

SKXD-512-5V3A

Technical solution of automatic detection of rechargeable bat- tery and capacitive equipment

Product name: rechargeable battery detection chemical
capacitance equipment

Product model: SKXD-512-5V3A

Channel parameters: 512 channels, voltage 5V, charging
current 3A, discharging current 3A

Product specifications: open cylinder 14,18,21,26,32
battery specific

First party	Second party
	Guangdong Songke Leading Intelligent

	Equipment Co., LTD
Sign and seal:	Sign and seal:
Version number of the protocol	[TOP-V 1.05]

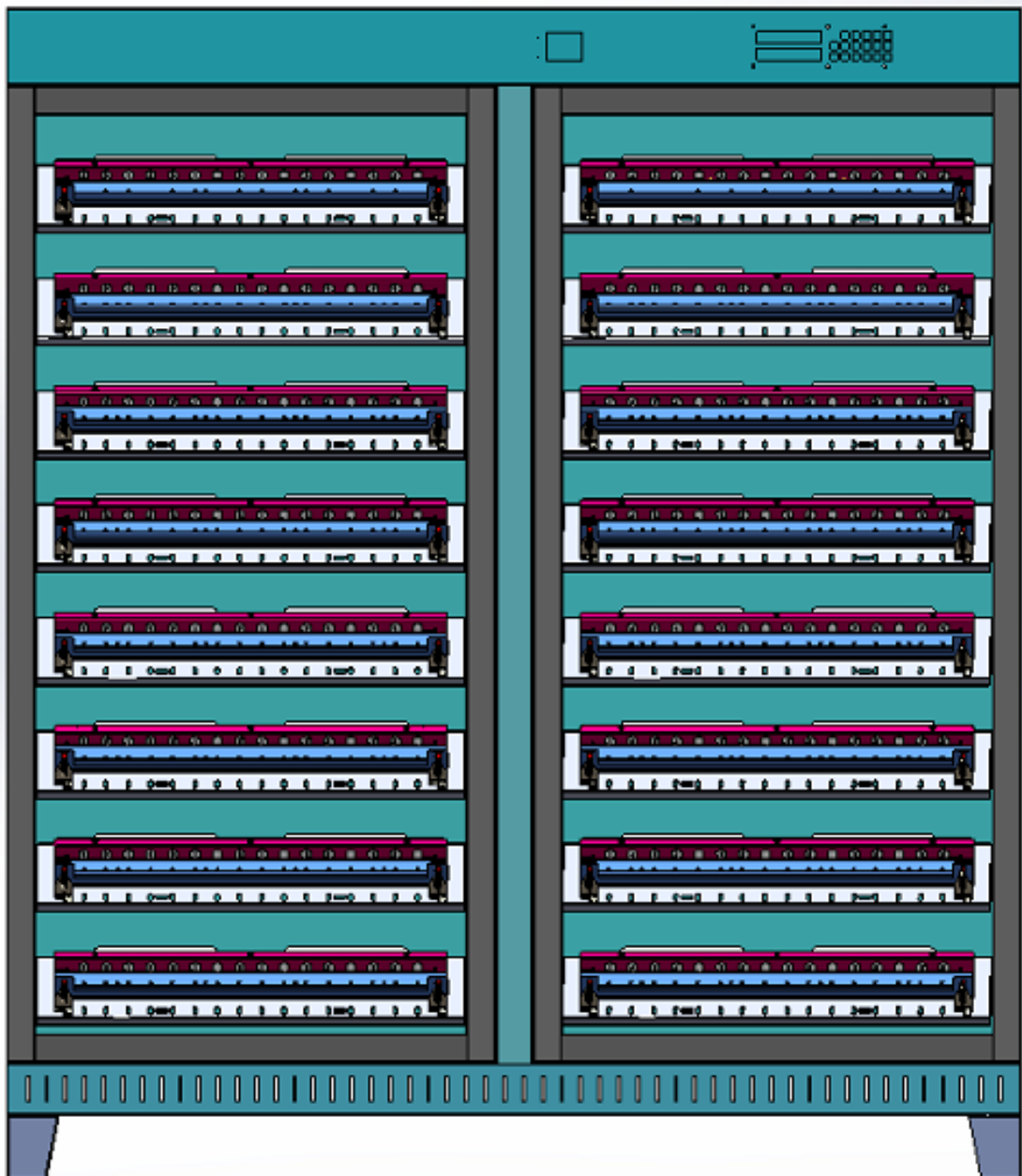
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I. Equipment model and external structure:

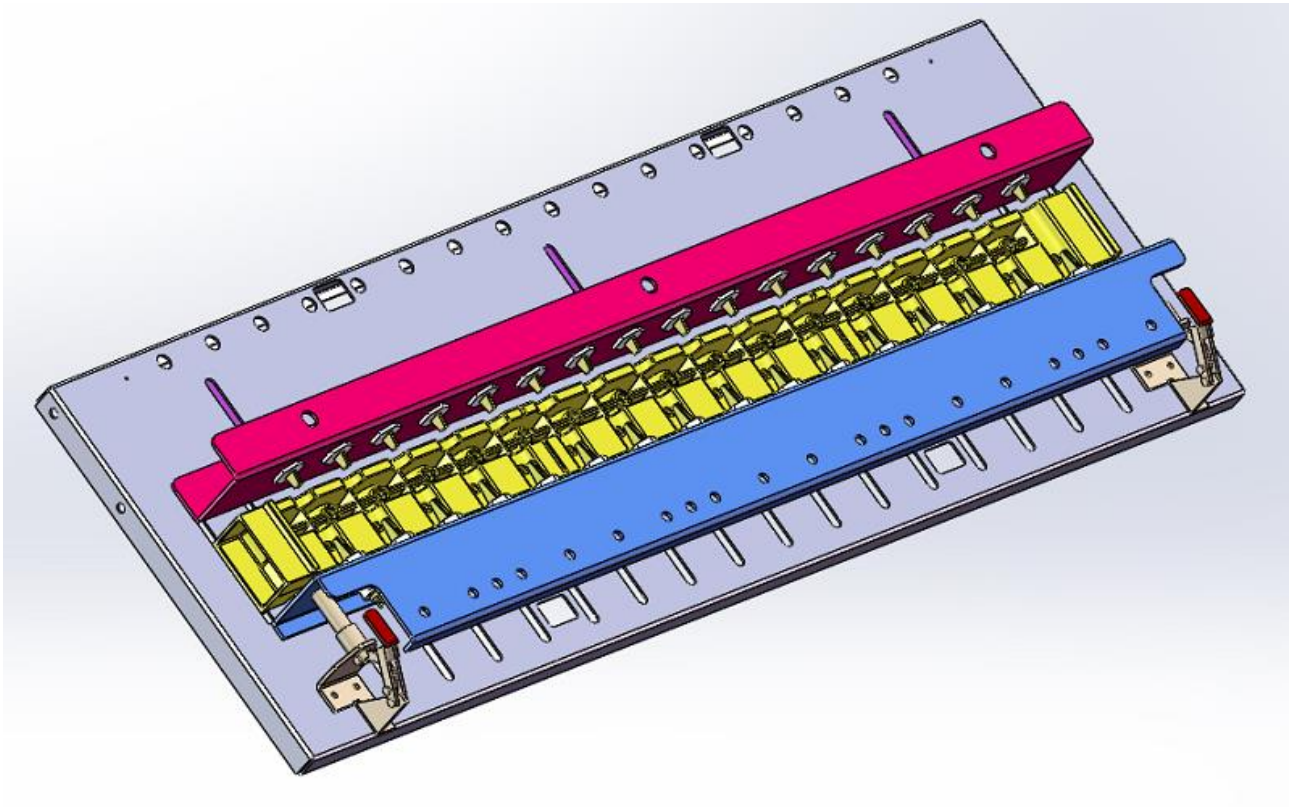
Equipment model: SKXD-512-5V3A

Equipment structure: The fixture adopts the design of quick push and clamp, and the battery is placed on both sides;

Reference dimensions of the single-layer device (mm): length 1596mm, width 500mm, height 1840mm (reference, subject to actual equipment);



Equipment appearance diagram



Note: The fixture part is designed by quick push clamping method, which can be compatible with cylindrical batteries 18,21,26 and 32 series (14-18). The height of the fixture can be adjusted from 60 to 70mm.

2. Basic composition of the equipment

It is specially designed for the formation, sorting and testing equipment of 18650,21700,26650 and 32650 batteries.

The device is mainly composed of a computer, communication interface and battery testing cabinet. The battery testing cabinet consists of fixture and plate body for placing fixture, constant current and constant voltage source, storage control circuit, sampling circuit, microcontroller and control panel.

3. Main performance of the equipment

1. Each device can perform constant current and constant voltage charging and constant current discharge test for 512 batteries that meet the voltage range.
2. Constant current-constant voltage power supply is adopted, and there is no impact when switching from constant current to constant voltage, which is especially suitable for lithium ion battery charging requirements.
3. The device uses an AVR microcontroller as the control center, working in conjunction with peripheral sampling circuits. It can be controlled by a higher-level computer. When connected to a computer, it can save complete charge-discharge curves for all channels. Alternatively, it can operate independently of the higher-level computer through the control panel, performing tasks such as constant current and voltage charging, constant current discharging tests, and time-based sorting.

4. Each battery has its own independent constant current and constant voltage source, forming its own loop without affecting each other.
5. Install an LED on each battery fixture as a working status display, which can be used to indicate battery capacity sorting after discharge is completed.
6. Real-time detection of the voltage of each battery. When charging, constant current charging is first performed. When the battery voltage reaches the set value, smooth transfer to constant voltage charging,

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When the set time or current termination condition is met, the charging ends. During constant current discharge, when the battery voltage is lower than the set value, the discharge ends and the corresponding battery indicator light is lit.

7. It has power failure protection function, and can continue to run the original workflow after power on.
8. The upper computer can set 32 work step parameters and 256 cycles, and each upper computer can connect 1 to 15 sets of single chip microcomputer systems (suggested 10 Clothes below).
9. Supporting software functions.
 - 1) Using the graphic operation interface, display the battery voltage, current, time, capacity and other data, and display the corresponding working status and abnormal conditions in various colors;
 - 2) Any segment battery capacity indicator (up to 100 segments);
 - 3) Data points can be recorded according to the changing conditions of voltage, current and time to form complete charge and discharge curve data. The time interval between data points of the curve is less than 15 seconds
 - 4) Battery sorting function is carried out under various conditions (capacity, time, open circuit voltage, discharge platform, etc.);
 - 5) Automatically calculate constant current charging ratio, capacity loss, discharge efficiency, average voltage, median voltage and other data;
 - 6) Operator permission setting, hierarchical operation;
 - 7) Can display charge and discharge curve, cycle diagram;

Iv. Main technical parameters

Unit type	MN-HF512-3K
Number of device channels	The machine has a total of 512 channels
Workflow control mode	Whole cabinet control
Charging mode	Constant current, constant pressure
Charging cutoff conditions	Voltage, current, time, capacity
Discharge mode	Constant current
Discharge cutoff conditions	Voltage, time, capacity
Sampling inspection cycle	$\leq 15s$
Voltage measurement range	0~5V, resolution 1mV
Battery voltage range	Charging: 0~4.5V, Discharge: 4.5~2.0V
Constant voltage range	3~4.5V
Voltage accuracy	$\pm (0.05\%RD+0.1\%FS)$
Current range	Charge 0.015-3A, discharge 0.015-3A, resolution 1 mA
Current accuracy	$\pm (0.1\%RD+0.1\%FS)$
Time frame	Set any time within 0~30000 minutes, the time unit is min
Time accuracy	$\leq \pm 0.1\%$
Fixture type	Four-line manual quick fixture (including support

	bar)
The fixture can be adjusted in height	Cylinder specified model (50-70mm)
Support the battery	Cylinder specification: 18650/21700/26650/32700
Working power supply	Three-phase four-wire system, AC380V $\pm$ 10%,50HZ, power consumption less than 13KW
Communication mode	RS485, baud rate 57600

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External dimensions	1596 (length) x 500 (width) x 1840 (height)
Work environment	Temperature: 0-40 , relative temperature less than or equal to 85%
Full load operating current	Maximum 30A for phase line and maximum 3A for neutral line
Equipment starting current	The instantaneous closing of the air switch is about 60A
Overall weight	About 250 kilograms

V. Main configuration requirements of the system

1. Minimum configuration for computer systems: P4 or higher CPU, more than 2G of RAM, over 200G of hard drive space, EGA/VGA color display, one CD-ROM, one mouse, Microsoft™ Windows XP or higher operating system, one available RS232 serial communication port, and a printer supported by Windows. The computer system is configured by the user and the number of microcomputers is determined based on actual needs.

6. Equipment acceptance, after-sales service and other matters

(1) Equipment acceptance

1. Acceptance method: pre-acceptance, formal acceptance.
2. Pre-acceptance: After the equipment is assembled, the user's technical personnel will go to the equipment manufacturer for acceptance according to the technical requirements. After the initial acceptance is qualified, the goods will be delivered to the site designated by the client.
3. Official acceptance: Party A shall notify Party B to sort out the delivery and provide the delivery date and arrival date. The official acceptance shall be carried out at the site where Party A uses the goods.
4. Acceptance criteria: After the completion of equipment commissioning, the equipment shall be accepted according to the technical requirements and technical indicators of the equipment. If the acceptance is not qualified, Party B shall modify and commission the equipment until the acceptance is qualified; if the acceptance is qualified, both parties shall sign for the handover.
5. Problem handling during acceptance: Party B shall solve the problems in the equipment acceptance process within the shortest time.
6. Acceptance procedures
 - 1) Inspect the appearance and structure of the equipment according to the requirements of the process equipment.
 - 2) The constant current charging, constant voltage charging, constant current discharging and other functions of the equipment shall be accepted according to

the content stipulated in the technical agreement to ensure that the accuracy of current and voltage is within the specified range.

- 3) After the equipment is qualified for production acceptance, stability acceptance shall be carried out. Within one month of operation, random tests shall be conducted according to the technical requirements of the equipment at any time, and the bad point situation, precision drift situation and power load situation of the equipment shall be monitored at the same time. All the above indicators shall be within the scope specified in the agreement

2 Within a month, when Party A conducts final acceptance, Party B shall be responsible for operation training for Party A's users and basic maintenance training for maintenance personnel.

- 4) If both parties have no objection, the equipment is judged to meet the technical requirements and pass the acceptance.
- 5) After the equipment acceptance is completed, the acceptance personnel shall prepare the acceptance report, and both parties shall sign the acceptance report.

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(2) After-sales service

1. The warranty period of the equipment is one year. During the warranty period, if the equipment fails, the seller will provide remote technical support within one hour; and send technicians to the site for technical service within 24 hours.
2. After the warranty period, if the equipment fails, the seller will provide remote technical support within 2 hours; the seller will send technicians to the site for technical service within 48 hours.
3. The fault problem shall be solved within a reasonable time, and the maintenance situation shall be written into a written maintenance record, which shall be signed and confirmed by both parties.
4. Within 12 months after the acceptance of the equipment, Party B shall be responsible for the free maintenance of the equipment (except for damage of wear-prone parts, improper operation, impact of natural disasters and power reasons, and improper movement of Party A's equipment).
5. Software (excluding operating system): Provides lifetime upgrade service.
6. Party B shall provide the lifetime maintenance service of the equipment. After the expiration of the warranty period, Party B shall only charge labor and transportation costs for the maintenance of the equipment, and party B shall only charge the cost for the replacement of the relevant accessories of the equipment.

(3) Others

1. Party A shall ensure that the surface of the battery tab is clean, and the contact surface between the battery tab and the fixture is clean, free from pollutants, electrolyte residue and corrosive gases;
2. Party A shall clean and maintain the fixture regularly;
3. Party A shall be responsible for laying and installing network cable, power supply cable and air pipe to the designated inlet of each equipment, and Party B shall provide technical support.