

# **IT9000 Control Software**

## **PV7300 User Manual**

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A CAUTION sign denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

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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.

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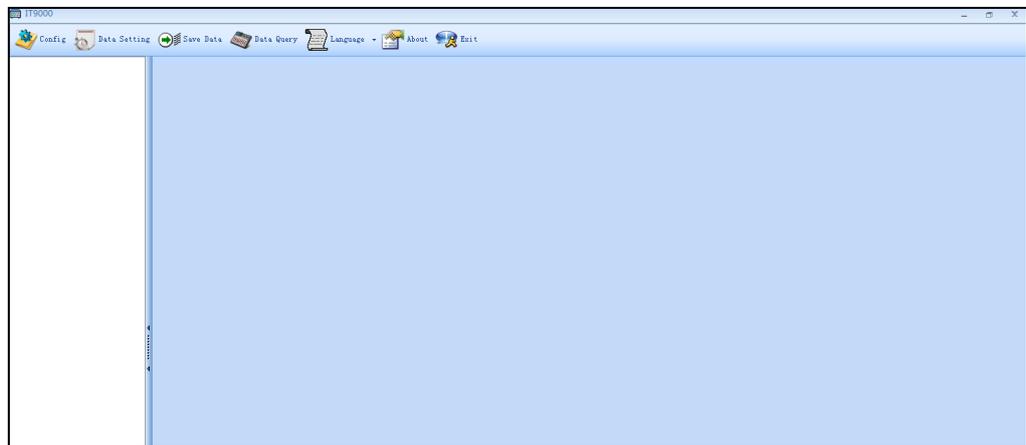
# Chapter1 Brief Introduction

## 1.1 Software Introduction

IT9000-PV7300 is a kind of easy-to-use and practicable control software designed by Itech Electronics Co., Ltd. It is applicable to Itech IT7300 Series power supply. With this software, you can take all operations for power 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 power device of IT9000 software control, including power 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 current 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**

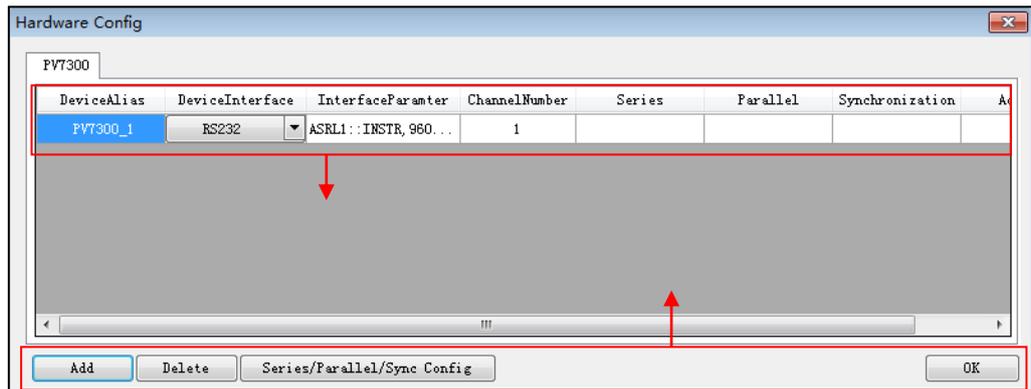
For specific functions of Series IT7300, refer to the User Manual of corresponding power supply.

## 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.

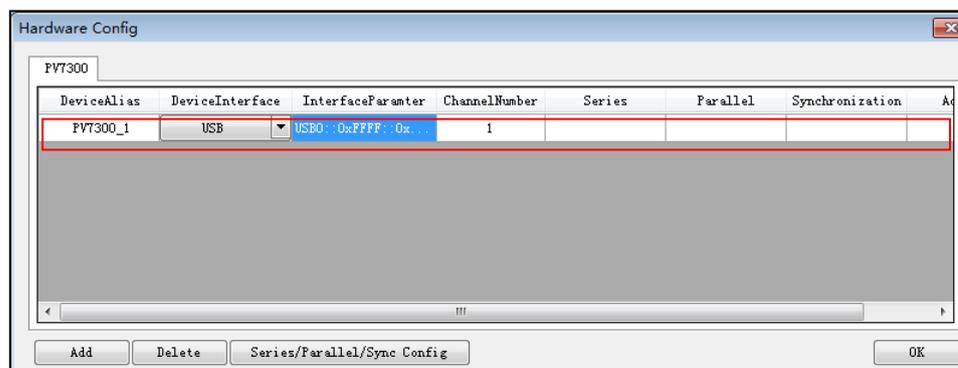
#### 2.1.2 Configuring Hardware

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.

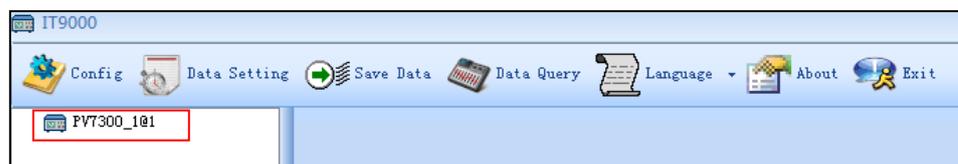
## Operation steps

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 “Communication Interfaces of Configuration 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.



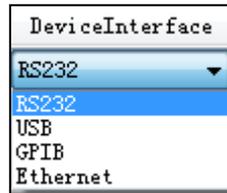
## 2.1.3 Configuring Interface of Device

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.

## Operation steps

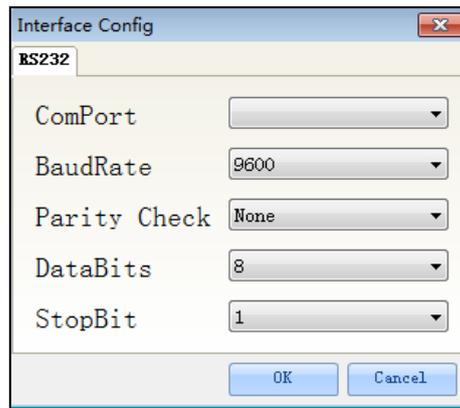
1. Select the device interface corresponding to the hardware device to be edited from the Hardware Configuration Interface, and select the interface

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.

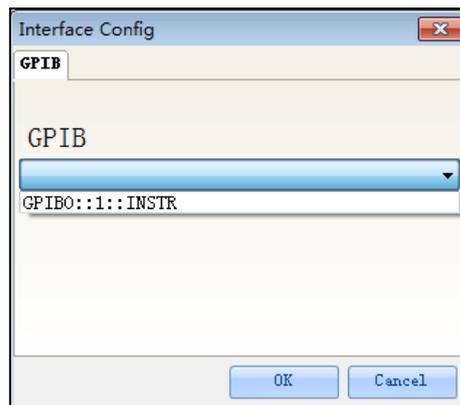
- RS232 Interface Parameter Configuration



Serial interface: to select serial interface, i.e., the serial interface number occupied by RS232 communication cable interface.

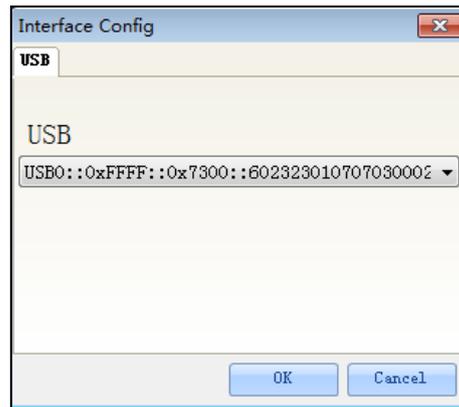
Baud rate, parity check bit, data bits and stop bit must be configured consistently with those in menu setup.

- GPIB Interface Parameter Configuration



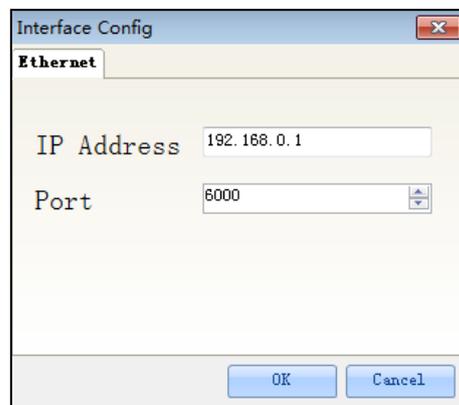
During GPIB communication of power device, the address setting range is: 1-30.

- USB Interface Parameter Configuration



- LAN Interface Parameter Configuration

If LAN interface is used for communication, both computers 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.

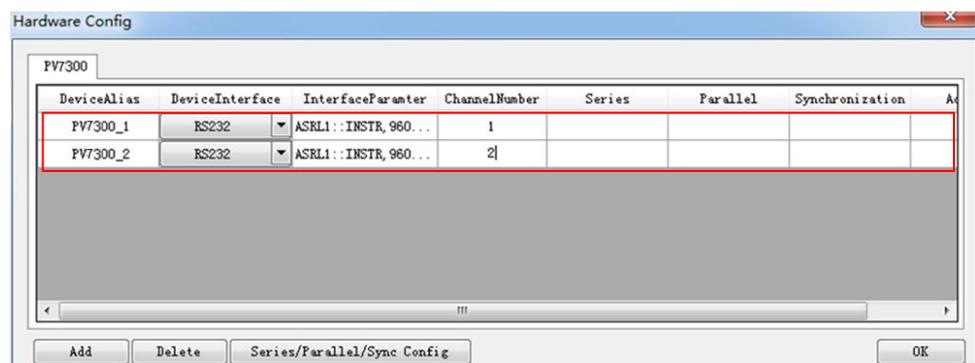


3. After interface parameter configuration, click “OK”. Finish interface parameter configuration.

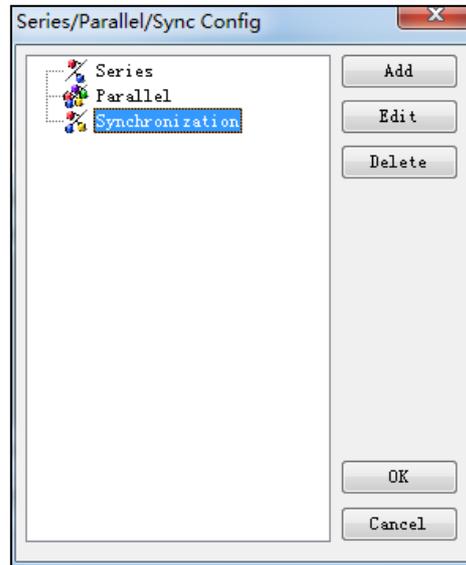
## 2.1.4 Series Parallel and Synchronization Configuration

This configuration is used when several devices or several channels are connected. The IT7300 series does not support Series and Parallel connection. You can synchronize the operation between multiple instruments by synchronizing configuration. For example, setting the voltage and current parameters of one instrument, other instruments will be set automatically.

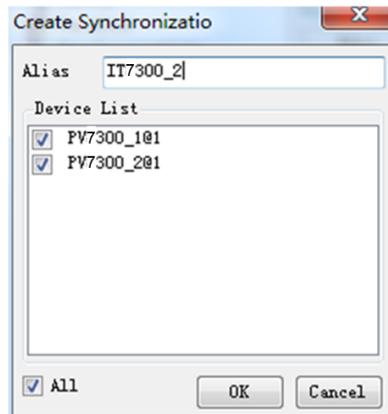
1. Follow the above steps to configure and connect 2 sets of IT7300 devices.



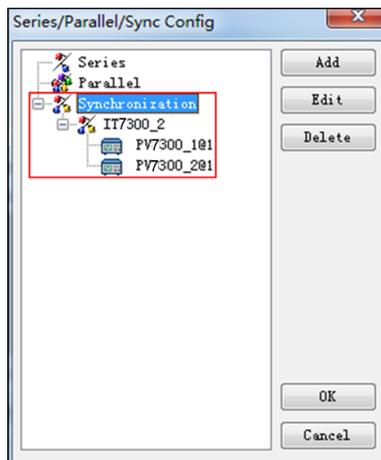
- Click “Series/Parallel/Synchronization” button and click “Synchronization” in the figure below.



- Click “Add” button to create Synchronization.
- Name alias: IT7300\_2. Click the box at front of PV7300\_1 and PV7300\_2 and select the devices for Synchronization.



- 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 “IT7300\_2” will be displayed at the left top of the interface.
7. Double click IT7300\_2 to display the Synchronization Control Interface.

## 2.2 Data Setting and Saving

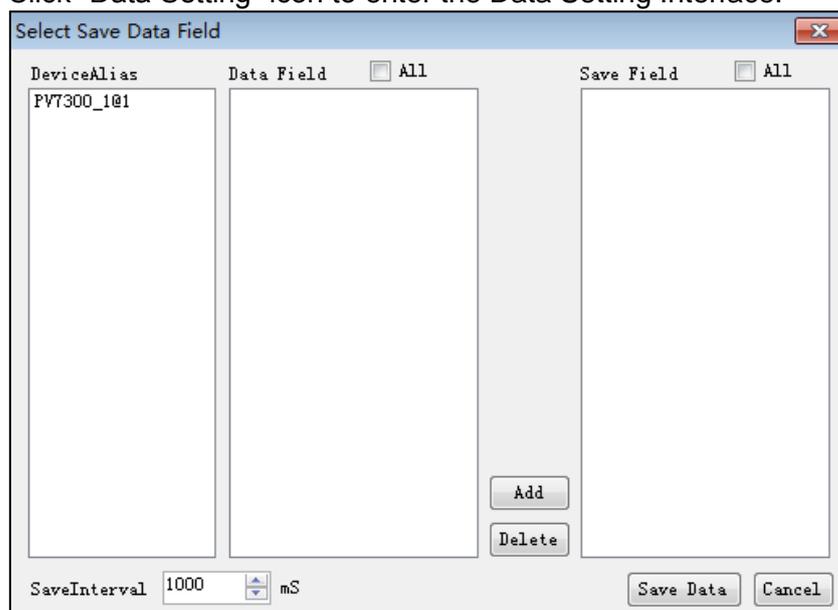
IT9000 can save test data. Before data saving, select the data field to be saved. Select the device alias for saving and the save interval.

### Operation steps

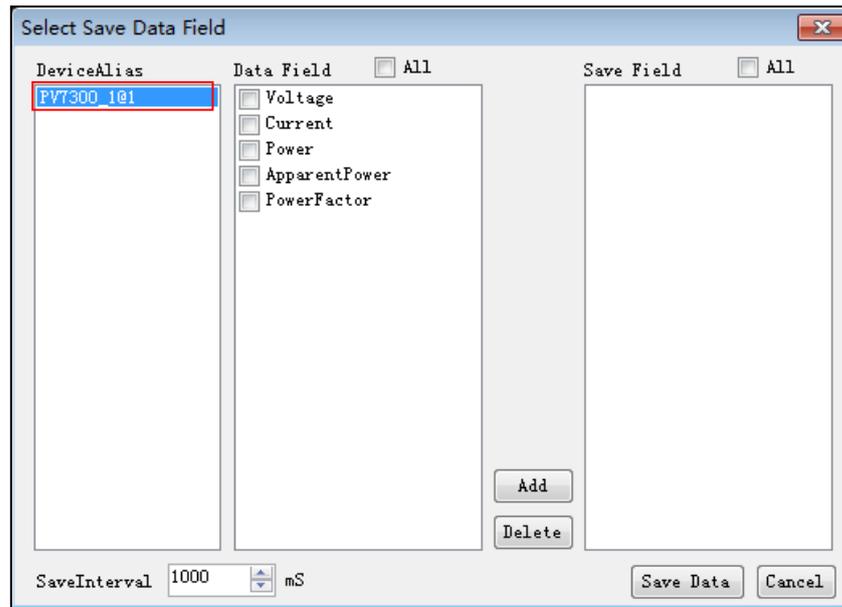
1. After device hardware configuration is finished, double click the device name (device alias @ channel number) displayed at top left of the interface. At this time, Device Control Interface will be displayed. As shown below.



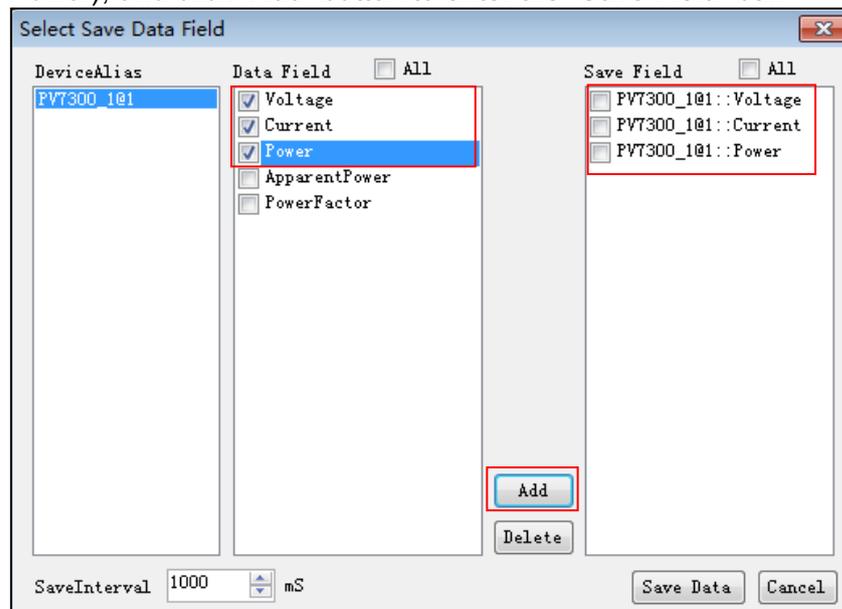
2. Click “Data Setting” icon to enter the Data Setting Interface.



3. Click the alias of the device requiring data saving.



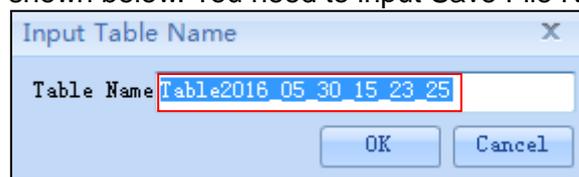
4. In “Data Field” bar, check the box at front of Data Field (Voltage, Current, Power), and click “Add” button to enter the “Save Field” bar.



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

5. Set “Save Interval”.
6. Click “Save Data” button to save data setting.

7. In the Control Interface, click  icon to appear the interface as shown below. You need to input Save File Name.



8. Click “OK” button in the figure above to start data save. Then, the icon will change to , and “Data Setting” and “Data Query” will be

grayed out. Click  icon to stop saving.

## 2.3 Data Query

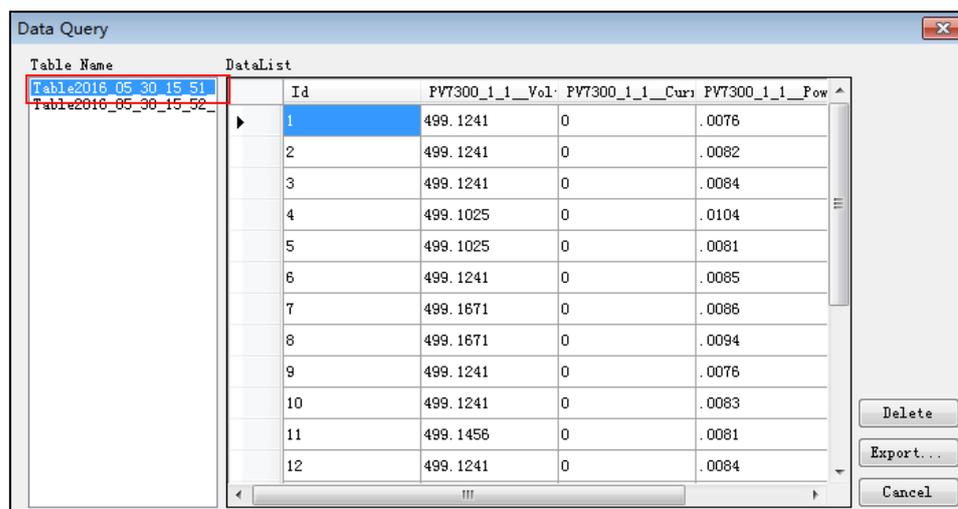
IT9000 software provides query function for measured data. You can query measured data at different periods of time and export and save these measured data.

### Operation steps

1. Click  icon to enter the Data Query Interface.



2. 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.

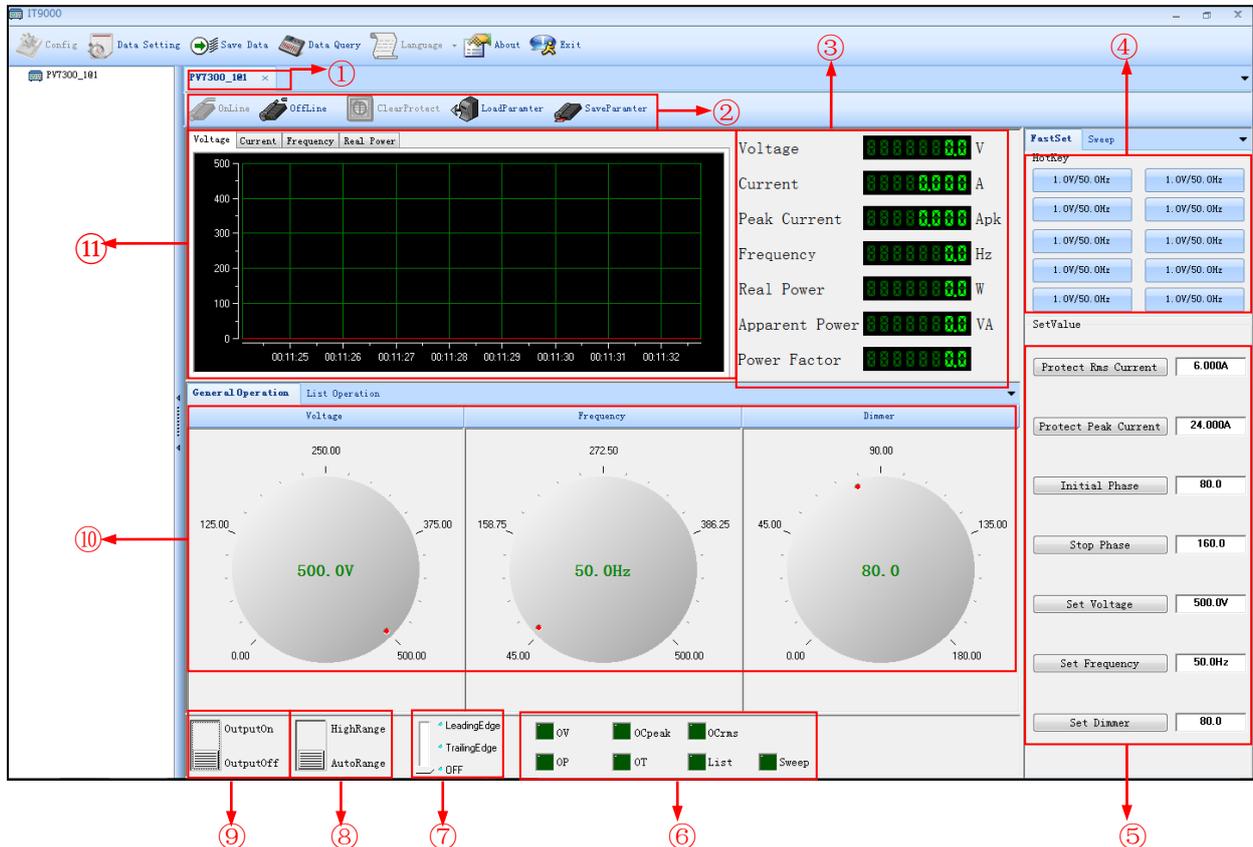


- Delete: to delete the data in current data list.
- Export: Click Export to export the data in current data list to EXCEL table. Saving path is optional.
- Cancel: to exit the Data Query Interface.

# Chapter3 PV7300 Control Interface

## 3.1 Introduction of Control Interface

The PV7300 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:
  - Online:** remote control, to set the power to Remote Control mode.
  - Offline:** local switch, to return the power back to Local Mode from Remote Mode.
  - Clear Protect:** to clear power protection status.
  - Load Parameter:** to call test parameters saved before, including fast setting, dynamic, scan, program and test parameters.
  - Save Parameter:** to save fast setting, dynamic, scan, program and test parameters, for fast access and usage by the user.
3. Display real-time value.
4. Hotkey, Set the voltage and frequency values
5. Fast setting
6. Status indicator: OVP, OPP, current peak protection, OTP, current effective value protection, list and sweep.
7. Set the phase dimmer: Leading edge/Trailing edge/Off

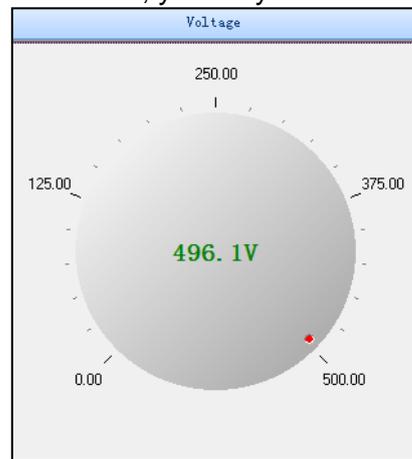
8. Set the voltage range: High Range/Auto Range
9. Switch output status of power supply: Output on/Output off
10. Set voltage, frequency and phase angle of phase dimmer/list operation in general operation. For list operation, refer to 3.5 List Operation.
11. Display the waveform of voltage, current, frequency and active power.

## 3.2 Setting Voltage, Frequency and Dimmer

You can set voltage, frequency and dimmer via Simulated Pulsating Knob (not so accurate setting) or Fast Setting Function (accurate setting).

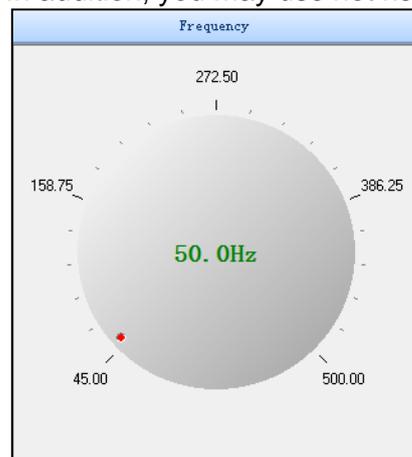
### Setting Voltage

1. Move the mouse to Simulated Pulsating Knob. Click and rotate the mouse to set voltage value.
2. In addition, you may use hot key (described latter) for accurate setting.



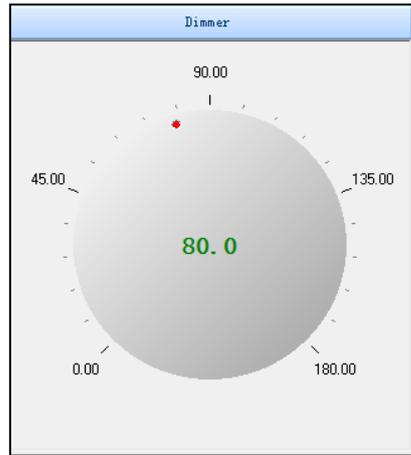
### Setting Frequency

1. Move the mouse to Simulated Pulsating Knob. Click and rotate the mouse to set frequency value.
2. In addition, you may use hot key (described latter) for accurate setting.



### Setting Dimmer

1. Move the mouse to Simulated Pulsating Knob. Click and rotate the mouse to set dimmer value.
2. In addition, you may use hot key (described latter) for accurate setting.



When setting the set value with software, be sure that you have clicked to make it gray out. Set the power to Remote Control status.



icon

## 3.3 Fast Set

### Hotkey

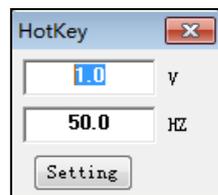


#### Hotkey:

This is a fast setting convenient for usage. Under each mode, there are 10 setting values available for fast selection. Under different operation modes, you only need to set required value and click mouse to execute corresponding operation. When executing operation, be sure to select operation mode.

#### Change data:

1. Right click the area for data change to pop up the dialog as shown below.



2. You may change the fast setting value for voltage/ frequency based on requirements.

## Setvalue

SetValue	
Protect Rms Current	6.000A
Protect Peak Current	24.000A
Initial Phase	80.0
Stop Phase	160.0
Set Voltage	22.0V
Set Frequency	50.0Hz
Set Dimmer	80.0

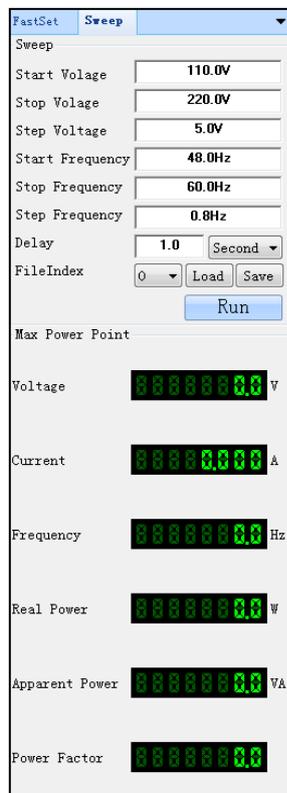
### Setvalue:

For setting values, digital keys can be used for correctly setting required parameters, including:

RMS protection current, peak protection current, initial phase, stop phase, voltage, frequency and phase angle setting of phase dimmer.

## 3.4 Sweep

### Sweep



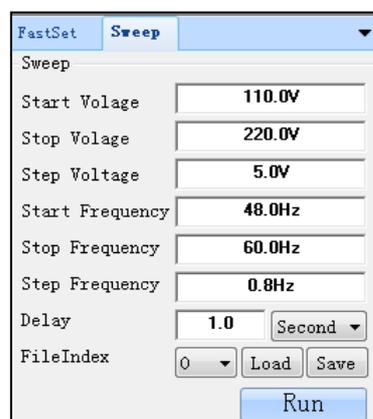
The screenshot shows the 'Sweep' control panel. It includes input fields for Start Voltage (110.0V), Stop Voltage (220.0V), Step Voltage (5.0V), Start Frequency (48.0Hz), Stop Frequency (60.0Hz), and Step Frequency (0.8Hz). A Delay field is set to 1.0 with a unit dropdown set to 'Second'. Below these are 'FileIndex' (0), 'Load', and 'Save' buttons, and a 'Run' button. The 'Max Power Point' section contains six digital displays: Voltage (0.00000000 V), Current (0.0000 A), Frequency (0.00 Hz), Real Power (0.0 W), Apparent Power (0.0 VA), and Power Factor (0.0).

#### Sweep:

With this function, the power supply can be output based on fixed voltage step, frequency step and set delay. At first, keep frequency stable, and sweep voltage based on step value. Till stop voltage value, the frequency is fixed to second step, and the voltage will be canned from initial voltage to stop voltage again. Take this step in sequence till stop voltage and stop frequency.

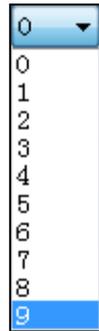
Sweep operation steps:

1. Set the start value, stop value, step value and delay value of voltage and frequency.

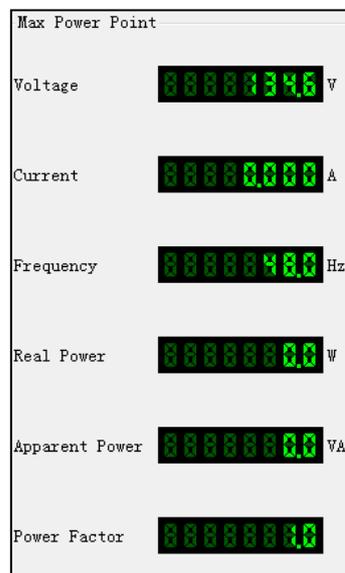


This is a duplicate of the screenshot above, showing the 'Sweep' control panel with the same configuration: Start Voltage (110.0V), Stop Voltage (220.0V), Step Voltage (5.0V), Start Frequency (48.0Hz), Stop Frequency (60.0Hz), Step Frequency (0.8Hz), Delay (1.0 Second), FileIndex (0), and a 'Run' button.

2. Select "File Number".

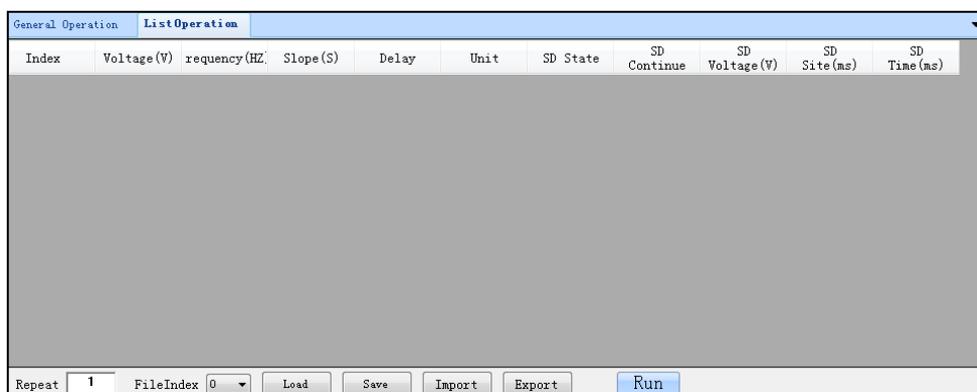


3. Click “Save” button to save the edited parameters. Click “Load” button to load the saved parameters. Click “Run” button to run the sweep programs corresponding to the selected number.
4. Click “Stop” button and the power supply will stop sweeping. After sweep test is stopped, you can display the voltage, current and frequency at maximum power point.



## 3.5 List operation

To make a list program, just click “List Operation” to enter the Fast Program page.



### Introduction of list operation display

**Repeat:** set the number of repeated operations.

**FileIndex:** save 10 list files (0-9). “Load”, “Save” and “Run” functions are just for operating list files corresponding to current number.

**Load:** load saved files.

**Save:** save currently edited file to selected number.

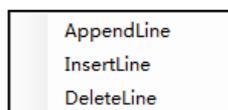
**Import:** Import external List documents.

**Export:** Export List file being edited.

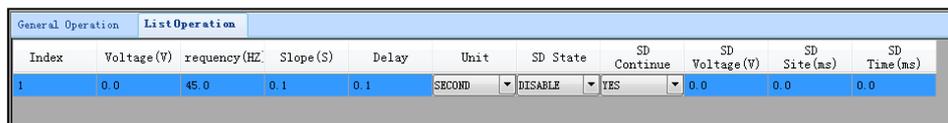
**Run:** run the list files corresponding to the selected number.

### Edit List

1. Click “List operation” tab to enter Fast Programming page.
2. In programming page, right click to appear the option shown below.



3. click “AppendLine” button to add the first step of program.



Index	Voltage (V)	frequency (HZ)	Slope (S)	Delay	Unit	SD State	SD Continue	SD Voltage (V)	SD Site (ms)	SD Time (ms)
1	0.0	45.0	0.1	0.1	SECOND	DISABLE	YES	0.0	0.0	0.0

4. Double click the value corresponding to program step (Value, Frequency, slope, Delay). Set them to required values and click OK.

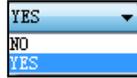
Select test time unit: SECOND, MINUTE, HOUR.



Select surge/trap (SD) status: If Enable is selected, you need to set whether to continue surge/trap, surge/trap voltage, surge/trap position (ms) and surge/trap time (ms). If Disable is selected, no setting is required.



Select Continue Test of Surge/Trap or not. If Continuous Test is selected, surge/trap will be generated by default time 100ms.



Set surge/trap voltage. Surge happens when the set voltage value is larger than the voltage value of current sep. Otherwise, trap happens.

Set surge/trap position. Limited by frequency, settable maximum value is 25ms.

Set surge/trap time

- Repeat step 2-4 to set other four steps in List file.

Index	Voltage(V)	requeency(HZ)	Slope(S)	Delay	Unit	SD State	SD Continue	SD Voltage(V)	SD Site(ms)	SD Time(ms)
1	4.0	45.0	0.1	5.0	SECOND	ENABLE	YES	5.0	20.0	5.0
2	5.0	45.0	0.2	5.0	SECOND	ENABLE	YES	6.0	20.0	5.0
3	6.0	45.0	0.3	5.0	SECOND	ENABLE	YES	7.0	20.0	5.0
4	7.0	45.0	0.4	5.0	SECOND	ENABLE	YES	8.0	20.0	5.0
5	8.0	45.0	0.5	5.0	SECOND	ENABLE	YES	9.0	20.0	5.0



#### NOTE

In parameter setting, you can manually adjust width of each column to check parameters to be set.

### Import List file from externals

IT9000 software supports import function of list files. The user can finish the editing of List file in Excel and import it into the software. This function simplifies the List file edit and facilitates user operation. Detailed operation steps are as below:

- Create a new Excel document on local PC and name it List 1.
- Open the Excel document and save it as in "other formats" i.e. "(\*.csv)".
- Open the List 1.csv document and edit the List. Set every step of the List and corresponding parameters.

	A	B	C	D	E	F	G	H	I	J
1	Voltage(V)	Frequency(HZ)	Slope(S)	Delay	Unit	SD State	SD Continue	SD Voltage(V)	SD Site(ms)	SD Time(ms)
2	4	45	0.1	5	SECOND	ENABLE	YES	5	20	5
3	5	45	0.2	5	SECOND	ENABLE	YES	6	20	5
4	6	45	0.3	5	SECOND	ENABLE	YES	7	20	5
5	7	45	0.4	5	SECOND	ENABLE	YES	8	20	5
6	8	45	0.5	5	SECOND	ENABLE	YES	9	20	5
7										

- Click "Import" button.
- Select and open List 1.csv file. Finish import of the List file.

Index	Voltage(V)	requeency(HZ)	Slope(S)	Delay	Unit	SD State	SD Continue	SD Voltage(V)	SD Site(ms)	SD Time(ms)
1	4.0	45.0	0.1	5.0	SECOND	ENABLE	YES	5.0	20.0	5.0
2	5.0	45.0	0.2	5.0	SECOND	ENABLE	YES	6.0	20.0	5.0
3	6.0	45.0	0.3	5.0	SECOND	ENABLE	YES	7.0	20.0	5.0
4	7.0	45.0	0.4	5.0	SECOND	ENABLE	YES	8.0	20.0	5.0
5	8.0	45.0	0.5	5.0	SECOND	ENABLE	YES	9.0	20.0	5.0

## Load local List

IT9000 software supports loading local List file of the device. The user can load the local List file to the software. Detailed operation steps are as below:

1. Manually edit the List file in load local and save it under FILE5.

	A	B	C	D	E	F	G	H	I	J
1	Voltage(V)	Frequency(HZ)	Slope(S)	Delay	Unit	SD State	SD Continue	SD Voltage(V)	SD Site(ms)	SD Time(ms)
2	4	45	0.1	5	SECOND	ENABLE	YES	5	20	5
3	5	45	0.2	5	SECOND	ENABLE	YES	6	20	5
4	6	45	0.3	5	SECOND	ENABLE	YES	7	20	5
5	7	45	0.4	5	SECOND	ENABLE	YES	8	20	5
6	8	45	0.5	5	SECOND	ENABLE	YES	9	20	5
7										

2. In the List Save area of Program Interface, click the drop-down arrow at right of file name and select FILE5.
3. Click “Load” button, and the Programming Interface will display the load local List5 file.

General Operation		ListOperation									
Index	Voltage(V)	requency(HZ)	Slope(S)	Delay	Unit	SD State	SD Continue	SD Voltage(V)	SD Site(ms)	SD Time(ms)	
1	4.0	45.0	0.1	5.0	SECOND	ENABLE	YES	5.0	20.0	5.0	
2	5.0	45.0	0.2	5.0	SECOND	ENABLE	YES	6.0	20.0	5.0	
3	6.0	45.0	0.3	5.0	SECOND	ENABLE	YES	7.0	20.0	5.0	
4	7.0	45.0	0.4	5.0	SECOND	ENABLE	YES	8.0	20.0	5.0	
5	8.0	45.0	0.5	5.0	SECOND	ENABLE	YES	9.0	20.0	5.0	

## Run List

1. Follow the steps above to edit List file.
2. Set Repeat Times.
3. Click “Run” to run program file. Click “Stop” to stop operation.

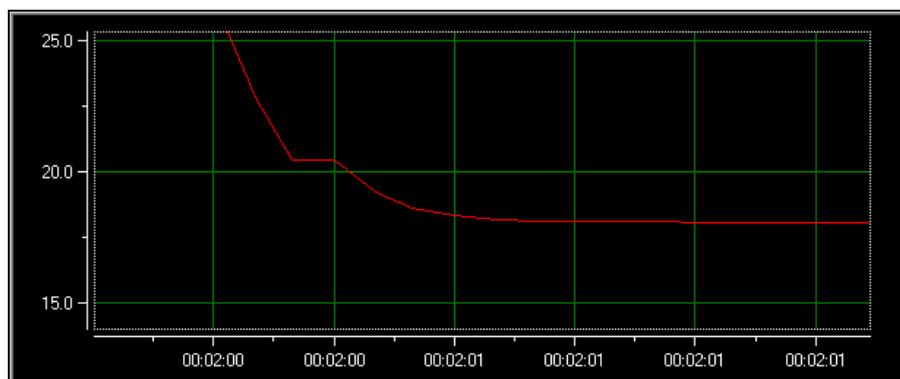
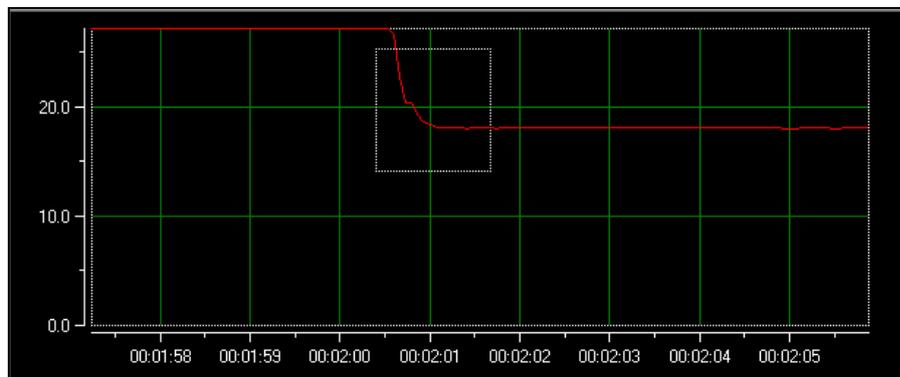
## 3.6 Curve Zoom Out and Translation

In the IT9000 software, voltage current frequency and real power 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 out

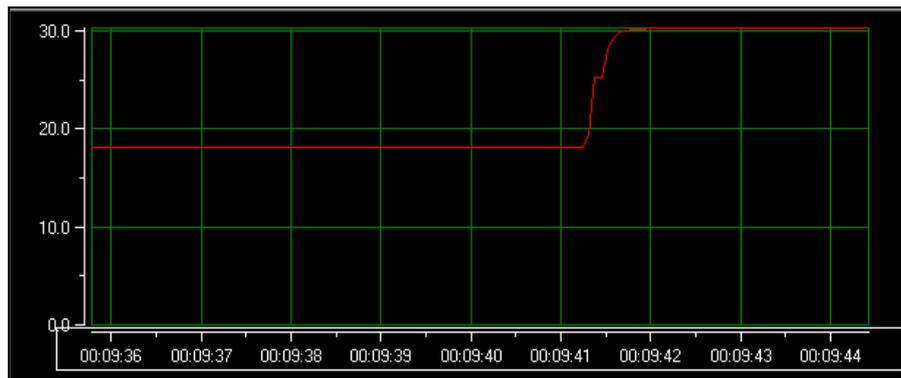
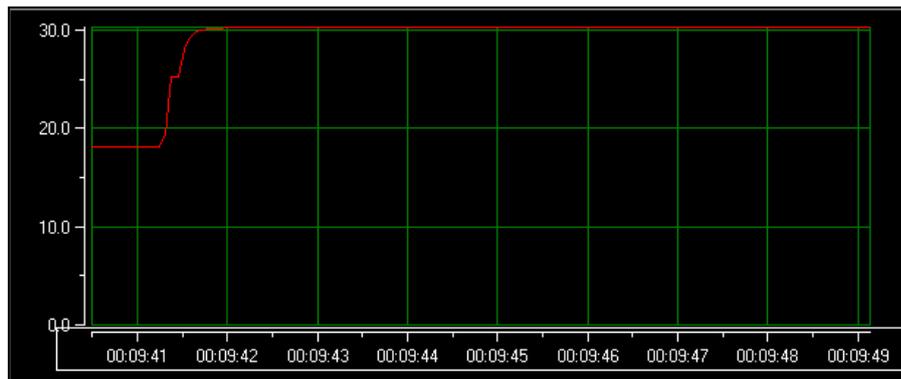
1. Right click the curve graph and select “Partial Zoom”. At the bottom of cursor will display a small rectangle box.
2. Move the cursor of small rectangle box to pull out a bigger rectangle box to define the location which you need enlarge the partial wave.
3. Release the mouse left key and the image will be promptly zoomed out.



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 current frequency real power coordinate to view curve.

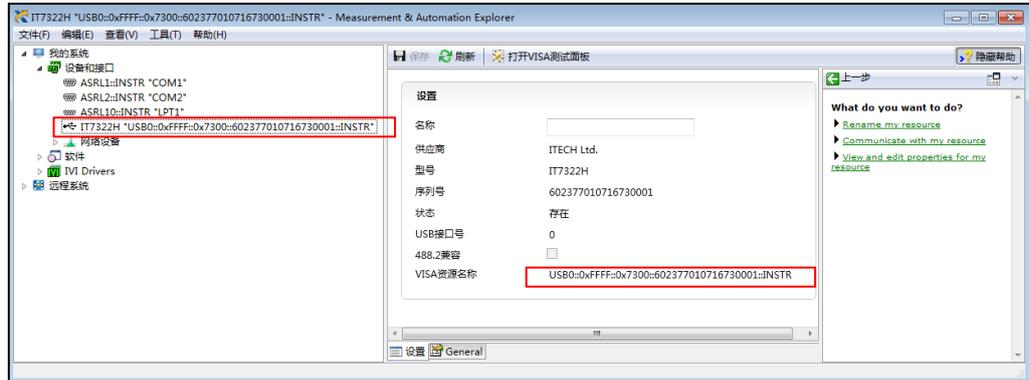


4. To resume dynamic records, right click the curve graph and choose "Resume".

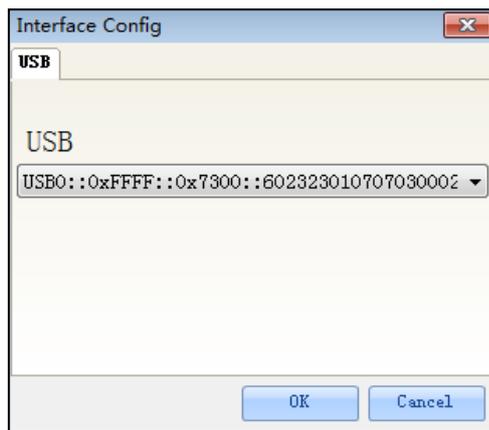
# Chapter4 Troubleshooting

## Judgment Method of Standard USB Interface

If a standard USB interface is used for connecting instrument, with MAX query, a device serial number will appear. Check the appearing device serial number conformed to actual device.



You may visualize it in IT9000 hardware configuration:



## **Contact US**

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1. Please refer to the CD-ROM of related user's manual in package.
2. Visit ITECH website [www.itechate.com](http://www.itechate.com).
3. Select the most convenient contact for further consultation.