I. Equipment brief introduction:

1.1 Equipment model: **SA-SCTM 15000A**

1.2 Feature introduction

The battery short circuit test machine is designed with the requirements of various battery short circuit test standards to meet the battery performance standard specifications. According to the standard requirements, the short circuit device must meet different internal resistance tests, so as to obtain the maximum short circuit current required by the test.

1.3 Equipment composition

The short circuit test machine is composed of short circuit device, resistance device, control system, safety protection system, data acquisition system, etc.

II. Basic parameters of the equipment:

2.1 Configure the power supply:

2.1.1 Control cabinet power supply 220V power: 1.5KW

2.1.2 Resistance box power supply 220V power: 1KW

2.1.2 Equipment gas source: No

2.2 Applicable specifications:

Cell, modules, battery packs and other samples that require a short circuit.

2.3 Equipment weight: control cabinet 150KG / resistance box 2400KG

2.4 Equipment size: Control cabinet: width * depth * height =W700mm * D600mm

* H1250mm (subject to the actual design)

Resistance box: width * depth * height =W 1550mm * D 1500mm

* H1850mm (subject to actual design)

2.5 Spraying color: RAL7035

2.6 Equipment schematic diagram:

Control cabinet,

Resistance box,

三、 Scope of application and functional characteristics of the equipment:

3.1 Scope of application;

GB 38031-2020, Safety Requirements for Power Battery for Electric Vehicles

(replacing GB / T 31485-2015, GB / T 31467.3-2015)

GB / T36972-2018 Lithium-Ion Battery for Electric Bicycle

GB / T36276-2018, Lithium-Ion Battery for Electric Energy Storage

QC / T 743-2006 Lithium Ion Battery for Electric Vehicles

QC / T 744-2006, Nickel metal hydride Battery for Electric Vehicles

ECE-R100, Safety Protection Technology for Vehicle Power Battery Test

UN38.3 The United Nations Test and Standard Manual for the Transportation of Dangerous Goods

3.2 Equipment function features:

1) The new short-circuit device is equipped with a dual protection system.
2) The actual test value of the overall circuit is less than 1m Ω
3) With two relatively independent control modes: remote (not less than 12m) and field, current, voltage, temperature and other parameters can be displayed and recorded; the remote structure ensures the safety of the experimenter, when the experiment process explosion will not affect the equipment, to ensure the continuation of the experiment.
4) The equipment uses manganese copper alloy precision shunt, which can ensure the temperature drift of ± 5ppm / ℃ and a very low power coefficient in the range of 0~70℃, and the thermal potential is less than 0.05uV / ℃, and has good long-term stability.
5) Have the function of monitoring and recording the battery surface temperature change and voltage change;
6) Equipped with a remote emergency stop button control
7) data acquisition system:

order number	content	parameter
1	Temperature collection system	Temperature acquisition range is-100℃ ~ + 1,300℃
		Precision of temperature measurement: ± 1.5℃
		Resolution: 0.1℃
		Temperature acquisition channel: 16 channel
		Temperature Acquisition Frequency: 10HZ
2	Total voltage acquisition system	Total voltage collection range: 0V~1000V
		The acquisition accuracy of total voltage: ± 0.25% F.S
		Total voltage acquisition channel: 1 channel
		Resolution: 0.01V
		Total voltage sampling frequency: 100HZ
3	Modulvoltage acquisition system	Modulvoltage acquisition range: 0V~200V
		Modulvoltage acquisition accuracy: ± 0.25% F.S
		Resolution: 0.01V
		Modulvoltage acquisition channel: 1 channel

		Modulvoltage sampling frequency: 100HZ
4	Single-unit voltage acquisition system	Single-cell voltage acquisition range: 0V~10V
		Single-cell voltage acquisition accuracy: ± 0.15% F.S
		Resolution: 0.01V
		Single-cell voltage acquisition channel: 12 channels
		Single-cell voltage sampling frequency: 100HZ
5	Current collection system	Current collection range: 0 A ~ 15,000 A
		Precision of current acquisition: ± 0.2% F.S
		Resolution: 1A
		Current acquisition channel: 1 channel
		Current acquisition frequency: 100HZ

IV. Technical parameters of the equipment:

1. Control the cabinet parameters

No.	project	parameter
1.	Short circuit way	normal atmospheric temperature
2.	Number of channels	1 channel
3.	short-circuit	Rated at 15,000 A

	current	
4.	Short circuit setting time	0-9999s Adjustable
5.	Console resistance (including connecting connections)	＜1mΩ
6.	control method	Field manual + remote PC control
7.	arc-control device	Import high-current switch
8.	mechanical life	10000 Times
9.	Heat dissipation method	forced air cooling
10.	Observe the mouth	400mm * 140mm plexiglass (whichever is actual design)
11.	connecting line	5 m positive and negative pole set (10 m total)
12.	Field and remote independent control and monitoring system	Computer remote control 12m, can also be field control.
13.	Defensive	Software above the guard protection, to

	protection function	prevent artificial misoperation
14.	trundle	Four removable casters, of reliable quality

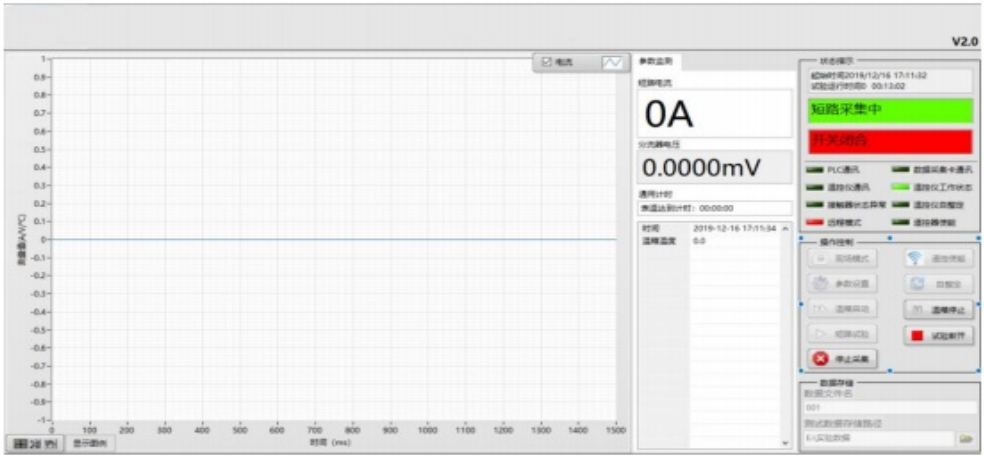
2. Resistance box parameters

order number	project	parameter
1.	Resistor gear	<1m Ω / 15000A (control cabinet resistance value), 3~4m Ω / 12000A, 10 m Ω / 6000A, 20 m Ω / 5000A, 30 m Ω / 2000A, 40 m / 1500A
2.	The resistance value can be realized	＜1mΩ , 4mΩ, 10mΩ, 14mΩ , 20 mΩ , 24 mΩ , 30 mΩ , 34 mΩ , 40 mΩ , 44 mΩ , 50 mΩ , 54 mΩ , 60 mΩ , 64 mΩ , 70 mΩ , 74mΩ , 80 mΩ , 84 mΩ , 90 mΩ , 94 mΩ , 100 mΩ
3.	testing time	5 Seconds
4.	Resistance gear position, resistance value accuracy	±5%
5.	insulation resistance	DC1000V, above 1 MΩ (between terminal and side panel)

6.	withstand voltage	AC1000V, 1min, with a leakage current of 5mA
7.	Resistor sheet material	constantane
8.	ground protection	With a dedicated ground terminal
9.	levels of protection	IP20
10.	Resistant temperature sensing characteristics	≤50ppm/℃
11.	Adjust the way	Manual close switch, power adjustable, no load switch
12.	cooling-down method	Forced air cooling, AC220V, 300, the bottom of the installed cabinet
13.	Load outoutgoing terminals	15000A copper row 15 * 100mm a total of 2

V. Software introduction:

order number	parameter
1	The software adopts LabVIEW, human-computer interface adopts standard Windows style, simple and easy to learn, can meet the normal control, collection and calculation;
2	The software interface parameter units can be selected (s, min, h; A, mA);
3	The software interface can set the sampling rate, set the battery voltage, temperature, short circuit time, etc., and synchronously display the short circuit current curve; it can stop according to the battery pressure drop, and the test can stop according to the temperature conditions
4	Data acquisition rate can be set;
5	You can measure the battery current in real time, and display the current value and time curve in real time.
6	Battery voltage can be measured in real time, and voltage value and time curves can be displayed in real time.
7	Battery temperature can be measured in real time, and temperature values and time curves can be displayed in real time.
9	These three time curves, the tester can selectively or all of

	the data.
10	Automatic record and save test data and automatically complete the test process.
11	Data for each test can be saved in a EXCEL document or other document format, and can be called out to view, historical test data, curves, etc.
12	Control software interface: (Adjustable) 

Vi. Main accessories and origin:

order number	List of main accessories	Product / brand
1.	Equipment main frame	Rijada
2.	short-circuiting device	enter port
3.	AC contactor	Chint
4.	Intermediate contactor	Schneider
5.	Switching Mode Power Supply	Taiwan Ming wei
6.	Control cabinet touch screen	siemens
7.	control cabinet PLC	siemens
8.	current diverter	custom made

9.	Copper row	domestic
10.	resistance box	Rijada
11.	button switch	Shanghai a good
12.	tri coloured lantern	domestic HNTD
13.	data acquisition system	ART
14.	computer	Dell dell

Note: Due to the supply cycle and other reasons, the above accessories may be replaced by other brands of the same level.

Vii. Standard equipment configuration:

order number	description	quantity
1	Equipment host	A
2	resistance box	A
3	computer	A set
4	Battery copper woven strip (about 4 m length)	A set
5	Temperature acquisition line (standard with 5 m)	Eight sets
6	Voltage acquisition line (standard with 5 m)	Seven sets
7	testing software	A set
8	Factory inspection report	A
9	Operating instructions for both the electronic and paper versions	A

VIII. Equipment Installation and use conditions

▌ installation environment

Ambient temperature: 5℃ ~ + 35℃, Relative humidity: 90% RH;

The equipment is installed indoors, there should be no high concentration of dust, corrosive gas and flammable and explosive atmosphere;

Ground leveling; (the user has installed the laboratory smoke exhaust system in advance)

▌ source

AC220V± 10%, 50Hz ± 5Hz, three-phase five-wire system;

The user is responsible for connecting the power cord to the control box air switch;

▌ ground, drainage

Ground resistance is less than 4 Ω (the workshop shall have a clean grounding device), and the grounding wire is connected to the bolt at the box base;

IX. General equipment configuration and standards:

1 Measure 1000 mm from the outer wall of the machine, the equipment noise is 75 dB, no obvious vibration.
The equipment shall meet the relevant national safety standards of the equipment and the safety standards and requirements required by the relevant safety codes.

X. Delivery time and transportation of equipment:

1 Delivery time: 75 days after signing the contract (advance payment).
2 The Seller is responsible for the transportation, and the buyer is responsible for unloading the goods after arriving at the designated place.

XI. Installation, commissioning and training:

1. Installation and commissioning: After the equipment is delivered to Party A, Party B shall immediately meet the installation and commissioning of the technical agreement.
2. Training plan: During equipment installation and commissioning, Party A's user personnel shall be trained during the installation process, and shall conduct centralized operation and equipment principle training after installation.

Xii. Quality assurance and after-sales service:

1. Quality assurance: free warranty period of 12 months, lifetime cost price maintenance price;
2. Response: countermeasure response within 2 hours after receiving feedback (telephone, email, fax, etc.), and personnel in place within 24 hours.