

---

# Stationary Battery Analyzer

Model No. : CTE-4000

## Instruction Manual



---

# Chapter 1: Description

## 1. Description:

CTE-4000 is a stationary battery analyzer that measures the conductance and voltage of 12V sealed lead-acid batteries for security systems, emergency lighting, mobility vehicles, uninterruptible and power supplies to identify those that:

- . Are good.
- . Are serviceable
- . Need to be replaced.

## 2. Specification

2.1 The analyzer measures the status of a battery in voltage and conductance values. It displays conductance values in Siemens (S). Ampere hours (Ah) are a typical measurement of jar capacity; however, they are difficult to measure without knowing the load to which the jars supply power. Lancol recommends that you use a reference value to compare the conductance value to the test results. A reference value is a typical conductance value for the type of jars you are testing. For more information about determining a reference value, refer to “Chapter 2: Pre-testing.”

### Test Range

CTE-4000 has an operating range of 100 - 19,990 Siemens, 12V 2AH – 3000AH.

### Data Storage

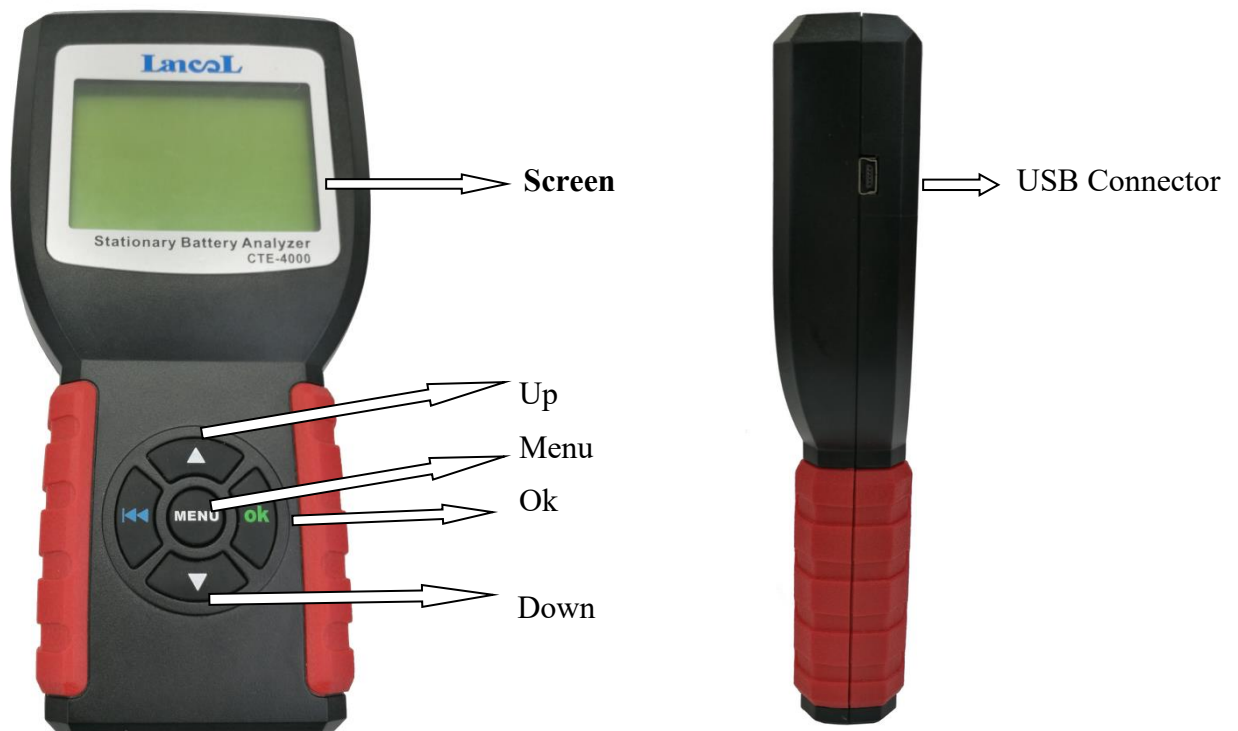
CTE-4000 can store 1000 groups of test results, and you can output the test results to your computer with the USB cable.

**Voltage Range:** 1.8 -16.00 Volts DC

**Accuracy:** +/-2% across test range, Voltage and Conductance

---

## Parts of the analyzer CTE-4000



## Chapter 2: Pre-testing

Before you test a site with the analyzer, you need to  
. Determine a reference value.

Note: make sure the battery you are testing is 12V batteries.

### Reference values

Reference values are average conductance values from a sample of strong batteries similar in condition and age. You can compare reference values to test the results from a group. The differences between test results are reference values help you determine the capacity of the group to see if it is providing enough conductances for the load. Differences can reflect how a group of batteries were treated, installed, or maintained.

---

## Options

Lancol recommends that you create your own reference values for a group of batteries to get values specific to the group you are testing. For this reason, the following options are listed in the order you should take to obtain a reference value.

1. Consult your company documentation for previous reference values that were created for the group you are testing. If you do not have previous reference values for the site, do step 2.
2. Test a sample of battery. Refer to “Testing a sample of battery”. If you cannot test a sample of battery, do step 3.
3. Test the battery in the group that you need to test with the analyzer and use highest conductance value as a reference value. If you cannot test the battery for a reference value, do step 4.
4. Use the average from the group. Refer to “Using the average in the group”

### Testing a sample of battery

To test a sample of battery for a reference value:

1. Choose at least 30 batteries from one manufacture with the same make, model, power rating, age(within 6 months), and service history.
  2. Record this information about the battery
    - .Battery manufacturer
    - .Model number
    - .Date of manufacture
    - .Date of installation
    - .Condition the battery operates in, such as charge voltage, temperature, and DC current through the battery
    - .Visible warings, such as leaking acid, corrosion, or distorted battery cases
  3. Test the battery. Refer to “Chapter 3: Testing”
  4. Test one battery five times. You should get the same conductance result.
  5. Figure the average conductance of the battery
- Note:Do not include battery that are higher or lower than 30% from the average because they might be outside an acceptable range.

### Using the average in the group

If you cannot obtain a reference value for a group, test all batteries of the group and use the average conductance value as your reference value.

---

## Using the percentages of the reference value

You can use the percentages of the reference value to help you determine the strength of the site. Table 6 lists ranges of reference value percentages, and the action you should take.

% of the Reference value	Battery condition	Action
>80%	Good	Check the battery to look for physical damage
60-80%	Serviceable with maintenance	Check for problems and refer to <ul style="list-style-type: none"><li>• Test results or other information about the site to determine the cause of low readings.</li><li>• Your company maintenance procedures for battery maintenance</li><li>• IEEE standard 1188-1996: Recommended Practice for Maintenance, Testing and Replacement of valve-Regulated, Lead-Acid (VRLA) Jars for Stationary Application</li></ul>
<60%	Unserviceable	Replace the jars. Refer to your company jar replacement procedures or IEEE standard 1188-1996.

Note: The above recommended maintenance standards are not national standards, according to the user's own risk-bearing capacity to adjust the scale standards, reduce the use of risk.

# Chapter 3: Testing


## 3.1.1 Connect Tester


Shake the clamps back and forth to make sure they are well connected. Tester requires the two clamps are well connected with the battery poles, otherwise, the test cannot go on. When enter the battery test program, screen prompts "**Check Connection**", do clean the poles and re-connect in the right way.




Tester has reverse connection protection function. When clamps are reversely connected, tester screen will not light, but it damages neither the tester nor the automotive load.

## 3.1.2 Key Description

-  **Up / Down keys**  
Select upwards or downwards via white UP and DOWN keys.

-  **Return and Menu key**  
Return to previous menu via blue RETURN key.

-  **OK key**  
Confirm the selection via green OK key

-  **MENU**  
Enter into Menu functions



## 3.2 Tester Startup


Tester automatically starts up after the clamps are correctly connected, and displays the Lancol startup interface (Default voltmeter is ON) refer to figure 1.

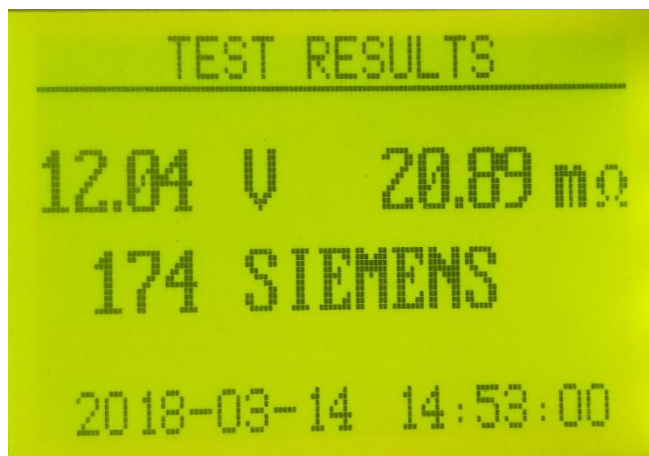


Figure 1, Startup Interface with Voltmeter on

At the middle bottom of the startup interface, it displays the voltmeter value, which can be used as DC voltmeter. DC Voltmeter test range is 1.80 - 16DCV, out of which will damage the tester.


### 3.3 Testing

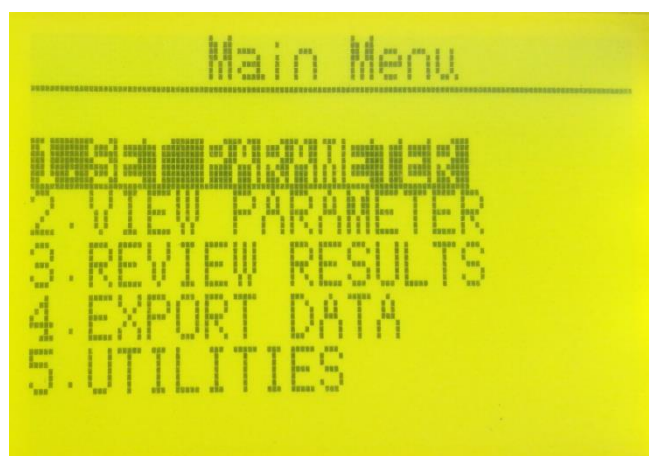
Press  or "HOLD" key of probe to get the quick test results.



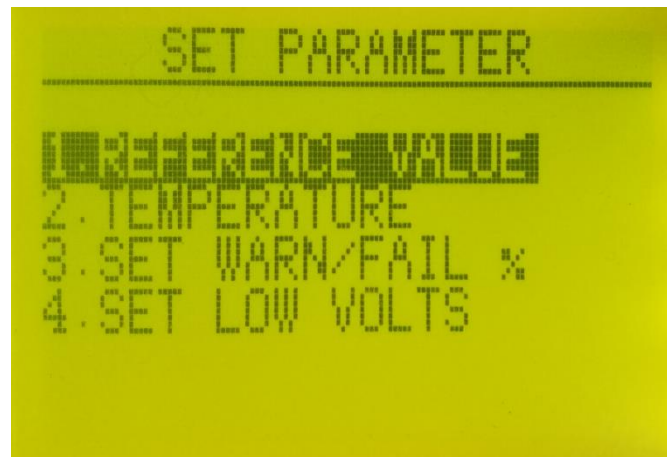
Note: This quick test does not need to set related parameters in the "MENU" function; if you press the "OK" test directly after power on, the parameters in the MENU will be used as the default value. (Test different batteries; please enter the MENU function to set the battery parameters).

### 3.4 Menu functions

When you connect the battery with the clamp, Press  key to enter into Menu functions



3.4.1 Click "OK" to confirm the parameter settings and enter the following interface:

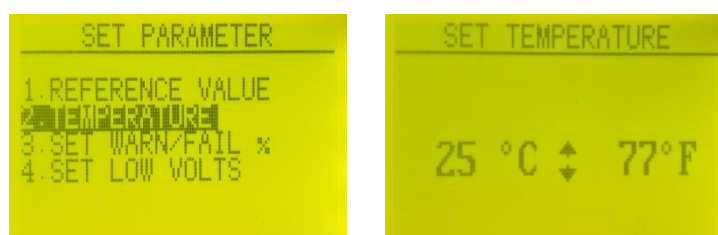


3.4.2 Continue to press "OK" to set the battery reference value



Press the up and down key to adjust the value of the standard values, press "OK" to confirm the standard value input and return to the boot main interface.

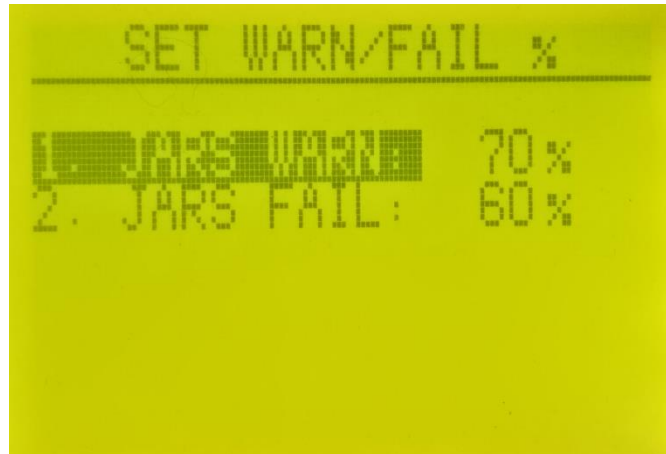
3.4.3 Press "MENU" to enter the selection temperature and press "OK"



Temperature refers to the actual battery storage location when testing the ambient temperature, the default temperature of 25 degrees. This temperature setting makes it easy for test data to be imported into computer later data comparison analysis.

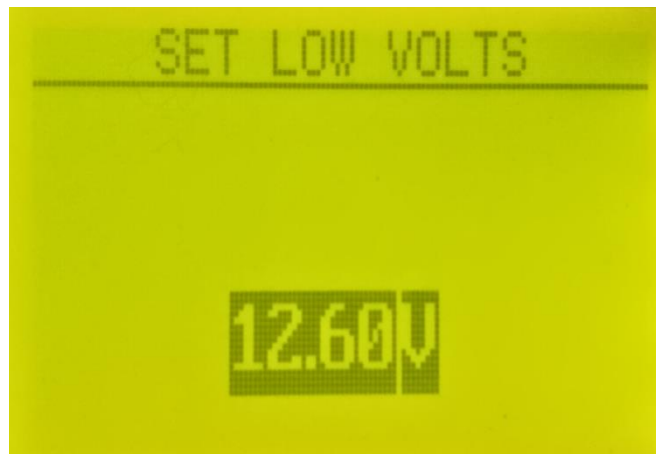


3.4.4 Select alert value settings and press OK to enter:



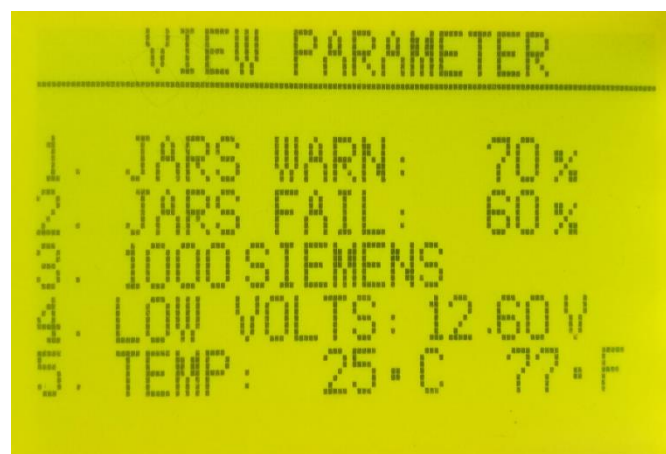
Press " " and "OK" left and right choice, the key to adjust the value, press "OK" to confirm.

3.4.5 Select low voltage setting and press OK to enter:



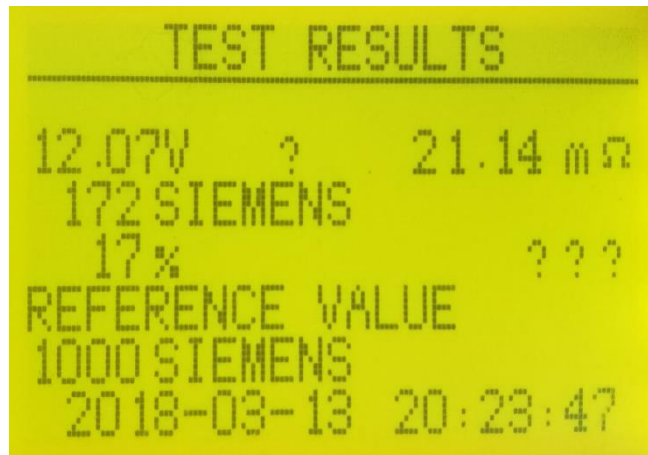
12V voltage default low voltage reminder for 12.60V, you can press up and down keys to adjust the reminder voltage value.

3.5 Press " ⬅ " to back to view parameters ' and press ' OK ' to enter the following viewing interface:

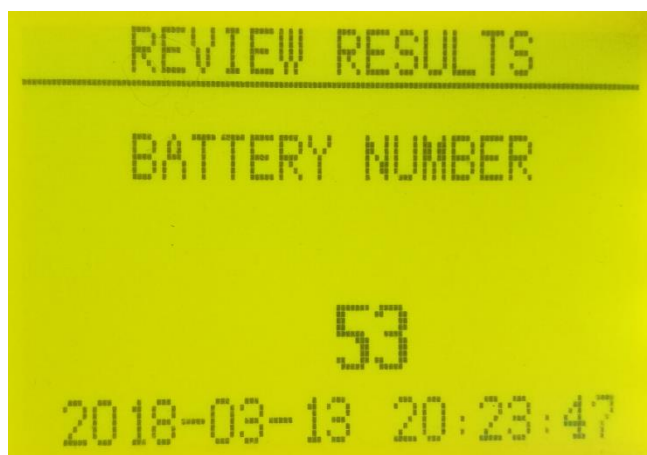


---

3.5.1 Set and view the confirmation parameter is correct, press "⏪" back to boot interface. Press "OK" for battery test, the test result interface is as follows:



3.6 Select View Test Results and press "OK"



Press the up and down key to select the time and serial number you want to view, press "OK" to go to view the test results.

Appear "?" refers to the voltage below the set low voltage alarm value and the test conductivity is lower than the set alarm proportional value (reminders need to focus on timely maintenance of batteries).

Note: The maximum support 1000 groups of data viewing.

3.7 Select Output test results press "OK" to confirm



Select the "output test data" Press "OK" button, the product packaging box to connect the data cable computer and tester data export interface, and install data export software, its installation steps are as follows:

Please download the software and installation instructions:

<https://boxpro.cn/boxpro/p/T19WYZ8MS>

After its data is exported, save as an Excel file

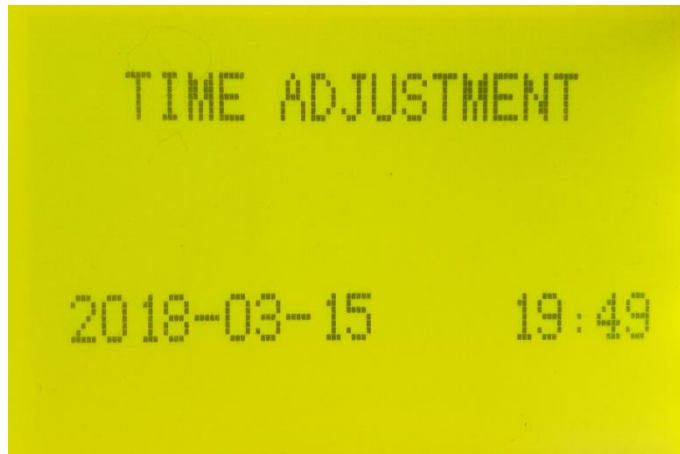
	A	B	C	D	E	F
1	测试时间	电池电压	实测电导值	参考百分比	标准电导值	温度
2	TEST TIME	BATTERY VOLTS	CONDUCTANCE	REF%	REFERENCE	TEMP
3	20170812115647	12.59	1066	94%	1095	26
4	20170812115655	12.59	1071	95%	1095	26
5	20170812115703	12.56	1072	95%	1095	26
6	20170812115710	12.56	1073	95%	1095	26
7	20170812115716	12.56	1075	95%	1095	26
8	20170814144552	12.49	424	37%	1095	26
9	20170814150742	12.82	1866	165%	1095	26
10	20170814150753	12.81	1881	166%	1095	26
11	20170814150839	12.81	1896	168%	1095	26
12	20170814152019	12.81	2166	192%	1095	26
13	20170814152147	12.49	442	39%	1095	26
14	20170821210500	12.73	449	41%	1090	25
15	20170821220547	12.71	446	40%	1090	25
16	20170821220601	12.68	445	40%	1090	25
17	----	----	----	----	----	----
18			END OF DATA	----	----	----

3.8 Select "UTILITIES" and press "OK" to enter:



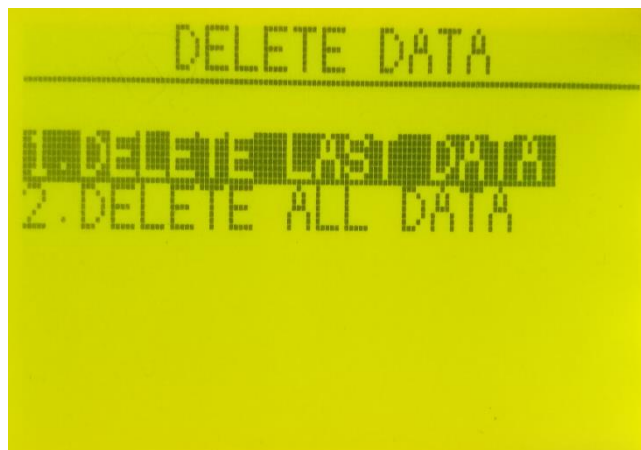
---

3.8.1 Select "TIME ADJUSTMENT" and press "OK" to enter the time setting



Move up and down key to adjust the time, each press "OK" to confirm a value, until all the values confirm exit.

3.8.2 Select "data deletion" and press "OK" to enter the following interface:



The up and down keys select to delete "last set of data" or "all data" and press "OK" to confirm.

Note: Select "all Data deletion" will delete all tested data, save data zero.

#### **4.Product Specifications**

Model:CTE-4000

Suitable deep cycle batteries: 12V 2AH – 3000AH.

Conductance range: 100-19,990 S (Siemens)

Conductance accuracy:  $\pm 3\%$

Voltage accuracy: 5mV

Correction: Automatic correction

Display: LCD green backlight

Store data: 1000 groups

Host weight: 750g

Operating temperature: 0-40° C

---

## **Warranty**

This warranty applies only to users and distributors who purchased Lancol's products through normal procedures.

Within one year from the date of delivery, Lagcol guarantees damage to its electronic products due to defects in materials or workmanship. This is due to abuse, unauthorized modification, use for purposes other than the design of the product, and failure to follow the instructions. Operation or other damage to the device or component is not covered by this warranty. The damages caused by the defects of the equipment caused by the damage to the instrumentation of the vehicle are limited to repair or replacement, and Lancol does not bear any indirect or incidental damages. The Lancol company will determine the properties of the equipment damage in accordance with the test method specified by it. No agents, employees or business representatives of Lancol Company have the right to make any confirmations, tips or promises related to Lancol Company's products.

## **Customer Service Center**

If you have any problems during the operation of the equipment, please call: +66-02-114 7145-9 or [info@7-mars.com](mailto:info@7-mars.com)

When the equipment needs to be repaired, please confirm the product problem in advance and then send it to Energy Power Save Company with a description of the problem. If the equipment is within the scope of warranty, Lancol will repair it for free; if the equipment is out of warranty, Langer will charge repairs and add return freight.

Lancol Company Address:

Chan Road, Thung Watdon , Sathon, Bangkok, Thailand 10120

Customer Service Center : +66 (096) 450 1250

Company website: <http://www.7-mars.com>

statement:

Energy Power Save CO.,LTD. reserves the right to change product designs and specifications without prior notice. Physical appearance and color may differ from those shown in the manual. Please refer to the actual product. We have tried our best to make all the descriptions in the book accurate, but we still find it inconvenient. If you have any questions, please contact your dealer or Lancol after-service center. The company will not bear any consequences arising from misunderstandings.