

# AC & DC INDUSTRIAL LOAD BANKS



## REL-ACLB-500-3000KW Resistive Load Bank System

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## Product Overview

### 1.0 Introduction

**RELIABILITY ACLB-500-3000KW Resistive Load Bank System** can accurately test performance parameters including the Dynamic Parameters Testing of all kinds of Generators, UPS Systems and Main Electrical System.

### 2.0 Technical Parameters

Technical Parameters	
Rating Voltage/Frequency	208/220/380/400/440/480VAC 50/60Hz, 3 phase 4 Wire
Max Load Power	Resistive Load: 500-3000KW
Load Step	1, 2, 5, 10, 20, 50, 100, 200, 500, 1000KW.
Power Factor	1
Load Tolerance (each step)	±5%
Load Tolerance (overall)	±3%
Display Precision	0.5 class
Control Power Supply	External power source 1phase, 220V/60Hz
Wire Connection	Load Power Supply Input—Copper bar (star connection) Control power supply input—Connector bar
Communication Interface	RS485, RS232
Insulation Class	F
Operating Mode	Continuous
Cooling	Air cooled, horizontal air in-take/out-take
Transportation	Hoisting, there are lifting lug in top of case and wheel castors on the bottom
Chassis color	Gray (RAL7035)
Dimensions	Customized
Weight	Approximately 300-980kg
Operating Environment Parameter	
Ambient Temperature	-10℃~+50℃
Relative Humidity	≤95%
Altitude	≤1500 meters
Atmospheric Pressure	86~106kPa

## 2.1 Measuring Control Function

--**Load testing:** load power that not beyond the rated power, testing and display stable state 3 phases voltage, current, active power, frequency, working time, etc of generator sets.

--**Load/unload with one key:** Whether manual control, remote control or software control, user can preset the power, then press load master button. Load bank loaded according to preset power to avoid load fluctuation during the power changing.

--**Control Pattern:** user can choose local control and intelligent control.

--**Local Control:** There is local control panel with several power steps; user can load/unload by button.

--**Intelligent Control:** Through data processing software in PC, user can make automatic load, to display, record and manage the testing data, to form curves, tables, also to print them.

--**Control Pattern interlock,** there is control pattern switch, when choose one control pattern, operation of other pattern is invalid, avoid the clash.

--**Local meter display data:** local meter can display 3 phases voltage, current, active power, frequency and so on.

## 2.2 Software Function

--**Communication pattern:** Intelligent control use photoelectric isolated RS485 interface connect to PC, with great anti-interference performance to make system control stable. Also user can use USB or RS232 through converter.

--**Load pattern:** Manual Load or Automatic Load.

--**Manual Load:** Input power, system will load according to preset power.

--**Automatic load:** user can preset power and length of working time of several load periods, as per 0%→25%→50%→75%→100% or 110% to make testing.

--**Parallel testing:** when several load bank work in parallel, use can make parallel testing via software, can display, record parameters of every load bank and whole system parameter of parallel operation.

--**Real-time parameter:** through software to display voltage, current, power, power factor, frequency and time, etc.

--**Security monitoring and control:** monitor working state of the load bank by watching software light, when abnormally stop and protect, it can show the reason.

--**Data save and query:** all the test data is saved in the software, easy to query in the history testing data.

--**Graphical display:** show real-time or history testing data, and support to print curve and graph as follows:

1) Graphs of real-time voltage, current, frequency and power; 2) Voltage graph

3) Current graph; 4) Power graph; 5) Frequency graph; 6) Power factor graph

--**Data format:** all the curves and graphs can be outputted as ".doc" format, testing data can be outputted as ".xls" format, and can be printed.

## 2.3 Protection

--**Emergency stop:** you can press the Emergency Stop switch in the panel, when the load bank is locked in this state, it cannot add any load.

--**Overvoltage protection:** when input voltage is over the safe value, it can unload automatically and give an alarm.

--**Short circuit protection:** when short circuit, fuses in the load bank can insure to unload automatically.

--**Overheating protection:** when temperature is over the safe value, it can unload automatically and give an alarm.

--**Fan interlock protection:** load bank cannot add any load when working power of fan is off.

--**Protection Buttons:** There are buttons for some protection, when misinformation occurs or user has special needs, user can temporarily turn off the corresponding protection function.

### 3 Installation

#### 3.1 Overall Appearance



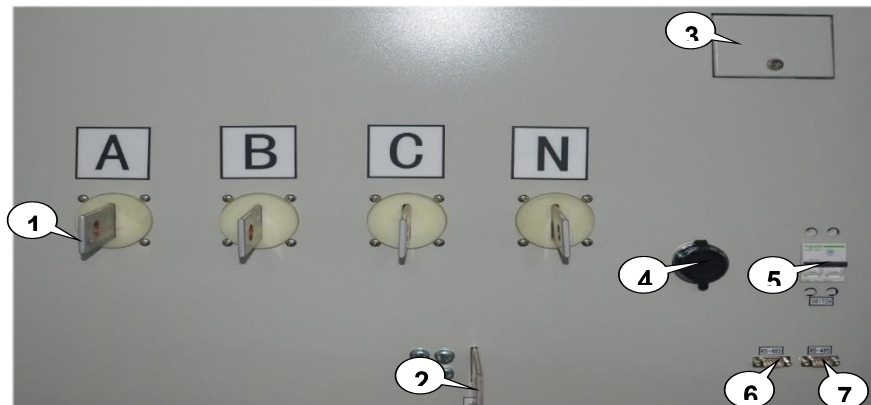
**(1) Control Panel:** Including meter, control switch, etc.





**(2) Power Connections:** Terminal Blocks are provided for load bank power supply and operating power supply, etc.

### 3.2 Connections

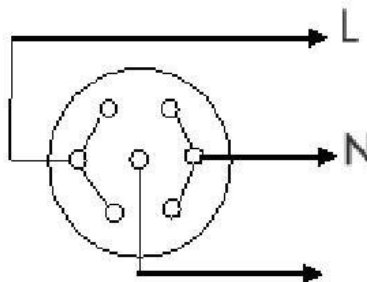


**(1) Load power input terminals:** from left to right as A, B, C, N phase, the device under test is connected to the output terminals.

**(2)  $\perp$  Ground terminal**

**(3) Fault protection control slot:** as shown in the figure, includes temperature abnormality protection and over voltage abnormality protection, etc.

**(4) Operating Power Supply Terminal:** A connection point is provided for Operating power supply interface.



**(5) RS-485 interface (Option):** connecting PC to this interface with data transmission line to control Load Bank operation thru a PC control. Upto two RS485 interfaces can be provided.

**(6) High Temperature Protection:** Point to down is "On", and point to up is "Off". It will be enabled by default. In case customer close protection switch, the "TEMPERATURE PROTECTION" function will be disabled.

**(7) Over Voltage Protection:** Point to down is "On", and point to up is "Off". It will be enabled by default. In case close protection switch, the VOLTAGE protection function will fail.



## 4 Local Control

### 4.1 Control Panel

In this chapter description, < > contents quote the switches and buttons on the panel.  
[ ] contents quote the options.

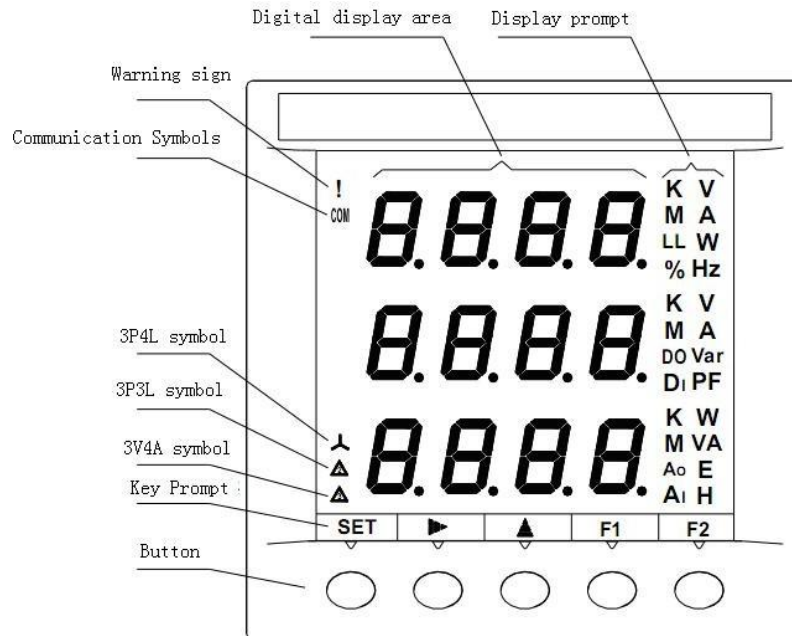


- (1) **Measuring meter:** display testing data.
- (2) **Fault indicator:** red fault indicator lights up, and with alarm, the load bank will be in protection.
- (3) **Control mode selector switch:** [Manual] use panel switch manually operated and point to [Intelligent] can be operated via PC software. Two methods are mutually exclusive modes of operation; please make sure the current operation mode is in accordance with the corresponding mode.
- (4) **Fan Power:** push the button, the indicator lights up, fans will work.
- (5) **Load Confirm:** Master load switch, when the switch is pressed, the yellow indicator lights up, load bank will load/unload according to a preset power loading.
- (6) **Emergency stop:** In case of emergency, press this switch, immediately stop loading. After resolving the emergency problem, clockwise rotary switch, unlock, continues to load.
- (7) **Power setting switch:** Load Steps are selected thru switches or optional Control System thru PC.




## 4.2 Data Display

**(1). Meter Symbol Description:** In the loading process, the Load Bank can display real-time parameters thru measuring instruments. Display instrument operating area, the key diagram is as follows:



Instrument has the upper, middle and lower three display windows, each value and unit symbol form the data. For example, the upper window shows 100.0V, it is to say phase A voltage is 100V.

With F1, F2 and  on the bottom, you can switch three windows and recycling display parameters.

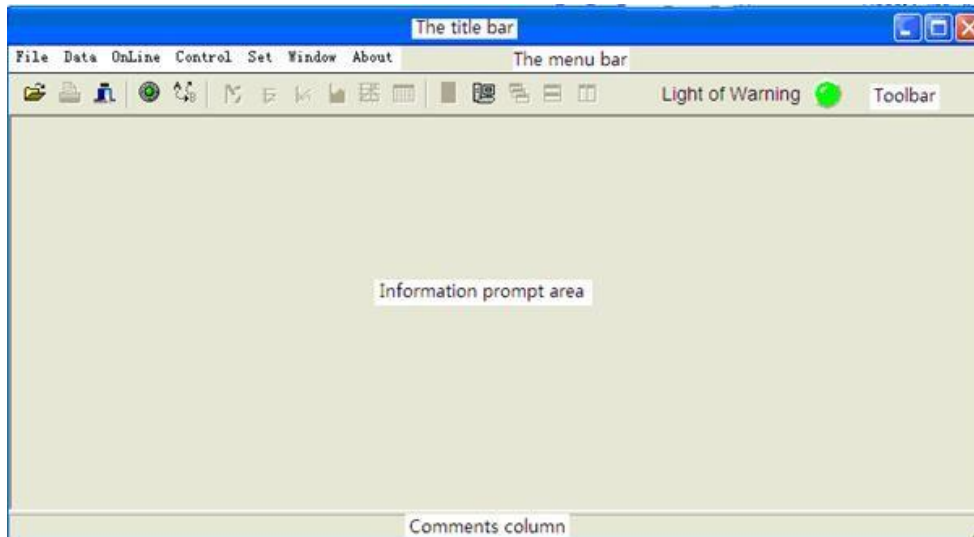
### Symbols Interpretation:

- V: phase voltage symbol; Unit: V, and combined with K, M to kV MeV;
- V LL: Symbols denote a line voltage; Unit: V, and combined with K, M to Kv, MV
- A: Current Symbol; Unit: A, and combined with K, M to kA, MA;
- W: active power symbol; Unit: W, and combined with K, M to kW, MW;
- Var: reactive power symbol; unit: Var, and combined with K, M to kvar, Mvar;
- VA: Apparent power symbol; Unit: VA, and K, M combination kVA, MVA;
- Hz: Frequency Symbol; Unit: Hertz;
- PF: Power Factor symbol;
- E: energy symbols; Unit: Ep (active power) kWh,  
Eq (reactive energy) kVAh, Es (apparent power) kVA
- 3P3L: 3-phase 3-wire two components;
- 3V3A: 3-phase 3-wire three elements;
- 3P4L: three-phase four-wire;

## 5 Data management software (Option)

### 5.1 The main interface

**Title Bar:** Displays the host name and test information tips.



**Menu bar:** Contains the main operation option, click the drop-down menu pop-up menu option to display the sub-menu.

**Toolbar:** contains the main function of the shortcut key, mouse hover over the icon to display the function description, click the appropriate icon to the Quick Start function. Corresponding function of each icon as shown below:



The "**alarm indicator**" is green, which means that the corresponding normal load conditions. When red, indicates abnormal load down, is protected state. Hover your mouse on the lights; you can view the protection reasons.

**Comment Field:** Information tips of shortcuts key, task details tips and other information.

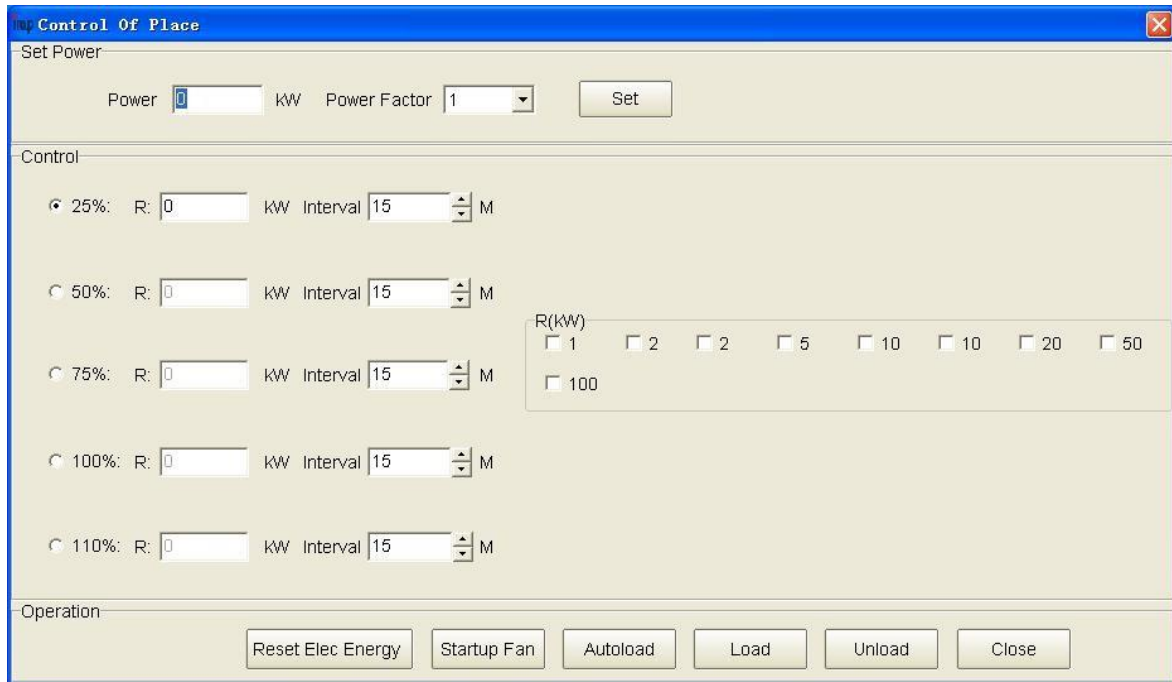
**Information Hint:** Mission District, mainly the task of displaying charts, parameters, information boxes and other information.

### 5.2 Communication Settings



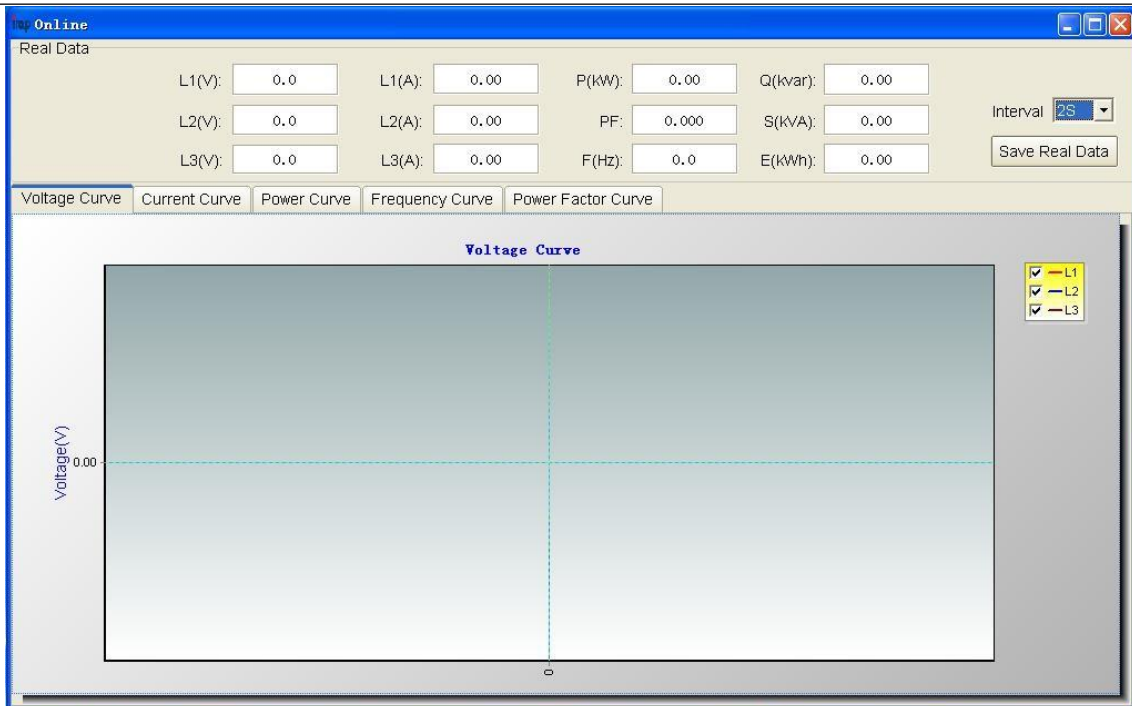
### 5.3 Loading

#### (1) Start the fan:



### 5.4 Real-time data

#### (1) Real-time interface:

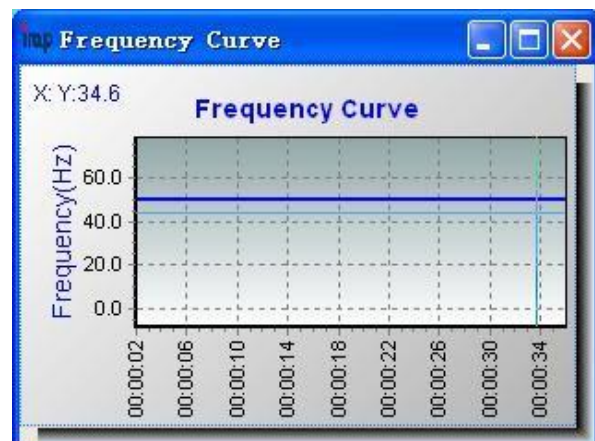
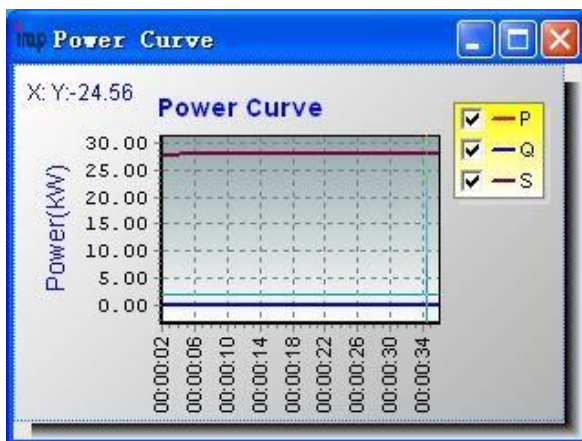
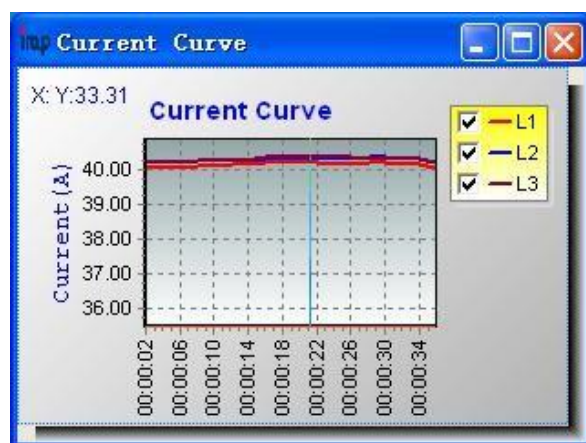
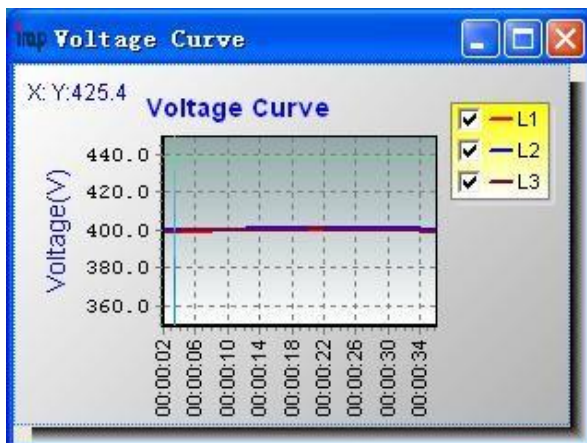


### 5.5 Test records

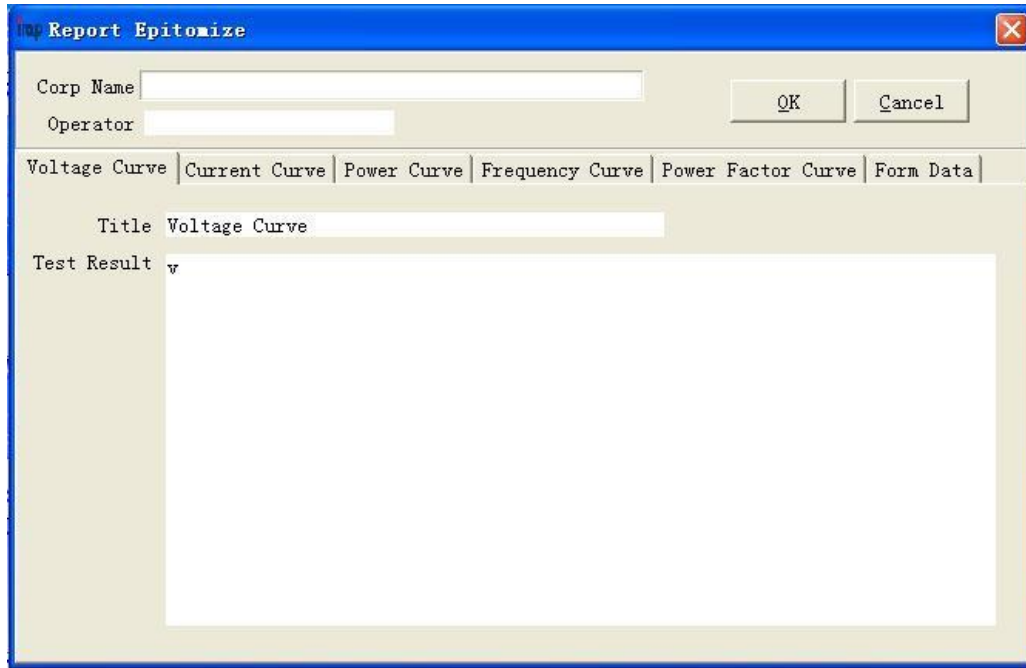
**(1) Open Test Record:**

Test Time	Running Time	Test Name	Operator
2013-01-22 15:30:44	7M42S	1121	111
2012-12-25 10:11:19	2M0S	112	1
2012-12-25 10:10:20	0M0S	444	11
2012-12-25 09:54:26	0M6S	23	22
2012-12-25 09:48:21	0M10S	4466	455
2012-12-25 09:48:04	0M4S	754	44
2012-12-25 09:44:39	0M20S	22	552
2012-12-25 09:43:30	0M18S	44	44
2012-12-15 15:08:24	0M34S	1222	112
2012-12-12 13:37:00	5M50S	666	11
2012-10-20 11:27:37	9M58S	0801	01

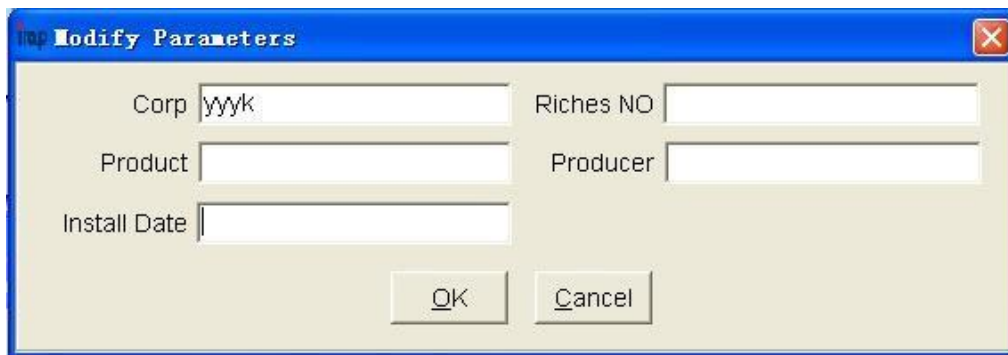
**(2) View chart:**



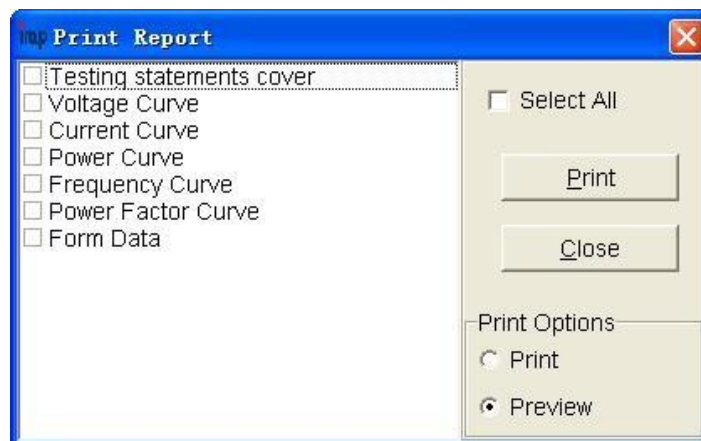
**(3) Report epitomize:**



**(4) Parameter list:**



**(5) To print the report:**









**Reliability Power Systems Australia**

Level 17, 40 Mount St. North Sydney

NSW 2060, Australia

reliability.australia@reliabilityups.com

## Reliability Power Systems

**Reliability Power Systems Canada**

4<sup>th</sup> Floor 2 County Blvd, Brampton

ON L6W 3W8, Canada

reliability.canada@reliability-power.com

**Reliability Power Systems Europe**

New Summer St, Birmingham

West Midlands B19, UK

reliability.europe@reliability-power.com

**Reliability Power Systems Middle East**

Level 9 Jameel Sq, Thahlia St.

Jeddah, Kingdom of Saudi Arabia

reliability.middleeast@reliability-power.com

**Reliability Power Systems Asia Pacific**

5/F China Life Tower, No.16 Chaowai St.

Chaoyang Dist, Beijing 100020, China

reliability.china@reliability-power.com