LB-480-500kVA RLC
AC Load Bank User Manual

Contents

1 Important Safety Instructions

● Read whole manual before using the product. As the reference please keep the manual properly, and follow the operation method carefully.

●Please take attention to the section start with ‘caution’ and ‘warning’. ●This product should be located and using in the clean, safety environment. Please check the operating condition before using.

●Ground terminal must be grounded before connecting to the power supply. ●Do not switch on the power supply during the cable connecting.

●Please connect all cables correctly. power on the system only with all the cables connected tightness.

● This product should be away from warning environment such as high corrosive, acidic, alkaline, combustible and explosive objects.

● Make sure the working environment is clean and well-ventilated INDOOR. No obstructions are allowed within 3-5 meters front of the device.

● IF outdoor operation is required, please avoid long time exposure from sunlight, rain, upwind or any other adverse conditions. It can be led to product damage. ●Risk of electric shock, do not touch the elements inside the machine during working time.

● In order to avoid the overheat damage, electrical fan is required to continue running for 3-5 more minutes after your working operation,

CAUTION!	**Please strictly following the instructions during the operating, any losses caused by the contravention of the correct operation methods, precautions or warnings will not be covered under the warranty!**

2 Product Overview

2.1 Introduction

Thank you for using **LB-480-500kVA RLC Load Bank** The system accurately tests output power and load capacity of all kinds of generators, main electrical parameters including the dynamic parameters tested.

2.2 Technical Parameters

Technical Parameters

Rated Voltage /Frequency	AC400V 3 phase 4 wire /60Hz
Max Load Power	Apparent power: 500kVA; Resistive: 1, 2, 2, 5, 10, 10, 20, 50, 100, 200kW, total 400kW. Inductive: 1, 2, 2, 5, 10, 10, 20, 50, 100, 100kvar, total 300kvar. Capacitive: 1, 2, 2, 5, 10, 10, 20, 50, 100, 100kvar, total 300kvar.
Load Step @480V, 60Hz	Resistive load: 400kW; Inductive load: 300kvar; Capacitive load:300kvar.
Power Factor	±0.8
Load Tolerance (each step)	±5%
Load Tolerance (overall)	±3%
Display Precision	0.5 class
Control Power	Supply External 480VAC 3 phase4wire60Hz
Wire Connection	Load bank input——Busbar (star coupling “Y”)
Communication	Control power input——terminal block
Interface	RS485, RS232
Insulation Class	F

Duty Cycle Continuous

Cooling Forced air cooling, horizontal inlet and vertical outlet air. Transportation For hoisting, there are lifting rings on the top and castors/forklift holes at bottom.
Casing Color Pantone Cool Gray 11 C
Dimension About 3000mm*2100mm*2100mm Weight About 3000KGS

Operating Environment Parameter

Workplace **outdoor**
Work

Temperature -20℃～+50℃
Relative ≤95%

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Humidity	≤2500M
Altitude Atmospheric Pressure	86～106kPa

2.3 Measuring Control Function

（1）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.

（2）Control Mode: local, remote or intelligent control for choosing. **（3）Local Control:** local control panel with several power steps, load or unload by switch on-off and read parameter values from measuring meter.

（4）Intelligent control: user can control load bank by data processing software of PC to make automatic load/unload, display, record and manager the test data, form curve, graph and can be printed.

--Remote control: Remote load/unload control via push-button switch on remote control box and view test data.

（6）Control mode interlock: there is switch in control panel to choose control mode, other control mode is invalid if user choose one control mode.

（7）One-key load/unload: Whether load/unload by local control panel or by PC

software control, user can pre-set the power then press the master load button.

（8）**Local meter:** can display Three-phase line voltage, three-phase voltage , current, active power, reactive power, apparent power, power factor, frequency, etc.

2.4 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.

（**6**）**Real-time parameters:** in the test process, the software can display real-time line voltage (default), phase voltage (settable), current, power, power factor, frequency, time and other main parameters.

. **--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 collection interval:** the minimum storage for interval is 2 seconds. **--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.

2.5 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.

-- Short circuit protection: The load circuit is equipped with a fuse to prevent damage to the equipment in case of short circuit or excessive current. **-- Overvoltage protection:** When the load input voltage exceeds the safety threshold, it will automatically unload and give an audible and visual alarm.

-- Temperature protection: When the load temperature exceeds the safety threshold, it will automatically unload and give an audible and visual alarm.

-- Fan interlock protection: The load cannot be loaded until the fan power switch is turned on.

--Fan air volume protection: when the air volume of the cooling fan is insufficient, it will automatically unload and give an audible and visual alarm.

--Fan phase sequence automatic transfer protection: when the control power line is not connected according to the correct phase sequence, the three-phase fan can also operate in the normal direction.

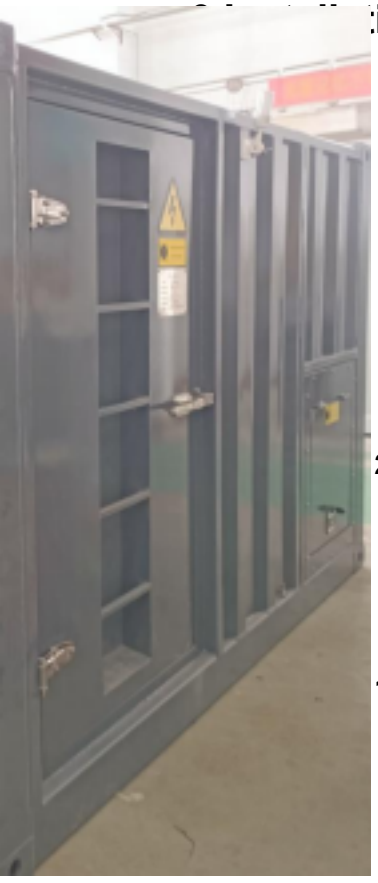
-- Protection switch: Some protection functions are equipped with switches, which can temporarily turn off corresponding protection functions in case of false alarms or special needs.

-- Control room door status alarm: When remote or intelligent operation is carried out, the operation room door is not closed during loading testing, the corresponding warning light is on, and the host beeps.

--Maintenance room door status alarm: When the chassis maintenance room door is open, the load cannot be loaded for testing, the generator set output switch cabinet cannot be closed, the corresponding warning light is on, and the host beeps.

-- Chassis grounding protection: In order to avoid electrification of the chassis and the risk of electric shock when the load is working, the load cabinet is equipped with a special grounding protection terminal.

-- Air outlet door limit status alarm: When the load bank air outlet door is not opened in place, the load bank cannot be loaded for testing.



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appearance

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6（1）Control panel: there is control panel inside.

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（2）.**Emergency stop alarm indicator**: when the machine is in the emergency stop locking state, the corresponding warning light and alarm.

（3）**Air outlet door:** Before opening the equipment, the air outlet protection door baffle should be opened first, and it should be confirmed that there are no obstructions or easily blown objects within two meters of the air outlet to prevent insufficient air intake and equipment suction of debris.

（4）**Air inlet door:** Before opening the equipment, the air inlet protection door baffle should be opened first, and it should be confirmed that there are no obstructions or easily blown objects within two meters of the air inlet to prevent insufficient air intake and equipment from absorbing debris.

（5）⏚ **Grounding terminal**: grounding the machine through this terminal

（6）**Load wiring room:** Load power supply inside.

3.2 Wiring Room

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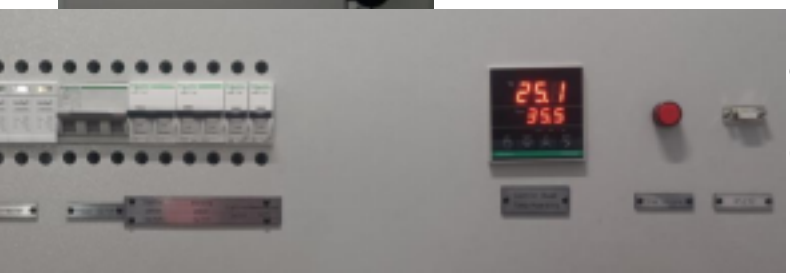

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（1）RS485: This interface is connected to a corresponding interface with the PC using the RS485 data transmission cable, implement intelligent control. The machine has two RS485 interfaces, choose one to use.

（2）RS-485 Interface: ditto.

（3）External control port: connect this interface with the external control port of the load bank cabinet with an external control line, and use the remote control box to control the load bank. **（4）Working power supply:** L1, L2, L3, N phase from left to right the three-phase five wire terminal is connected with the AC 480V/60Hz power supply to supply power for the machine. **（5）** ⏚ **Grounding terminal**: grounding the machine through this terminal

（6）**Working Power Indication**: L1, L2, L3 light, light on means corresponding power supply connect.

（7）**Lightning arrester switch:** After pulling this switch upwards, the lightning arrester indicator light will light up.

（8）**Power Switch:** After pulling this switch upwards, the machine will be powered on and started.

（9）**Control power switch**: auxiliary switch, control the wall socket power supply.（**10**）

Working power switch: Control the power supply of PLC and other equipment.（**11**）

Lighting Switch: Flip the switch up in the auxiliary switch turned on, you can turn on the lights inside the machine.

（12）**Dehumidification Switch:** Flip the switch up, temperature control meter startup.

（13）**Temperature display**: display the real-time temperature

（14）.**Emergency stop alarm indicator**: when the machine is in the emergency stop locking state, the corresponding warning light and alarm.

（15）**RS-232 port:** Connect this interface to the corresponding interface of the PC using a data transmission cable, which can be transferred through a remote console to control the load using the PC.

16（**16**）

Load power input terminal: L1, L2, L3, Nand N phases from left to right,

connected to the output terminal of the equipment to be tested.

3.3 Inspection

3.3.1 Ventilation examination: to observe the machine all the vents are normal, with or without foreign body obstruction, the surroundings are neat and clean, near the machine must not hinder ventilation debris, make sure the duct patency.

	Always keep the air duct patency, otherwise the risk of overheating!

3.3.2 Switch interface to check: Check all switches and interfaces, to ensure that the protection switches are turned down in the remaining switches are turned off, to avoid abnormal start when energized. If the interface has a wet, after breakage, please remove hidden danger, and then proceed.

3.3.3 Working conditions Check: Check whether the working conditions can meet the request. Prepare well all the tools which may use, ensure that for the equipment (such as dc power) are in normal, and ensure that the power supply is stable, which could satisfy with the max voltage, current. Besides the environment temperature, humidity should be controlled within normal range.

3.4 Wiring

3.4.1 Install ground: connect one end of earth wire to ground terminal of load bank and fixed with screws, the other end connected to the work site grounding system.

Dangerous!	**Must reliably ground for the machine!**

（2）Installation Test Cable: Connect the load bank wiring compartment load power input terminal to output terminals of generator under test. Wherein the cables, connect the end marked with a yellow sign to input terminal phase L1, the other end to the output terminal of the device under test phase L1, connect phase L2 to green cable, cable connection L3 to red, blue to N phase, then fixed with screws.

（3）The installation of working power supply lines: Connect one end of the power supply line to the power supply terminal of the load bank, connect another end to AC 380V 3 phase, 60HZ power supply, fix with screw. Use yellow color (green and red line connect with the ground line of power supply and this load bank. Use brown, black, gray lines connect with the L1, L2, L3 phase of the power supply. The working power supply line and testing cable is related to system safe, must connect correctly.

Dangerous!	**1.Terminals must be connected firmly, loose cables can cause overheating!** **2.Be sure to access the correct cable voltage, frequency, polarity or phase**

	sequence! **3. Always use the cable in working can withstand the current through!**

4 Local Control

4.1 Control Panel

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

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（1）Measurement instrument: Display the test data.

（2）Fault: The red indicator light is on, accompanied by an alarm sound, indicating that the machine is in a protected state.

（3）Control Mode: Point to 'Local' to operate using panel switches, and point to 'Intelligent' to operate using PC software. The two operation methods are mutually exclusive. Please ensure that the switch points to the same operation method as the one currently used.

（4）Fan Power Supply: Press the switch, the green indicator light will light up, and the fan will start running.

（5）Load Confirm: Press the total load reduction switch, the yellow indicator light will light up, and the load will be loaded according to the preset power. **（6）**

Emergency stop: When encountering an emergency situation, press this switch to immediately stop loading. After the emergency situation is relieved, rotate the switch clockwise to unlock and continue loading.

（7）**Temperature controller:** Control the temperature and humidity in the load cabinet.

（8）**Power setting switch:** resistive load: 10 levels, namely 1, 2, 2, 5, 10, 10, 20, 50, 100 and 200kW. Capacitive load: There are ten grades, namely 1, 2, 2, 5, 10, 10, 20, 50, 100 and 100 kvar. After pressing the corresponding switch, turn on the main loading switch to load according to the corresponding power.

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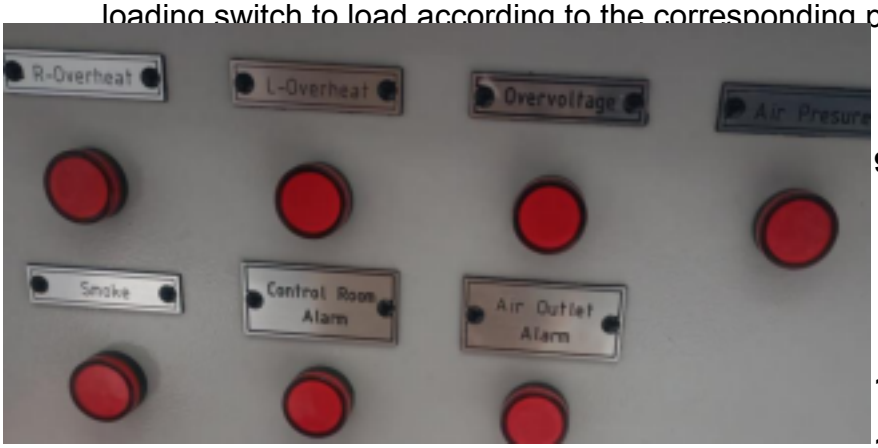

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（9）**R-Overheat:** when temperature of load bank is too high, load bank is in protection state; corresponding indicator lights up and give alarm.（10）**L-Overheat:** when temperature of load bank is too high, load bank is in protection state; corresponding indicator lights up and give alarm.

（11）**Over voltage:** When voltage is too high, it enters into protection state, the corresponding warning light and alarm will be turned on.

（12）**Fan air pressure indicator:** when the machine is in the protection state, the corresponding warning light will be on and the host will ring

（13）**Smoke alarm indication:** when the smoke concentration of this machine is too high, it will enter the protection state, the corresponding warning light will be on, and the host will ring.

（14）**Control room threshold state alarm:** when remote operation or intelligent operation is performed, the door of the operation room is not closed during the loading test, the corresponding warning light is on, and the host buzzes.

（15）**Air outlet threshold status alarm:** when the power on test is conducted, the air

outlet cover of the chassis is not opened, the corresponding warning light is on, and the host buzzes.

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（16）R-Overheating shield switch: pointing downward is [ON/ON], pointing upward is [OFF/OFF], and the default is "ON". If the shield switch is turned off, the protection function will fail.

（17）L-Overheating shield switch: pointing downward is [ON/ON], pointing upward is [OFF/OFF], and the default is "ON". If the shield switch is turned off, the protection function will fail.

（18）Overvoltage shield switch: the downward direction is [ON/ON], the upward direction is [OFF/OFF], and the default is "ON". If the shield switch is turned off, the protection function will fail.

（19） Fan air pressure shield switch: pointing downward is [ON/ON], pointing upward is [OFF/OFF], and the default is "ON". If the shield switch is turned off, the protection function will fail.

（20） Smoke shielding switch: pointing downward is [ON/ON], pointing upward is [OFF/OFF], and the default is "ON". If the shield switch is turned off, the protection function will fail. **（21） Control room door limit shield switch**: [ON/ON] when pointing down, and [OFF/OFF] when pointing up, which is on by default. If the shield switch is turned off, the

protection function will fail.

（22）Air outlet door limit shield switch: pointing downward is [ON/ON], pointing upward is [OFF/OFF], and the default is "ON". If the protection switch is turned off, the protection function fails.


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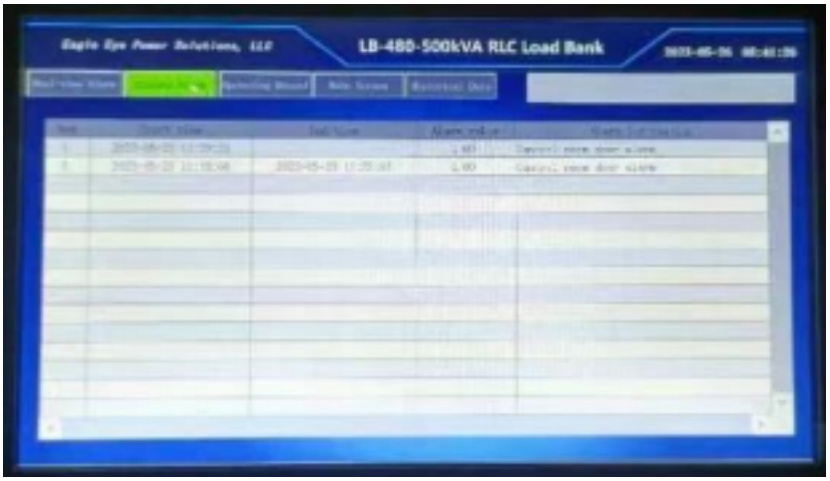
（23）Maintenance room threshold protection switch: when the maintenance room door of the load cabinet is open or the air outlet door is not open, the load cannot be loaded.

4.2 Display operation

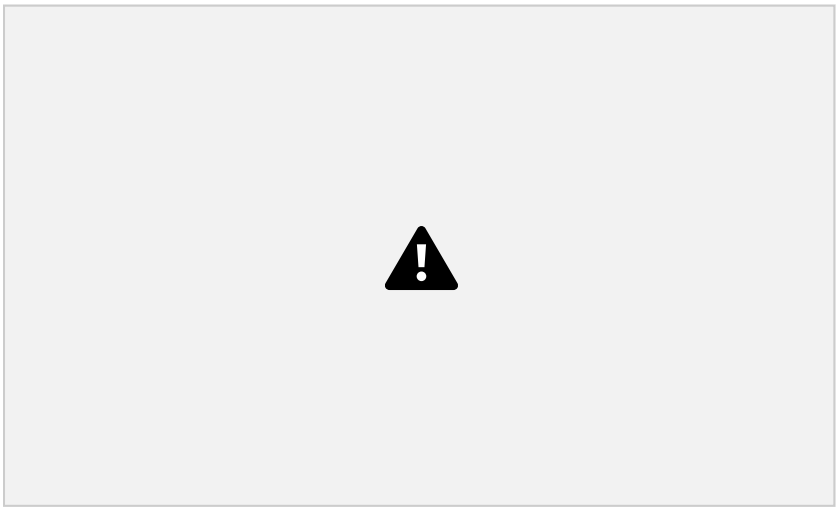
（1）Real time alarm: the current alarm will be displayed when a real time alarm occurs during field operation

（2）Historical alarm: this page displays the alarm records occurred during the operation.



（3）Real time data: display current real-time voltage, current, active power, etc. Load: First, click the start fan button. After the fan starts, click R to input the power value to be loaded, and then click Load. The device is successfully loaded. Unload: Click on R to change the previous power value to 0, and then click on the load device to successfully uninstall. Click to stop the fan, and the fan will shut down after a delay of 5 minutes.

（5）Historical data: you can query the historical voltage, current, power and other data after the test.



4.3 Start

（1）Start the equipment to be tested: After all cables are correctly connected, power on the equipment to be tested and prepare the test.

（2）Start the machine: turn on the "Power Switch" in the wiring room, and the machine will enter the standby state.

（3）Start the PC: If intelligent control is required, connect the working power cord of the PC, start the PC, and open the supporting data management software.

4.4 Control Mode Selection

Local control: the machine can be operated through the control panel switch, remote control cabinet or PC software, and three operation modes can be switched using the Control Mode Selector Switch on the control panel. When the switch points to [Local], use the control panel to operate the machine, and other controls are invalid.

Remote control: When the switch points to [Remote], use the remote control box to control the machine, and other controls are invalid.

Intelligent control: when the switch points to [Intelligent], use software to control

the machine, and other controls are invalid. Intelligent control can operate remotely and manage data. It is recommended.

Control mode interlocking: The two control modes are locked mutually. If your operation does not respond, please check whether the control mode is selected correctly. This chapter mainly introduces local control methods

4.5 Load

（1）Start fan: Select local control mode, push < Fan Power Supply > on the panel, the fan starts running. Please ensure the fan working normally, and then proceed.**（2）**Load: calculate the power needed to be loaded, push and combine the power value, green lights up, then push < Load Confirm > switch, the yellow indicator lights up, and then the machine loads in accordance with the appropriate power level.

Note: If need to load 70KW, press20KW and 50KW, then press < Load Confirm >.

If you need to change loading power, please press power setting switch re-combine and press < Load Confirm > switch again

Note: Assume you want to change 15kW to 30kW, press 5kW and press 20kW then press < Load Confirm >.

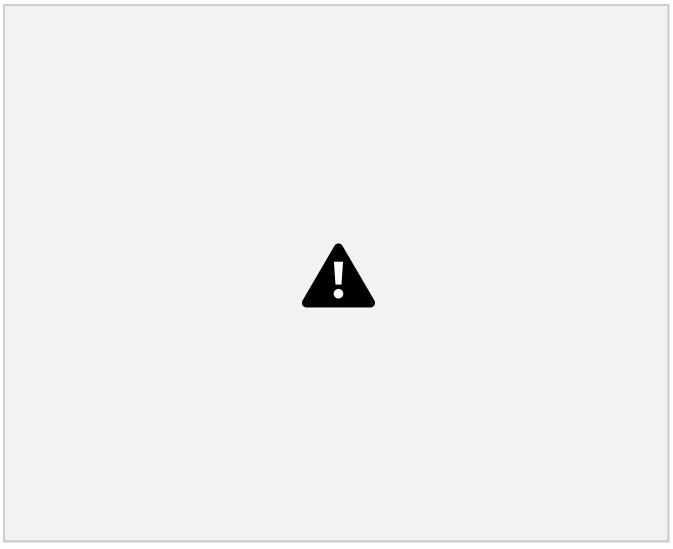
To protect the system, please make sure the changing KW (old) is not more than 30% (than the new KW).

（3）Uninstall: If you need to end the test, remove the entire load, set 0kW, the machine stop loading.

dangerous	When the alarm occurs, be sure to remove all the load, close all the power setting switch>, that is, set to 0 Kvar, and then remove the alarm!

4.6 Data Display

Meter Symbol Description: In the loading process, the machine can display real-time parameters by 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.

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

English symbols meaning:

V: phase voltage symbol; Unit: V, and combined with K, M to kV MeV;

V LL: two 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;

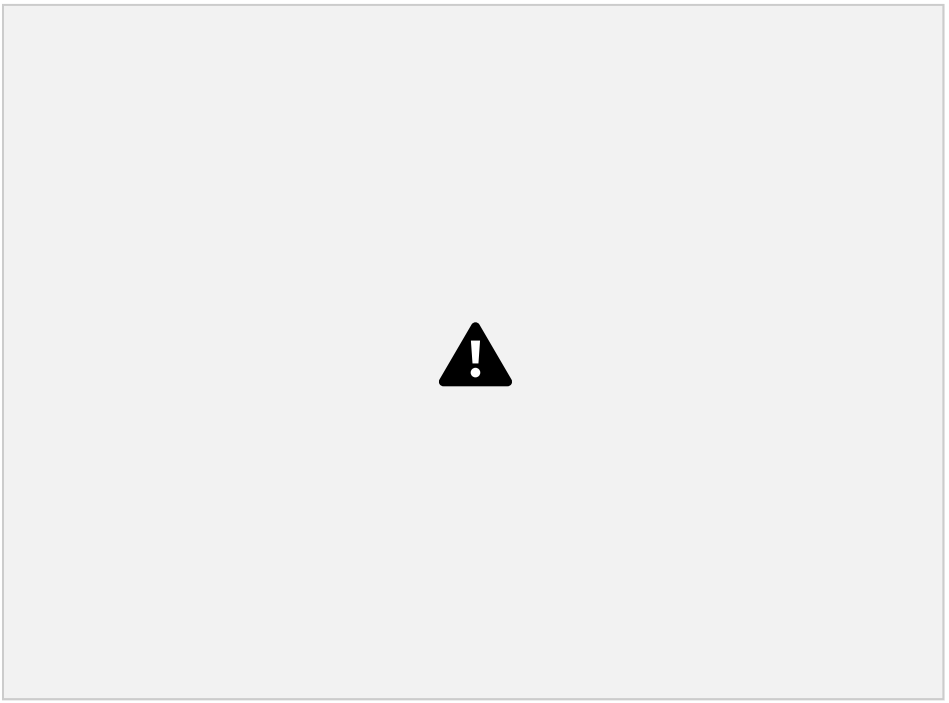
3P4L: three-phase four-wire;

4.6.2 Display the voltage, current: in the non-setting state, press F2, current and voltage will be displayed. For example, in the 01 interface (see following pictures), press the F2 key to switch to 02 interface; in 03 interface, press the F2 key to return to 01 interface. Switch the display process shown below:

Note: There are number under each pictures above

01: Display three phase voltage, from top to bottom is A, B, C phase voltage wiring in only 3P4L; 02: Display of three-phase line voltage, from top to bottom as AB, BC, CA line voltage 03: Display of three-phase current, from top to bottom as A, B, C-phase current.

4.6.3 Display the power, frequency, power factor, electric energy: in the non-set state, by pressing F1 and button, you can view the following parameters. For example, in the corresponding interface 04, such as by key to display 05 interfaces; such as pressing the F1 key, the display screens 08. Switch the display process shown below:



Note: There are numbers below each picture

04: From top to bottom display the total active power, total reactive power, total apparent power, display units are watts, var, VA, and with k combined into kw, kvar, kVA, and with M combined into MW, Mvar, MVA;

05: Three-phase active power display, from top to bottom as A, B, C-phase power, display units watts, and with k, M combined into kilowatts, megawatts;

06: Three-phase reactive power display, from top to bottom as A, B, C phase reactive, lack of display units, and with k, M combination into kvar, Mvar;

07: Display of three-phase apparent power, from top to bottom as A, B, C phase apparent power,

display units VA and with k, M combined into KVA, MVA;

08: From top to bottom display voltage and frequency, the total power factor, frequency is displayed in Hertz;

09: Display of three-phase power factor, from top to bottom as A, B, C-phase power factor; **10:** Shows the total active energy, the first line shows the symbol Ep, second and third lines are combined into 8 data show power, display units kWh;

11: Shows the total reactive energy, the first line shows the symbol Eq, second and third lines are combined into eight data show power when the unit kvar display;

12: Shows the total apparent energy, the first line shows the symbol ES, second, a combination of three lines into eight data show power when the unit kVA displayed.

Note: In addition to the above features, do not perform other operations on the measuring meter, the incorrect setting can result inaccurate data.

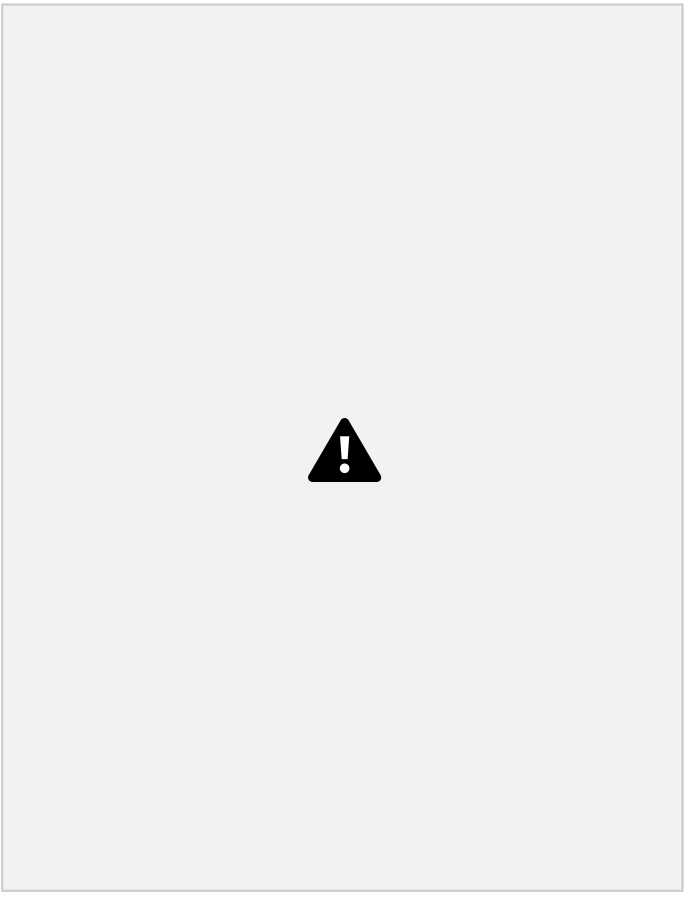
4.6.4 The initial setting: if incorrect instrument settings is made, and meter becomes inaccurate or does not work, please refer to and follow the setting methods in the instructions to set the parameters in the table below:

Instrument parameters	Meaning	Initial setting
LINE	Wire	3P4L
UR	Voltage magnification	1
IR	Current ratio	160
BAUD	Communication speed	9600
ADDR	Instrument address	2
U^{---}	upper limit value of voltage alarm	332.5
DELY	voltage delay	10
I^{---}	upper limit value of current alarm	4.52
DELY	current delay	10

Note: If the meter does not work properly or shows inaccurate data, please contact the hotline service.

4.7 Temperature and Humidity Controller

4.7.1 Show Introduction



4.7.2 Legend

number	name	Status instance	explain

1	Temperature display area	XX.X℃	Display the current measured temperature value, display range: -40.0 ℃~99.9 ℃ Display menu and data during key programming
2	Channel display	X	Display the current measured channel, display range: 1~3
3	Temperature display area	XX%	Display the current measured humidity value, display range: 20%~90%
4	Working status indicator	Indicator light on	Correspondingly display the working status of channels 1, 2 and 3, with heating, blowing and heating faults
5	SET	Press	Select the operation function and program
6	Left direction key	Press	View data or data fields
		Long press	Press and hold for 3 seconds to force heating
7	Right direction key	Press	View data or data fields
		Long press	Press and hold for 3 seconds to force air blast
8	ENTER	Press	Confirm the function or enter the next menu

4.7.3 The parameter setting process of CH1, CH2, CH3 is one and the same. Taking CH1 as example, to explain

clearly: After setting entry system, menu and data display in Area 1, after setting entry channel, Area 2 display

channel sequence number. Display before entry in.CH1:

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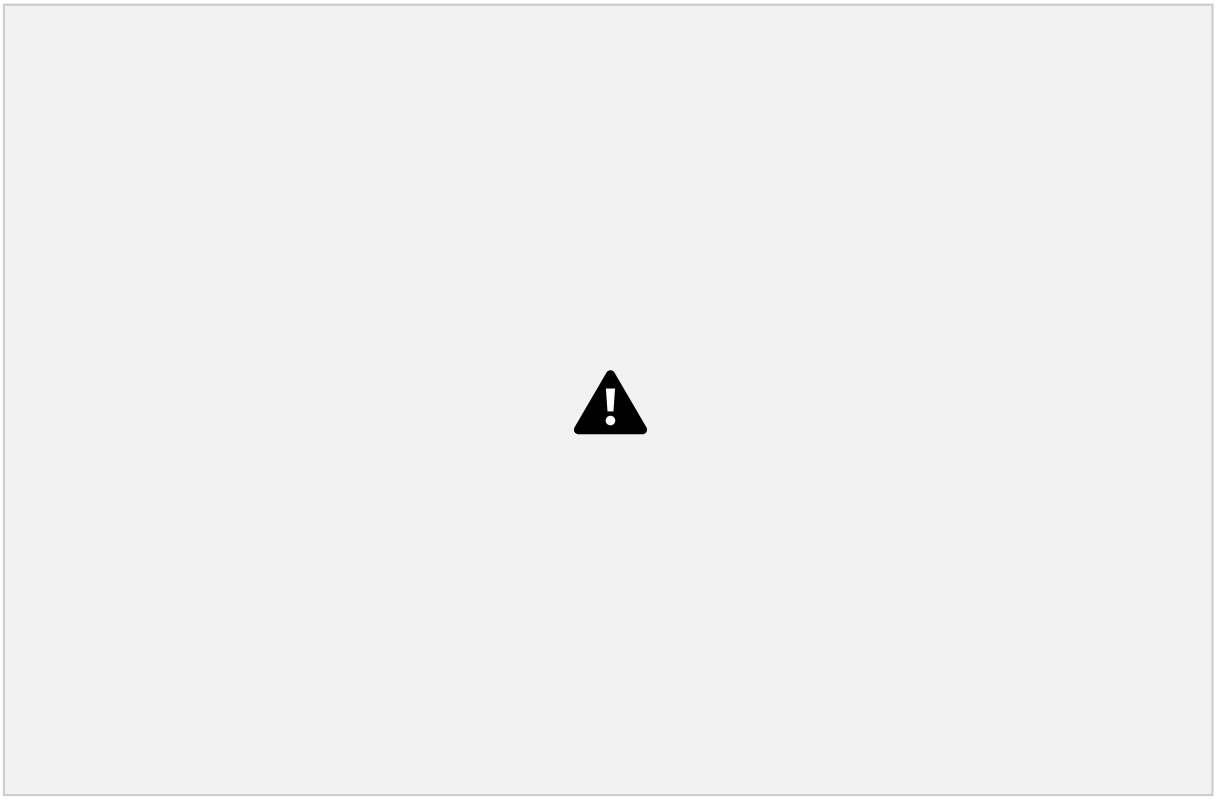
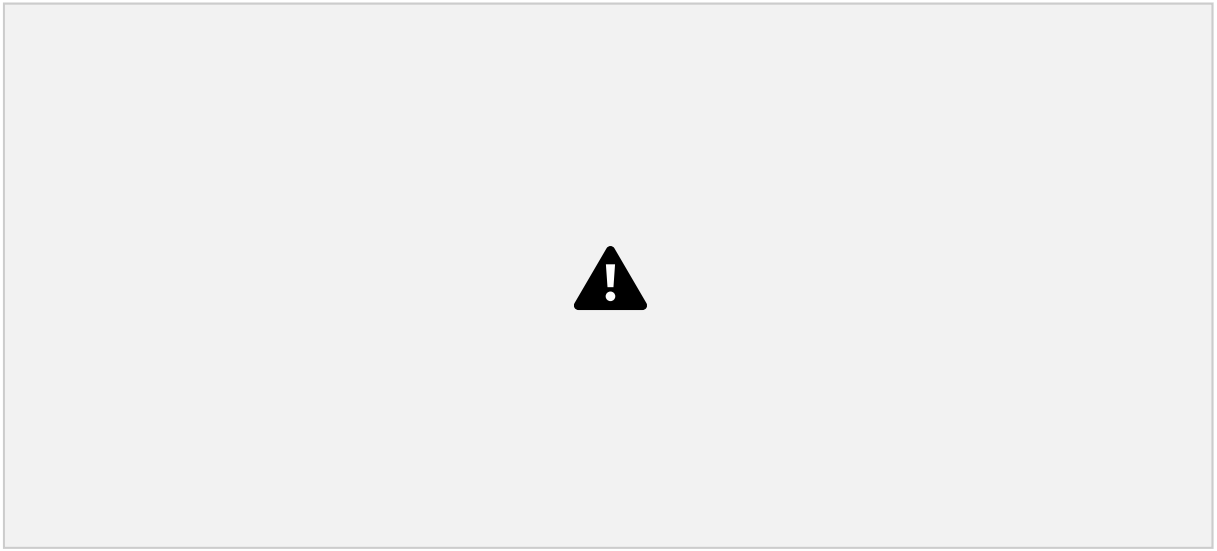
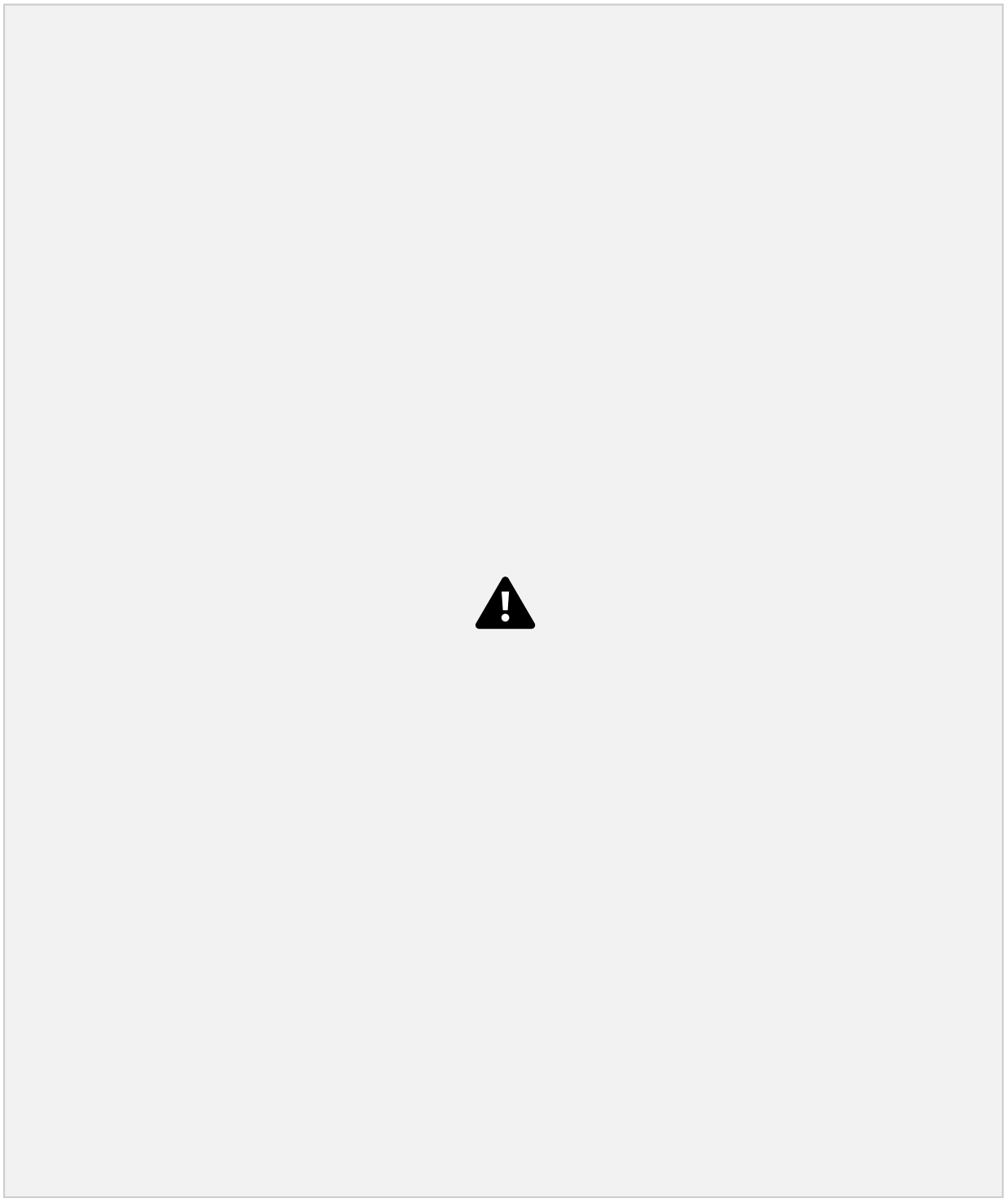
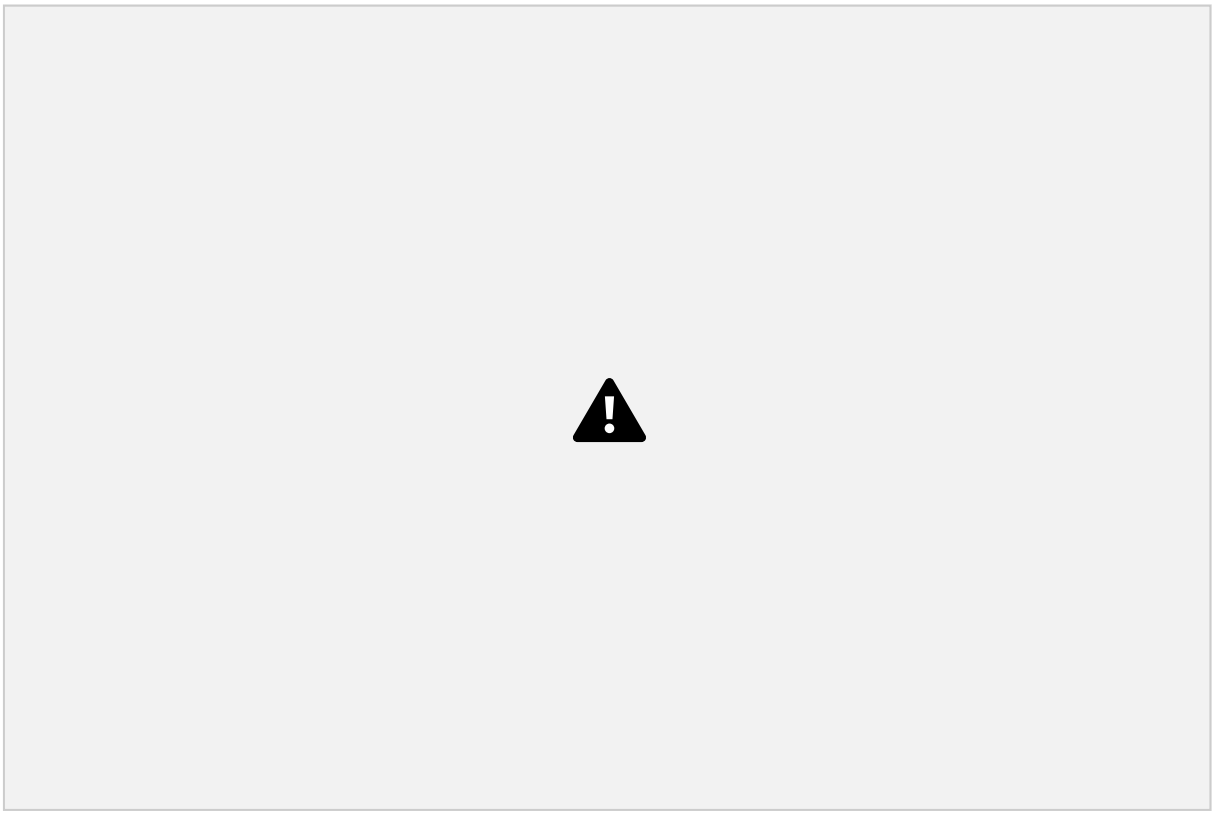








Single click the Enter, return the main menu, use left/right key to select other main menu and setup the optional

item. The communication "COMM “may set up Local address (1～247) and Communication baud rate value (1200,

2400,4800,9600,19200) . The display mode "dISP" is used to set three channels: interval in circling measurement

display; closed circling or interval for 2s,4s,6s,8s. AI random position of main menu ,single click SET to select

storage or not and exit system setting, then return back normal working

mode. **4.7.4** Set up system password

Press SET and ENTER simultaneously about three seconds, display: "CodE", Single click ENTER for entry,

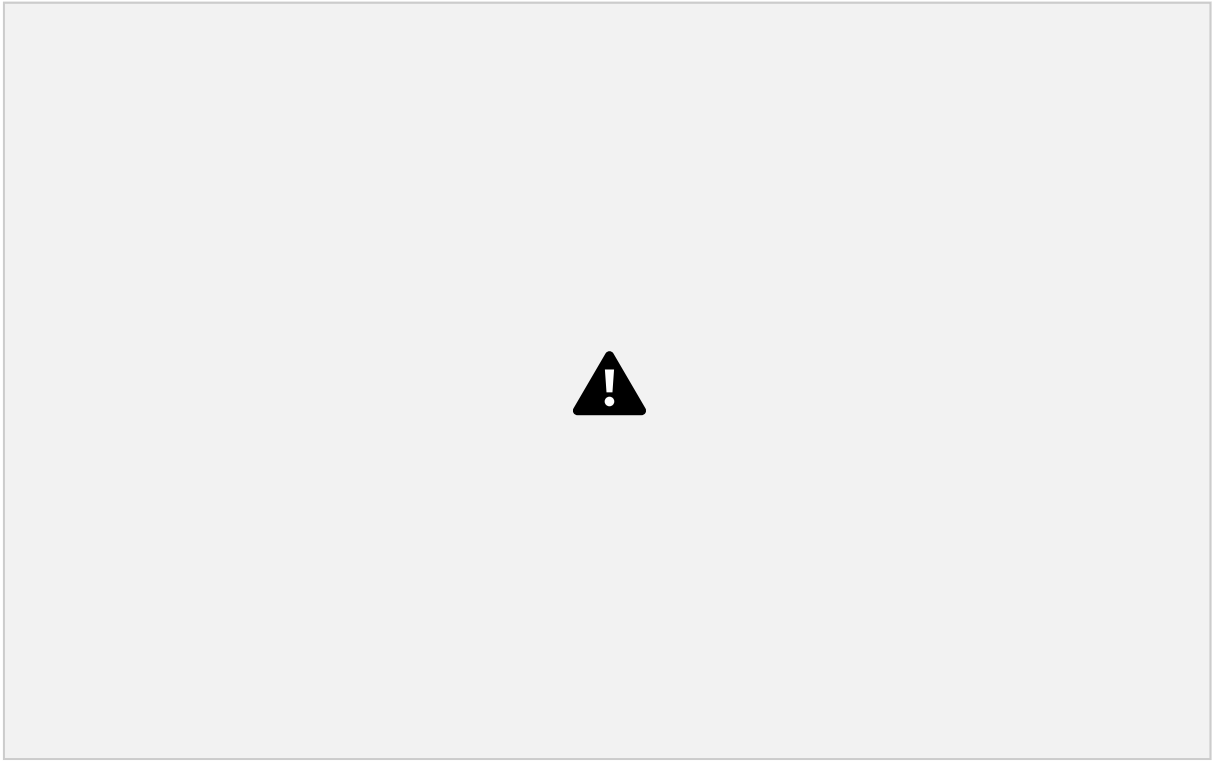
type current system password. Single click ENTER to confirm the typed password, the correct password display

"yES", and switch to "n.Cod" automatically, single click entry to type new password, press ENTER to select storage

or not, then to exit.

At random setting position, if within 1 minutes, no effective key is pressed, the system return to measuring status

automatically the setting is not stored.



Initial setting: If the instrument is accidentally set incorrectly, resulting in misalignment or inability to function properly, please refer to the setting method in the accompanying instrument manual and set the instrument parameters to the options in the following table:

Starting conditions	startup environment	Startup status
low temperature	5°	start
humidity	80%	start
humidity	70%	stop
high temperature	7°	stop

4.8 Protection

4.8.1 Emergency Manual: If emergency happens, please immediately press the red

[EMERGENCY STOP] switch, the machine will removed the load; failure, emergency indicator lights up and beeps alarm. In this state, the loading function is locked, only the fan continues to run. After emergency situation is ruled out, emergency stop switch can be rotated clockwise to unlock and re-tested.

4.8.2 Automatic protection: This machine has an automatic protection function, when the following circumstance occurs, the fault and the corresponding alarm indicator lights and chirping alarm, fully loaded automatically dropped. Protection status loading function is locked, please identify the reasons for troubleshooting, to be released and then re-test the alarm.

Overheating: The internal temperature exceeds a preset warning level;

Over voltage: The machine input voltage exceeds a preset warning level;

Part of the protective function has a switch, protection switch point downward, it can give alarm. When the protective functions false alarm, or require the temporary close some protection functions, then pull up to the appropriate protection switch to turn off, then under the same condition, unit will not give the corresponding alarm and continues to load testing.

	If there is no special need, be sure to protect the switch is in a downward protected.

4.9 Shutdown

4.9.1 Off: Uninstall, let fans should continue to run for about5 minutes, blew away the heat inside the chassis, and then turn off the power switch on the control panel to stop the fan running. Then turn off the side of the chassis power switch downward, turn off the machine.

4.9.2 Stitches: After the shutdown, disconnect the power line, turn off output power supply of the device under test, and then remove testing cable, finally disconnect the remaining cables to make recovery of original status for the machine.

5 Data management software

5.1 System Configuration

In this chapter description, **[ ]** contents quote menu item or option;

“” contents quote the screen prompts.

Make intelligent control with data management software by flipping the selector switch to intelligent. The recommended configuration to run data management software is as following:

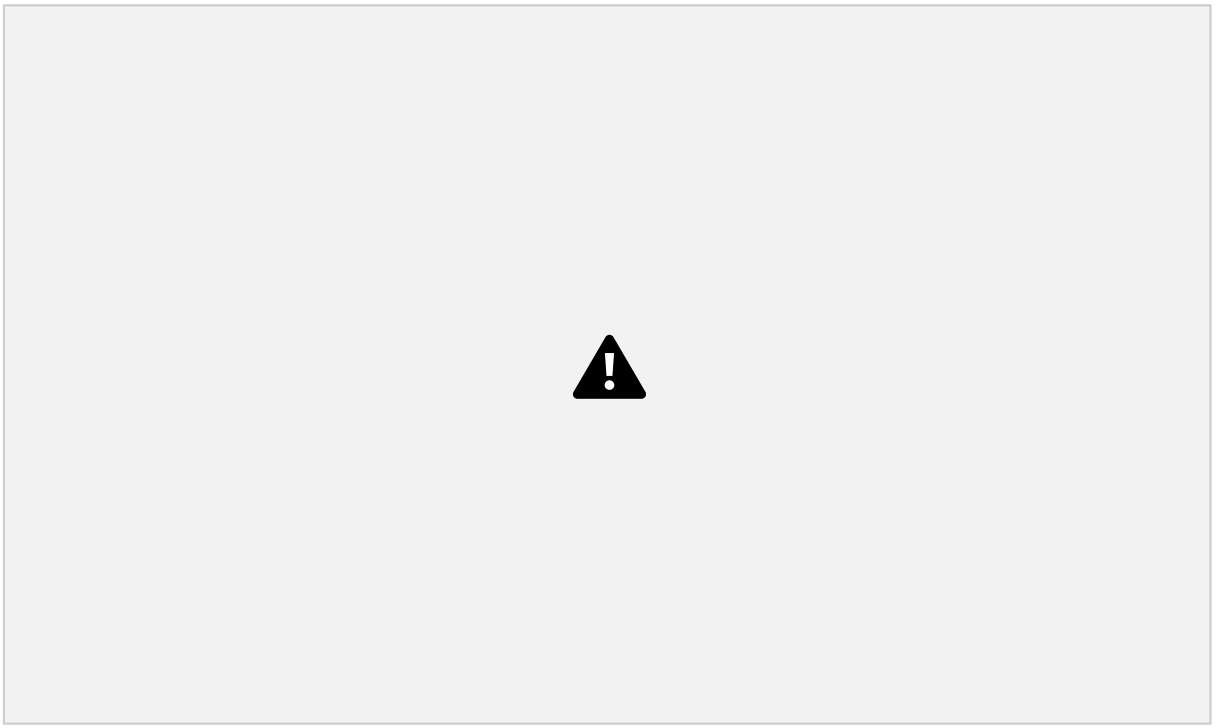
- PC (personal computer, laptop)
- Microsoft Windows 98/2000/Me/XP/Vista/7 operating system
- Resolution of 1280 × 960 or more displays
- CPU clocked at 300MHz or more
- 64M RAM or above
- 50M or higher hard disk
- USB
- Keyboard, mouse or compatible input device
- Color or black and white printer

5.2 Software Installation

Data management software installation files stored a USB drive. Before you install this program, you are recommended to exit the operating system, other applications. Then insert the disc into your desktop or laptop computer (hereinafter referred to as PC), the USB interface, through the "My Computer" or "Explorer" into the U disk root directory, double-click the program icon to open the named **LB-480-500kVA RLC Load Bank** files, enter the installation interface.

Follow the instructions on the screen, continuous click **[Next (Next)]** to complete the software installation, the software is installed by default in the Program Files directory on the C drive, and generates the same name shortcut on the desktop. Users can double-click the program icon on the desktop software, start the application. Data management software to enter the main interface.

5.3 Main Interface



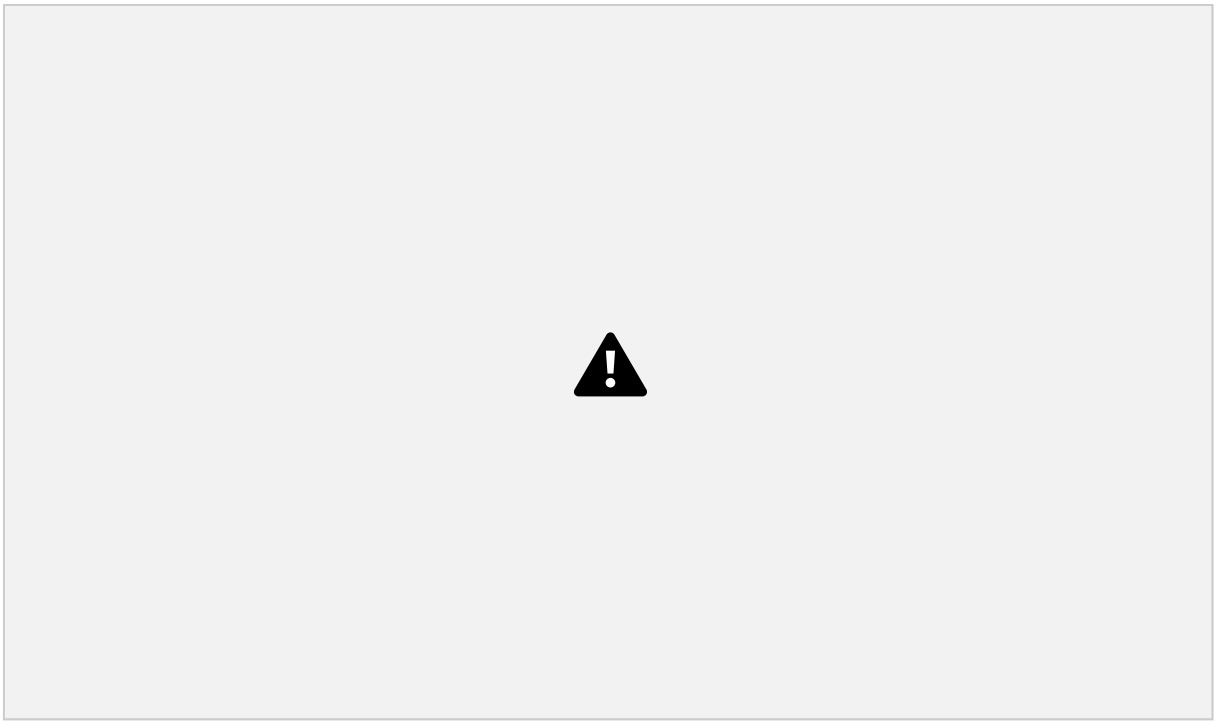
（1）**Title Bar:** Displays the host name and test information tips.

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

（3）**Information display area:** mainly displays the chart, parameters, information box and other information of the task.

5.4 Communication Settings

After PC connected to the unit by using data transmission line, the first step is communication settings. Clicking the [Set] menu, and then click the drop-down menu in the [Set Port] options, or click icon on the toolbar selecting the appropriate communications interfaces (COM1-COM9) in the dialog, click OK. First, you should use the default port, if not successful online, look for available port on your PC (in the "My Computer" on the right - Properties - Hardware - Device Manager - port) and choose the settings.



5.5 Online

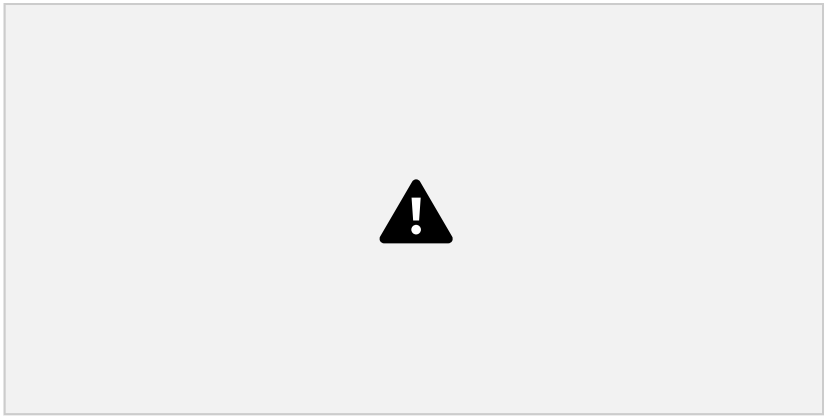
Getting Online: Most of the features on this computer require being online before they can be used. Click on the software [AC380V-1000kvar-L Automatic Load Bank], open it, and the software will automatically recognize the communication port online. If the prompt shows that no load was found, the fault content will be displayed in the fault display area, indicating online failure. Please try changing the communication serial port settings or unplugging the communication cable, and then reconnect.

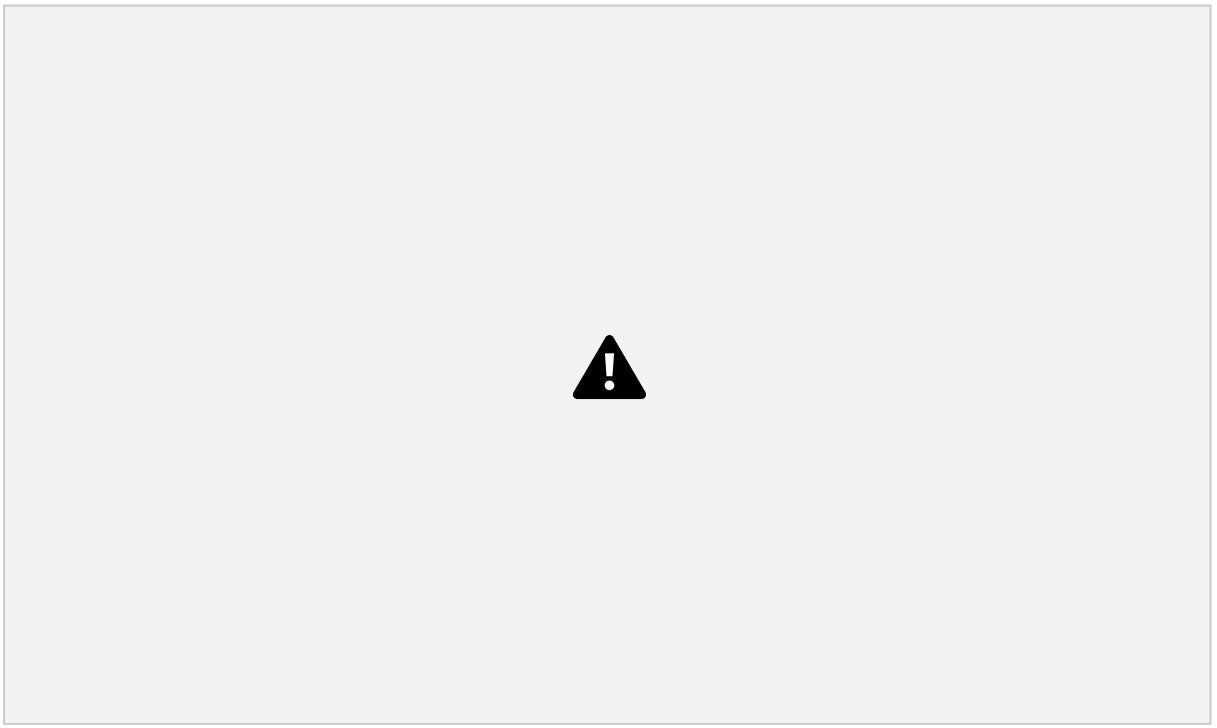
5.6 Function

(1) Power setting: Click on the [Load Test] menu to achieve the most basic power setting operation.

(2) Parameter display: During the loading process, users can view parameters at any time through the monitoring interface, and can also click on the label at the bottom to switch to displaying voltage, current, and other curve graphs.

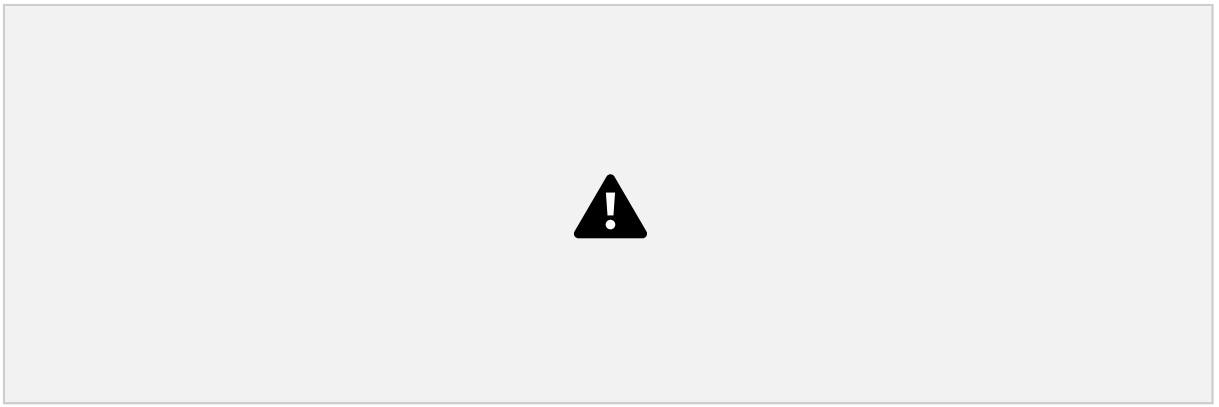
(3) Save Data: Before loading, if you are ready to save the test record, press the "Save Data" button on the right side of the interface, and the button will change to "Stop Saving" to start saving the real-time data of this test. After the test is completed, click 'Stop Saving' and the prompt will indicate that the data has been saved successfully. Save the data during this period. Then click on 'History' to view the

saved historical data. 



5.7 Load

（1）Start the fan: Before loading, click the [start fan] option to run the fan, and then the option becomes [stop the fan].



（2）Loading mode: Software has two loading modes: manual loading and automatic loading.

（3） Manual loading: One power value can be loaded at a time. Do not select the loading stage (such as 25%) on the left side of the interface, directly select the power level on the right to set the power, and then click **[Load]** to load according to the selected power value.
If you want to change the loaded power value, please re-check the gear and click **[Unload]** again.

（4） Automatic loading: the power and duration of each stage can be set, and the

loading can be performed continuously in sequence. Click each stage such as 25% in the **[Control]** area, and input the power to be loaded in the power dialog box. Then click **[Interval]** to set the duration of each stage, and click **[Auto Load]** to load according to the set stage. The system will automatically complete the power increase and decrease in the order of 25%, 50%, 75%, 100%, 75%, 50%, and 25%.

（5）Unload: In loading state, click **[Unload]** to unload all loads. After unloading, please keep the fan running for 3-5 minutes. After the residual heat in the standby box is dissipated, click [Stop Fan] to end the work.

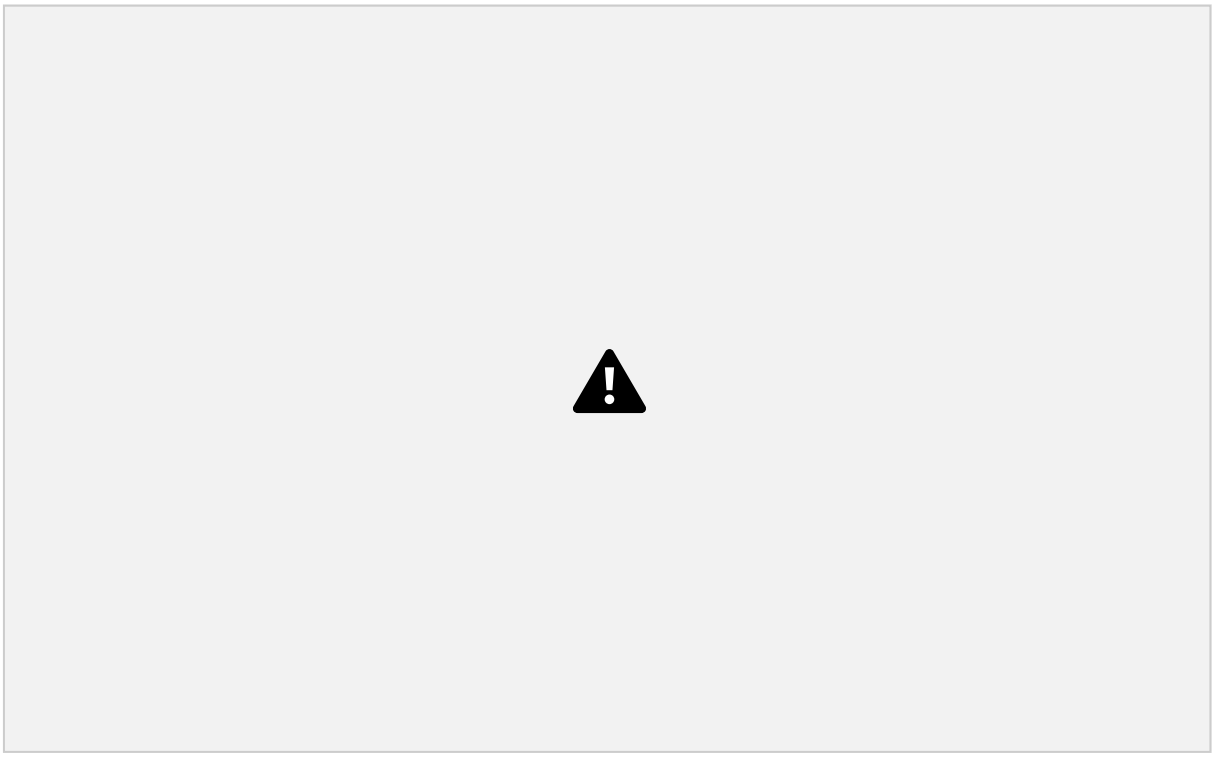
5.8 Test Records

（1）Open: Double-click the test records, or choose test records and click **[Open]** button, open the test records. The following analysis of the data, print and other operations are based on currently data records.

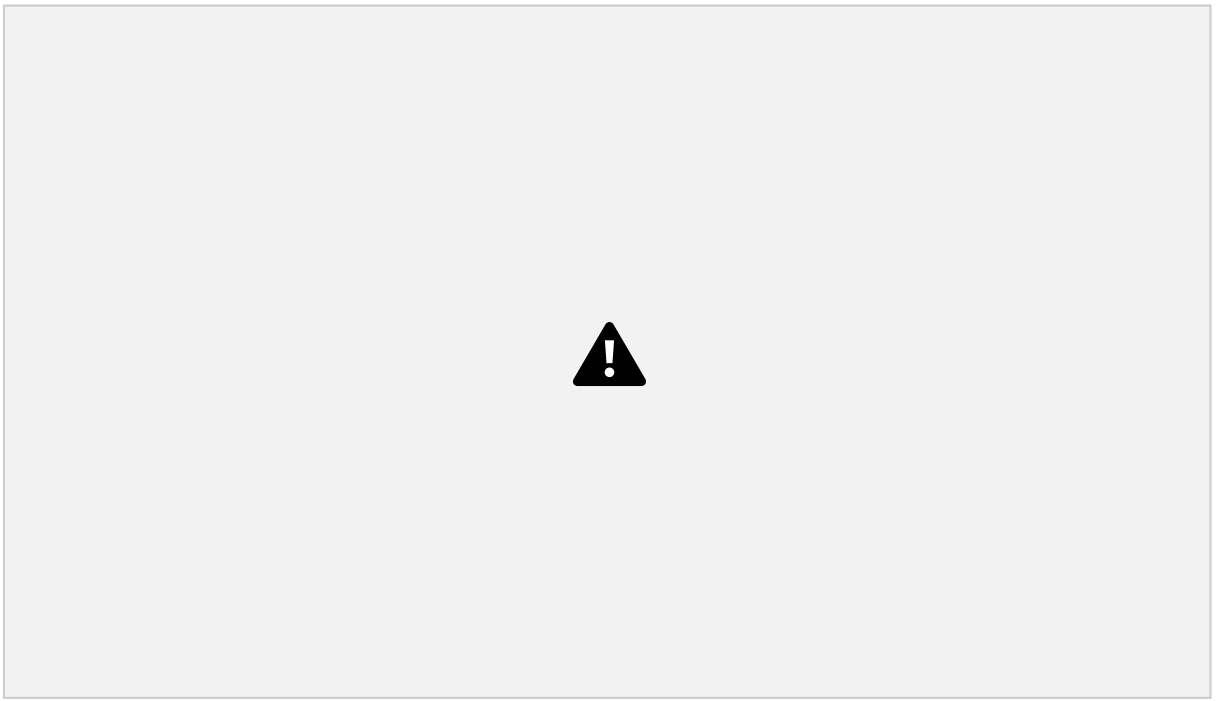
(2) Delete: To delete the selected record, click Delete button and confirm. To avoid accidental deletion, please save important data files.

（3）Import records: Click **[Import]** button, selecting the recording which you want to import in the dialog box and click OK.

（4）Export Record: Select the record which you want to export, click **[Export]**, confirm the message, and in the "Save As" dialog box, click the subsequent **[Save]**. **（5）**Viewing graphs: Click the **[Data]** menu, and then click each option in the drop-down menu to view the voltage, current, frequency, power, power factor graphs and table data. Among them, click **[Export Excel]** in the table data to save the data as an Excel table.



（6）Form Data: Click the [Data] menu, and then click the [Form Data] option in the drop-down menu, you can freely fill in the test information, and fill in the comments on the relevant tests in the "Test Results" for reference. The content filled in this interface will appear in the printed report.



（7）Word Export: Click [Export Report] to export.

（8）Print Preview: Click [Preview Report] to preview.

（9）Print report: Click [Print Report] to print.

5.9 Exit the System

Click the **[File]** menu, select the drop-down menu **[Exit]** option, or click the icon on the toolbar in the confirmation dialog box, click **[Yes]** to close the software. After working, you should click the Start Windows System → Turn Off Computer → Turn off. First exit operating system, and then turn off the computer. Do not cut off power directly.

6 Equipment Maintenance

6.1 Routine maintenance

6.1.1 Cleaning: When system maintenance, operators should do thoroughly cleaning, especially the dust and debris that adhere to the vents which can be sweep out by brush or compressed air. Operators should be careful when cleaning, we don't open the enclosure, don't touch and break the parts. After cleaning, check carefully whether the equipment is in good condition. Turn on the power and check measuring instrument, fan is in good condition. If no abnormal, then start the testing. **6.1.2 Ventilation:** Operator should turn on the power to check the performance of fan. If cooling fan is abnormal or air duct blockage, it will cause internal too high temperature for the machine not to work in reliability.

6.1.3 Dehumidification: Before use, must confirm there is no water or moisture on joint interface of cables. If there is moisture, it should be dry and then put into use, so as not to cause a short circuit after power on.

6.1.4 Cover: After the machine stops working, please put away all the parts, and properly keep, do not make cables long exposure in the sunlight, the plug should be covered. The machine needs a dust cover after using. If outdoor use, the load bank should be covered up by rainproof cloth to avoid corrosion and damp. **6.1.5 Storage:** If the machine is idle for a long time, the machine and accessories should be stored in a cool, dry indoor environment, away from high temperature and damp environment.

6.1.6 Running: If the machine is idle for a long time (three months or more), please connect the machine to working power and let it running regularly. Components heat will disperse moisture to ensure that the device performance is stable and reliable. Especially in areas where the air humidity is big, no-load running on a regular basis is an effective measure to reduce equipment failure.

6.1.7 Consultation: If the machine fails in operation or maintenance, and cannot accurately judge equipment failure reason, please do not hesitate to call our after-sales service hotline, consult to our technicians.

Dangerous!	1. Disconnect all the wires when cleaning. 2. Do not open the protective enclosure, otherwise the warranty will be not available! Contact the after-sale service if repairing internal elements is needed.

6.2 **Fault Handling**

Please see the below table, the common faults and solutions in working. If the problem you encountered is not one of them, please contact the service hotline to give feedback

Faults performance	Possible reasons	Solutions
The machine can not start Automatic shutdown after starting	Power supply is not connected	Check the device wiring is correct, and check whether the local power supply is powered.
	Power anomalies	Check if the voltages of input working power supply is correct
Abnormal fan rotation	Power supply not steady	Provide the steady power supply
Lack of fan flow, poor heat dissipation	Vents or fan blocking	Check the vents and fan if there is ducts or debris, sweep out.
Operation no response	Control mode selection error	Check the control mode selection is in accordance with the current operation mode.
Part of the switches do not response	Switch is damaged	If no response when you use some switches, the corresponding switch is damaged, please contact the hotline service.
Load switch can not be opened, unload immediately after loading	Locked by emergency or automatic protection	Check if the machine alarms, after the exclusion of a dangerous situation, rotate the emergency stop switch clockwise bounce and unlocked.
	Testing cables not connected or equipment not start	Check if the connection between load bank and equipment under test. Make sure the equipment under test start.
Power is 0 after loading	Cable not firm or voltage problem	Check if the cables connect well. Or check if the voltage is in the normal range, if voltage is too low, power will be low
Power can not reach the set value	Data line not connected	

Can’t find testing data		accordingly. Re-connect data transmission line

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Software can not be online	Communication cable is not connected or incorrect communication interface settings	Re-connect data transmission line, or changing the communication interface address settings.

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7 **Service**

7.1. The machine is under warranty for one year.

7.2. If you have any issues, please contact Eagle Eye for support. **7.3**. Do not open the machine without prior instruction, or the warranty will be void.

Contact Us

If you have any questions or comments, please contact Eagle Eye Power Solutions. You can reach our team any of the following ways

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Phone: 1-877-805-3377

Email: info@eepowersolutions.com

Website: www.eepowersolutions.com

Fax: 414-962-3660

Mailing address:

Eagle Eye Power Solutions, LLC

6306 Eastwood Court

Mequon, WI 53092.