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# Battery Tester

## PITE3915

# User Manual

P-141106-V1.8

# **PITE**

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## Catalogue

<b>1. INTRODUCTION .....</b>	<b>3</b>
1.1 SAFETY INFORMATION.....	3
1.2 OPERATING PRECAUTIONS.....	3
<b>2. ABOUT PITE3915.....</b>	<b>4</b>
2.1 ACCESSORIES .....	4
<b>2.2 APPLICATION.....</b>	<b>5</b>
2.3 FEATURE.....	5
<b>2.4 TECHNICAL PARAMETER .....</b>	<b>6</b>
<b>3. OPERATION .....</b>	<b>6</b>
3.1 MEASUREMENT PREPARATION.....	6
3.1.1 <i>Main Unit Structure and Operation</i> .....	6
3.1.2 <i>Wire Connection</i> .....	7
3.1.3 <i>Power On</i> .....	7
3.1.4 <i>About Reference Values</i> .....	8
<b>3.2 MEASUREMENT .....</b>	<b>9</b>
<b>3.2.1 Test for Single Cell.....</b>	<b>9</b>
<b>3.2.2 Test for Battery String.....</b>	<b>11</b>
<b>3.3 DATA MANAGEMENT .....</b>	<b>13</b>
<b>3.4 SYSTEM MANAGEMENT .....</b>	<b>15</b>
3.4.1 <i>Instrument Calibration</i> .....	15
3.4.2 <i>Time Setting</i> .....	16
3.4.3 <i>System Update</i> .....	17
3.4.4 <i>Version Information</i> .....	17
<b>4. DATAVIEW SOFTWARE.....</b>	<b>17</b>
4.1 SOFTWARE INSTALLATION/UNINSTALL.....	18
4.1.1 <i>Software Installation</i> .....	18
4.1.2 <i>Software uninstall</i> .....	19
4.2 SOFTWARE OPERATION.....	19
4.2.1 <i>Import Data</i> .....	19
4.2.2 <i>View &amp; Delete Data</i> .....	20
4.3 HELP.....	24
4.4 HOT KEY .....	24
<b>5. SERVICE AND MAINTENANCE .....</b>	<b>25</b>
5.1 CLEANING .....	25
5.2 STORAGE .....	25
5.3 BATTERY MAINTENANCE .....	25
<b>6. FAQ.....</b>	<b>25</b>
<b>7. APPENDIX.....</b>	<b>26</b>

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# 1. INTRODUCTION


This Users Manual gives full information on how to use PITE3915 Battery Tester (hereinafter called “Tester”) safely and effectively. Please read the manual carefully so as to obtain maximal performance of the Tester.

 **Warning:** Read this manual completely before connecting and powering on the Tester to avoid possible damage caused by improper use of this instrument.

## 1.1 Safety Information




For your protection, please read this safety information completely before operating the activator. Carefully observe all warnings, precautions and instructions.

 **WARNING:** Servicing described in this manual is to be done only by qualified personnel. To avoid electric shock, do not service the instrument unless you are qualified to do so.

 <b>DANGER</b>	Safety testing has been done on this instrument thoroughly before shipment. However, mishandling during use could result in injury or other bad consequences, as well as damage to the instrument. Make sure that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulted directly from instrument defects.
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### Safety Symbols

Description of symbols used in this manual.

 <b>DANGER</b>	Indicates correct operation to prevent an extreme hazard that could result in serious injury or other bad consequences to users.
 <b>WARNING</b>	Indicates correct operation to prevent a significant hazard that could result in serious injury or other bad consequences to users.
 <b>CAUTION</b>	Indicates correct operation to prevent possible injury to users or damage to the instrument.
<b>NOTE</b>	Indicates advisory items related to performance or correct operation of the instrument.

## 1.2 Operating Precautions

### Safety information

- 1) PITE3915 is widely used in power utility, telecom machine room, industrial production management and the alike for testing of resistance and voltage of standby batteries. It may somehow be dangerous during operation. Only qualified technicians or specialized trained personnel are

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recommended to use it.

- 2) This device includes a LCD touch screen. Please avoid crashing, moisture, hard scratching or any other operation that may damage the screen.
- 3) This device includes a rechargeable Lithium battery. Please charge it only with 's battery charger. The rechargeable batteries may get heat during charging. User should take care when taking out batteries after charging. Disconnect the charging unit from the power supply when it is not in use.
- 4) Do not try to uninstall the device by yourself. If necessary, please contact for some helpful assistance.

### Disclaimer

will not be liable to any accessories/product malfunction or damage, or any personal harm caused by any misuse of product, illegal purpose of using this device or any other way not described in this user manual.

## 2. ABOUT PITE3915

PITE3915 is a new generation of battery tester with touch-screen. It is strictly designed to evaluate and maintain all stationary power systems including Uninterruptible Power System.

Via accurate testing of resistance and voltage, it gives an indication of battery capacity and technical status. The measurement data can be read on the instrument display directly. And it can also be uploaded to PC simply by using the USB drive. With the analyzing software, you could not only keep a record of the testing result but also have detailed analyzing for the status of batteries in different testing conditions.

### 2.1 Accessories

After receiving the instrument, make sure you have all the following parts.



Portable bag for convenient carrying and field testing.



Detailed packing list as blow:

Name	Number	Name	Number
Portable bag	1	Testing clamp (pair)	1
Main unit	1	Power adaptor	1
USB converter	1	USB drive	1
User manual	1	Pin type probe(pair, Optional)	1

## 2.2 Application

PITE3915 Battery Tester is widely used in the following areas:

- ◆ Telecom: Central Office, data processing centers and Remote Sites
- ◆ Power Utility: Switchgear, Power Station and Power Plant
- ◆ Financial Institutions: Corporate Data Centers
- ◆ Petrochemical: Process Control systems
- ◆ Offshore platforms
- ◆ Government: Local and regional
- ◆ Tax and Revenue Processing Centers
- ◆ Homeland Security, Schools, Army and Navy
- ◆ Air force Facilities, Fire and Police Agencies
- ◆ Hospital UPS system
- ◆ Electrical vehicle suppliers
- ◆ SLA battery manufactures

## 2.3 Feature

- ◆ Wide test range: 5~6000Ah, compatible for single cell of 1.2V, 2V, 6V and 12V
- ◆ Smart and portable hand-held device, rugged and easy-to-go
- ◆ Colorful touch screen with optional operations of keyboard
- ◆ Simultaneously test for voltage, resistance and estimated capacity of batteries
- ◆ Online measurement, no need to remove battery and string from its system for testing, safe and convenient
- ◆ Fast testing for battery and string in seconds with testing data auto saving
- ◆ Strong anti-interference in high current with stable and accurate performance
- ◆ Testing frequency lower than 10 Hz, effectively avoid interference from capacitive resistance of

battery itself

- ◆ Direct USB drive for software update and data transfer to PC for further analyzing
- ◆ Powerful PC management software, convenient for data storage and analyzing
- ◆ Big memory for testing data storage of more than 3000 cells
- ◆ Buzzer Alarm Function and over voltage protection, secure to use
- ◆ Auto-calibration function before testing, enhancing the testing accuracy
- ◆ Retest and compensation function: any faulty operation or omission could be retested simply with one click
- ◆ Referenced data inside memory for the comparison of your test, and self-defined reference values are available

## 2.4 Technical Parameter

Items	Parameters
Test range	Resistance: 0.000mΩ~100mΩ Voltage: 0.000V~150V
Test resolution	Resistance: 0.001mΩ Voltage: 1mV
Test accuracy	Resistance: $\pm 2.0\%rdg \pm 6dgt$ Voltage: $\pm 0.2\%rdg \pm 6dgt$
LCD display	240*320 pixel 3.5" TFT touch screen
Dimension	210mm*110mm*60mm
Weight	0.5kg
Memory	16M bytes, FLASH
Power supply	Rechargeable Li-ion battery, more than 5 hours working time after full charge
Power adapter	AC100V~240V/DC8.4V-1A
Communication interface	USB

\* 16V-220V is for over voltage protection.

## 3. OPERATION

### 3.1 Measurement Preparation

#### 3.1.1 Main Unit Structure and Operation

Below are the pictures for the main unit:



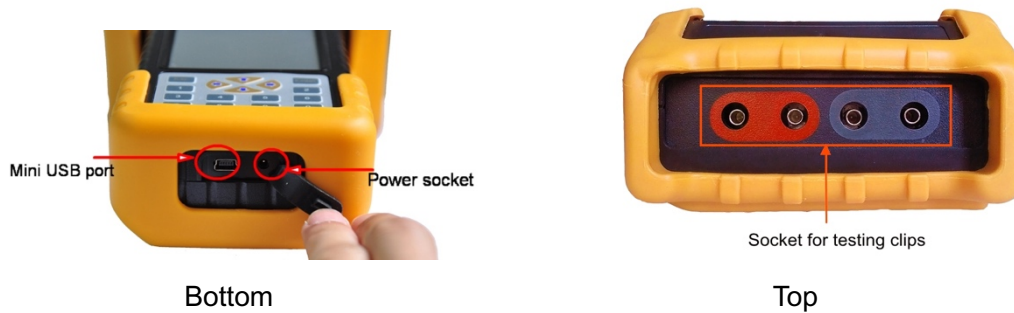


Fig 3.1.1

### Operation of touch-screen

Click on each menu to highlight it and click it again to carry out each function. Click “**Back**” to return to the upper menu and click “**Home**” to return to the starting screen.

### Operation of keyboard:

Keyboard operation has the same effect with touch-screen operation. Press each arrow key “←”, “→”, “↑” and “↓” to highlight each menu and press **Enter** to activate it. And key **Esc** is for going back to upper menu.

### 3.1.2 Wire Connection

Before measurement, please first connect the testing clip with main unit and fix the screw like Fig 3.1.2.1. Then clamp the black clip with the negative polar of battery and the red clip with positive.

#### NOTE:

- 1) To enhance the measurement accuracy, please try to clamp the clips around the posts of battery. Rust or any insulating material (e.g. glue) around the posts will increase the resistance. Therefore, please try to avoid these causes before connecting the clips.
- 2) Measurement of 3918 is based on 4-point measurement. Each clamp has two metal points that are connected with the battery posts during measurement. This is same to the pin type probe. So each time when you use the pin probe for measurement, make sure that all the four pins on the pin probe should be connected with the battery posts well.



Fig 3.1.2.1



Fig 3.1.2.2

### 3.1.3 Power On

Switch on the power on/off button indicated in Fig 3.1.3.1, you will see the starting screen as Fig 3.1.3.2. Click any point of screen to view the main menu like Fig 3.1.3.3:



Fig 3.1.3.1



Fig 3.1.3.2

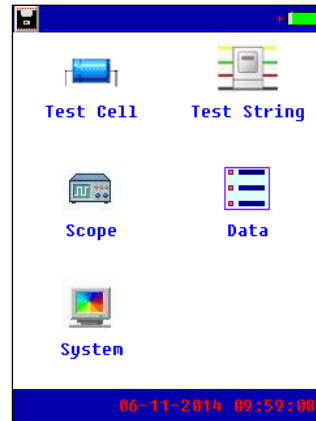




Fig 3.1.3.3

**About screen:**

: This icon is for screenshot. Connect the USB drive with bottom of the main unit with USB converter, highlight this icon, click it again and wait for a little while, the current screen will be snapped in the USB drive.

06-11-2014 09:59:08: indicates the current time which is predefined in **3.4.2 Time Setting**.

: This icon indicates the status of Li-ion battery inside main unit. When it is full green, it is full charged. If it is blank, it indicates that battery is low. Please connect with the power adaptor timely for charging.

**U**: When this letter turns green, it indicates the USB drive is well connected with main unit.

**3.1.4 About Reference Values**

PITE3915 has pre-installed reference conductance for some common battery types. These values are average conductance values got from samples of strong battery strings similar in condition and age of usage. Generally, a sample of 30 new or healthy batteries are tested to obtain a value representative of a new online battery 90 days after installation. By comparison, the differences between test results and reference values will help you determine the string capacity and health status for further solutions. Differences may reflect how a string was treated, installed, or maintained.

**How to specify your reference values?**

Reference values in PITE3915 menu may not universally fit the batteries that you are testing. Therefore, you are recommended to specify your own reference values. You have the following options to set your reference value:

- A. Consult to your document from battery manufacturer for the reference values for the batteries that you are testing.
- B. Test the batteries in the string and use the lowest conductance under correct way of test for reference value. For cells ranking in the string, please refer to *String summary* in **3.3 Data Management**.

- C. Use the average conductance of the string as reference value. This is only used for measurement of battery string. For detailed setting, please refer to “**Set average value as reference**” in section **3.2.2 Test for Battery String**.

### Indications of Battery Condition

Below is the definition of the testing result for battery and battery string.

Indication	Reference	Guide
<b>Good</b>	$0.8 \leq R\% < 1.15$	$-20\% \leq \text{Measured resistance fluctuation} < 15\%$
<b>Pass</b>	$1.15 \leq R\% < 1.5$	$15\% \leq \text{Measured resistance fluctuation} < 50\%$
<b>Warn</b>	$1.5 \leq R\% < 2.0$	$50\% \leq \text{Measured resistance fluctuation} < 200\%$
<b>Fail</b>	$2.0 \leq R\%$	Measured resistance fluctuation $> 200\%$
<b>Abnormal</b>	$V_m < 0.9$ OR $V_m > 1.2$ or $R\% < 0.8$ Battery is Abnormal	$V_m < 0.9$ OR $V_m > 1.2$ or $R\% < 0.8$

**NOTE:** You could also see reference values in **Appendix** of this manual.

## 3.2 Measurement

### 3.2.1 Test for Single Cell

This is for testing single cell. To do this, you will need to set the parameter of the cell before measurement. If you have several blocks of batteries of the same rating (e.g. 2V, 100Ah), you are suggested to use “string test” (see 3.2.2) which will be much more time-saving and convenient for data management in PC software.

Select “**Test Cell**” in the menu to enter the screen for parameter setting. (See Fig 3.2.1.1).

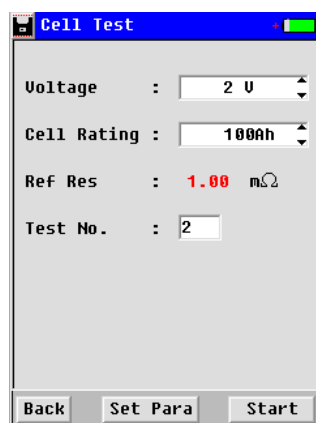


Fig 3.2.1.1

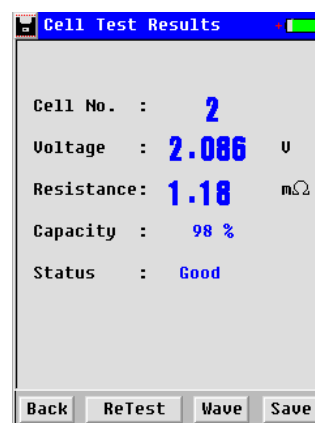


Fig 3.2.1.2

Use main unit keyboard or mini keyboard on screen for number input.

Totally there are 5 options for single cell voltage: 1.2V, 2V, 6V, 12V and self-defined. Please click the option of “Voltage” to view each one (Fig 3.2.1.1). As voltage changes, cell rating will be changed accordingly. Click the box or use arrow keys to select the cell type that you will test. Reference resistance will be changed to fit each cell type.

Cell number is self-defined to distinguish from each other. This could be viewed in data management. After the setting, click the button **Start** at right bottom to carry out the test.

Testing result will display in seconds like Fig 3.2.1.7. If you need to retest it, click the button **Retest**. Click **Save** (in Fig 3.2.1.2) to save the testing result, or disconnect the testing clips from battery and testing result will be automatically saved.

**NOTE:** As mentioned in **3.1.2 Wire connection**, testing result may vary a little due to different way of connection between testing clips and battery posts. Therefore, if testing result varies in different time, please refer to the lower value.

### Specify Battery Type & Reference Value

If you could not find the exact type of battery that you want to test, or you want to specify your own reference resistance, you could self-define the parameter.

#### 1) Specify battery type

If you have battery that has non-standard voltage type (e.g. 4V 100Ah), you could add this type. To do this, please select "Defined" in the box of "Voltage", then click **Set Para** at the bottom, input the parameters required and click **Add** to save the setting (e.g. refer to images from Fig 3.2.1.3 to Fig 3.2.1.5). Maximally you could set 10 different voltage types.

#### 2) Specify reference value

If you would like to set different resistance reference or cell type under the same battery voltage, please first select voltage rating and then click the button **Set Para** to add these information. Maximally you could add 10 different cell types under each battery voltage. Screen in Fig 3.2.1.6 and Fig 3.2.1.7 are for your reference.

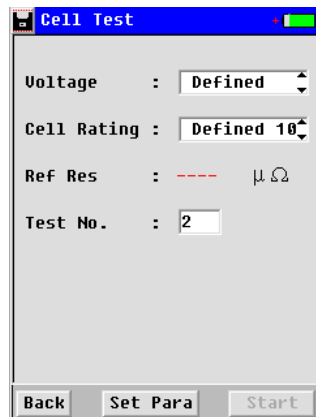


Fig 3.2.1.3

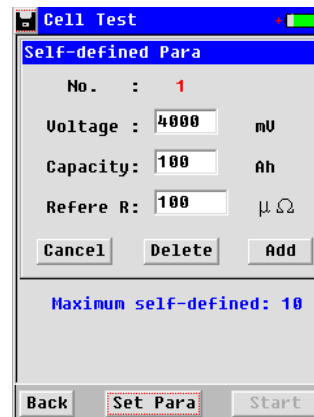


Fig 3.2.1.4

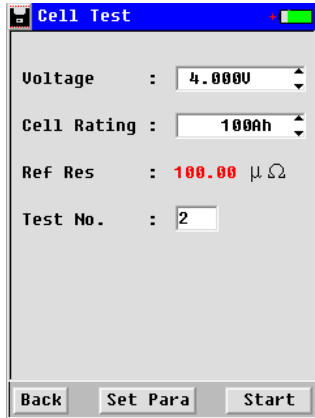


Fig 3.2.1.5

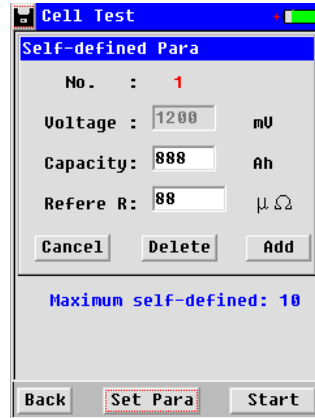


Fig 3.2.1.6

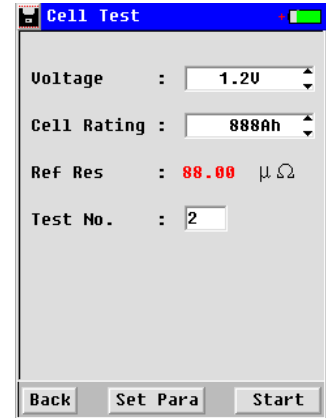


Fig 3.2.1.7

To delete defined values, please click **Set Para** in the menu and click **Delete**. This step will delete all the customized value that you have set before.

### 3.2.2 Test for Battery String

This function is for testing batteries of the same type one by one in a string. Maximally it could record up to 256 sites. Each site could record up to 256 strings. And one string could test up to 256 cells based on its setting. When all the batteries are of the same type, you just need to set the parameter at the beginning and the whole measurement process could be done in a very short time.

To get started, click “**Test String**” in main menu to go to the next step for parameter setting. Select battery rating in the same way like single cell measurement. Setting of user-defined data is also in the same way.

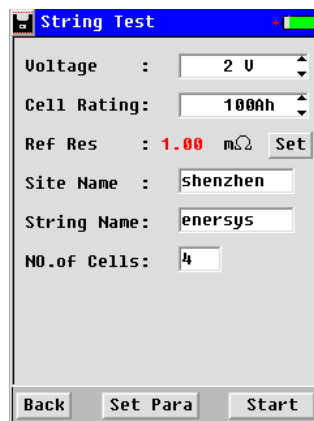


Fig. 3.2.2.1

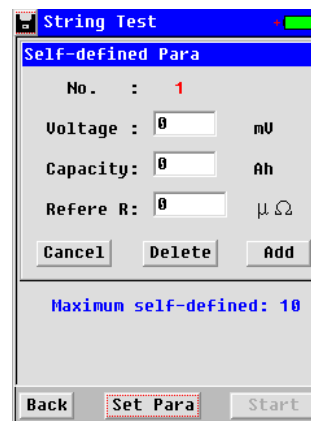


Fig. 3.2.2.2

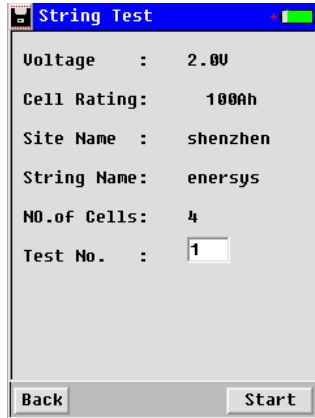


Fig. 3.2.2.3

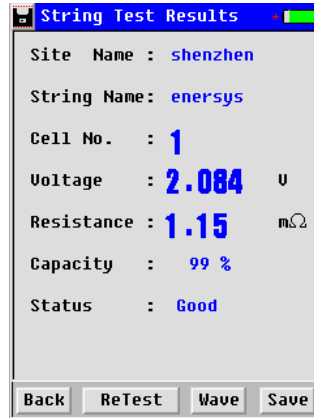


Fig. 3.2.2.4

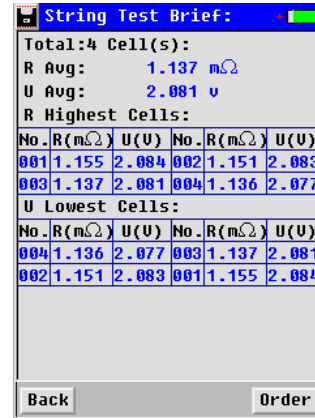


Fig. 3.2.2.5

“**Site Name**”: user-defined, input the number or letter of site for convenient data recording

“**String Name**”: user-defined to distinguish it from other strings

“**No. of Cell**” indicates the total number of cells in one string.

If you need to specify your own reference value, do in the same way like the setting in single cell test (Fig. 3.2.2.2). After the above settings, click **Start** to go to the next step. “**Test No.**” (Fig. 3.2.2.3) indicates the cell to begin the test in the string. For example, if total cells are 3 and “**Test No.**” 1, that means it will begin the test from the first (No. 1) cell.

**NOTE:** If you need to retest certain cell (e.g. first cell in a string of 3) or cells after the whole string test, just input the cell number (in Fig. 3.2.2.3) to begin the test. In DataView software, new testing result will automatically overwrite the previous record.

After the above setting, click **Start** to begin the measurement. Testing result of the first cell will displayed like Fig 3.2.2.4 when you hear the sound “Beep”. Then disconnect the testing clips, testing data of the first cell will be automatically saved with another “Beep”. Then clamp the testing clips on the next cell, wait for a few seconds before the testing automatically begins. Do in the same way until the last cell.

During string testing, you could just put the tester in the carrying bag after clicking the button **Start**. This is very convenient for testing and only one personnel is needed to handle string testing in a short time.

When measurement of all batteries in the same string are finished, you will hear the longer sound Beep and get the testing result as Fig. 3.2.2.5. String summary with all batteries ranking and average values will be displayed. To review detailed data, please refer to **3.3 Data Management**.

**Set average value as reference:**

This function is only for battery string. In this measurement, there is no reference value at the time of setting. After the testing of the whole string, it will automatically take the average resistance as the reference value of the whole string. Please do as below:

In the exemplified screen of Fig. 3.2.2.1, you just select the voltage type, click the button **Set**, finish the setting of other parameter as usual and continue the measurement. For exemplified screen of measurement result, please refer to **3.3 Data Management**.

In measurement of 1.2V Ni-cd batteries, currently you could only set average as reference.

### 3.2.3 Test of Oscilloscope

This function could have a simple test for battery voltage. Select “**Oscilloscope**” in main menu and you will see the screen as below (see Fig 3.2.3):

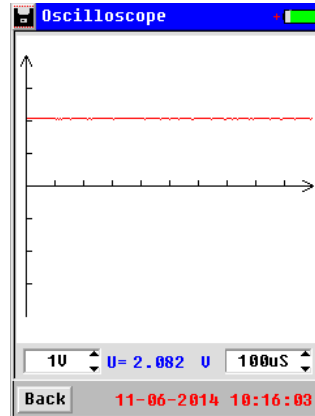


Fig. 3.2.3

“1V” indicates the voltage scale on the vertical axle.

“100uS” indicates time on the horizontal axle.

Both numbers are changeable for different view.

## 3.3 Data Management

Testing data for single cell and battery string are saved in main unit memory as tests are finished. Maximally the Internal memory could save testing data for 3000 cells. Before space is full, please transfer the data timely to PC by using the USB drive and USB converter.

For management, click “**Data**” in the main menu, and then go to the following screen:

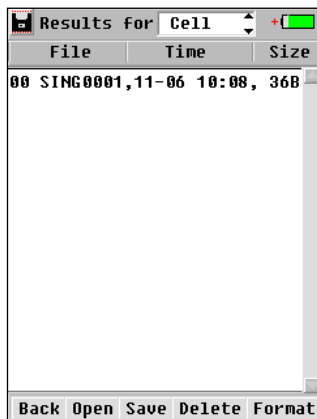


Fig. 3.3.1

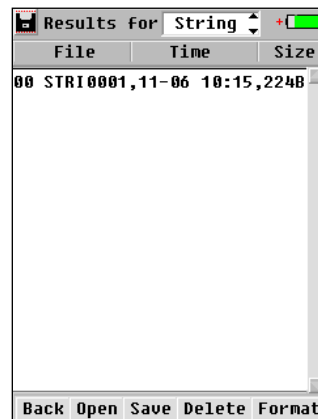


Fig. 3.3.2

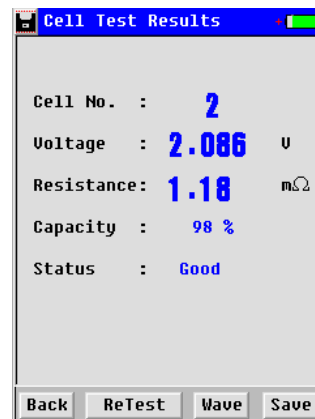


Fig. 3.3.3 cell result

Select the displaying for single cell or string on the top of the screen.

Testing data like name, testing time and size will be displayed. Other buttons have functions as below:

**Open**: Click this button to view the testing result as Fig. 3.3.2 and Fig 3.3.3.

**Up / down**: paging up or down.

**Save**: Select relevant item and click this button to save the testing result in the USB drive. Before this operation, make sure that the USB drive is well connected.

**Anal**: Click this button to have a string summary with all batteries ranking and average values will be displayed.

**Delete**: Select the desired item and click this button to delete the record.

**Format**: It is used to format all testing records.

**NOTE**: Please make sure that you have kept them properly before deleting or formatting the records. Once deleted or formatted, the data could not be recovered.

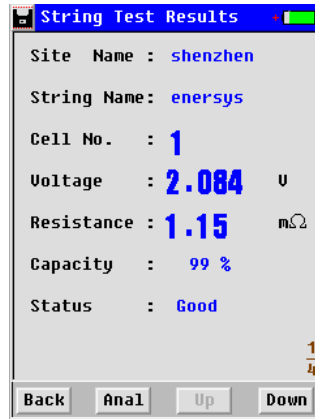


Fig. 3.3.4

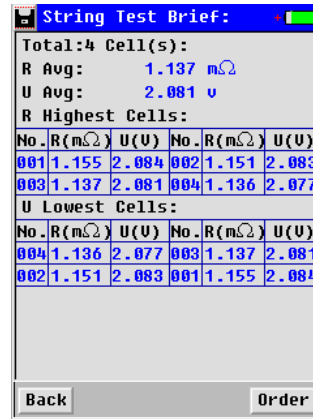


Fig. 3.3.5

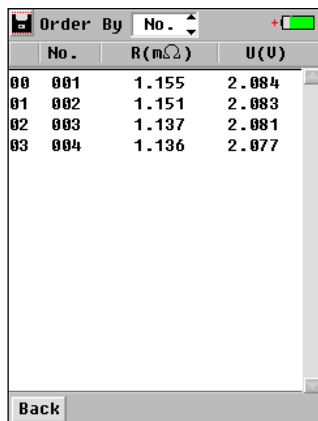


Fig. 3.3.6 All cells

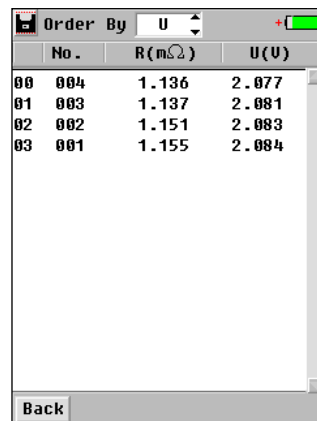


Fig. 3.3.7 Voltage ranking

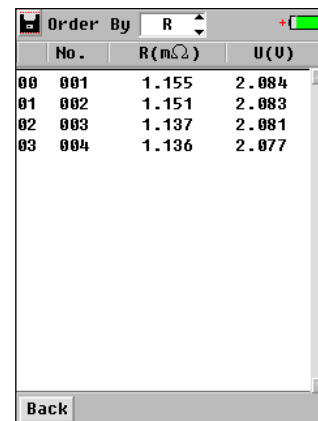


Fig. 3.3.8 Resistance ranking

### String Summary

String summary will help you judge the general health status of batteries in the same series. Reference values could be picked up from the summary.

To view string summary, please open relative record of string (e.g. Fig. 3.3.4) and click **Anal** to view the string test summary. It will list average resistance, average voltage, 8 cells with highest resistance and 8 cells with lowest voltage in the whole string (Fig.3.3.5). Click **Order** to further ranking of voltage and resistance for the whole string like Fig. 3.3.6- Fig. 3.3.8. Voltage will be ranked from low to high, and resistance will be ranked from high to low.

### NOTE:

- To enhanced testing accuracy, the highest and lowest values in the battery string are excluded in the calculation of average resistance and voltage.
- If there are no more than 8 cells in the string that you have tested, all cells will be listed in highest resistance and lowest voltage.

- Average resistance and lowest resistance in the string could be used as self-defined reference value.

### 3.4 System Management

Click “**System**” in the main menu, and then you will see the following screen for system management (see Fig 3.4). For detailed instruction, please check the text below.



Fig. 3.4

#### 3.4.1 Instrument Calibration

This section only includes basic information for calibration of the unit. For the whole process of calibration, you will require some specific facilities and a more detailed instruction from . Please contact your supplier if you need this.

##### 3.4.1.1 Zero Calibration

Zero calibration is used for more reliable measurements by way of adjusting the zero values of resistance-range and voltage-range. Before calibration, please remove the connection with any battery. To begin it on screen, click “**Zero-Cali**” and go to the next screen as below (see Fig 3.4.4.1.1). Just click the button “**Calibrate**” and wait for a few seconds until the screen displays “**Calibration Done!**”

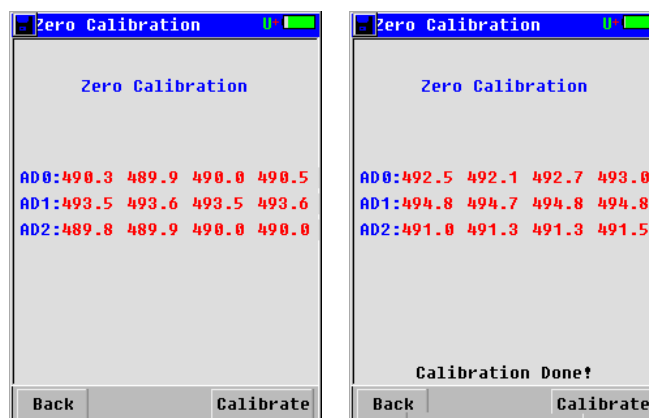


Fig 3.4.4.1.1

##### 3.4.1.2 Voltage Calibration

Voltage Calibration is used to calibrate voltage of a single cell. This testing requires connection with cells. Click “**Volt-Cali**” to enter into the screen of calibration. Select the cell type for the first cell for testing, input the actual value in “**Real V1**” and click the button **Cali**. After the first cell is calibrated,

input the actual value for the second and click **Cali** as well. If you need to calibrate other cell type, select it on the top “**Range**” and repeat the same operation. For more detailed instruction, please contact sales representative.

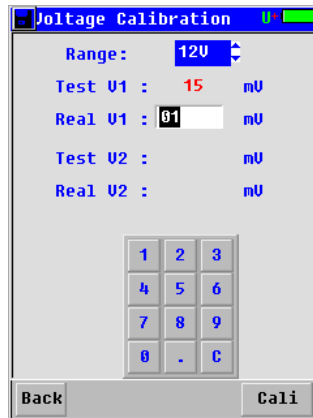


Fig 3.4.4.1.2

### 3.4.1.3 Resistance Calibration

This function will require specific instrument and has been calibrated well in before delivered to you. For more detailed instruction, please contact sales representative.

### 3.4.1.4 Phasic Calibration

This function will require specific instrument and has been calibrated well in before it is delivered to you. If you really need it, please contact your supplier for detailed instruction.

### 3.4.1.5 Save parameter setting

After all the above calibrations, please do not forget to save new parameters before the main unit is turned off. To do this, click “**Save Para**” and input the password “12345678” (Fig 3.4.1.4). If password is correct, you will see the indication: “**Saved!**”

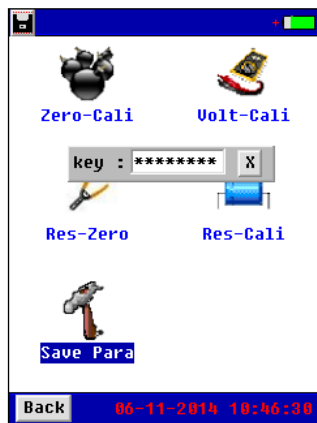


Fig 3.4.1.4

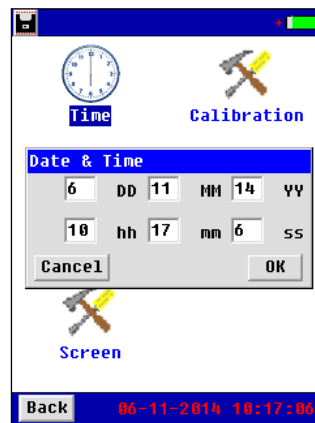


Fig 3.4.2

## 3.4.2 Time Setting

Click “**Time**” for data and time setting. The Screen will be seen as below (see Fig 3.4.2). The first line is for date setting and second line for time. After the setting, click **OK** to save the change.

### 3.4.3 System Update

PITE3915 enjoys free software update from TECH. INC. The update is done by direct connection with USB drive. You have two optional ways to update it:

1. Save the new software in the root directory of USB drive, connect the USB drive with main unit, click “**Update**” under “**System**” and select **OK** (see Fig 3.4.3) You will see the process for update on screen. After update is done, screen will automatically to the starting screen.
2. Connect the USB drive with main unit and restart the unit. You will see the process screen for update. After update is done, screen will automatically to the stating screen.

Both ways have the same effect for update.

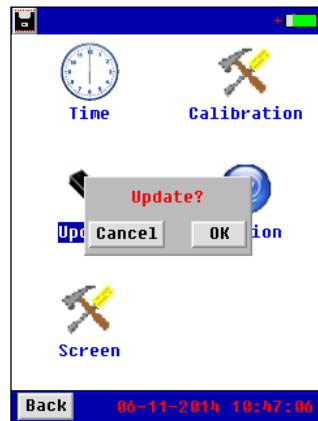


Fig 3.4.3

### 3.4.4 Version Information

Software version will change as update is done. To view the current version and serial number of the tester, click “**Version**” and you will see screen as below: (see Fig 3.4.5)

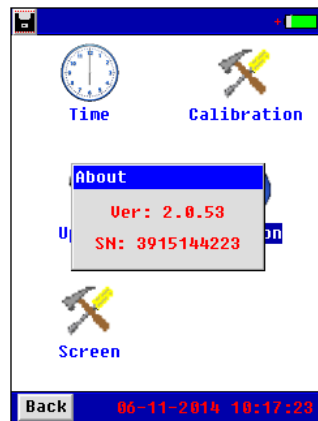


Fig 3.4.4

## 4. DATAVIEW SOFTWARE

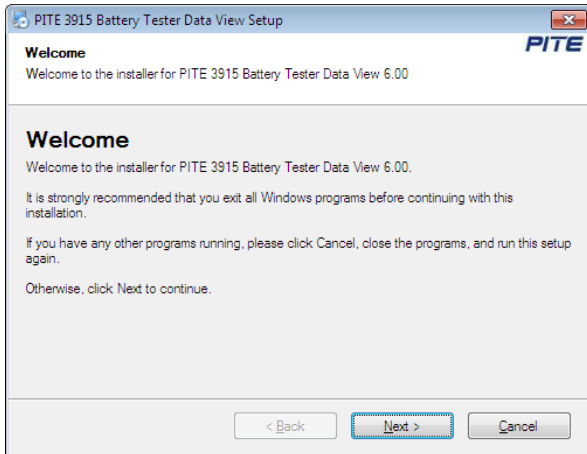
All testing data are saved in PITE3915 main unit and it could be transferred to computer for data view. The following software should be well installed to enable the data analyzing. This software will help you know battery health status comprehensively. Application Software is included in the attached USB drive. This software will comply with Operation Systems of Windows XP and Win 7.

## 4.1 Software Installation/Uninstall

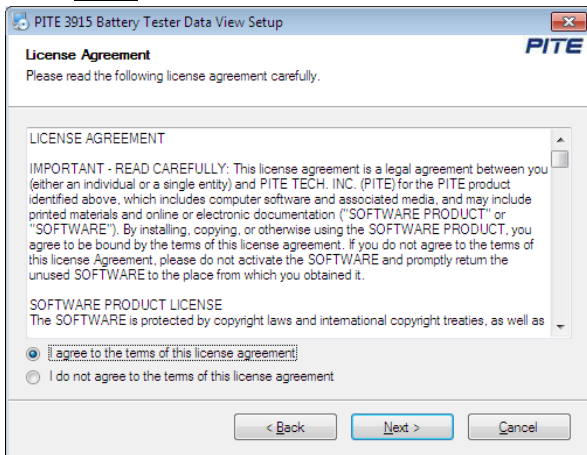
### 4.1.1 Software Installation

- 1) Start your computer
- 2) Stop all applications running in the computer (recommended).
- 3) Connect the USB with computer.
- 4) Find installation folder and double click the file named “PITE3915 Battery Tester Data View setup.exe” to start the installation.

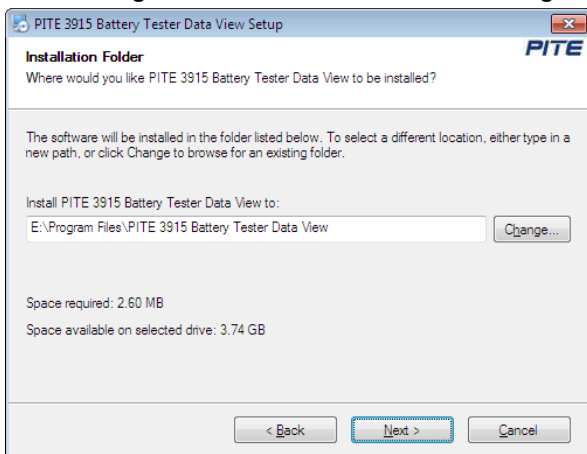
Installation screens will be as below.



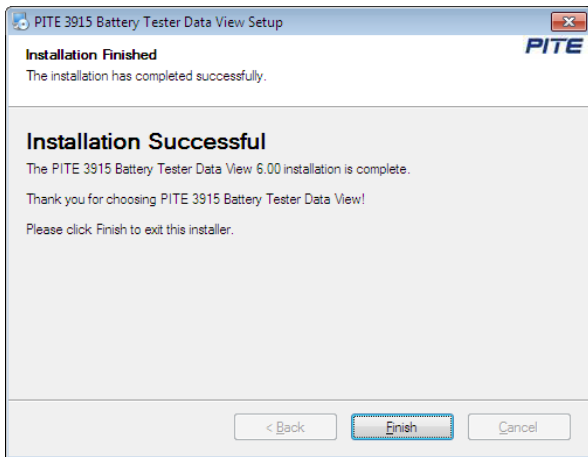
Click **Next** to enter into the following screen:



Select “I agree to the terms of the license agreement” and click **Next** to enter the following step:



Change the setup root if necessary, click **Next** and you will come to this step:



Click **Finish** to complete the installation.

A window will pop up: "Installation completed. Do you want to start the management software?" Click **Yes** to start it or **No** to close the window.


After installation is done, you will see the icon  on the desktop. If you could not see it on desktop, it can also be found in "Start" menu.

#### 4.1.2 Software uninstall

To install the software, please follow these steps: Start → program → PITE3915 Battery Tester Dada View → Uninstall PITE3915 Battery Tester Data View

## 4.2 Software Operation

This analyzing software is applied to PITE3915 Battery Tester. Any generated report will be saved automatically in the PC. You could save, delete or print testing data as per your need.

To start the software, double click the icon . And the main screen will pop up as Fig 4.2.a. You will see the example data in the screen. This example could be deleted after you have imported your data.

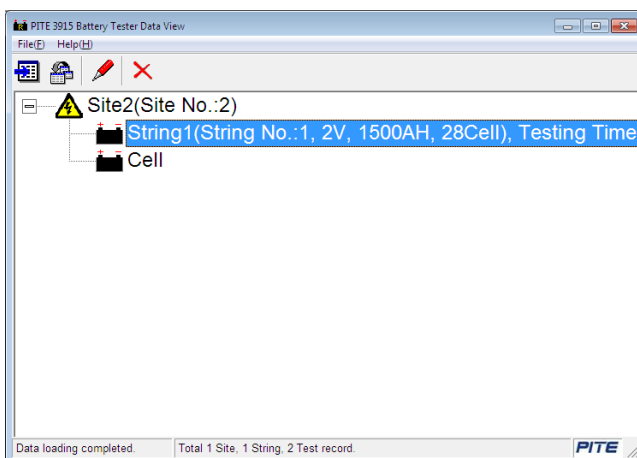


Fig 4.2.a

#### 4.2.1 Import Data

All testing data are saved in PITE3915 main unit and it could be transferred to computer via USB drive for data analyzing. For proper operation, please use 's USB drive only.

Click “File” and then “import”, a box will pop up like Fig 4.2.1.2

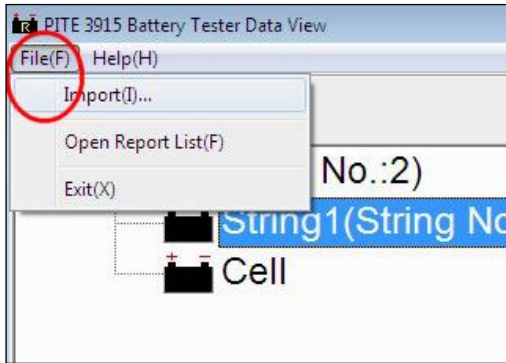


Fig 4.2.1.1

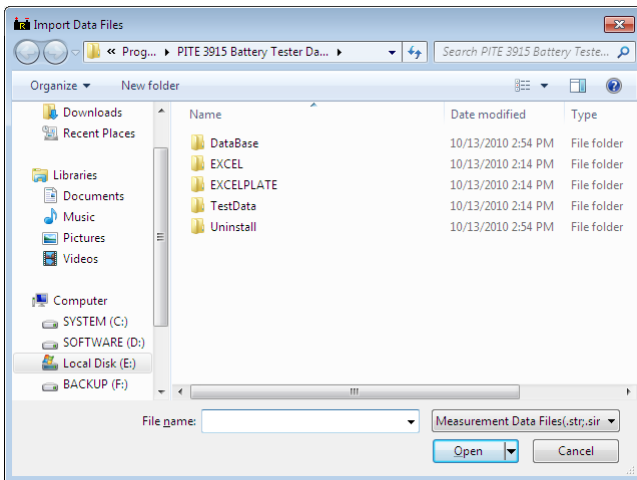


Fig 4.2.1.2

Select relevant testing data that are already saved in the PC and click **Open** to import.

**NOTE:** To import several files simultaneously, you could use keys like **Ctrl** or **Shift** for multi-selection and click **Open** to import.

## 4.2.2 View & Delete Data

The imported data is showed on the main screen like Fig 4.2.2.a. It includes the information for site, string test and cell test. Site number and string numbers are in accordance with the numbers predefined in PITE3915 main unit. All testing data will be grouped in different sites with string and cell testing data below.

**String** includes string number, voltage, capacity, cell quantity and testing times.

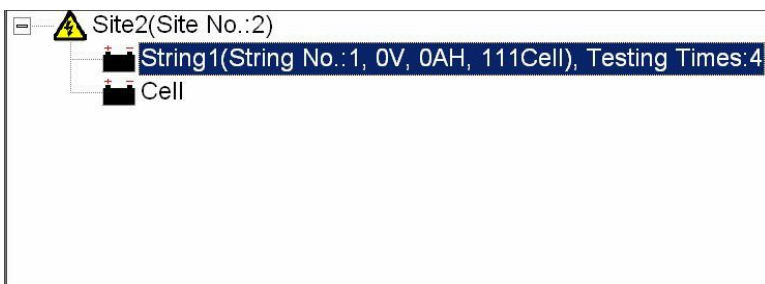


Fig 4.2.2.a

Select site or string item and click right; you could carry out functions of Add, Modify and Delete. See Fig 4.2.2.b and Fig 4.2.2.c

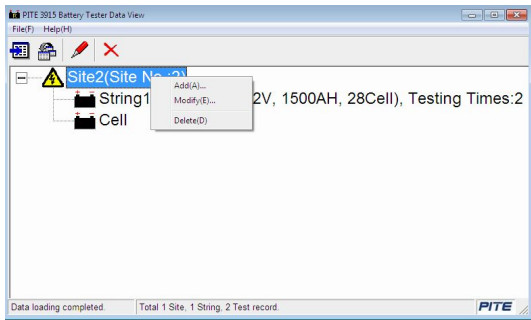


Fig 4.2.2.b

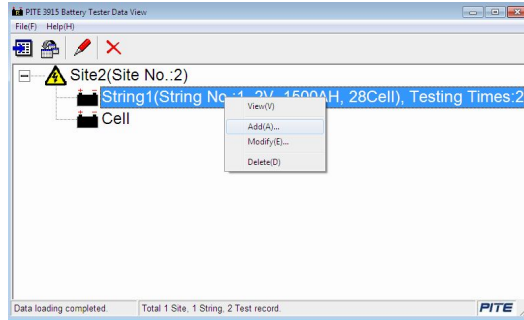


Fig 4.2.2.c

**Add:** You can add new information for another site or string as figures (example) below. Testing result imported in the future will be grouped accordingly based on the setting for same site number and string number.

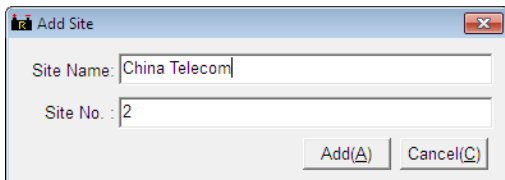


Fig 4.2.2.d Add Site

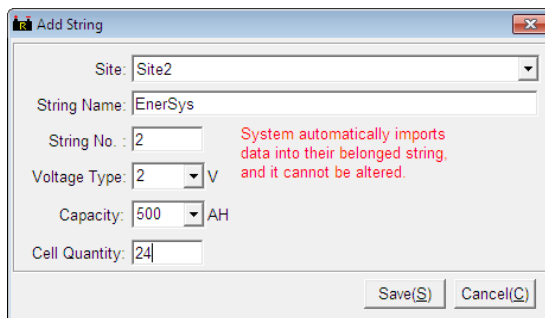


Fig 4.2.2.e Add String

**Modify:** This function is used to rename sites and strings. This will help users remember each site and string easily. As this information is changed, relative information will be changed accordingly in the test report. We will introduce this later. See modify screen on the following Fig 4.2.2.f and Fig 4.2.2.g

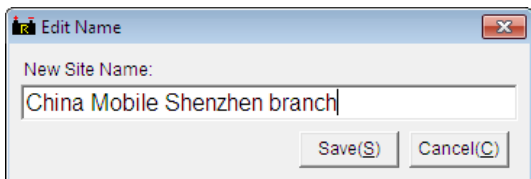


Fig 4.2.2 For Site

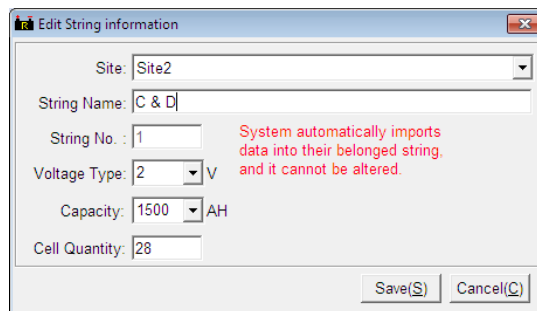


Fig 4.2.2.g For String

**Delete:** You could delete the testing data if necessary. Before delete it, make sure you have kept the record properly.

#### 4.2.2.1 View String Data

##### 1) View Data

Double click string item and you will see the string data box on the screen. It displays the detailed testing data for strings in different time. The testing data includes test time, string voltage, resistance, capacity and status. Percentage of each battery status will also be displayed on the top with different colors.

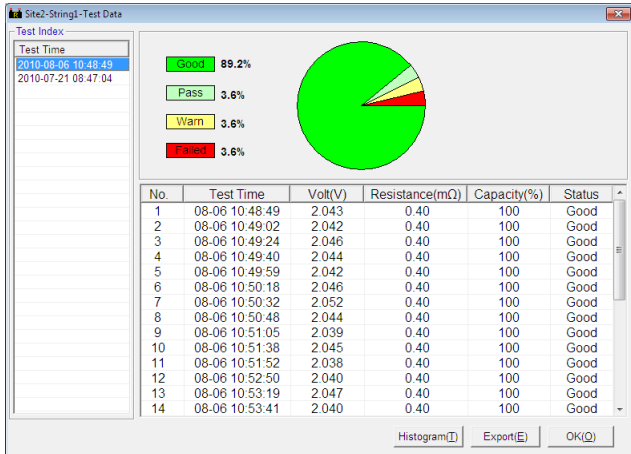


Fig 4.2.2.1.a

Double click relevant **Test Time** (if the same string is tested for several times) on the left to view testing data of each cell in the string.

**NOTE:** For convenient data view, you could sort out data in sequences like below:

1. Click **Test Time** on the left, the following items in the box will be sorted automatically. See Fig 4.2.2.1.b
2. You could sort out testing parameters of each string by clicking **No.**, **Test Time**, **Volt**, **Resistance**, **Capacity** and **Status**. See Fig 4.2.2.1.c

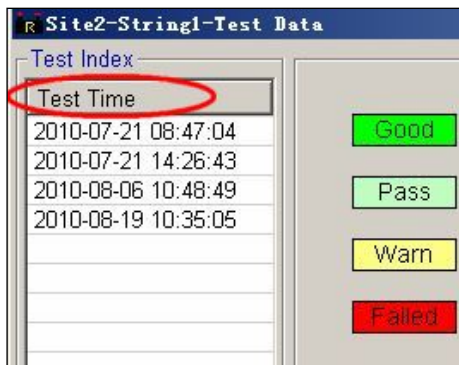


Fig 4.2.2.1.b

No.	Test Time	Volt(V)	Resistance(mΩ)	Capacity(%)	Status
17	08-06 10:54:29	2.053	0.40	100	Good
7	08-06 10:50:32	2.052	0.40	100	Good
13	08-06 10:53:19	2.047	0.40	100	Good
3	08-06 10:49:24	2.046	0.40	100	Good
6	08-06 10:50:18	2.046	0.40	100	Good
16	08-06 10:54:15	2.046	0.40	100	Good
10	08-06 10:51:38	2.045	0.40	100	Good
4	08-06 10:49:40	2.044	0.40	100	Good
8	08-06 10:50:48	2.044	0.40	100	Good
15	08-06 10:53:59	2.044	0.40	100	Good

Fig 4.2.2.1.c

## 2) View Histogram

Histogram visually displays string performance in all aspects including voltage, resistance and capacity. Click **Histogram** button (in Fig 4.2.2.1.a) to view the histogram of the current string data. See Fig 4.2.2.1.d for example.

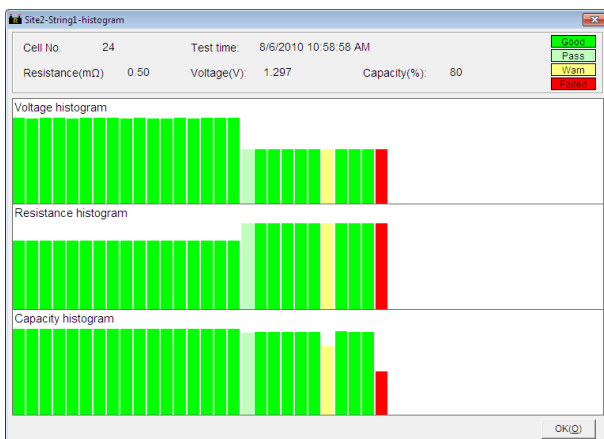


Fig 4.2.2.1.d

Move the cursor on each column of the histogram; you will see relative testing result (cell number, time, resistance, voltage and capacity) of each cell on the top.  
Click **OK** to close the window.

### 3) Export Data

Click the button **Export** (in Fig 4.2.2.1.a) and the selected data will be generated as a report in the format of Microsoft Excel like Fig 4.2.2.1.e. This report will be automatically saved in your computer. To find out where it is, click "File" and then "Open Report List" in the toolbar of main screen.

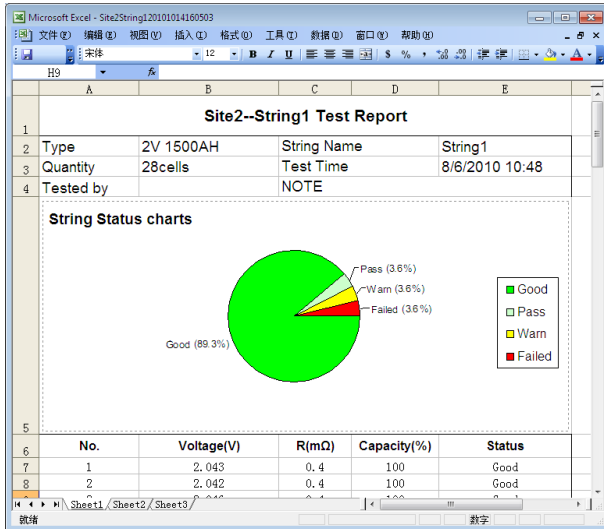


Fig 4.2.2.1.e

You could edit the report if necessary. If your PC is well connected with printer, you can print it directly.  
**NOTE:** Please install Microsoft Excel2000 above version before you export the data.

### 4) Delete Data

Select the test time, right click and select "Delete" to erase the record.  
For multi-selection, you could use keys of **Ctrl** or **Shift**.

## 4.2.2.2 View Cell Data

### 1) View Data

Double click the item "Cell" under each site in main screen, cell test data will be exemplified as below:

No.	Test Time	Volt(V)	R(mΩ)	Capacity(%)	Status	Notes
1	2010-08-04 10:08:34	2.074	1.00	90	Pass	
3	2010-08-12 14:33:12	2.032	1.00	65	Failed	
10	2010-08-11 16:52:52	12.059	120.00	80	Warn	
16	2010-08-19 13:57:31	1.953	1.00	100	Good	

Fig 4.2.2.2.a

Parameters of the cells like testing time, voltage, resistance will be displayed. Like string data view, you

could click each item to sort them out in sequences. To add some comments of each cell, you could directly double click the boxes below **Notes** to input your comments, or you could select one cell data, click right and then “Add Comment”. See Fig 4.2.2.b for example.

No.	Test Time	Volt(V)	R(mΩ)	Capacity(%)	Status	Notes
1	2010-08-04 10:08:34	2.074	1.00	90		
3	2010-08-12 14:33:12	2.032	1.00	65		
10	2010-08-11 16:52:52	12.059	120.00	80		
16	2010-08-19 13:57:31	1.953	1.00	100		

Fig 4.2.2.2.b

### 3) Export Cell Data

Click the button **Export** to export cell test report into an Excel Form like Fig 4.2.2.c

No.	Test Time	Volt(V)	R(mΩ)	Capacity(%)	Status	Notes
16	8/19/2010 13:57	1.953	1	100	Good	EnerSys, No. 14, Retest
1	8/4/2010 10:08	2.074	1	90	Pass	
10	8/11/2010 16:52	12.06	120	80	Warn	
3	8/12/2010 14:33	2.032	1	65	Failed	

Fig 4.2.2.2.c

## 4.3 Help

Click **Help** → **About**, and it displays the detailed information of PITE3915 Battery Tester Data View Software like Fig 4.3.a.

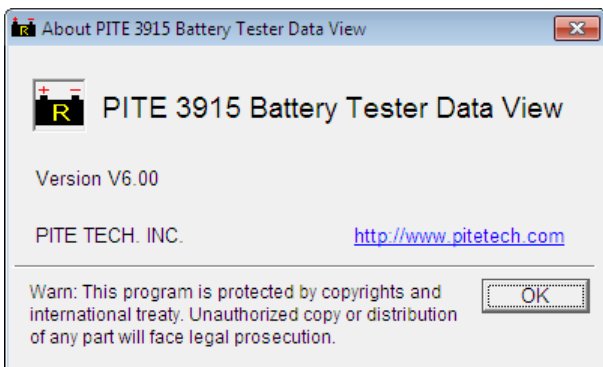


Fig 4.3.a

## 4.4 Hot Key

On the top the DataView main screen, there are some shortcut keys with means as below:



Import Data



View Data. Select string or cell item and click the button to view the test data.



Modify site or string information. Select site or string item and click the button to edit test information.




Remove site or string data. Select site or string item and click the button to erase it.

---

## 5. SERVICE AND MAINTENANCE

### 5.1 Cleaning

Please clean PITE3915 main unit and its accessories with soft damp cloth and a mild cleaner. Do not use abrasives, solvents, or alcohol, because they can deform or discolor the tester and accessories. After cleaning voltage testing clip with software cloth, clean it again with water and wipe it. Do not damage the metal part of the clips to ensure its accurate performance during testing.

 **WARNING:** For your own safety, make sure that the main unit and accessories are not connected with the power supply before cleaning.

### 5.2 Storage

After using PITE3915, put the main unit and all its accessories into the carrying case, and store the case in ventilating place under proper temperature and humidity. Never expose the Tester and its accessories to water, high humidity, or dampness. If not used for a long time, the Li-battery will discharge itself gradually. To keep its best performance, you are suggested to charge the battery periodically, like once a month.

### 5.3 Battery maintenance

When the PITE3915 is delivered from factory, it may not be power off. Please charge it before operation. In the status of charging, the charging indicator is red. When it is full-charged, the indicator turns green. It could be used for about 5 to 6 hours if the battery is full charged.

**NOTE:** Long time charging will not damage the battery, however, personnel is needed to look after it.

To gain maximum performance of the battery, you are recommended to activate it by full discharging and then full charging approximately 4 times a year.

## 6. FAQ

Q: Main unit has no response after power is on.

A: Maybe battery is power off. Please restart the main unit after connecting with charger. If main unit works, you could either keep the connection and carry out the operation or use it after battery is full charged.

Q: After main unit is power on, it buzzes.

A: Main unit has not enough power, charge it.

Q: Main unit menu is normal but has no reaction when it has external connection.

A: Main unit has not enough power or the wirings are not well connected. Please check the wiring well.

Q: Operation time is too short.

A: Battery problem, please reactivate it.

Q: Main unit is down with frozen screen during testing.

A: External interference is too strong. Generally it is caused when ground probe touches the live line. Please restart the main unit and try again.

## 7. APPENDIX

Reference for battery capacity, resistance and voltage:

VOLTAGE	CAPACITY	RESISTANCE	VOLTAGE	CAPACITY	RESISTANCE	VOLTAGE	CAPACITY	RESISTANCE
12V	0.8Ah	120.0mΩ	12V	31.0 Ah	8.6mΩ	2V	350 Ah	0.6mΩ
12V	1.3 Ah	102.0mΩ	12V	33.0 Ah	8.4mΩ	2V	400 Ah	0.5mΩ
12V	2.2 Ah	63.7mΩ	12V	38.0 Ah	8.2mΩ	2V	420 Ah	0.48mΩ
12V	3.3 Ah	66.7mΩ	12V	40.0 Ah	7.9mΩ	2V	450 Ah	0.45mΩ
12V	4.0 Ah	46.9mΩ	12V	60.0 Ah	6.5mΩ	2V	462 Ah	0.43mΩ
12V	5.0 Ah	37.4mΩ	12V	65.0 Ah	5.8mΩ	2V	500 Ah	0.4mΩ
12V	6.0 Ah	30.2mΩ	12V	75.0 Ah	5.5mΩ	2V	600 Ah	0.32mΩ
12V	7.0 Ah	23.0mΩ	12V	80.0 Ah	5.3mΩ	2V	800 Ah	0.24mΩ
12V	8.0 Ah	20.0mΩ	12V	85.0 Ah	5.0mΩ	2V	1000 Ah	0.2mΩ
12V	9.0 Ah	19.0mΩ	12V	100.0 Ah	4.5mΩ	2V	1500 Ah	0.16mΩ
12V	10.0 Ah	18.7mΩ	12V	120.0 Ah	4.3mΩ	2V	2000 Ah	0.12mΩ
12V	12.0 Ah	14.4mΩ	12V	150.0 Ah	4.0mΩ	2V	3000 Ah	0.11mΩ
12V	14.0 Ah	13.6mΩ	12V	200.0 Ah	3.0mΩ	6V	1.3 Ah	55mΩ
12V	15.0 Ah	13.0mΩ	12V	230.0 Ah	2.0mΩ	6V	2.8 Ah	40mΩ
12V	17.0 Ah	12.1mΩ	12V	250.0 Ah	1.0mΩ	6V	3.2 Ah	28mΩ
12V	18.0 Ah	11.4mΩ	2V	100 Ah	0.9mΩ	6V	4.0 Ah	24mΩ
12V	20.0 Ah	10.6mΩ	2V	150 Ah	0.83mΩ	6V	5.0 Ah	18.3mΩ
12V	24.0 Ah	9.8mΩ	2V	170 Ah	0.76mΩ	6V	7.0 Ah	14.0mΩ
12V	25.0 Ah	9.5mΩ	2V	200 Ah	0.70mΩ	6V	10.0 Ah	12.0mΩ
12V	26.0 Ah	9.2mΩ	2V	250 Ah	0.68mΩ	6V	110 Ah	4.3mΩ
12V	28.0 Ah	8.9mΩ	2V	300 Ah	0.65mΩ	6V	200 Ah	1.7mΩ