

IT9000 Control Software

PV5101 User Manual

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NOTE

A NOTE sign denotes important hint. It calls attention to tips or supplementary information that is essential for users to refer to.

目录

Chapter1	Brief Introduction.....	1
1.1	Software Introduction	1
1.2	IT9000 Interface Introduction.....	1
Chapter2	Basic Operation.....	3
2.1	Hardware Configuration	3
2.1.1	<i>Function Introduction.....</i>	<i>3</i>
2.1.2	<i>Configuring Hardware.....</i>	<i>3</i>
2.1.3	<i>Configuring Interface of Device.....</i>	<i>4</i>
2.1.4	<i>Series, Parallel and Synchronization Configuration.....</i>	<i>6</i>
2.2	Data Setting and Saving	7
2.3	Data Query.....	9
Chapter3	PV5101 Control Interface	10
3.1	Introduction of Control Interface	10
3.2	Configuration Function.....	11
3.3	Check Measurement Result.....	13
3.4	Check Statistics Function	14
3.5	Curve Zoom In and Translation	15

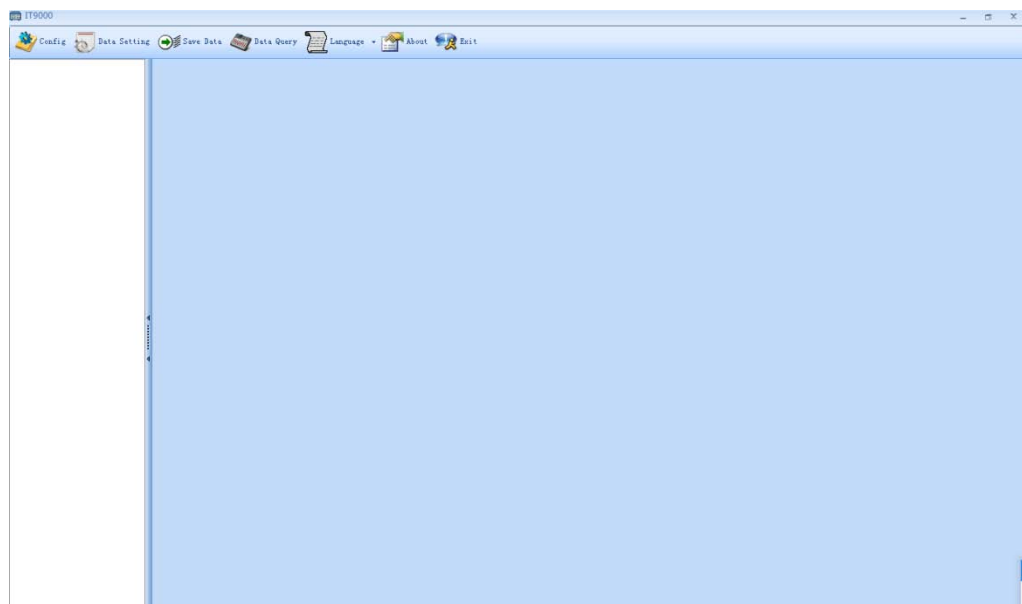
Chapter1 Brief Introduction

1.1 Software Introduction

IT9000-PV5101 is a kind of easy-to-use and practicable control software designed by Itech Electronic Co., Ltd. It is applicable to Itech IT5101 series Internal Resistance Tester. With this software, you can take all operations for Internal Resistance Tester front panel via computer control and enjoy great convenience in remote control. This software supports RS232, USB, GPIB and Ethernet serial port communication.

1.2 IT9000 Interface Introduction

After run IT9000, the software will initialize, in about 2 seconds, the below interface will appear:



The interface is described as follows:



- **Config**
Configuration function, to configure hardware information for control load device of IT9000 software control, including load device alias, device interface and interface parameter, and to configure sub-devices (e.g., channels) for each device.
- **Date Setting**
Data setting, mainly to select numeric field to be saved, device alias and save interval before data saving.
- **Save Date**
Data saving, mainly to save voltage/current/power/resistance test data. Before data saving, please set data at first.
- **Date Query**
Data query, to open the data file saved before.

- **Language**
To select software language version, including Simplified Chinese, Chinese-traditional and English.
- **About**
To list related information of software, including Company website.
- **Exit**
To exit IT9000 software.

**NOTE**

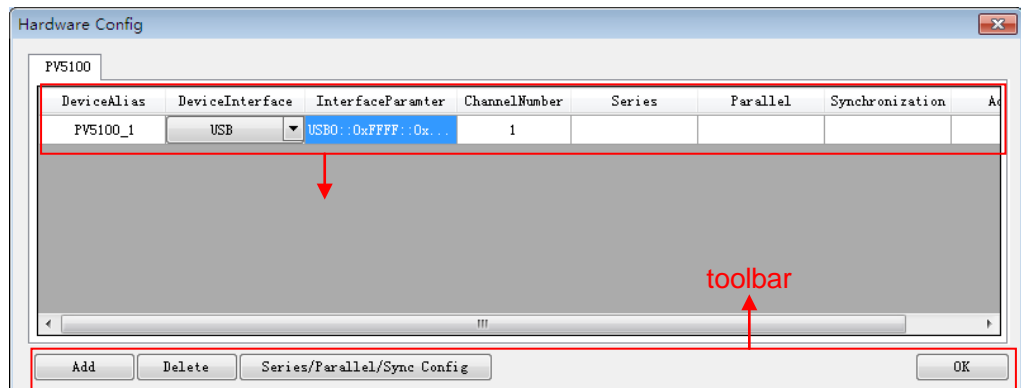
For specific functions of Series IT5101, refer to the User Manual of corresponding instrument.

Chapter2 Basic Operation

2.1 Hardware Configuration

2.1.1 Function Introduction

The hardware configuration interface of IT9000 software is as shown below.



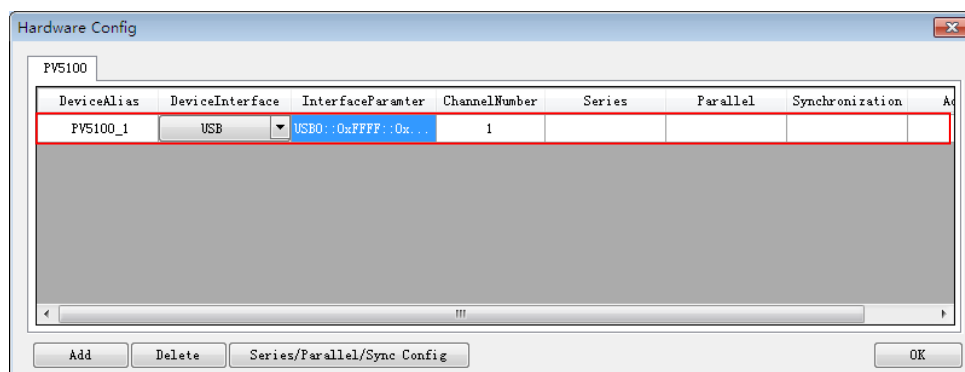
- The “Device bar” includes settings for device alias, device interface, interface parameter and channel number:
 - ◆ Device Alias: the alias of a device, used to distinguish devices of same model.
 - ◆ Device Interface: drop-down options include RS232, GPIB, USB and Ethernet.
 - ◆ Interface Parameter: the interface parameter corresponding to device interface.
 - ◆ Channel Number: to set the channel number of sub-device.
 - ◆ Series: to display series configuration name in series connection of devices.
 - ◆ Parallel: to display parallel configuration name in parallel connection of devices.
 - ◆ Synchronization: to display synchronization configuration name in synchronization of devices.
 - ◆ Address: to set load communication address (used for devices with frame format protocol).
- Main toolbar functions:
 - ◆ Add: to add hardware device.
 - ◆ Delete: to delete specific device.
 - ◆ Series/Parallel/sync Config
 - ◆ OK: to confirm hardware configuration information.

2.1.2 Configuring Hardware

This function enables the user to create new hardware information or modify existing hardware device information. Detailed operation steps will be given below taking creation of new device information as example.

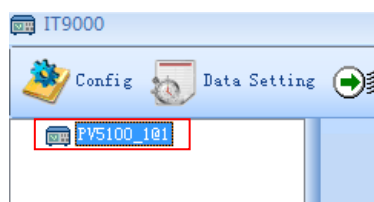
Operation steps

1. Run IT9000 software and click “Configure” icon.
2. Click “Add” button in the Configuration Interface and display the currently added hardware device information and default parameter of device in the “Device bar” at top. As shown below.



To change default parameter of hardware device (e.g., device interface, interface parameter and channel number), you may click the parameter for change.

- Device Alias: double click to edit device alias.
 - Device Interface: to select from the drop-down box.
 - Interface Parameter: double click to configure in the Configure Dialog. For details, refer to Section 2.1.3 “Configuring Interface of Device”.
 - Channel Number: set the channel number of sub-device. The channel number is changeable.
3. Click “OK” to save the configuration information of current hardware device. At this time, the device name (device alias @ channel number) will be displayed at top left of the interface. To pop up the Control Interface, you need to double click the Device Name.

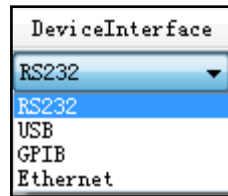


2.1.3 Configuring Interface of Device

IT9000 software is installed in PC and interacts with matching hardware devices via different communication interfaces. This software supports interfaces like USB, RS232, GPIB and Ethernet interface. When configuring the hardware device, configure different interface types based on actual needs and set corresponding interface parameters for different interfaces. IT5101 internal resistance tester support USB, GPIB and LAN.

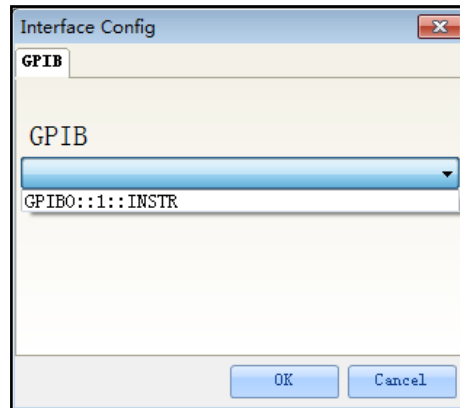
Operation steps

1. Select the device interface corresponding to the hardware device to be edited from the Hardware Configuration Interface, and select the interface type from the drop-down list.



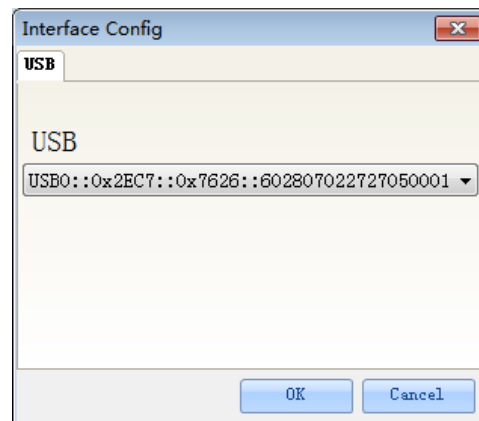
2. After selecting the device interface, double click corresponding “Interface Parameter” column. The system will pop up “Interface Configuration” window.

- GPIB Interface Parameter Configuration



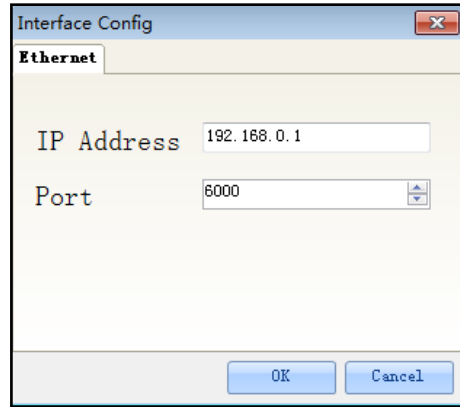
During GPIB communication of power device, the address setting range is: 1-30.

- USB Interface Parameter Configuration



- LAN Interface Parameter Configuration

If LAN interface is used for communication, both computer and device are connected via HUB (or, the device and computer are directly connected via cross network cable). The computer and device IP setting should be in a same network segment.



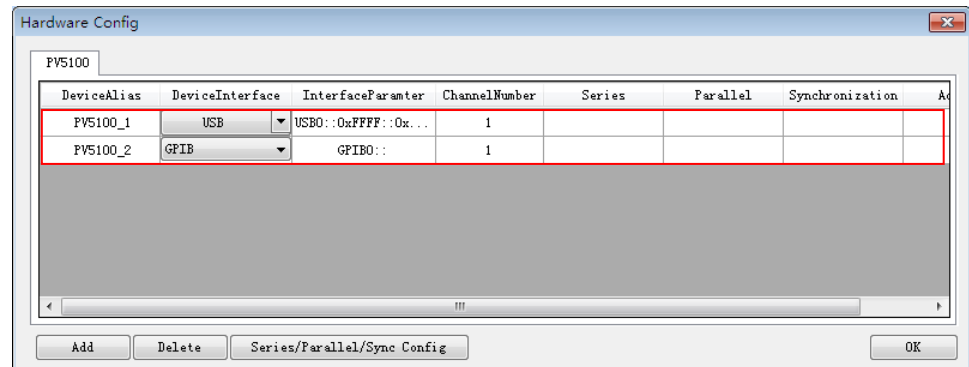
3. After interface parameter configuration, click “OK”. Finish interface parameter configuration.

2.1.4 Series, Parallel and Synchronization Configuration

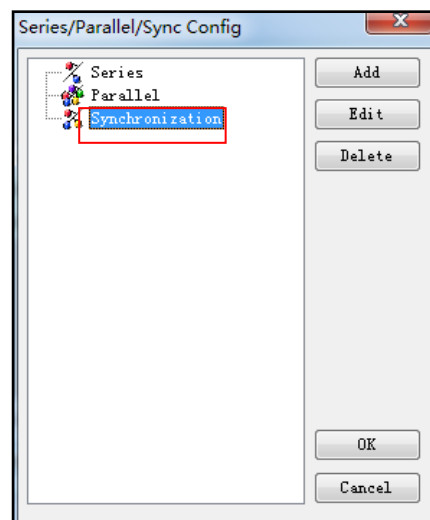
This configuration is used when several devices or several channels are connected. Setting types include series, parallel and synchronization. IT5101 Series can be configured with synchronization.

Synchronization Configuration

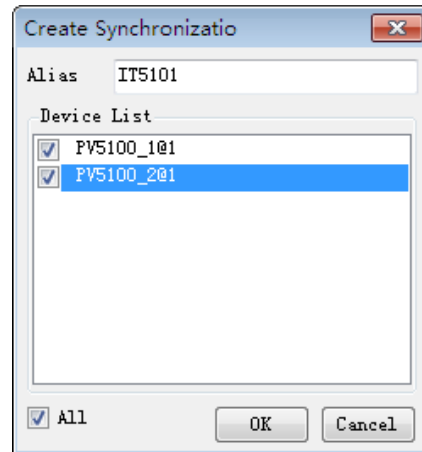
1. Follow the above steps to configure and connect 2 sets of IT5101 devices.



2. Click “Series/Parallel/Synchronization” button and click “Synchronization” in the figure below.



3. Click “Add” button to create Synchronization.
4. Name alias: IT5101. Click the box at front of PV5101_1 and PV5101_2 and select the devices for Synchronization.



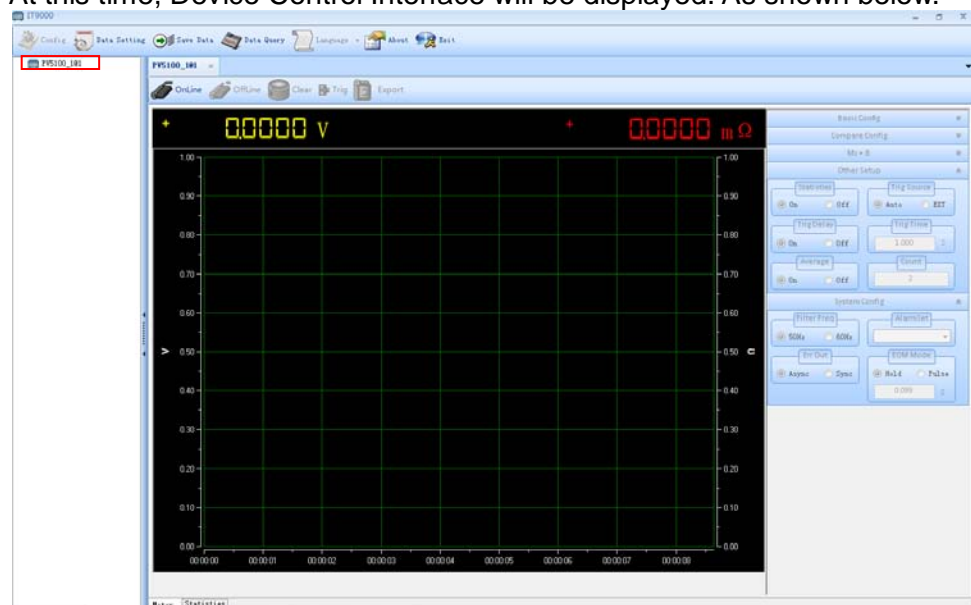
5. Click “OK” button. The Synchronization Configuration Interface will display configured device.
6. Click “OK” to save the current Synchronization configuration information. At this time, the Synchronization configuration name “IT5101” will be displayed at the left top of the interface.
7. Double click IT5101 to display the Synchronization Control Interface.

2.2 Data Setting and Saving

IT9000 can save test data. Before data saving, select the data field to be saved. Select the device alias for saving and the save interval.

Operation steps

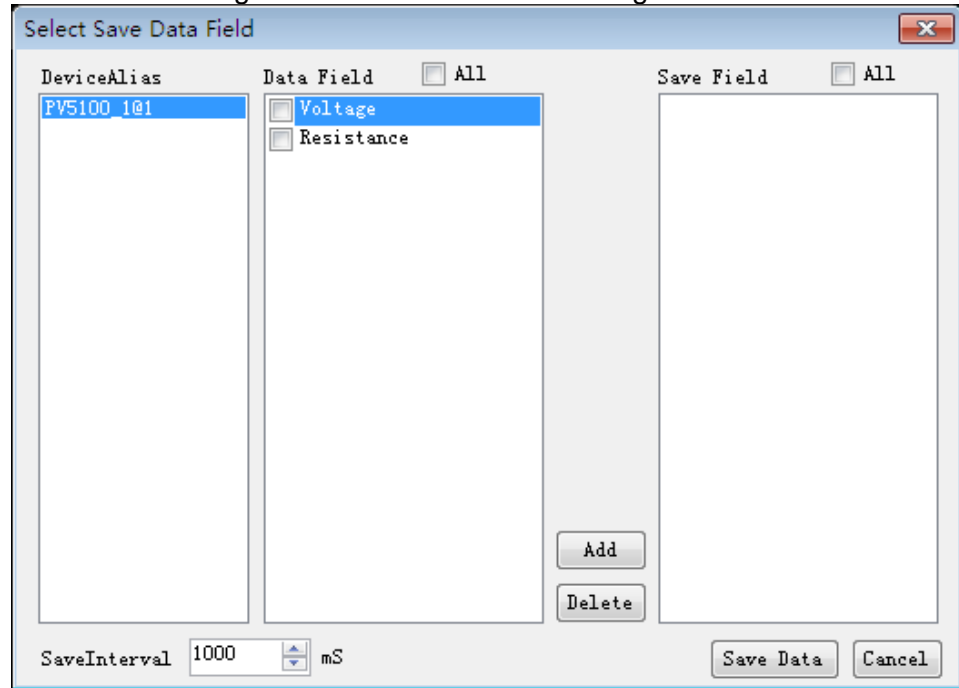
1. After device hardware configuration is finished, double click the device name (device alias @ channel number) displayed at top left of the interface. At this time, Device Control Interface will be displayed. As shown below.



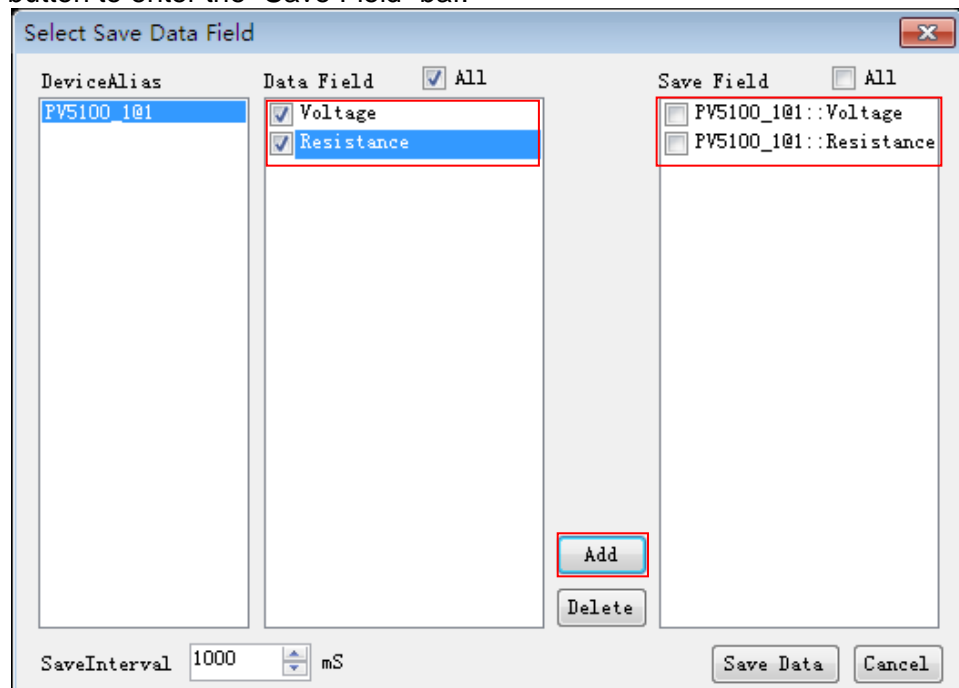

NOTE

For specific functions of Series IT5101, refer to the User Manual of corresponding instrument.

- Click "Data Setting" icon to enter the Data Setting Interface.

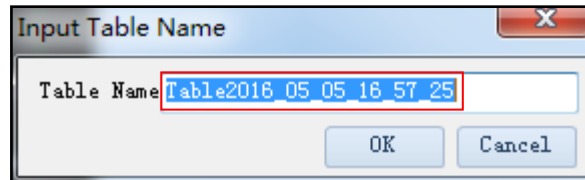


- Click the alias of the device requiring data saving.
- In "Data Field" bar, check the box at front of Data Field, and click "Add" button to enter the "Save Field" bar.



You may also click the Field Name in the Save Field bar. Click "Delete" button to delete the saved field.

- Set "Save Interval".
- Click "Save Data" button to save data setting.
- In the Control Interface, click "**Save Data**" icon to appear the interface as shown below. You need to input Save File Name.



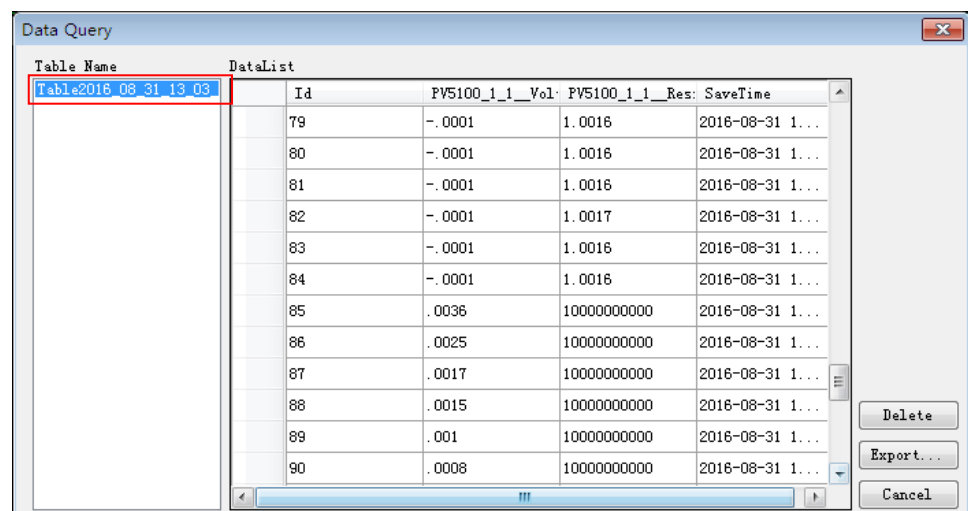
- Click “OK” button in the figure above to start data save. Then, the icon will change to “**Stop Save**”, and “**Data Setting**” and “**Data Query**” will be grayed out. Click “**Stop Save**” icon to stop saving.

2.3 Data Query

IT9000 software provides query function for measured data. You can query measured data at different periods of time and export and save these measured data.

Operation steps

- Click “Data Query” icon to enter the Data Query Interface.
- In Data Query Interface, select and click the “Table Name” of data saving, and the test data will be displayed in the data list. As shown below.



- Delete: to delete the data in current data list.
- Export: Click Export to export the data in current data list to EXCEL table. Saving path is optional.
- Cancel: to exit the Data Query Interface.

Chapter3 PV5101 Control Interface

For specific functions of IT5101, refer to user manual of corresponding instrument.

This chapter provides description of control functions of IT9000 software based on IT5101. The screenshots varies from different models, so please take the actual interfaces of instrument and software.

3.1 Introduction of Control Interface

The PV7600 Control Interface of IT9000 software is as shown below.



1. Tab bar, to switch the display of Control Interfaces of different devices.
2. Toolbar, main functions include:
3. **Online**: remote control, to set the device to Remote Control mode.
4. **Offline**: local switch, to return the device back to Local Mode from Remote Mode.

Clear: valid when checking statistics information, to clear existing statistics information

Trig: to trigger statistics function

Export: valid when checking statistics information, to export existing statistics information

5. Real-time measured values of voltage and internal resistance and curve charts. The curves are divided by colors, which shall be consistent with colors of measurement display data.

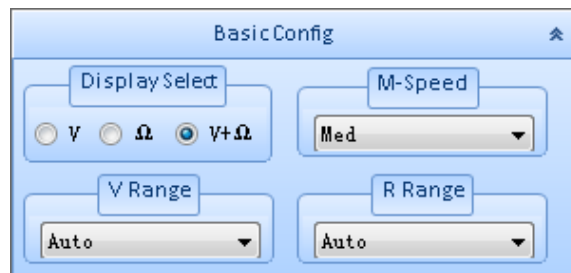
6. Function-related configuration, basic configuration, compare configuration, operation configuration and other configurations
7. Switch tab of measurement mode and statistics mode
8. Compare function status

3.2 Configuration Function

With configuration function in IT9000 software, the user can conveniently configure related system parameters and set functions in software interface.

Basic Measurement Configuration

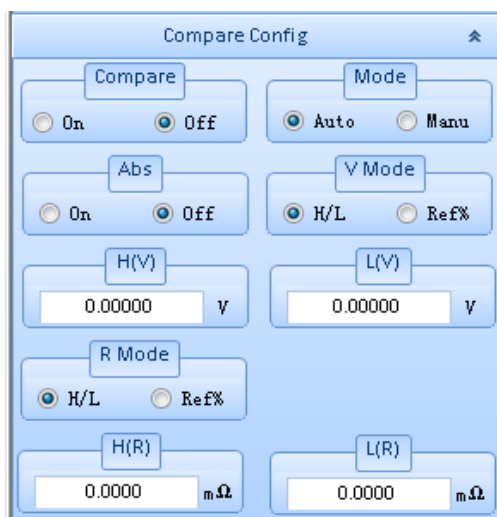
In function-related configuration areas at right side of the control interface, the user can perform configurations related to basic measurements, including display mode selection, sampling speed, voltage and resistance range gear. The range gear is different based on models IT5101 and IT5101E. The text below takes IT5101 as an example.



- Display selection: parameter for display of real-time measurement value, including voltage display/resistance display or voltage and resistance display
- Sampling speed: sampling speed of existing measurement, which is divided into four gears: Slow, Med, Fast and EX. Fast
- Voltage range: divided into 6V, 60V and 300V
- Resistance range: divided into 3mΩ, 30mΩ, 300mΩ, 3Ω, 30Ω, 300Ω and 3,000Ω

Compare Function Configuration

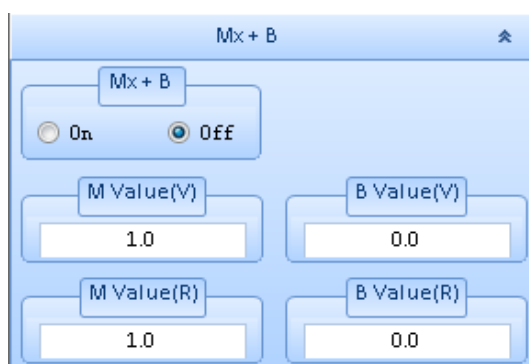
In function-related configuration areas at right side of the control interface, the user can configure compare functions of the internal resistance tester. At first, select compare switch, compare mode, absolute compare or relative compare. When absolute compare is selected, set upper limit and lower limit of absolute voltage and absolute resistance. When relative compare is selected, set compare benchmark and relative percentage. For detailed descriptions of functions, refer to the *IT5101 User Manual*.



- Compare switch: to switch on or switch off compare function
- Compare mode: compare method, divided into manual compare and automatic compare
- Absolute value: during judgment of comparer, read absolute value of voltage measurement. Even in reversed polarity of battery, compare based on absolute value.
- Voltage compare: to set voltage compare mode, with absolute compare or relative compare optional
- Resistance compare: to set resistance compare mode, with absolute compare or relative compare optional
- Upper limit and lower limit of voltage and resistance: to set upper limit and lower limit of voltage or resistance
- Benchmark/percentage: to set benchmark value and percentage during compare

Calculate Function Configuration

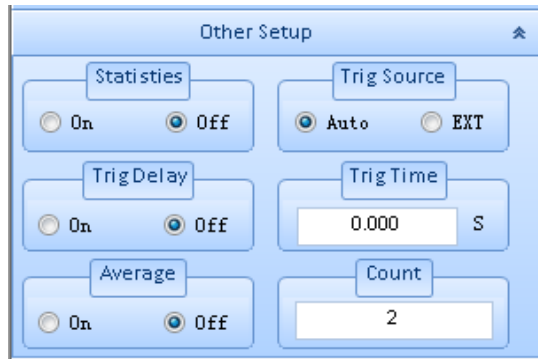
In function-related configuration areas at right side of the control interface, the user can configure $Mx+B$ calculation function of the internal resistance tester for separate configuration of amplification coefficient and offset of voltage or resistance. For detailed descriptions of functions, refer to the *IT5101 User Manual*.



Other Function Configurations

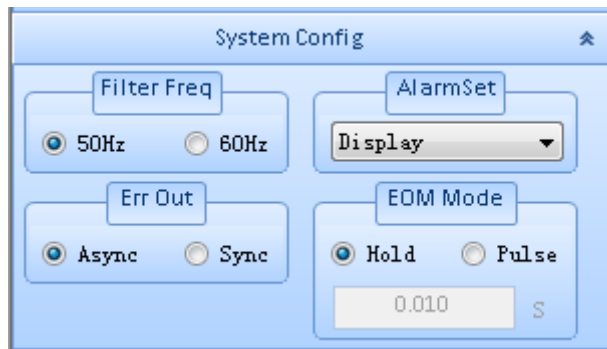
In function-related configuration areas at right side of the control interface, the

user can perform other configurations of the internal resistance tester, including statistics function switch, trigger source selection, trigger delay ON state, delay time, sampling average function and average count. Separately configure amplification coefficient and offset configuration of voltage or resistance. For detailed descriptions of functions, refer to the *IT5101 User Manual*.



System Configuration

In function-related configuration areas at right side of the control interface, the user can perform system configurations of the internal resistance tester, including filter frequency set, alarm method set, error output set and EOM mode set. For detailed descriptions of functions, refer to the *IT5101 User Manual*.



3.3 Check Measurement Result

After connection of measurement circuit of the IT5101 internal resistance tester, the control interface displays existing measured voltage and resistance. For example, when voltage and resistance display is selected, measurement results are displayed as follows:



3.4 Check Statistics Function

The IT5101 internal resistance tester provides statistics function. During measurement, start statistics function and trigger statistics. Then, the system will record measured values and calculate measurement information.

The screenshot displays the PV5101 control interface with the Statistics function active. The table below shows the measured values and calculated information for voltage and resistance.

V	σ	S	Cp	CpK	Max	Index	Min	Index	Pass/Total
0.1229V	0.1370V	0.2400V	0.00	0.14	0.0000mΩ	0.001	0.0000mΩ	0.001	0/2
0.0000mΩ	0.0000mΩ	0.0000mΩ	0.00	0.00	0.0000mΩ	0.001	0.0000mΩ	0.001	0/2

The interface also includes tabs for Statistics, Excel, Voltage Wave, and Resistance Wave at the bottom.

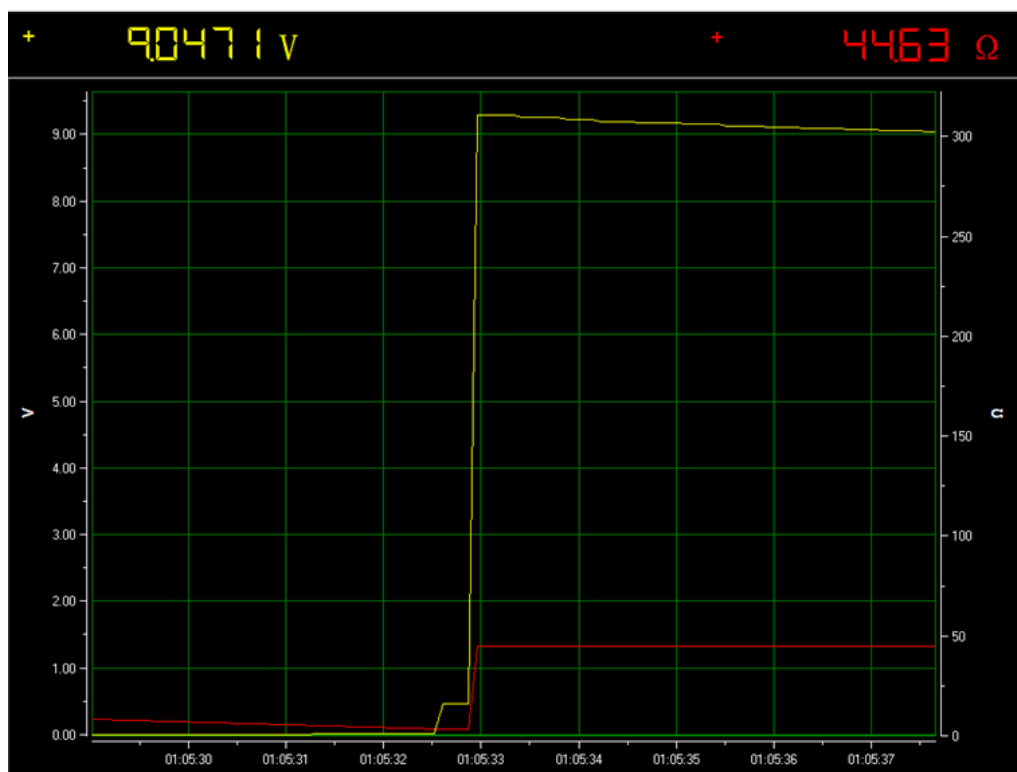
In the check interface of statistics information, the user can also select the Excel/Voltage Wave/Resistance Wave tab for detailed check of measurement data information.

In the statistics and Excel tab, the user can export statistics information to the CSV file. After export, information is as shown below.

A	B	C	D	E
Num	V	R	Pass	Date/Time
1	0.28mV	1.0002Ω	N	02-27/10:50
2	-0.05mV	1.0002Ω	N	02-27/10:50
3	0.28mV	1.0002Ω	N	02-27/10:51
4	0.28mV	1.0002Ω	N	02-27/10:52
5	0.28mV	1.0002Ω	N	02-27/10:53

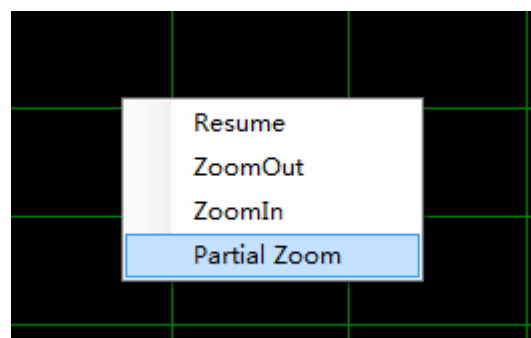
3.5 Curve Zoom In and Translation

In the IT9000 software, voltage and resistance curve graphs have such functions as Resume, Zoom Out, Zoom In and Partial Zoom. Right click any one at the curve graph, as shown below.

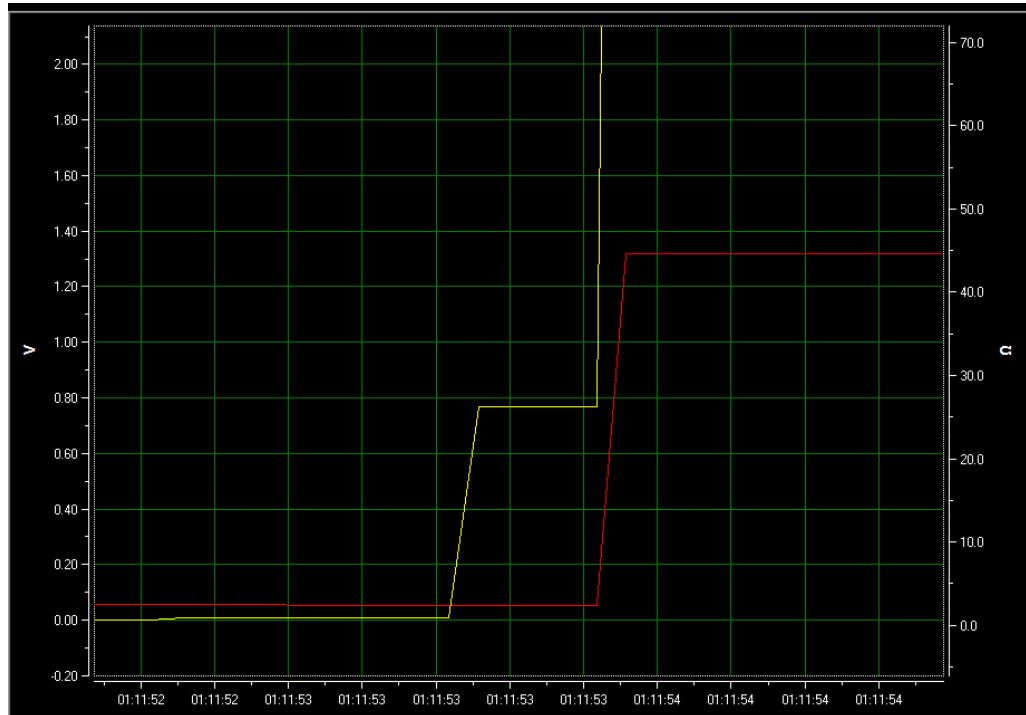


Curve zoom in

1. Right click the curve graph and select "Partial Zoom". At the bottom of cursor will display a small rectangle box.



2. Move the cursor of small rectangle box to pull out a bigger rectangle box to define the location which you need enlarge the partial wave.
3. Release the mouse left key and the image will be promptly zoomed in.



4. To resume dynamic records, right click the curve graph and choose "Resume".

Translation View

1. Move the cursor shape to any position of the horizontal coordinate axis (Time Axis) and the mouse will change to be a hand.
2. Hold down the mouse left key to move the mouse. When moving left, you will see the curve after the current time; when moving right, you will see the curve before the current time.
3. Similarly, you can translate the voltage/resistance coordinate to view curve. Left V means voltage axis. When you move it, the yellow curve will move up and down; and right Ω means resistance axis. When you move it, the red curve will move up and down.



- To resume dynamic records, right click the curve graph and choose "Resume".



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