

NEW

Dual Digital Thermometer

Model: ICT-220



Security Information

In order to use the thermometer correctly, please read the full text of the manual carefully before use, especially the part about "safety information".

Warn

A Warning identifies conditions or actions that may pose a hazard to the user. To avoid electric shock or personal injury, follow the steps below.

1. Check the case before using the thermometer. Check the case for cracks or missing plastic pieces, especially the insulation around the connectors. Do not use thermometer if exterior is damaged.
2. Before opening the instrument case, disconnect the thermocouple from the thermometer.
3. When the battery indication symbol "" appears, the battery should be replaced in time.
4. If the thermometer is not working properly, do not continue to use it. The protective device may have been damaged, in case of doubt, the thermometer should be sent to the designated point for repair.
5. Do not use the thermometer near explosive gas, steam or dust.
6. Do not apply more than the rated voltage (30V) marked on the thermometer between the thermocouples or between the thermocouple and the ground terminal.
7. When there may be a potential difference between thermocouples, insulated thermocouples should be used to repair the thermometer, and designated replacement parts should be used.
8. Never use the thermometer with the case or cover of the thermometer open.

Careful

The conditions or actions that may cause damage to the meter or the equipment under test are listed below. To avoid damage to the meter or equipment, please use with caution.

1. When using a thermometer, select the appropriate thermocouple, function file or range file.
2. When using two-way measurement, it must be ensured that there is no potential difference between the two lines.

3. Never try to charge the battery.
4. When installing the battery, pay attention to the "+" and "-" polarities of the battery .

Notice

1. When the product is replaced with a battery or abnormal power failure, the recording function is turned off, and the recording function must be restarted by connecting to the mobile phone APP .
2. For the first use, you need to open the battery cover and remove the insulating sheet , so that the product can be turned on normally.

Product Description

- 1.APP viewing and scene-based data analysis make the product smarter and work more convenient;
2. Support OTA; OTA is combined with the characteristics of fast response and wide measurement range of thermocouples, and is continuously upgraded to meet the needs of various professional scenarios;
3. Support offline data recording, historical data can be seen, and realize rapid analysis of Bluetooth reading;
4. Using a 2.8-inch COG dot matrix screen, the interface display is more intuitive, clear and professional;

Button function

Button	Function
	1. Power on (short press) 2. Shut down (long press) 3. Turn on/off the backlight (short press in the power-on state)
	Dual temperature interface /temperature difference interface switching
	Dual temperature interface /temperature difference interface switching



1. Dual temperature interface : Short press MAX /MIN/AVG to switch between three types of data
2. MAX/MIN/AVG interface: Long press to exit
3. Configuration interface: raise the setting parameters



1. Configuration interface: down-regulate the setting parameters
2. Dual temperature interface : short press to turn on/off Bluetooth



1. Short press to lock/unlock the current interface
2. Long press to turn on/off the buzzer

Technical Parameters

Sensor type	K-type thermocouple
Measuring range	-50-250°C (bare wire), -50-500°C (extended armor) -58 - 482 °F (bare wire), -58 - 932°F(extended armor);
Resolution	0.1°C/0.1°F (>100°C, the resolution is 1 °C /1 °F) °C
Accuracy	± (0.5°C+0.5% of reading)
Response speed	T 99 <2 seconds (bare wire)
Display mode	2.8-inch COG dot matrix screen
Thermocouple lead wire length	1 meters
Number of probes	support 2 thermocouples
Acquisition frequency	>5 times /second
Operating temperature	-20-50°C
Storage temperature	-40-70°C
Power supply	3*AA
Battery life	150 hours (without backlight, bluetooth off)
Recording points	5000 points
Product Size	66mm*169mm
Product weight	

Product function introduction

Instructions



boot interface

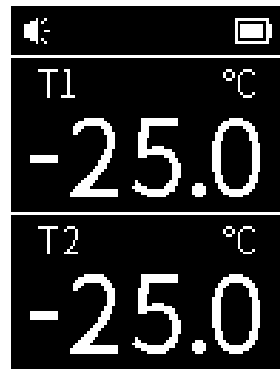


Figure 1
Dual display interface



Figure 2
Temperature
difference interface

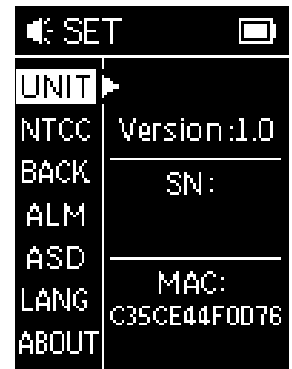


Figure 3
setting interface

Operating mode

1. Turn on the power switch of I CT-220 ;
2. The backlight is turned off by default (🔌) after booting , and the back-light can be turned on/off by short pressing the button in the boot state;
3. Insert one or two K-type thermocouples into the top socket of the product. When the thermocouples are not connected correctly, the product will display a fault indication, see the fault code table;
4. The product enters the dual temperature interface by default , as shown in Figure 1, the large screen displays the real-time temperatures of the two thermocouples ;
5. Press the (🔍) button on the dual temperature interface to enter the MAX interface, press this button again to cycle through the minimum, average, and maximum three interfaces, long press to clear the MAX / MIN/AVG data and return to the dual temperature interface ;
- 6.the dual (☰) temperature interface to enter the temperature difference interface, as shown in Figure 2, display the real-time temperature difference of the two thermocouples and display the real-time temperature of the two thermocouples at the same time, short press multiple times, and cycle through the temperature difference interface and the dual temperature interface ;
7. Press the (🔍) button on the temperature difference interface to enter the MAX interface, press this button again to cycle through the minimum, average, and maximum three interfaces, long press to clear the MAX /MIN/AVG data and return to the temperature difference interface;
8. (🔊) Short press the button to lock/unlock the current interface, long press the button to turn on/off the buzzer, the product buzzer icon.
9. Short key on (📶) the non-setting interface to turn on/ off Bluetooth. When the Bluetooth is turned on, the Bluetooth icon flashes on the

screen. You can use E litech Tools The mobile APP searches for the ICT-220 device, and the APP end clicks to connect, and the Bluetooth icon is displayed for a long time, indicating that the Bluetooth connection is successful; when the Bluetooth is turned off, the Bluetooth icon on the display interface disappears, and the APP end device is offline .

Parameter setting mode

1. After the product is turned on, press and hold  the button for 3 seconds to enter the setting interface, as shown in Figure 3;
2. Enter the setting interface, the product is in the UNIT setting column by default, and you can press  /  to switch between °C/°F;
3. Short press  the button to switch the setting column on the left in turn, select the NTCC option, and press  /  to turn on/off the internal N TC temperature compensation function of the product. After opening, the internal N TC temperature value can be displayed in real time;
4. Select the BACK setting bar, you can press  /  Press the button to adjust the time for automatically turning off the backlight, and the factory default is to turn off the backlight timing extinguishing function;
5. Select the A LM setting column, you can press  /  Press the button to turn on/off the alarm function (this function will not be displayed if you do not purchase this function)
6. Select the A SD setting bar, you can press  /  Press the button to adjust the automatic shutdown time. The factory default automatic shutdown is automatic shutdown without any operation for 30 minutes ;
7. Select 0 in the CAL setting column, and CAL T 1 is displayed . The calibration channel 1 is selected by default. Short press the MODE key/MUTE key to switch to select channel 2. Channel 2 can be selected by pressing  /  key to change the offset value setting. The allowable adjustment range is $\pm 5^{\circ}\text{C}$.
8. Select the LANG setting column, now only supports English, and will continue to be updated in the future.
9. Select the A BOUT setting column, the secondary parameter column displays Version, SN code, MAC information, you can press  /  Press the button to switch to display SN QR code, APP QR code, and return to the ABOUT setting interface
10. Press and hold the setting button for 3 seconds to save the setting parameters, and the interface returns to the interface before entering the setting interface.

Battery level indication

battery level icon	battery level
	Sufficient battery
	Power 3/4
	Power 2/4
	Power 1/4
	critically low battery

Fault alarm function

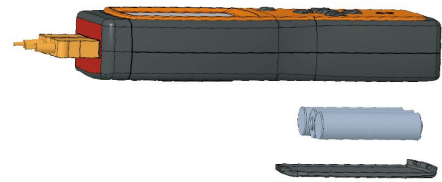
error code	cause of issue
"-----"	No thermocouple thermometer connected
"-E01-"	A d chip
"-E02-"	Calibration data lost
"-E03-"	Difference status, the sensor cannot calculate the difference
"-E04-"	NTC value exceeds upper and lower limits (-40°C - 50°C)
"-OH-"	Exceeding the upper limit (the measured temperature and humidity exceed the upper limit range, and OH is always displayed when calculating the maximum, minimum, and average values)
"-OL-"	Exceeding the lower limit (the measured temperature and humidity exceed the lower limit range, and OL is always displayed when calculating the maximum value, minimum value, and average value)

Battery Installation

Battery specifications: 3 AA batteries ;

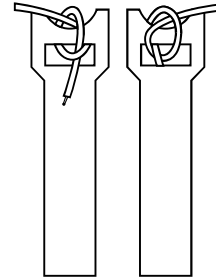
Open the battery compartment according to the direction shown in the figure, and then put the battery into the battery compartment. Pay attention to the direction of the battery when installing.

Note: For the first use, you need to open the battery compartment and take out the insulating sheet. When taking the insulating sheet, press the battery with your hands to prevent the battery from popping out.



Velcro

If using Velcro, thread the thermocouple through the Velcro, as shown in the picture, and then attach the Velcro to the pipe so that the pipe is in direct contact with the thermocouple bead



Instrument Calibration

CAL setting in the setup options , the thermometer reading can be adjusted to compensate for the error of a certain thermocouple. The allowable adjustment range is $\pm 5^{\circ}\text{C}$;

- 1.Place the thermocouple in a known and stable stable environment (e.g. in a mixture of ice and water)
- 2.let the temperature stabilize
- 3.Under the 0 CAL setting, select the channel to be adjusted, and adjust the error value until the temperature reading displayed at the bottom of the screen is consistent with the calibrated temperature. (Refer to 0 CAL setting function description)

Note: When you no longer need to use this bias value, please restore this bias value to 0.0.

Instrument maintenance

The surface of the thermometer is dirty. When it needs to be cleaned, use a soft cloth or sponge dipped in a little water or a commercial cleaner to wipe it gently. Do not wash it with water, and do not let water enter the housing, so as not to damage the thermometer.

Instrument maintenance

Thermocouple* 2 Instruction manual *1 AA battery*3 Velcro*2

Smart Apps

The ICT series supports Bluetooth wireless connection, and can experience remote viewing of measurement data, recording and exporting data reports, remote firmware upgrades, over-temperature alarm reminders, temperature compensation and other intelligent functions through the mobile APP.

1.1APP download

1.Apple users: Search "Elitech Tools" in the "APP Store".

2.Installer: Search "Elitech Tools" in "Google Play".

3.Scan the QR code to get the APP.

Compatibility: The Apple system supports version 11.0 and above, and the installation system supports version 5.0 and above.



1.2APP connection

1.Turn on the product, press a short key , and the Bluetooth icon flashes. 

2.Open "Elitech Tools", click "Search Nearby Devices", connect the product, and enter the interface to view the data.

1.3 User Registration

1.Open the "Elitech Tools" APP, click  the icon in the upper left corner of the home page.

2.Go to the menu and click Login.

3.Select Register Now to register user information.

4. After the registration is  complete, click Add Device on the My Device interface .

5. Manually enter the SN serial number on the information label on the back of the product or scan the QR code to add the device.

Note: If the information label is lost or damaged, please go to Device Settings -> About to check the serial number.





1.4 Value-added services

How to purchase value-added services:

Method 1: Log in the user information, enter the My Devices interface, click the + sign to add devices, and click the device list to purchase items.

Method 2: Connect the device via Bluetooth, enter the details interface, click Settings at the bottom of the interface, and purchase items in the device list.

1.4 Temperature Compensation Settings

The internal N TC temperature compensation function of the product can display the internal N TC temperature value in real time after it is turned on; it can manually adjust the NTC temperature when it is turned off.



1.5 Over-temperature alarm prompt

The over-temperature alarm function is turned on, and the upper and lower limit alarm values of the temperature can be set. When the device detects that the temperature exceeds the set upper and lower limit range, there will be an alarm function.

Note: This function needs to be purchased before it can be used, and the purchase method is detailed in 1.3 of this article.

1. Connect the device to the APP and enter the details interface.
2. Click Settings, Alarm Settings.
3. Turn on the alarm function, and you can set the upper and lower limit alarm values of channel 1 and channel 2. When the collected temperature exceeds the upper and lower limit range, an alarm will be prompted.



1.6 Offline recording mode

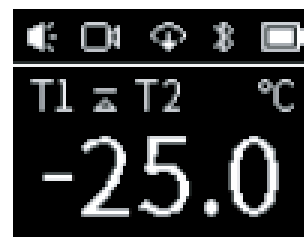
The offline recording mode can store data in the device without Bluetooth connection, and then export it for viewing through the APP.

Note: This function needs to be purchased before it can be used, and the purchase method is detailed in 1.3 of this article.

1. Connect the device to the APP and enter the details interface.
2. Click Settings, click Recording.
3. Record Interval: Click Record Interval to select the interval time.
4. Start recording: Click to start offline recording, the recording icon on the device lights up and starts to flash.

The device can record up to 5000 pieces of data.

5. End recording: Click to stop offline recording, and the recording icon on the device goes out.
6. Data reading: Click to read the historical data of the device and export the data.
7. Data deletion: Click to clear historical data.



data logging icon

1.7 Firmware update

The device can perform remote firmware upgrade through the APP, the operation steps are as follows:

1. Connect the device to the APP and enter the details interface.
2. Click Settings and select Update Firmware.
3. If the latest firmware needs to be upgraded, the device will enter the upgrade process, and the interface will display that the upgrade is in progress.



1.9FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one

or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

