PV3140 Software

User Manual

Notices

Revision

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2023

Itech Electronic, Co., Ltd.

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Safety Notices

CAUTION

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.

WARNING

A WARNING sign denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

NOTE

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

Quality Certification and Assurance

We certify that IT-M3140 series instruments meet all the published specifications at time of shipment from the factory.

Warranty

ITECH warrants that the product will be free from defects in material and workmanship under normal use for a period of one (1) year from the date of delivery (except those described in the Limitation of Warranty below).

For warranty service or repair, the product must be returned to a service center designated by ITECH.

- The product returned to ITECH for warranty service must be shipped PREPAID. And ITECH will pay for return of the product to customer.
- If the product is returned to ITECH for warranty service from overseas, all the freights, duties and other taxes shall be on the account of customer.

Limitation of Warranty

This Warranty will be rendered invalid in case of the following:

- Damage caused by circuit installed by customer or using customer own products or accessories;
- Modified or repaired by customer without authorization;
- Damage caused by circuit installed by customer or not operating our products under designated environment;
- The product model or serial number is altered, deleted, removed or made illegible by customer;
- Damaged as a result of accidents, including but not limited to lightning, moisture, fire, improper use or negligence.

Safety Symbols

⎓	Direct current	|	ON (power on)
~	Alternating current	○	OFF (power off)
≂	Both direct and alternating current	⎍	Power-on state
⏚	Protective conductor terminal	⎕	Power-off state
⏚	Earth (ground) terminal	±	Reference terminal
⚠	Caution, risk of electric shock	+	Positive terminal
⚠	Warning, risk of danger (refer to this manual for specific Warning or Caution information)	−	Negative terminal

	Frame or chassis terminal	-	-

Safety Precautions

The following safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or specific warnings elsewhere in this manual will constitute a default under safety standards of design, manufacture and intended use of the instrument. ITECH assumes no liability for the customer's failure to comply with these precautions.

WARNING

- Do not use the instrument if it is damaged. Before operation, check the casing to see whether it cracks. Do not operate the instrument in the presence of inflammable gasses, vapors or dusts.
- The electronic load is provided with a power line during delivery and should be connected to a socket with a protective earth terminal. Before operation, be sure that the instrument is well grounded.
- Make sure to use the power cord supplied by ITECH.
- Check all marks on the instrument before connecting the instrument to power supply.
- Use electric wires of appropriate load. All loading wires should be capable of bearing maximum short-circuit current of electronic load without overheating. If there are multiple electronic loads, each pair of the power cord must be capable of bearing the full-loaded rated short-circuit output current
- Ensure the voltage fluctuation of mains supply is less than 10% of the working voltage range in order to reduce risks of fire and electric shock.
- If you use the power supply to charge the battery, pay attention to the positive and negative polarity of the battery when wiring, otherwise the power supply will be damaged!
- Do not install alternative parts on the instrument or perform any unauthorized modification.
- Do not use the instrument if the detachable cover is removed or loosen.
- To prevent the possibility of accidental injuries, be sure to use the power adapter supplied by the manufacturer only.
- We do not accept responsibility for any direct or indirect financial damage or loss of profit that might occur when using the instrument.
- This instrument is used for industrial purposes, do not apply this product to IT power supply system.
- Never use the instrument with a life-support system or any other equipment subject to safety requirements.

CAUTION

- Failure to use the instrument as directed by the manufacturer may render its protective features void.
- Always clean the casing with a dry cloth. Do not clean the internals.

- Make sure the vent hole is always unblocked.

Environmental Conditions

The instrument is designed for indoor use and an area with low condensation. The table below shows the general environmental requirements for the instrument.

Environmental Conditions	Requirements
Operating temperature	0°C to 40°C
Operating humidity	20%-80% (non-condensation)
Storage temperature	-10°C to 70 °C
Altitude	Operating up to 2,000 meters
Pollution degree	Pollution degree 2
Installation category	II

Note

To make accurate measurements, allow the instrument to warm up for 30 min before operation.

Regulatory Markings

CE	The CE mark indicates that the product complies with all the relevant European legal directives. The specific year (if any) affixed refers to the year when the design was approved.
UKCA	The UKCA mark indicates that the product complies with all relevant UK legal regulations (if accompanied by a year, it indicates the year the design was approved).
	The instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard the electrical/electronic product in domestic household waste.
	This symbol indicates the time period during which no hazardous or toxic substances are expected to leak or deteriorate during normal use. The expected service life of the product is 10 years. The product can be used safely during the 10-year Environment Friendly Use Period (EFUP). Upon expiration of the EFUP, the product must be immediately recycled.

Waste Electrical and Electronic Equipment (WEEE) Directive

This product complies with the WEEE Directive (2002/96/EC) marking requirement. This affix product label indicates that you must not discard the electrical/electronic product in domestic household waste.

Product Category

With reference to the equipment classifications described in the Annex I of the WEEE Directive, this instrument is classified as a “Monitoring and Control Instrument”.

To return this unwanted instrument, contact your nearest ITECH office.

Compliance Information

Complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Low-Voltage Directive (Safety) 2014/35/EU

Conforms with the following product standards:

EMC Standard

IEC 61326-1:2012/ EN 61326-1:2013 [1][2][3]

Reference Standards

CISPR 11:2015+A1:2016 Ed 6.1
IEC 61000-3-2: 2018 RLV
IEC 61000-3-3: 2013+A1:2017
IEC 61000-4-2:2008
IEC 61000-4-3 2006+A1:2007+A2:2010/ EN 61000-4-3 A1:2008+A2:2010
IEC 61000-4-4:2012
IEC 61000-4-5:2014+A1:2017
IEC 61000-4-6:2013+cor1:2015
IEC 61000-4-11:2004+A1:2017

1. The product is intended for use in non-residential/non-domestic environments. Use of the product in residential/domestic environments may cause electromagnetic interference.
2. Connection of the instrument to a test object may produce radiations beyond the specified limit.
3. Use high-performance shielded interface cable to ensure conformity with the EMC standards listed above.

Safety Standard

IEC 61010-1:2010+A1:2016

Content

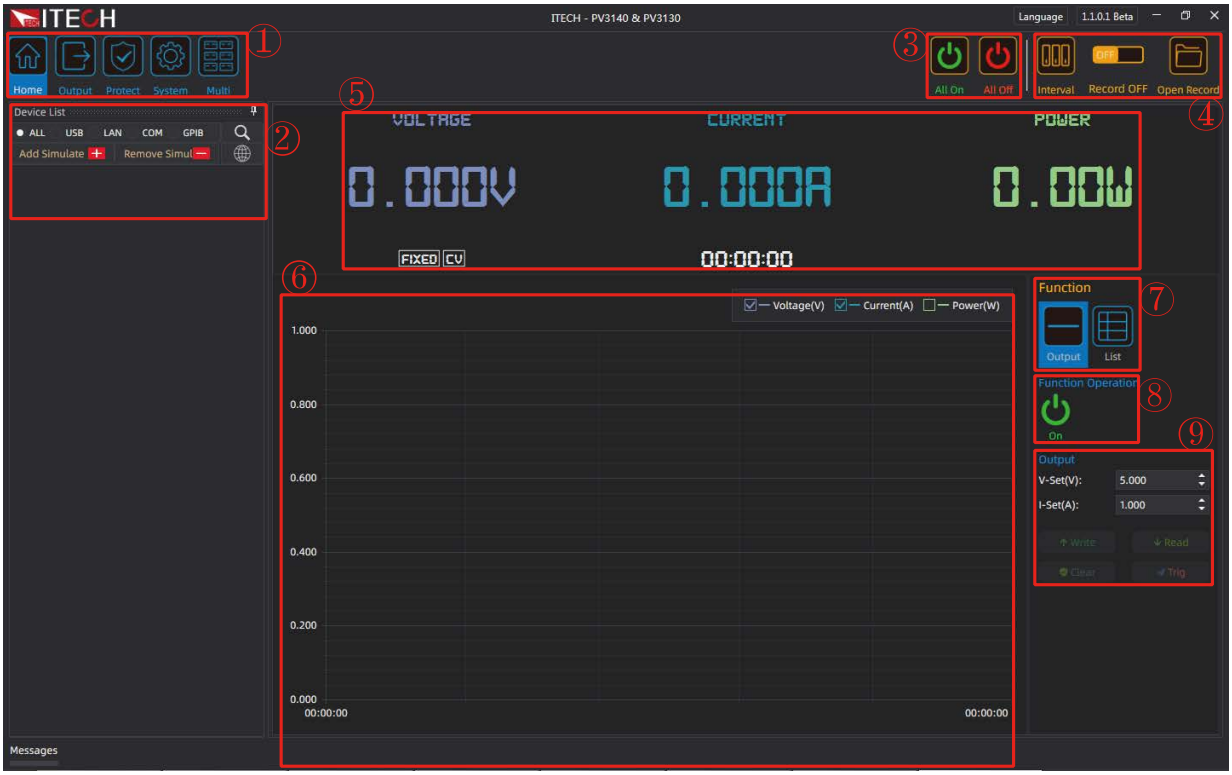
Chapter 1 Introduction

1.1 Software Introduction

PV3140 software is a kind of easy-to-use and practicable control software designed by Itech Electronic Co., Ltd. It can work with IT-M3140 series power supplies. This software allows the user to control the computer to achieve all the operations on the front panel of the power supply, providing great convenience to the user when performing remote operations.

1.2 Introduction of Main Interface

After running the PV3140, the software initializes and the following screen will appear after about 2S.



The interface is described as follows.

1. Function bar: The user can directly click the button to enter the corresponding operation interface.
2. Device List: The device list displays a list of hardware devices currently configured and connected to the system.
3. All On: Turn on all the outputs of the added channels.

   All Off: Turn off all outputs of the added channels.
4. Data recording and language settings.
   - Record: The record is mainly used to record the data of the current test,

and before that, the sampling interval needs to be set.

- Open Record: Opening a record mainly refers to opening a previously saved record.
- Interval: Set the saving interval of data recording, i.e. how long to save the data every time.

5. Output parameter display and output status display.
   - **VOLTAGE/CURRENT/POWER:** Displays the actual output voltage value, current value and power value.
   - **CV/CC/Fixed/List:** Output status indication, including CV (constant voltage output), CC (constant current output), List (list output mode), Fixed (fixed output mode).
   - **OV/OP/OC/UV/UC/SR/FB:** Protection status indication, including over voltage (OVP), over current (OCP), over power (OPP), under voltage (UVP), under current (UCP), Sense fault protection, Foldback protection.
6. Current, voltage, and power graphs.
7. Function Selection: Fixed Output or List Mode.
8. **Output:** Turns the output on or off.
9. Output
   - V-Set: Sets the output voltage value.
   - I-Set: Sets the output current value.
   - Apply: Set parameters to machine.
   - Restore: Get parameters from machine.
   - Clear Prot: Clear the device protection.
   - Trigger: Set trigger source to BUS and trigger immediate.

Note

For specific features of the IT-M3140 series power supply, please refer to the user's manual.

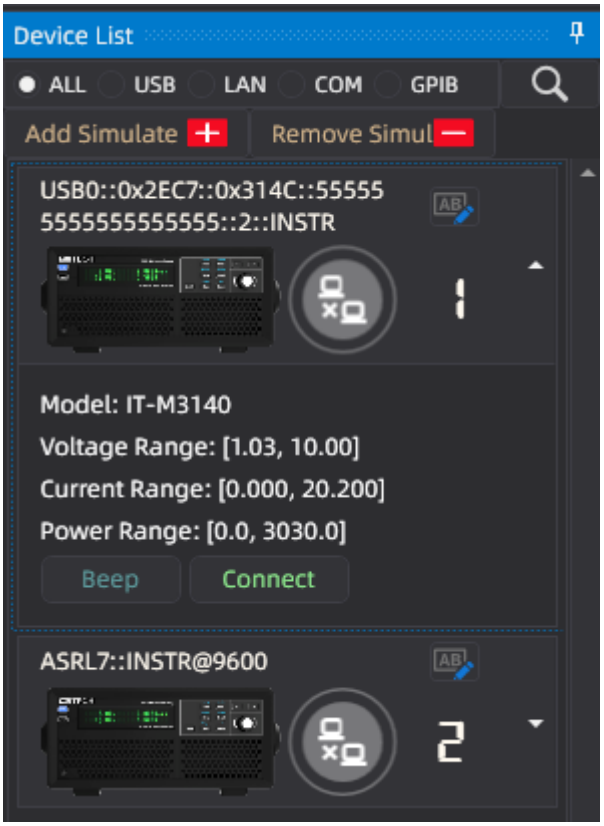
1.3 Connecting device communication

PV3140 software is installed in PC and interacts with matching hardware devices via different communication interfaces. This software supports interfaces like USB, RS232, GPIB and LAN.

Operation steps

1. Select the communication mode, and use the RS232 cable, USB cable, GPIB cable or LAN cable to connect the power supply and PC.
2. Configure the communication interface of the power supply end. For the configuration steps, please refer to Section 2.6 Connection Interface in the *IT-M3140 Series User Manual*.
3. Communicating with devices on the software side.
   a. In the "Device List," click  to scan device interface parameters.

b. Click the dropdown arrow , and then click "Connect" to establish communication with the device. Double-click on the device interface parameter information to connect the device communication as well.



- Beep： Click the " Beep " button, and the corresponding machine will make a sound.
- Connect: Click the "Connect" button to establish communication with the device.
- Discon: Click the "Discon" button to disconnect communication with the device.
- Add Simulate: Click the " Add Simulate " button to add a virtual device.
- Remove Simulate: Click the " Remove Simulate " button to remove a virtual device.

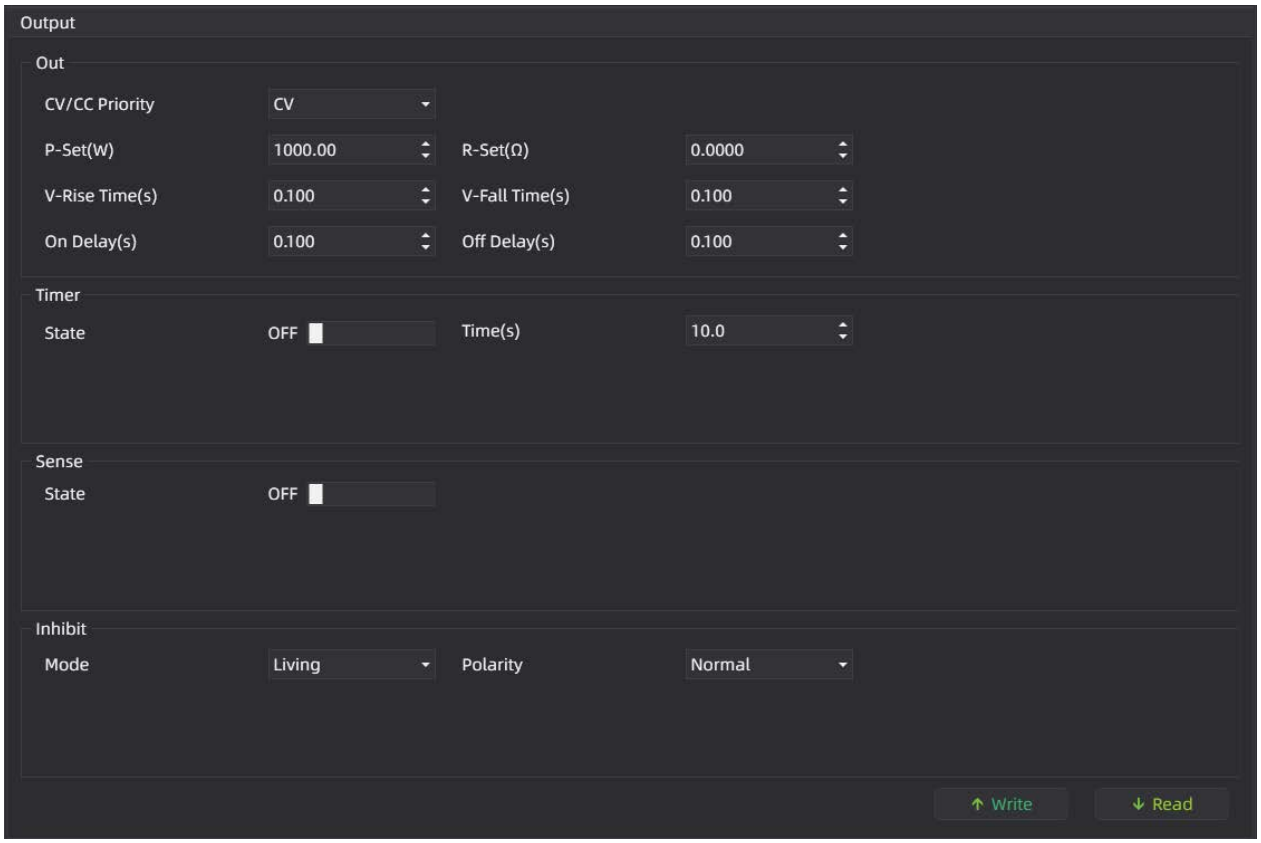
c. Click  to modify the set name.

Chapter 2 Function Operations

This chapter introduces specific function operation methods and procedures of PV3140 Software.

2.1 Output Setting

In the main interface of software operation, click the [Output] option to enter the output settings area.

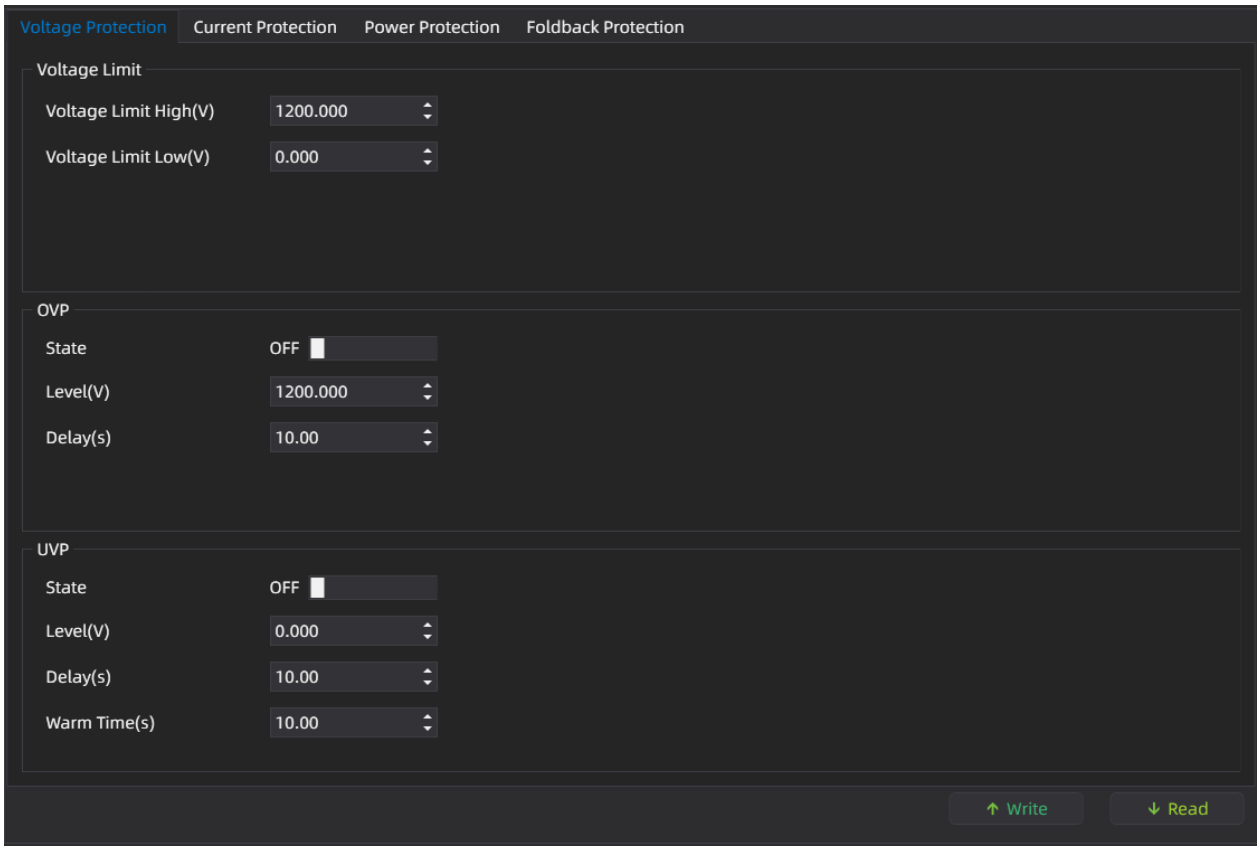


Parameters	Descriptions
Output	
CC/CV Priority	Set the output priority mode: CC/CV.
P-Set	Setting the power.
R-Set	Set the internal resistance.
V-Rise Time	Voltage rising time. Setting range: 0.025 to 10S.
V-Fall Time	Voltage falling time. Setting range: 0.025 to 10S.
I-Rise Time	Current rising time. Setting range: 0.025 to 10S.
I-Fall Time	Current falling time. Setting range: 0.025 to 10S.
On Delay	Set the output-on delay time.
Off Delay	Set the output-off delay time.
Timer	
State	Set the output timer function state: On/Off.
Time	Set the output time.
Sense	
State	Set the sense function state: On/Off.
Inhibit	
Mode	Set the inhibit output mode of external Inhibit IO.

Polarity	Set polarity: Nomal/ Inverted.

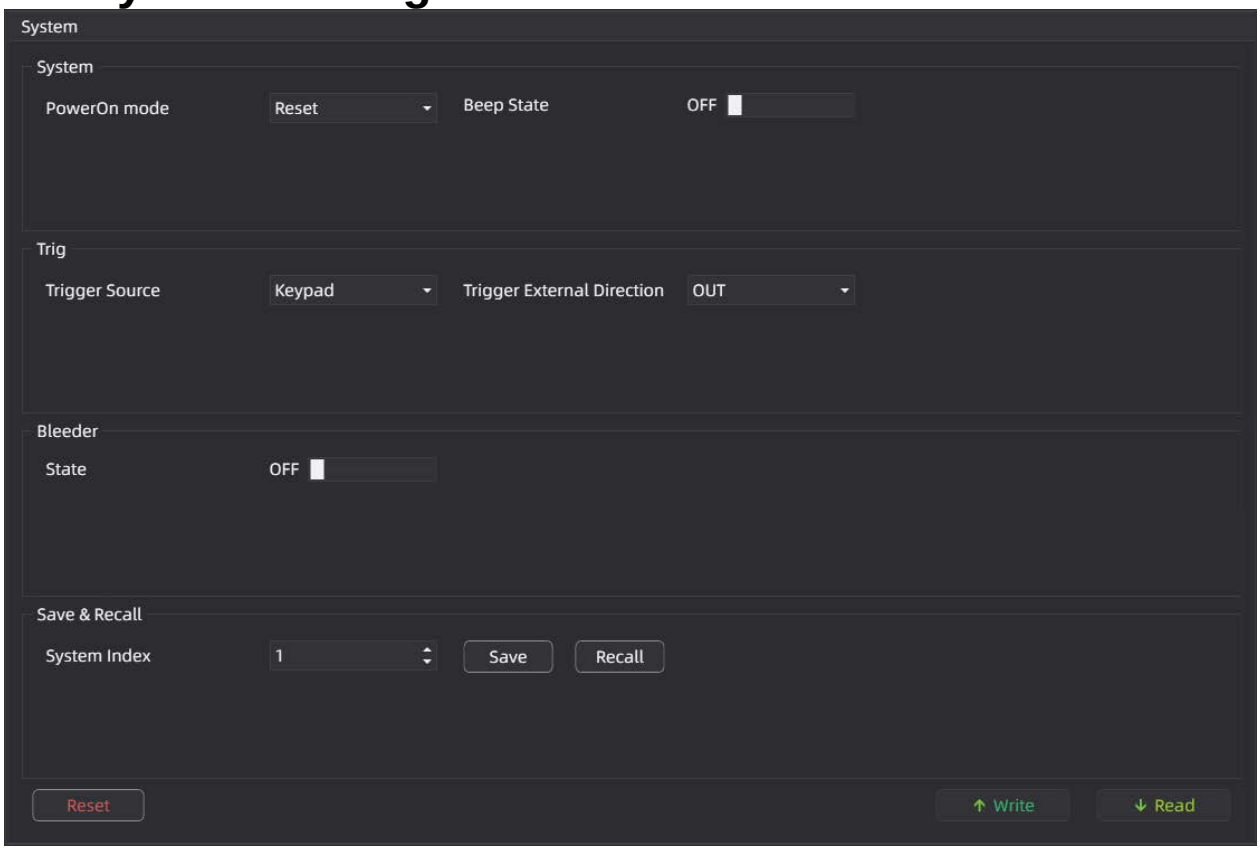
2.2 Protect Setting

In the main interface of software operation, click the [Protect] option to enter the protect settings area.



For detailed parameters description, please refer to the corresponding parameter introduction in the user manual.

2.3 System Setting



For detailed parameters description, please refer to the corresponding parameter introduction in the user manual.

2.4 List Function

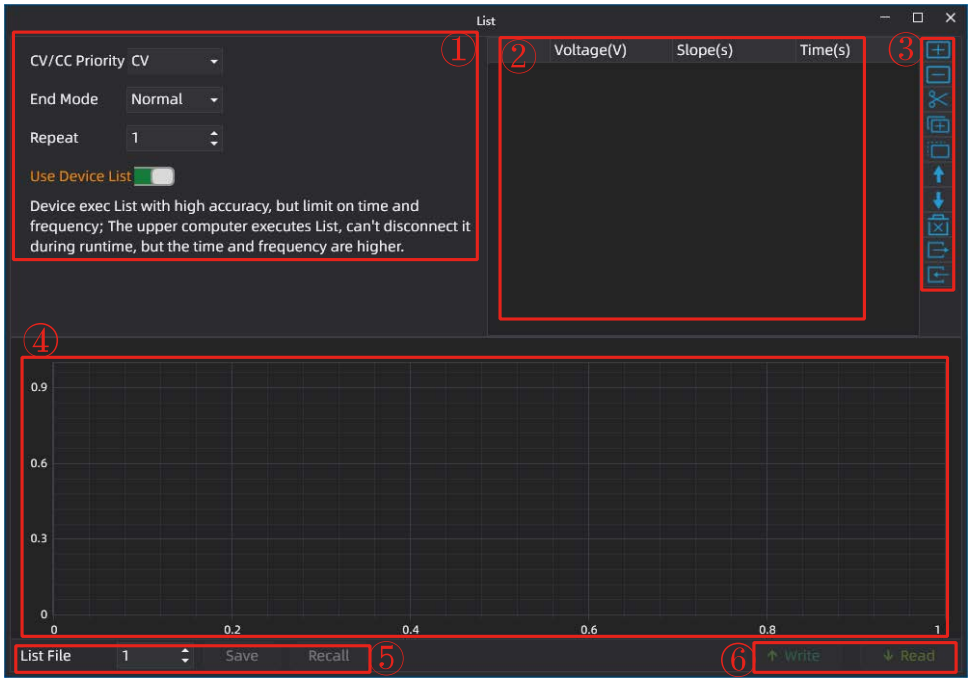
Users can edit and run a List file by following the steps below.

Introduction of List Interface

In the main interface of the software, click 

followed by 

sequentially to enter the List Settings area.



The interface is described as follows:

1. The setting area of List file configuration parameters. The parameters are described as follows.
   - CC/CV Priority: Select CV priority or CC priority.
   - End Mode: Return to normal output mode (NORMal) or maintain output at the last step of the List (LAST) after the List has finished running.
   - Repeat: Set the number of list repetitions within the range from 1 to 100000000.
   - Use Device List:  indicates running the List through software control;  indicates running the List through the built-in List function of the instrument, which can output custom waveforms more realistically.
2. The List display area displays the edited List files. You can scroll through and browse them through the upper-lower scroll bar.
3. List edit button. The functions are described as follows.

    : Add a step.

    : Delete the select step.

    : Copy the select step.

    : Paste the select step.

    : Re-order the steps.

    : Clear the List under editing.

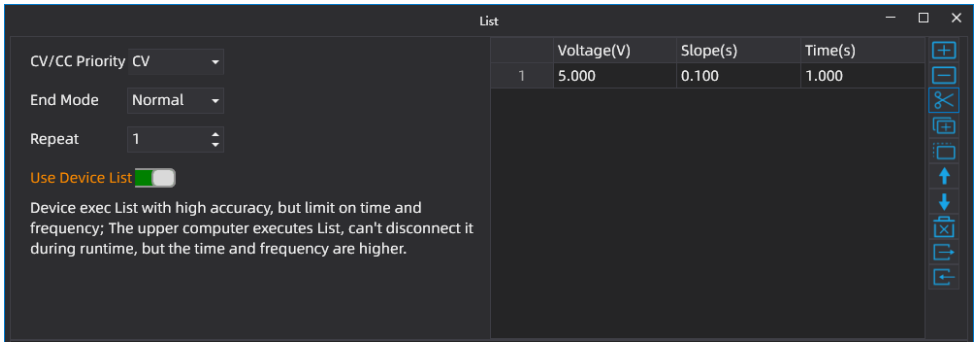
 : To export the list file into computer. The user can export the list file to computer after editing. The exported file is saved as *.csv excel format.

 : To import the list file into the software. The user can edit list file in Excel, then import into the software.

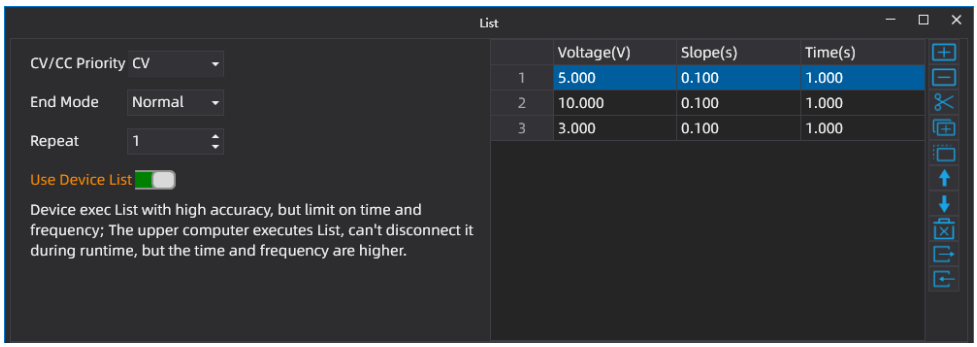
4. Preview the display area of the List waveform.
5. List Operations.
   - List File: Set the list file name (1-10). Click "Save" to save the edited list to the storage address specified in the instrument memory. Click "Recall" to load the list file saved in the instrument memory into the software interface.
6. Write/Read.
   - Write: Write the real-time List file into the IT-M3140 instrument.
   - Read: Read List file from the IT-M3140 instrument.

Edit List

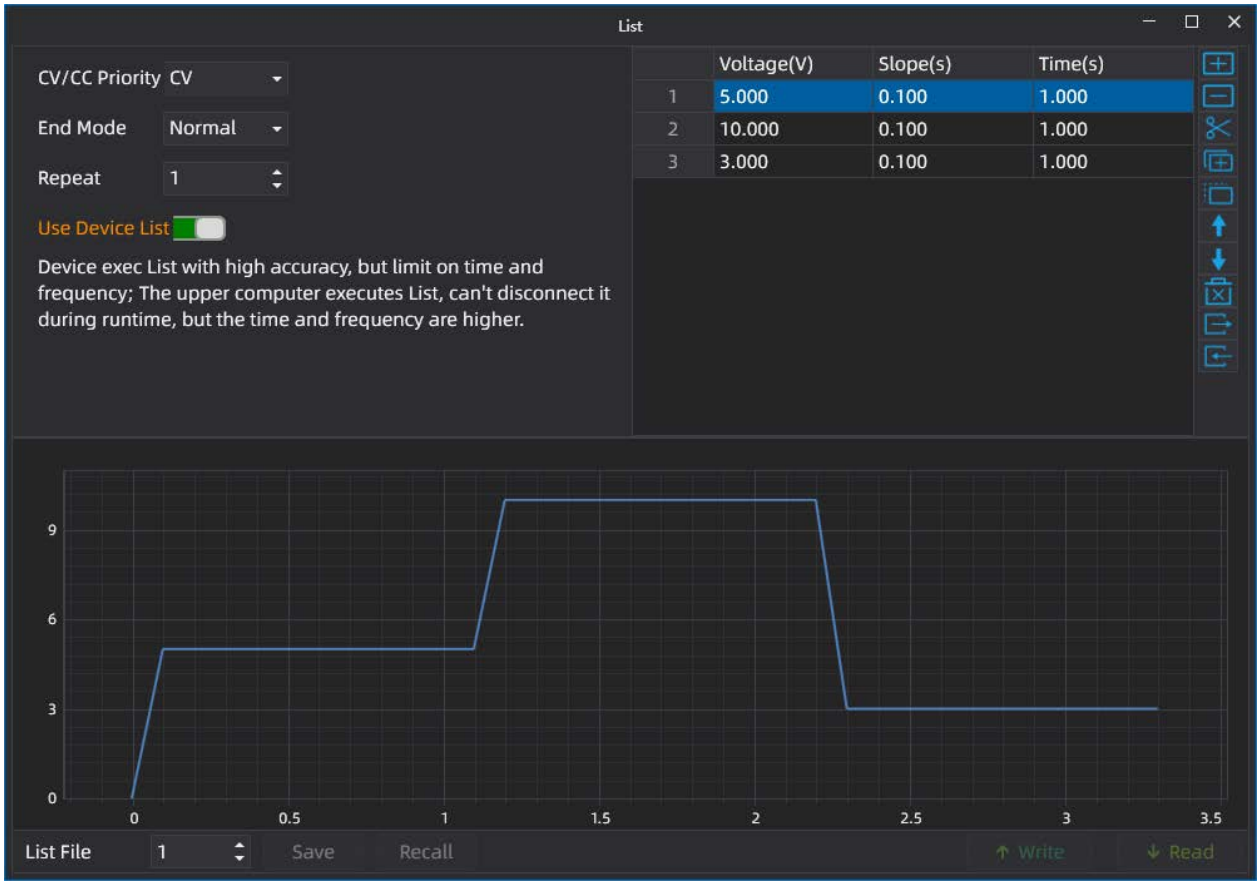
1. Set "CC/CV Priority", "End Mode", and "Repeat".
2. Click "  " to add a new single step. The successful addition is shown in the figure below.



3. Edit the single step.
   - Voltage/Slope/Time: The voltage or current value of a single step, and the slope of a single step, the pulse width of a single step.
   - Setting method: Double-click the cell and modify the value.



4. Repeat the above steps to edit multiple single steps according to the test requirements.
5. Save list file to device. There are two methods to save it as follows:
   i. Click on 'Write' to save the list settings to the device.
   ii. Set the list file name (1-10). Click on 'Save' to store the edited list to the specified memory address in the instrument.
6. In the waveform display area below, you can preview the custom waveforms of the list.



Export/Import List

- **Export List**

  The user can export the List file contents in the software to the computer.

  1. Refer to “Edit List” above, and edit the List file to be exported.
  2. Click the  button in the List function interface, and set the file name and storage location of the export file, and click Save. Finish the export of the List file.

- **Import List**

  In addition to editing the List file directly in the software interface, users can also edit it on their computer and store it in the software by using the import function. This feature simplifies the operation of List and makes it easier for users to use.

  1. Refer to “Export List” operation to export an Excel template of List file and name it List 01.csv.

2. Open the List 01.csv file, and edit List. Based on requirements, re-define each step of List and related parameter values.
3. Click the  button, and select the List 01.csv file in the computer. Click and open it. Finish import of the List file.
4. Click on 'Apply' to save the list settings to the device.

Run List

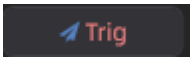
1. Refer to “Edit List” or “Export/Import List”, and edit the List file.
2. Choose to run the List file on PC or locally on the machine.

 : Run the List file on the PC.

 : Run the List file locally on the machine.

3. Click the 

button to turn on the instrument output.
4. Click the 

button to open the List mode.
5. Click the 

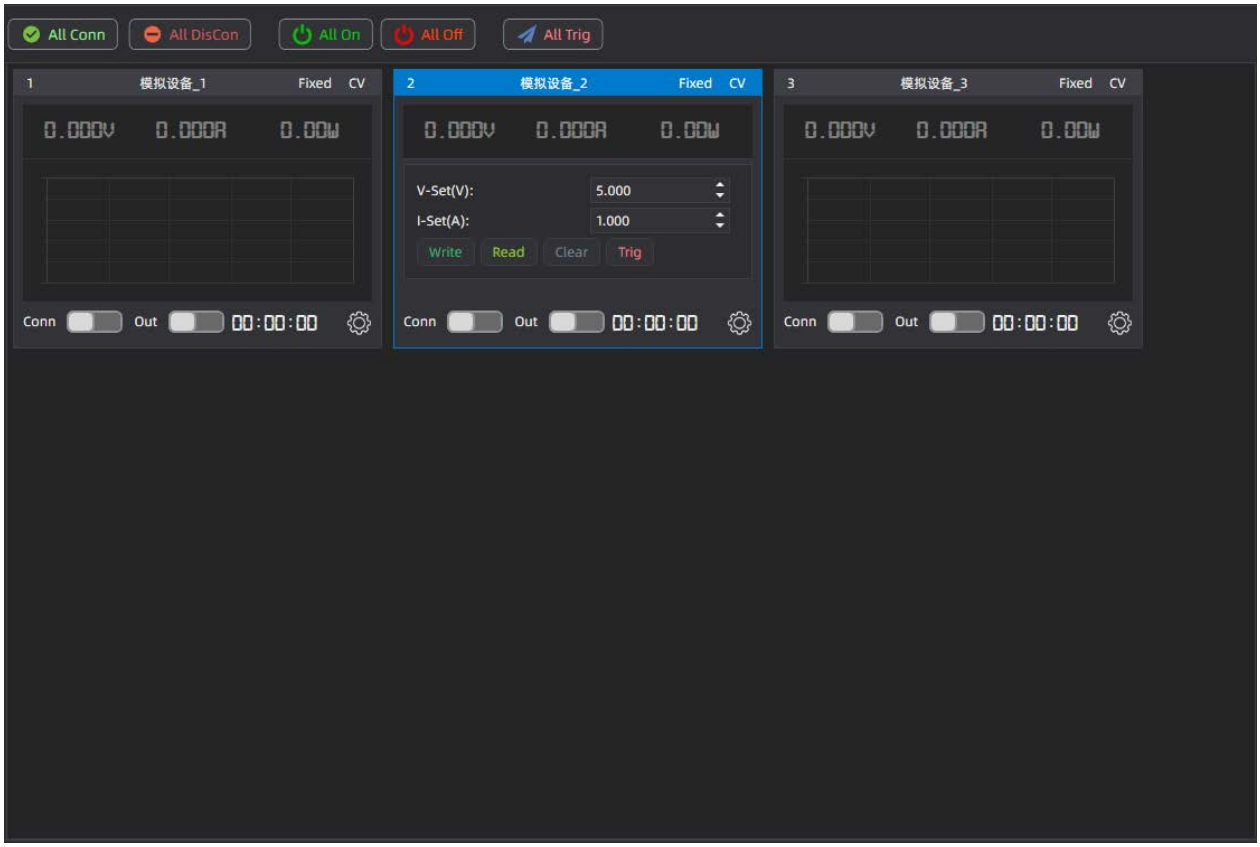
button to run the selected List file.

Stop running: During the execution of the List, you can press 

to stop it. Otherwise, you will not be able to edit the waveform parameters of the List during its execution."

2.5 Multiway

In the main interface of software operation, click the [Multiway] option to enter the multiway settings area.



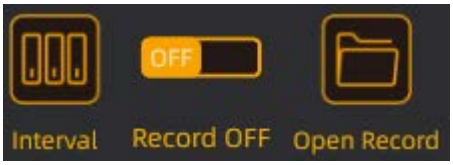
- All Connect: Connects all devices for communication.
- All Disconnect: Disconnects all devices from communication.
- All On: Turn on the output for all devices.
- All Off: Turn off the output for all devices.
- All Trig: Trigger the List function for all devices.
-  : Set the voltage and current values for the current device.

2.6 Save the measurement data

To save related test parameters as .csv file to Report folder of software installation on the computer.

1. Click on 'Interval' to set the save interval for data recording.
2. Click the "Output" button to turn on the power output.

3. Click the ON/OFF button above the Record to start saving data.
4. Click Open Record button to open the report file path directly.



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