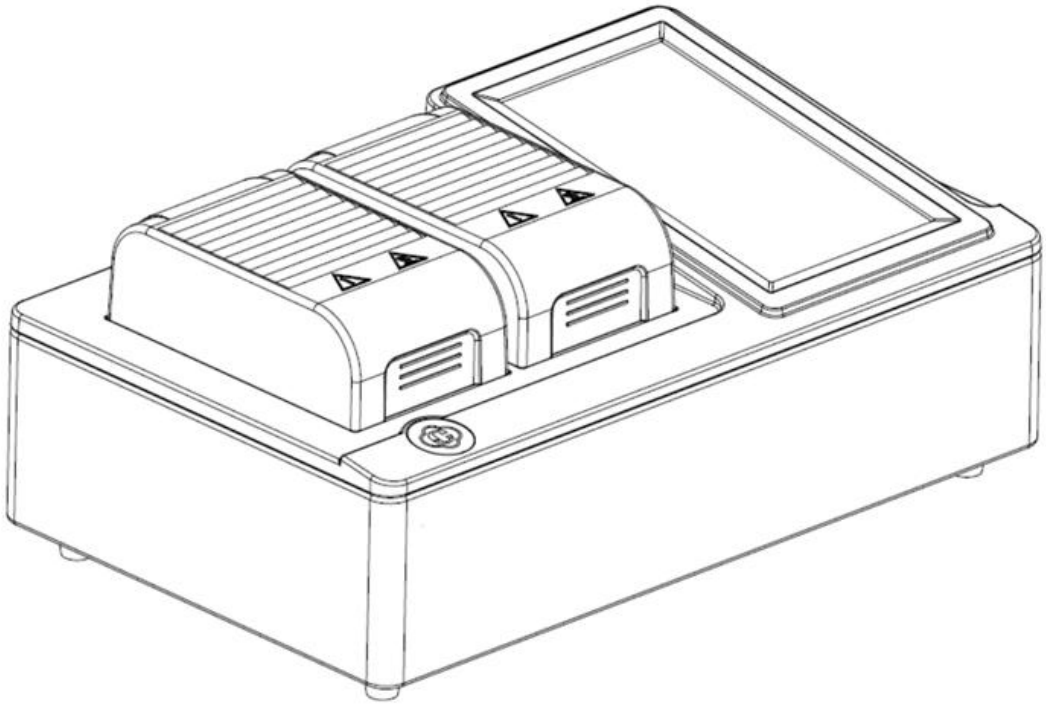
iDea1212

Benchtop Dual Zone Smart Digestion Instrumen

User Manual



The specifications and information mentioned in this manual are for reference only and are subject to change without notice. Unless otherwise agreed, this manual is for guidance only, and all statements and information herein do not constitute any form of warranty.

Guangdong Rainstin Instruments Co., Ltd. http://www.rainstin.com/

Contents

Friendly Reminder

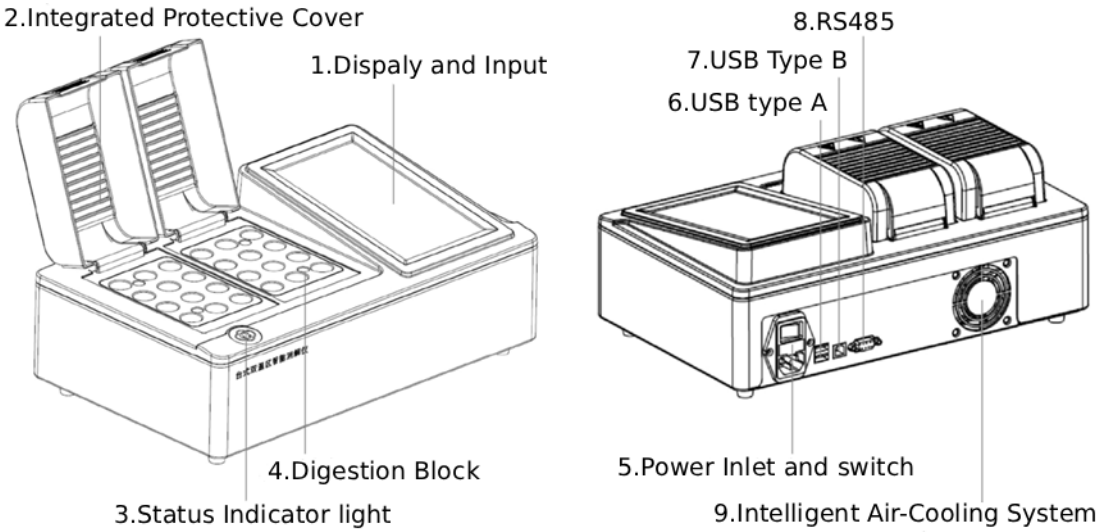
1. Please read this manual carefully before using the instrument.
2. Do not touch the bottom of the device during heating.
3. Ensure the protective cover is in place before starting, and do not open it during digestion.
4. Do not use digestion tubes or caps that are damaged, leaking, or loose.
5. In case of liquid leakage, immediately turn off the power.
6. Do not place flammable or explosive materials near the instrument.
7. When not in use, keep the protective cover on to prevent dust ingress.
8. Always use a grounded power outlet to ensure safety.

1. Product Introduction

The **iDea1212 Benchtop Dual Zone Smart Digestion Instrument** is an advanced 24-well digester designed with 2 heating zones for water quality testing applications. It is equipped with a 7-inch full-color capacitive touchscreen, which displays real-time temperature control curves for clear monitoring of temperature changes throughout the digestion process.

Featuring a fast, intelligent digestion system, the iDea1212 supports one-touch operation for multiple water quality testing parameters to meet most user needs, with customizable digestion temperature and time for extended applications. Its user-friendly interface and precise temperature control provide a reliable and efficient solution for laboratory water quality testing.

The iDea1212 is designed with two independent 12-hole heating zones that can be controlled separately or simultaneously. When operated independently, different samples can be digested at the same time, significantly reducing total digestion time and improving efficiency.



1. **Display and Input**: Used for entering various operation commands and displaying execution results
2. **Integrated Safety Protective Cover**: Provides protection against potential safety hazards caused by tube rupture during digestion.
3. **Status Indicator Light:** Blue = Idle mode; Green = Digestion mode; Red = Fault.
4. **Digestion Block**: Heating unit designed for 16 mm tubes
5. **Power Inlet & Switch**: For connecting the device to power supply and turning the instrument on/off
6. **USB Type A**: For upgrading the display and motherboard firmware.
7. **USB Type B**: For connection to a host computer.
8. **RS485**: For external devices or LIMS system integration.
9. **Intelligent Air-Cooling System**: Ensures cabinet heat dissipation, extends the service life of electronic components, and protects operator safety

2.Product Feature

Display & Input:

• 7-inch full-color capacitive touchscreen with intuitive operation

• Six preset digestion programs (CODcr, TP, TN, Pb, CODmn) with customizable options; Preset programs can be modified using an administrator password.

• Real-time display of temperature curves for precise monitoring during digestion.

• Visual pop-up notifications with audible alerts ensure process monitoring and timely response.

• Real-time display of project type, operating status, current temperature, set time, and remaining time.

Control:

• Dual temperature control options (dual control and single control) to meet diverse experimental needs, enhancing efficiency and sample throughput.

• Thick-film heating technology for long service life and rapid heating.

• Intelligent PID temperature control for precise and stable performance.

• Temperature calibration function to eliminate deviations between displayed and actual sample temperature.

Safety:

• Automatic heating cut-off in case of over-temperature to protect equipment and operator.

• Integrated heat-resistant protective cover for safe observation during digestion.

• Intelligent air-cooling system to maintain suitable internal temperature, prevent burns, and extend electronic component lifespan.

Communication:

• Rich Communication Interfaces: Two USB-Type A, one USB-Type B, and one RS485 interface.

• Supports USB upgrades for display, motherboard firmware, and data export.

• Supports data expansion functionality.

3.Technical Specifications

Item	Parameter
Display & Input	7-inch full-color capacitive touchscreen
Digestion Capacity	24 tubes for dual heating zone (12+12)
Digestion Volume	0–10 mL
Digestion Hole Size	16.6 mm diameter / 65 mm depth
Temperature Control Mode	Intelligent PID temperature control
Temperature Control Resolution	0.1°C
Temperature Accuracy	±1.5 °C
Temperature Range	0–200°C
Heating Speed	From 25°C to 165°C within 6 minutes
Custom Programs	Supported
Heating Mode	Thick-film heating technology
Overtemperature Protection	Automatic heating cut-off
Protective Cover	High-transparency integrated safety shield
Intelligent cooling	Automatic fan start/stop to prevent accidental burns
Temperature Calibration	Calibrate temperature discrepancy between the sensor and the digestion hole
Completion Prompt	Pop-up notification + buzzer alert
Status Indicators Light	Blue for idle, green for digestion, and red for fault
Rated Voltage	AC 110–220V / 50/60Hz
Rated Power	750 W
Dimensions (L × W × H)	341 × 206 × 153 mm
Weight	5.1 kg

4.Disclaimer and Warranty

4.1 Disclaimer

1. The specifications and information mentioned in this manual are for reference only and are subject to change without notice.
2. Please read the safety instructions carefully before using the instrument. The company is not responsible for accidents caused by improper operation.
3. This product is intended for use in professional fields. Operators must have relevant knowledge and skills. Accidents caused by misuse are not covered.

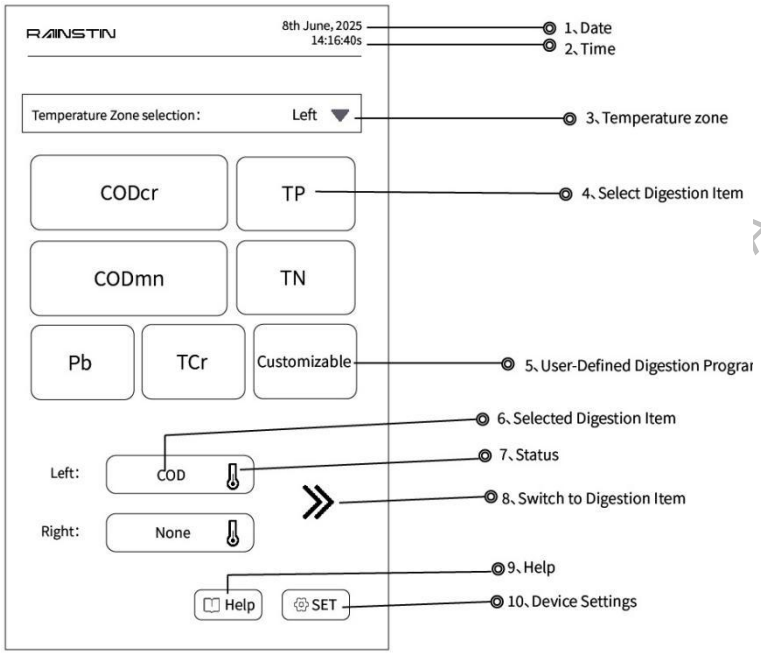
4.2 Warranty

1. All products undergo strict inspection before shipment and are covered by a one-year free warranty for quality issues.
2. During the warranty period, if problems arise due to improper operation, unsuitable environment, human error, accidents, or improper storage/transportation, the company may charge repair costs.
3. For out-of-warranty instruments, paid repair and service are available.
4. Warranty does not apply under the following conditions：
    a. Unauthorized disassembly, modification, or repair.
    b. Repairs by non-authorized personnel.
    c. Tampering or breaking of anti-disassembly seals.
    d. Use of non-original consumables causing malfunctions.
    e. Products purchased through unauthorized channels.
    f. Improper use or operation in unsuitable environments.

5.Instrument Operation

5.1 Preparation

Open the packaging and check whether all instrument accessories are complete and correct. After confirmation, insert the AC power plug into the device’s power interface. Turn on the power switch — the display interface will appear as follows:



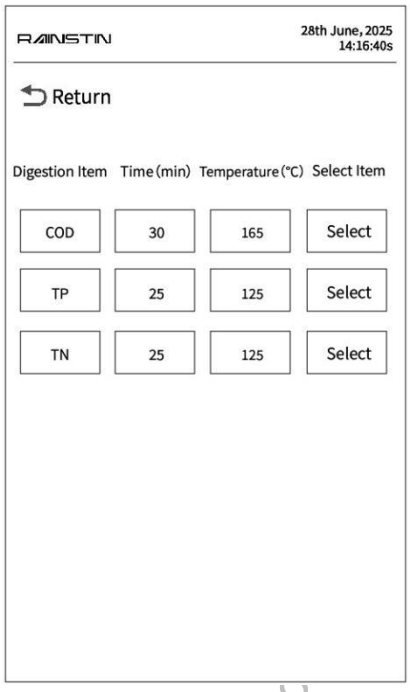
5.2 Starting Digestion Program

5.2.1 Temperature Zone Selection: Select the temperature zone from the "3. Temperature Zone" dropdown menu: Left Temperature Zone, Right Temperature Zone, or Full Temperature Zone. Full Temperature Zone indicates that both temperature zones have the same digestion settings.

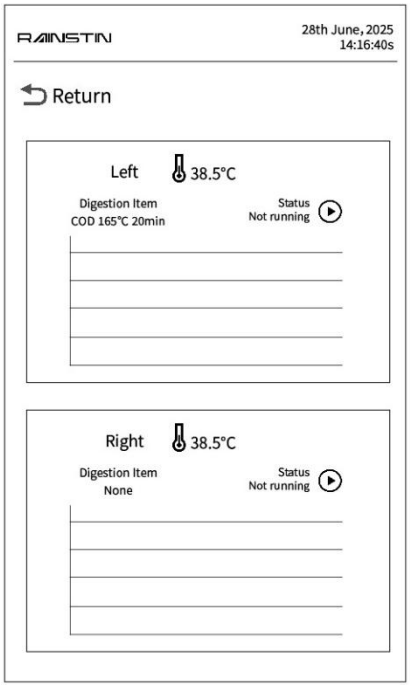
5.2.2 Digestion Item Selection: After selecting the temperature zone, click "4. Select Digestion Item" to choose a preset digestion program (COD, Total Phosphorus, Total

Nitrogen, Total Chromium, Lead, Permanganate Index). If the desired program is not available, use "5. User-Defined Digestion Program" to set it.

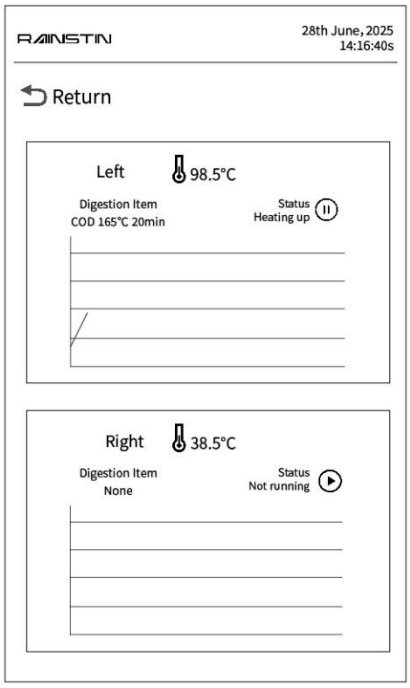
5.2.3 Custom Digestion Program Setup: After selecting the digestion temperature zone, click "Customizable" to open the setup interface as shown in the below figure. Enter the required information in the prompt boxes, then save the settings and press "Back". The selected temperature zone will run according to the customized digestion temperature and time.



5.2.4 Entering the Digestion Page: Press "8. Switch to Digestion Item" to enter the digestion page. The selected program will be displayed under “Digestion Item”. If it displays “None,” which means no digestion program has been selected for that temperature zone. The thermometer icon is gray and the status shows “Not running” and the run button shows  when the digestion program is not started.

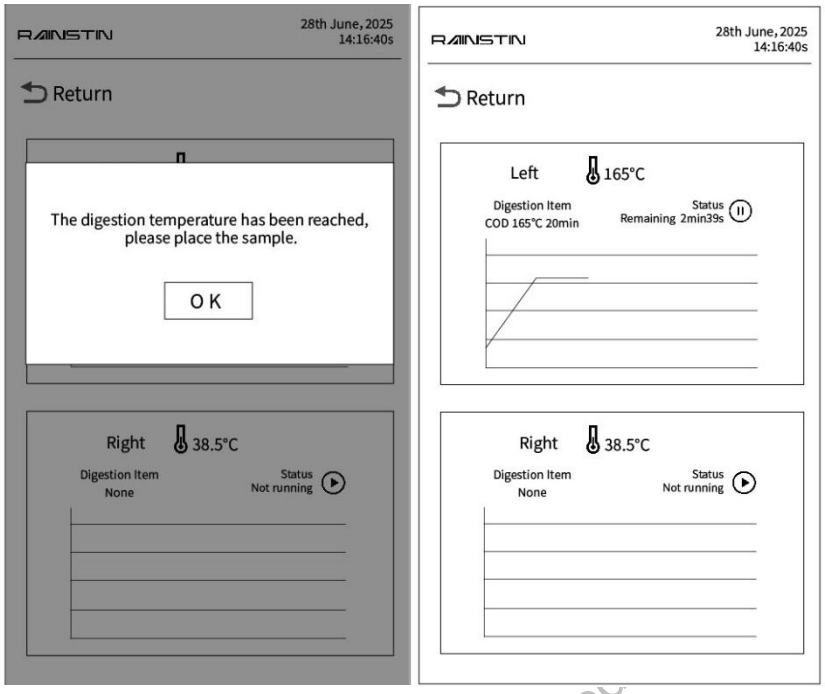


5.2.5 Start Heating: Click the run button to start heating. The thermometer icon will change from gray to red and the temperature continues to rise. The run button will change to and the status shows “heating”. If the run button is clicked during the heating process, heating will be immediately interrupted and run button will be changed to .

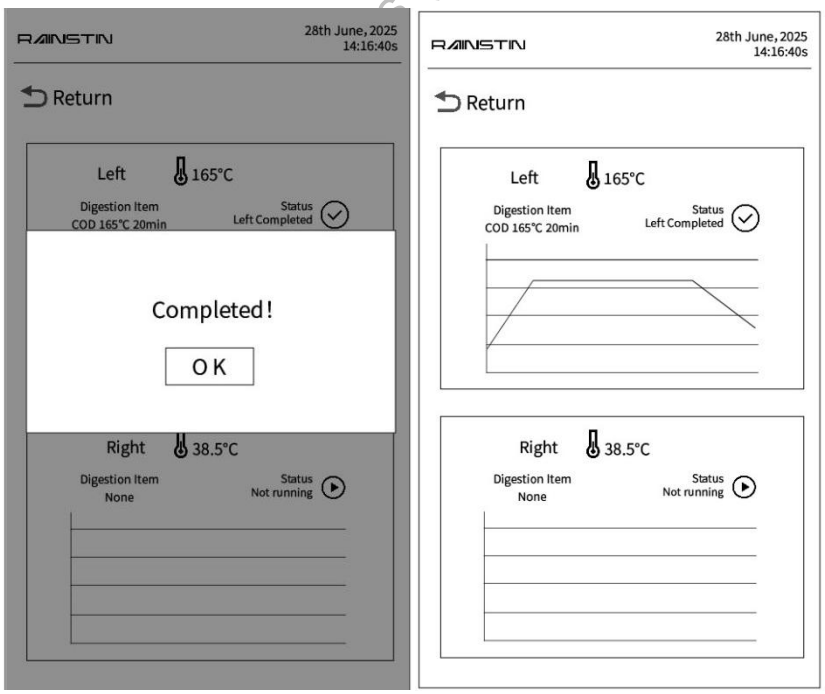


5.2.6 Start Digestion: When the temperature reaches the specified digestion temperature,

a popup notification will appear with the message, "The digestion temperature has been reached. Please place the sample" (with a voice prompt). Place the corresponding sample into the digestion hole, click "OK", and the digestion countdown will begin.



5.2.7 Digestion Complete: When the countdown ends, a popup will display "Completed" (with a voice prompt). Click "OK" to complete the digestion process.

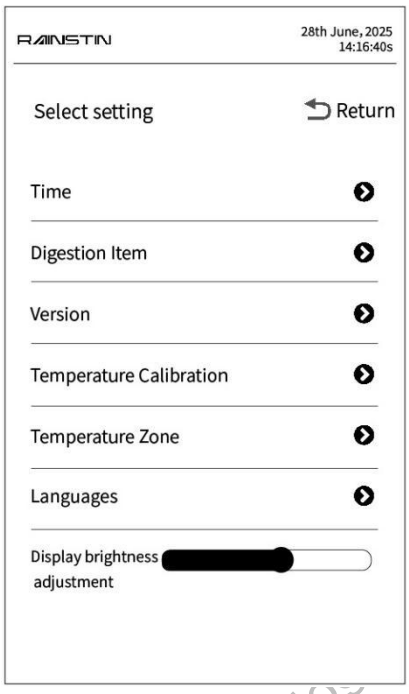


5.2.8 Dual Zone Digestion: Click the "Return" button to return to the main page, set the

digestion program for another temperature zone, and repeat the above 5.2.6 process for dual zone digestion.

5.3 Instrument Settings

Press the "SET" button on the main interface to enter the settings page. Press "Return" to return to the main page.

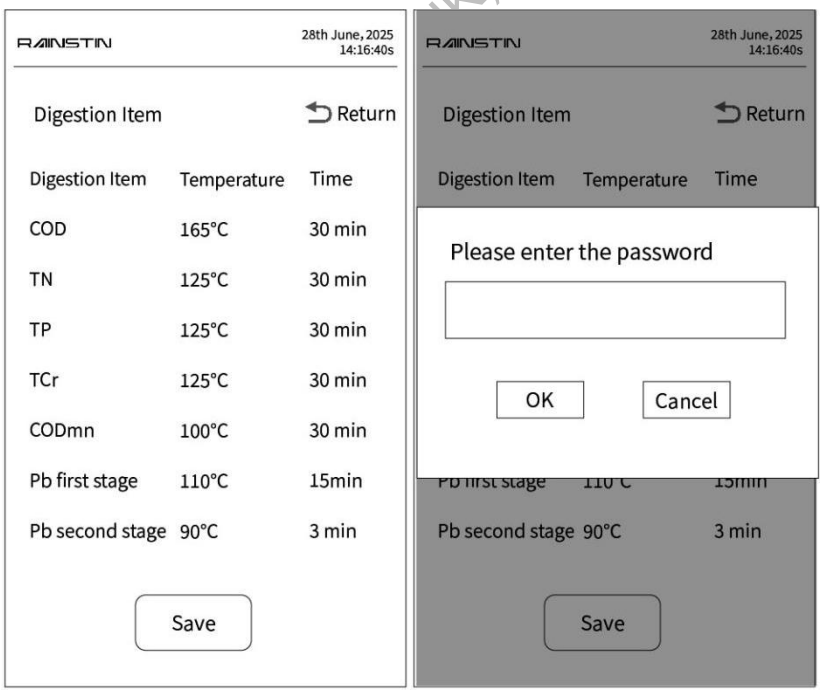


5.3.1 Time Setting

Click the corresponding area to input the correct year, month, day, hour, minute and second, then press "Save".

5.3.2 Digestion Program Preset

For preset digestion programs, click the corresponding "Digestion Item", "Temperature", or "Time" to modify. After modification, press "Save", and when the popup appears, enter the password "666666" and press "OK" to save the settings.

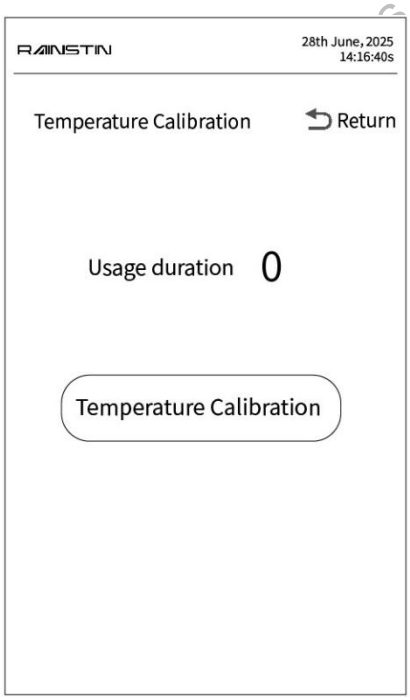


5.3.3 Version Information

Displays the current version number.

5.3.4 Calibration Settings

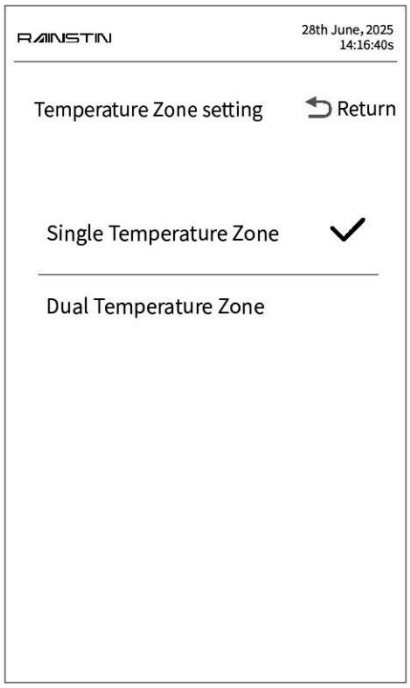
Used for factory temperature calibration, to be performed by the manufacturer's professional engineers



5.3.5 Temperature Zone Settings

Temperature zones are preset by the manufacturer based on actual needs before delivery.

After selecting a temperature zone, the interface will display the corresponding settings.



5.3.6 Language Settings

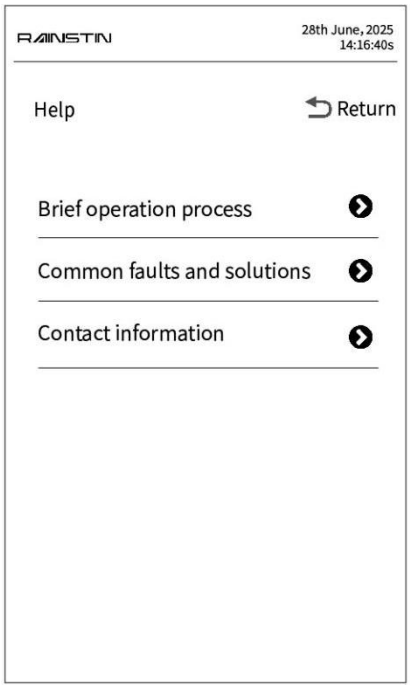
Choose Simplified Chinese or English.

5.3.7 Brightness Adjustment

Drag the slider to adjust the screen brightness.

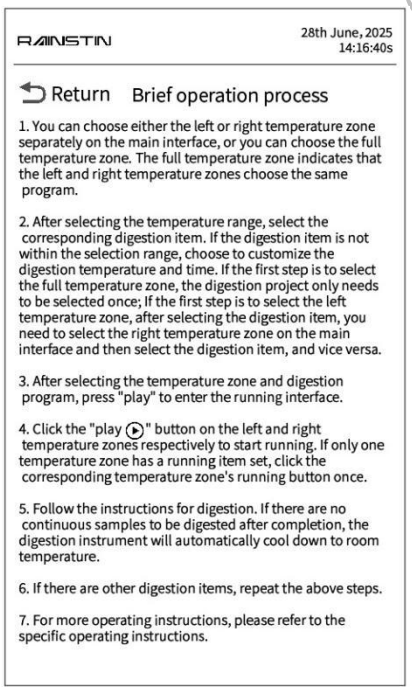
5.4 Help

The help page as shown in the below figure



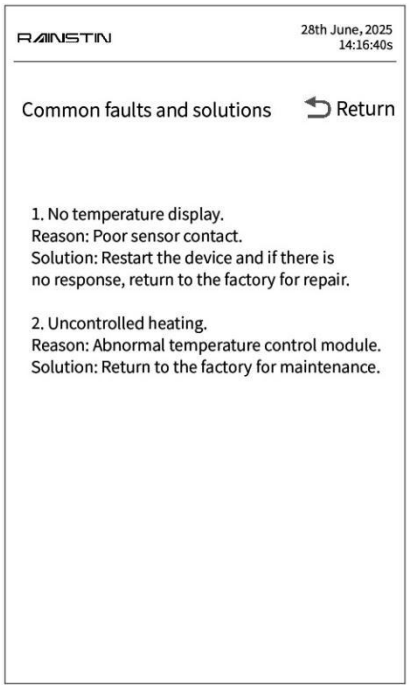
5.4.1 Brief Operating Procedure

Provides a simple introduction to the operating steps.



5.4.2 Common Faults and Solutions

Lists error codes and solutions.



5.4.3 Contact Information

Displays the company's customer service hotline and website.

6.Packing List

Item	Number
Benchtop Digestion Instrument	1
Power Cable	1
User Manual	1
Certificate of Conformity	1
Warranty Card	1