DPX-30028

Technical Specification

AC400V-2000kW Automatic Load Bank

Technical Parameters

Technical Parameter	
Rated Voltage & Frequency	400VAC, 3 phase 4 wire, 50Hz (A, B, C, N)
Max Load Power	Resistive 2000kW
Load Steps @400V	1, 2, 2, 5, 10, 10, 20, 50, 100, 200, 200, 200, 200, 200, 200, 200, 200kW, total 2000kW Note: when voltage is less than 400V, power will derate according to Ohm's Law.
Power Factor	1
Load Tolerance (each step)	±5%
Load Tolerance (overall)	±3%
Display Meter	Multiple function meter
Fan Control Power	External power 400VAC 3 phase 4 wire (A, B, C, N), 50Hz
Wire Connection	Load bank input——busbar Control power input——terminal block
Communication Interface	RS232/RS485
Insulation	F
IP	Control part IP54
Way of Working	Continuous Working
Cooling	Forced air cooling, horizontal inlet air and upwards exhaust cooling
Enclosure Structure	The container is sealed, and the box is equipped with personnel access doors, which are locked. It is equipped with a ladder up to the top, an air inlet and outlet protective door, and a protective net inside to prevent foreign matters from entering.
Transportation	It has lifting eyes and forklift channel
Color	As customer's requirements or as our design RAL Gray 7035
Dimensions	4000*2100*2100mm
Weight	Around 4,000kgs
Remote Controller Color	Black
Remote Controller Dimension	Around 492*395*216mm
Remote Controller Weight	Around 10kgs

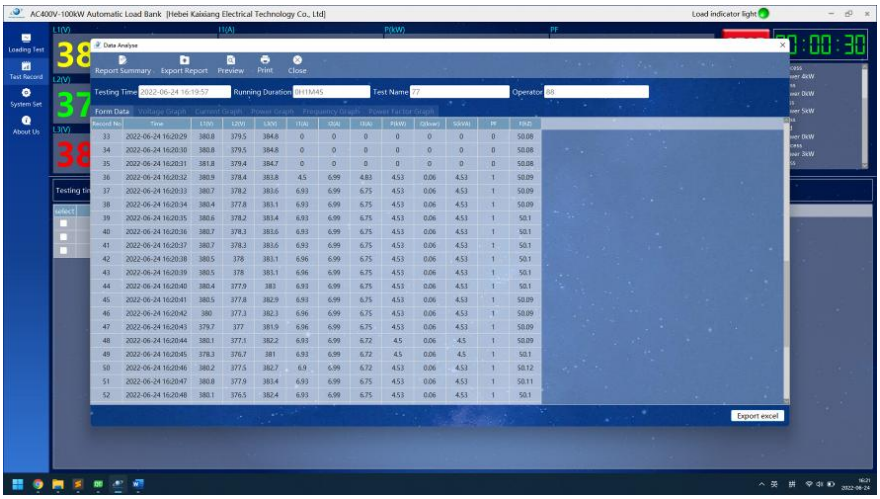
Operating Environment Parameter	
Ambient Temperature	-20℃～+50℃
Using Place	Outdoor
Altitude	≤2500 meters
Relative Humidity	≤95%
Noise Level	≤90dB at 1 meter
Atmospheric Pressure	86～106kPa
Ventilation Distance	It is required that the air inlet shall be 3 ~ 5 meters clear of obstacles, the air outlet is more than 3 meters away from the roof or other obstacles.
Reserved Distance	In order to facilitate personnel access, there shall be no obstacles 3 meters in front of the control room and 2 meters in front of the maintenance room.
Safe Working Distance	There shall be an isolation fence 1 meters outside the load cabinet, and there shall be no miscellaneous personnel within 3-5 meters when the load cabinet is working.

Functions

1) User could load any power within rated power, can test voltage and current of three phase and each phase, resistive power, power factor, apparent power, frequency and running time of generator set.
2) Whether load/unload by local control panel, remote control box or by PC software control, user can pre-set the power then press the master load button.
3) Control mode: user can choose local control, remote control box or intelligent control (PC control).
4) Local manual control: there is local control panel in load bank, with multiple load steps, min load steps 1kW, controlled by buttons.
5) Remote control: user can operate via remote control box (portable) with LCD touch screen, MAX 100 meters.
6) 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.
7) Control mode interlock: there is switch in control panel to choose control mode, other control mode is invalid if user choose one control mode.
8) With data processing software, could form curves of current, voltage, resistive power, apparent power, and frequency, can be printed.
9) Auxiliary functions: the control panel of the load bank is designed with a lighting switch, and a single-phase AC220V / 50Hz power socket is reserved for computer or other temporary power.

Data Processing Software Functions

1) Communication type: through RS232, RS485 interface.
2) Load mode: manual load or automatic load.
3) Manual load: input power and power factor.
4) Automatic load: User can set several periods of power and time and in turn of 0%→25%→50%→75%→100% or 110% or other sequence to make automatic load testing.
5) Parallel testing: when several load banks parallel working, parameters of each load bank can be displayed and recorded, so do the final parameters of paralleling working.
6) Real-time parameter: Current, voltage, power, power factor, frequency, time, etc could be displayed by software.
7) Safety monitoring: User can know the working conditions of load bank through software indicating light. When in abnormal stop protection, software will indicate the reasons of stopping.
8) Data collection interval: the min saving interval is 1 second.
9) Data saving and in query: testing data could be saved in software; user can query at any time.
10) Data display: it could display real-time data and history data; user can print voltage, current, frequency, power graphs and charts.
11) Charts and graphs are output in format of JPG while testing data output in Excel format, and all can be printed.



Protection

(1) User can press the emergency stop button in panel to unload immediately.

(2) In case of **over-voltage, over-heat, short circuit**, load bank will automatically remove load and give alarm.

(3) Fan protection: Machine could not do load testing before working power of fan is on.

(4) Load bank will unload and give alarm when any fan is abnormal or with insufficient air volume, etc.

(5) When control power cable in wrong connections, 3 phase fans can also work well.

(6) Protection button: there are some protection buttons can be switched off when false alarm or for special requirements.

(7) Enclosure grounding protection: To avoid electric shock caused by enclosure, grounding terminal will be installed.

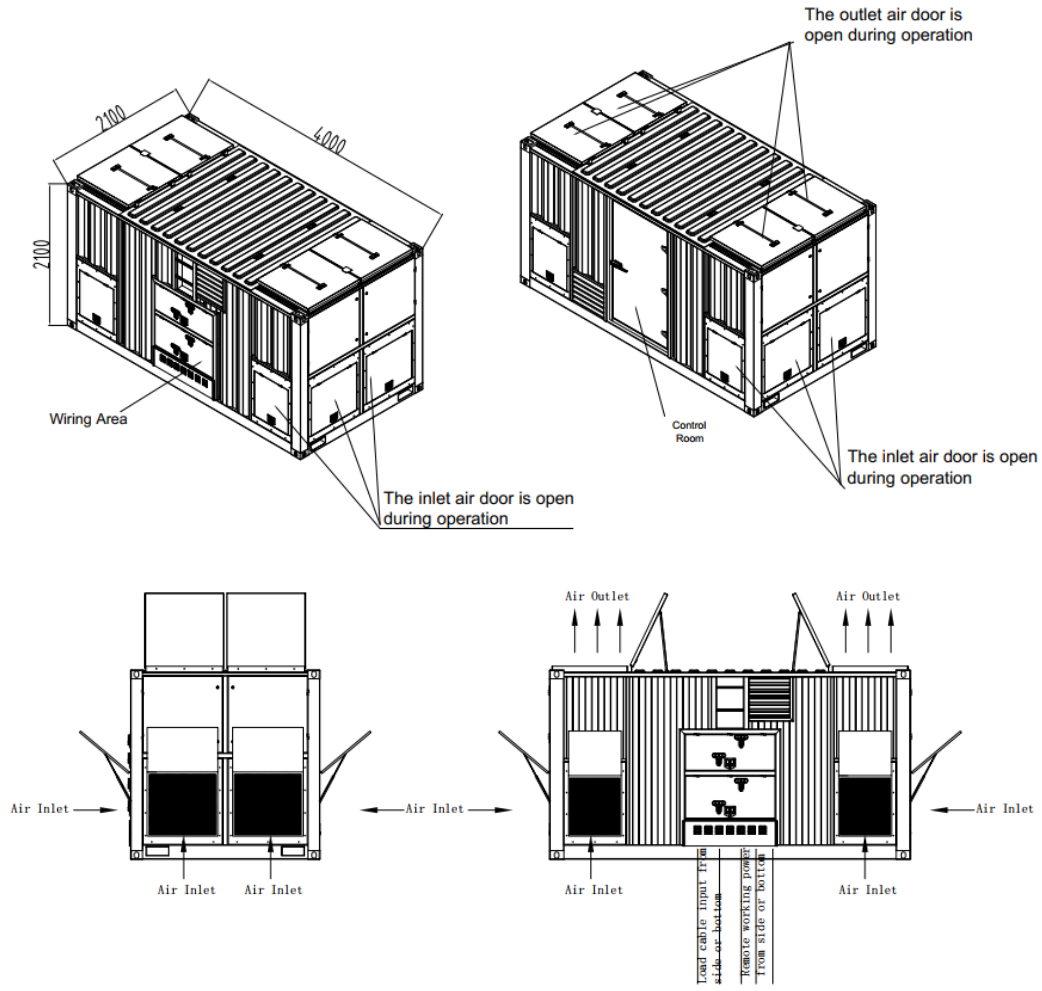
(8) Status alarm of door of control room: When make remote control or intelligent control, if door of control room is not close, the alarm light will be on with sound, can't load.

(9) Status alarm of door of air outlet: If door of air outlet is not open, the alarm light will be on with sound, can't load.

(10) Status alarm of door of maintenance room: If door of maintenance room is not close, the alarm light will be on with sound, can't load.

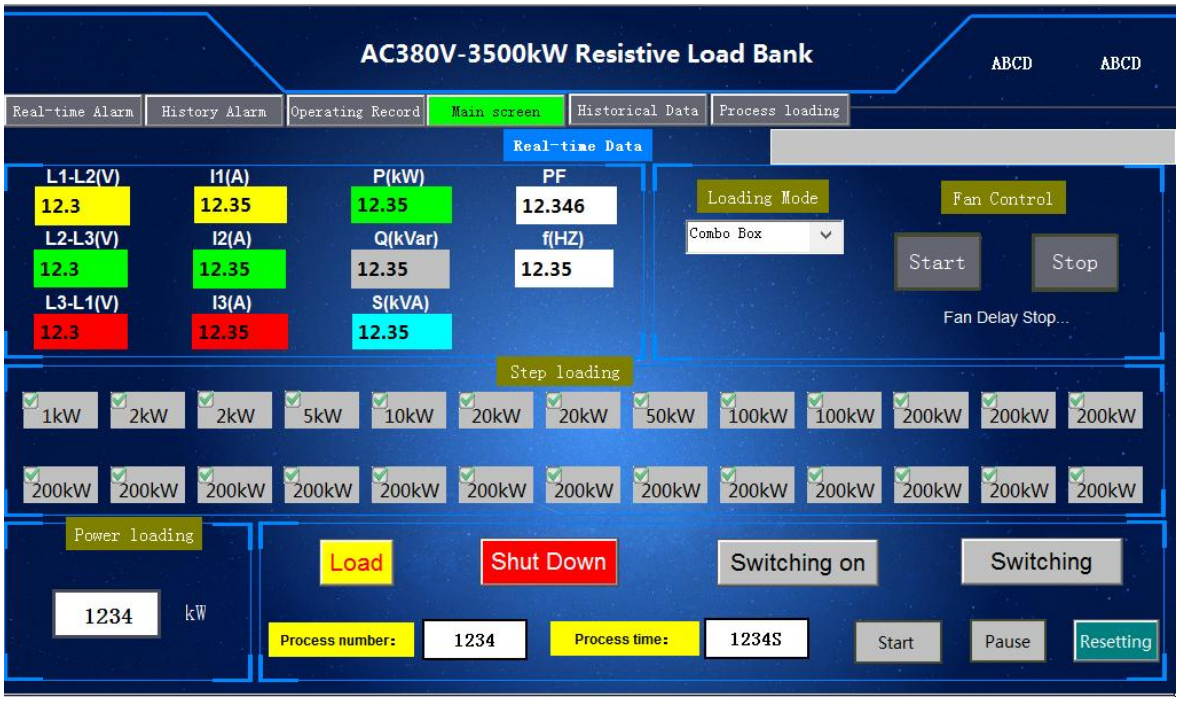
(11) Pre-heating protection of the control unit: the load cabinet is equipped with a temperature and humidity detection device. When the device collects that the ambient humidity is high or the temperature is low, it will automatically heat / dehumidify to keep the environment of the controller in the load cabinet dry and the temperature appropriate.

Pictures



Remote Control Box

The remote controller box is connected to load bank by control cables. The control switch is in the aluminium alloy box. It is portable, durable, solid and easy-control. User can make remote control.



Remote control box for reference

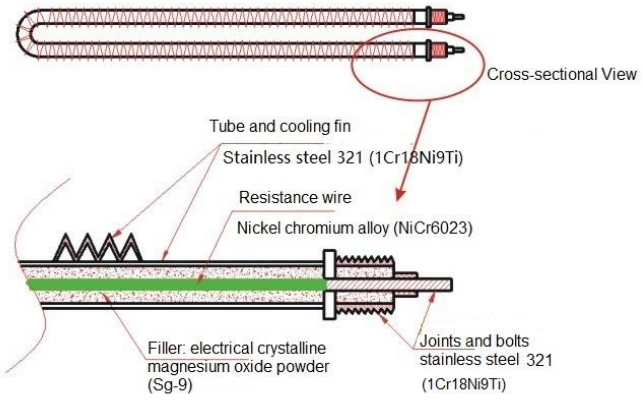
Resistor

The core part of the load---the dry load module, can convert electrical energy into thermal energy, and perform continuous discharge tests on the equipment such as the generator set and power supply to be tested. Our company uses self-made alloy resistors to form load modules. In view of the characteristics of dry load safety which is easily affected by temperature, our company adopts strict quality control on temperature coefficient and heat dissipation performance. The alloy resistors produced have small temperature drift, slow temperature rise and fast heat dissipation, the heat resistance is stronger when working at full load, and it can work stably for a long time. The specific technical solutions and goals are as follows:

1) Alloy resistor is Nickel chromium alloy (NiCr6023), anti-temperature (max working temperature reach up to 1300℃), steady electrical performance, low temperature drift ($5*10^{-5}$/℃), this technology is the most advanced in alloy resistor manufacturing.

2) The materials of resistor strictly use low extensibility and resistance oxidation Stainless Steel 321 (1Cr18Ni9Ti), filling material is exporting grade electrical crystallization magnesium oxide powder (Sg-9), performance standards JBY-TE4088-199, magnesite density 3.0g/cm^3±0.2, screws is anti-corrosion, anti-temperature Stainless Steel 321 (1Cr18Ni9Ti). With strict and clear material control, the mass-produced alloy resistor is with highly congruent performance.

3) Cooling fin Stainless Steel 321, height 7mm±2, thickness 0.4mm±0.2, winding interval no more than 3mm±0.2.



4) Each resistor withstand voltage is DC3000V or 1500V, 50Hz, 1 minute without puncture. Real voltage is 1/3 of withstand voltage, make sure the resistor in good working condition without puncture.

5) Cooling fin uniform temperature no more than 300℃, max 320℃, there isenough margin to make sure alloy resistor can be working continuously, resistor max temperature 1300℃.

6) When resistor temperature reach 300℃ to 400℃, temperature drift is alsdess than ±2%, it assure the resistance value no much changes in high temperature working condition, thus loading steady power could be available in any temperature.

7) Whether in max and min temperature, load accuracy is no more than 3%

8) Air outlet temperature no more than 80℃ (within 1 meter)