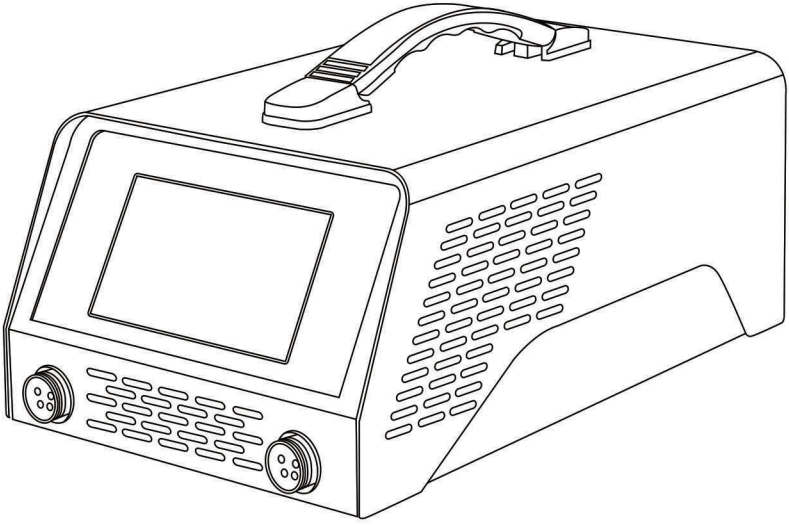
HOBAG
宏邦智能

BV0550S/60S智能锂电池
测试仪用户说明书



请在专业人员的指导下操作使用本机，
否则错误的设置或操作可能会造成电池爆炸起火!

四川宏邦智能装备有限公司电话：400-028-3090

尊敬的用户：

感谢您选择四川宏邦智能装备有限公司 (以下简称本公司) BV0550S/60S 系列产品，在使用此系列产品前应当仔细阅读使用说明书。因为对电池的操作具有极高的危险性，所以必须严格按照说明书所述方式使用。如果违规操作或者不知晓电池规格进行设置，极易造成危险。因使用BV0560S系列产品所造成的直接后果和间接后果本公司概不负责!。

产品型号：	BV0560S
适用范围：	电压：0.5V~5V 容量：0~9999Ah的单体电芯
充电范围：	电压：0~5V 可调 电流：0.2A~50A/60A
放电范围：	电压：0.5V~5V 可调 电流：0.2A~50A/60A
功能：	充电、放电、分容、均衡
电压精度：	± 0.02%FS+2字
电流精度：	± 0.05%FS+10字
通信方式：	USB 通信、串口通信
设备电源：	AC 220V 50Hz
工作环境：	环境温度 0~40℃，通风干燥
保护功能：	电池接反/电池脱夹/电池超压/过流/超温

BV0560S 系列产品支持 0~5V 电芯，请勿测量超出 5V 电压的电芯，在使用过程中注意通风，防止因为通风不良导致机器过热！

操作说明：

1、连接正负极电流输出线，按照机身正面标识插入插头，红色插入正极端，黑色插入负极端。

2、连接电池，将红色输出夹具夹住电芯正极极耳，黑色输出夹具夹住电芯负极极耳，确保夹具与极耳接触良好，稳定。

注意：一定要区分电池正负极，在夹具接反的时候仪器会发出蜂鸣警报，请勿开启工作

容量测试仪触控屏使用说明

一、主页介绍

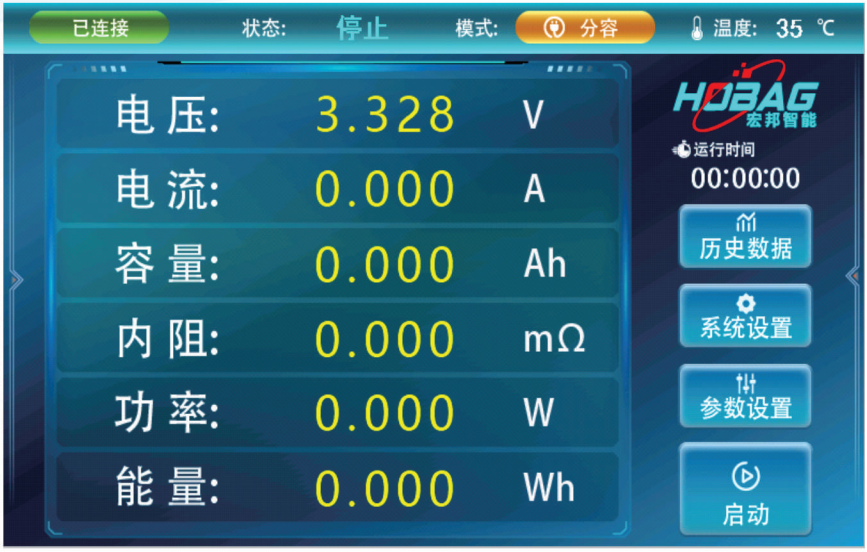


图1 容量测试仪主页界面

主页显示测试仪的工作状态和电池信息，具体说明如下：

“已连接”：设备通信正常。

“状态：停止”：测试仪处于停止状态。

“模式：分容”：当前工作模式为分容。

“温度：35℃”：测试仪内部温度为35℃。

“电压、电流、能量等”：所连接电池的状态信息与测试数据。

关于“内阻”的特别说明

内阻为电芯直流内阻。根据其测量特性，仅当电池电压处于指定范围内，以及测试参数设置接近钛酸锂、铁锂、三元性质且测试仪启动时，才会进行测量。电压范围取决于第一工步类型：

第一工步为放电：2.318~2.390V / 3.220~3.320V / 3.606~3.718V

第一工步为充电：2.376~2.462V / 3.212~3.328V / 3.696~3.830V

注意：直流内阻与电芯状态及多种环境因素相关，测量结果仅供参考。

二、系统设置

点击主页面右方的系统设置，可进入如下操控界面。在此界面，可选择“专业”、“智能”两种测试模式。此界面下可选择是否打开温控风扇，默认开启状态下，风扇转速根据温度调整；若关闭，风扇默认为全速运行。蜂鸣器开关启停按键声音反馈功能。数据校准可调整电压、电流标定值，非专业授权人士禁止改动。



图2 系统设置界面

三、参数设置

点击主页面右方的参数设置。在专业模式下（如下图），可详细配置工步参数。

分容模式下，可选择循环类型：“充放”（先充电后放电）或“放充”（先放电后充电）。点击 “均衡电压”，可设置循环结束后电池的停止电压或均衡容量。



图3 专业测试模式的分容设置界面



图4 均衡电压/均衡容量设置界面

参数设置提示

充电截止电压

钛酸锂：2.7~2.8V

三元/聚合物：4.1~4.2V

磷酸铁锂：3.6~3.65V

充电电流

建议设为电芯容量的 10%~20%，以尽量降低电芯发热（请参考电池规格书）。

充电截止电流

恒流转恒压充电后，充电电流递减至此值时判定为充满，建议值 0.2~1A。

放电截止电压

钛酸锂：1.6~1.7V

三元/聚合物：2.75~2.80V

磷酸铁锂：2.4~2.5V

放电电流

建议设为电芯容量的 10%~50%，以尽量降低电芯发热（请参考电池规格书）。

在智能模式下（如下图），仅需选择电池类型及测试功能，输入预估电池容量参数，测试仪将自动设置测试参数。



图5 智能测试模式下的参数设置界面

四、历史数据

在运行停止状态下，点击主页面右方的**历史数据**，可查看最近10次测试的电池数据。您最多可选择三个电池的数据，点击确认后即可查看其数据曲线。进入曲线界面，选择底部对应的电池编号，即可查看曲线明细。



图6 历史数据

在曲线界面中，坐标轴及曲线颜色对应关系如下：
红色坐标轴与红色曲线：表示电压。
黄色坐标轴与黄色曲线：表示电流。
正常电芯的电压曲线应为一条平滑曲线。若电压出现陡升或陡降，可能原因包括：
电流设置过大、测试进入静置阶段，或电池性能出现下降。
若设备运行时间过短，可能不显示数据曲线，或曲线变化特征不明显。

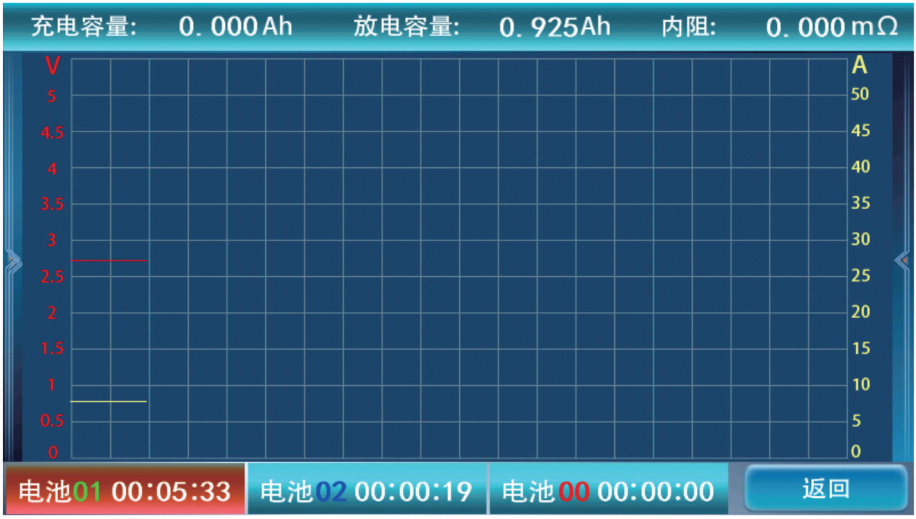


图7 历史数据曲线

五、注意事项

必须等本机运行结束才会有结果数据；
运行时间过短不会记录数据；
本机运行过程中进行任何操作，必须先按下暂停键；
禁止多次0V充电激活不可充电或零电压或鼓包损坏的电池；
禁止测试电压超过5V的电池；
必须按照电芯规格书正确且合理的设置充电截止电压/电流,放电截止电压/电流；
必须在有人监督的空旷环境下进行测试，周围不得有高温易燃易爆及贵重物品。

六、常见故障及排除方法

1、夹具夹住电池设备报警

原因：电芯正负极与夹具正负极接反
解决办法：调换连接电芯的正负极夹具，正确夹住电芯极耳。确定电芯极耳没有接反，则关机重新启动。如若仍然报警则有可能芯片因为静电、短路等原因损坏，请联系厂家。

2、为什么测试结果数据偏差严重

原因1：充电截止电压/充电电流/截止电流设置错误
解决办法：按照电芯规格书正确合理的设置参数
原因2：放电截止电压/放电电流设置错误
解决办法：按照电芯规格书正确合理的设置参数

原因3：夹具与电芯极耳接触面积不够/采样夹没有夹到电芯极耳上

解决办法：想办法增加接触面积，小鳄鱼夹夹到电芯极耳根部

3、为什么充电过程中电芯电压会超过设置电压

原因1：电流超出电池承受范围/距离目标电压过近，且电流较大

解决办法：按照电池规格书设置电流大小

原因2：设备夹具与电芯极耳接触不良/接触面积过小

解决办法：增大与电芯极耳的接触面积，确保连接稳定

4、为什么充放电过程中夹具发热严重甚至烧毁

原因1：设定电流超过或者接近夹具所能承受的极限电流

解决办法：减小设定电流或者联系厂家更换夹具

原因2：夹具与极耳接触不良

解决办法：增加夹具与电芯极耳的接触面积，确保连接稳定

5、为什么数据曲线不显示

原因1：设备运行时间过短

解决办法：运行设备超过2分钟后再查看数据曲线，随着测试时间增加，曲线信息会更加完整。

6、为什么电芯在恒压完成之后电压会降低或者增高

原因：电芯物理特性导致电压会在充电/放电完成后回升或者下降

解决办法：电芯物理特性，无法改变

7、为什么电芯在充电/放电过程中发热严重

原因1：未按照电芯规格进行设置充电/放电电流，超出电芯承受范围

解决办法：按照电芯规格书调整充电/放电电流

原因2：电芯性能下降

解决办法：建议更换该电芯，有损坏风险

8、参数设置后启动没有电流出现

原因1：夹具未能有效与极耳连接

解决办法：重新夹取电芯，保证启动前能有效读取电芯电压

原因2：充放电功率部分损坏

解决办法：联系厂家维修(请勿擅自拆机导致不可逆的损坏

原因3：参数设置失败或附近干扰过大，导致通信失败

解决办法：点击停止后重新设置参数远离干扰源

附：

1：产品按中国境内标准实行七天包换，十八个月保修

2：保修服务仅限于正常使用情况。以下情况不在保修范围内：人为损坏/自行拆卸改装维修/不按说明书要求使用/外部不可抗因素导致的损坏，不在免费保修范围

3：测试夹具等配件属于消耗品不予保修

4：保修服务请联系您的经销商处，如无法联系经销商可致电我司协商处理。

容量测试仪上位机使用说明

一、安装上位机软件

打开安装包，按步骤安装USB串口驱动、安装上位机软件。注意，上位机软件的安装目录不可有中文。



图8 USB串口驱动安装界面

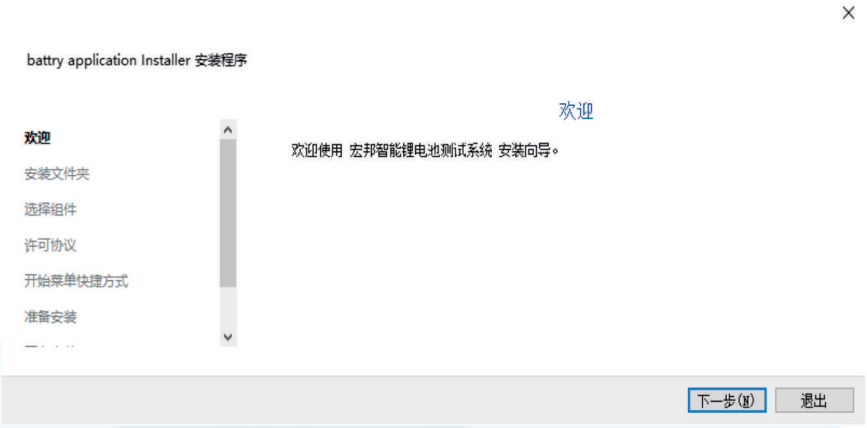


图9 上位机软件安装界面

二、上位机功能介绍

打开上位机软件后，界面如图10所示。在右下角选择对应的COM串口，点击连接。选择正确的串口后，界面运行数据等参数，将与测试仪界面显示参数一致，如图11所示。

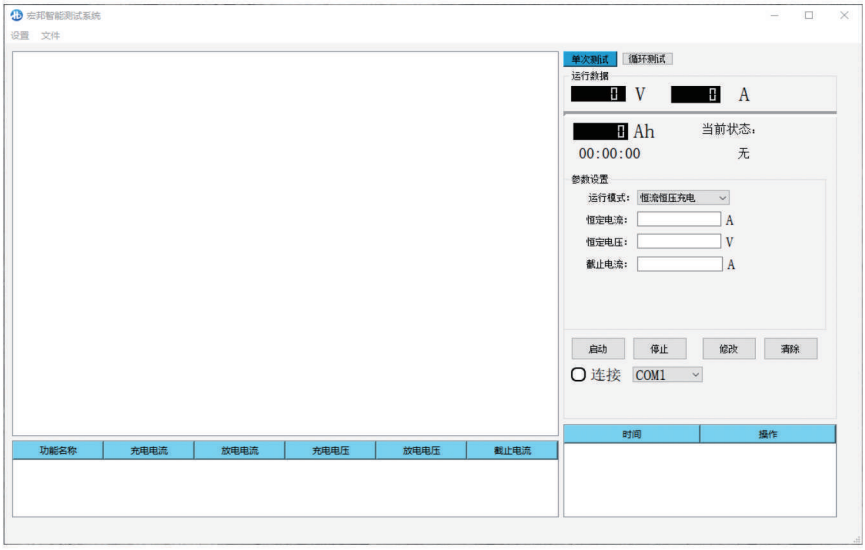


图10 上位机软件主界面

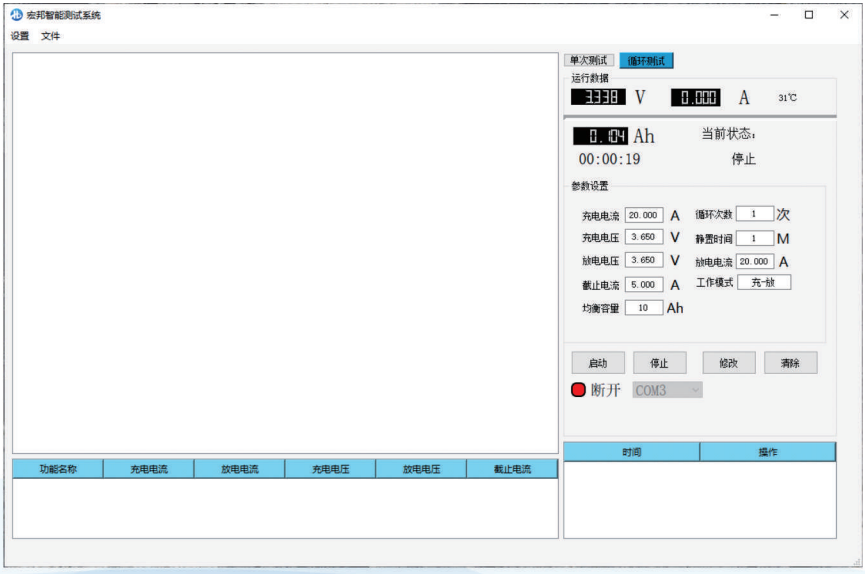


图11 正确连接设备后界面状态

连接设备后，点击【修改】，可调整运行模式及对应的参数设置（请按照电芯规格书调整测试参数，否则可能带来锂电池失控的风险）。参数设置完成后，点击【启动】，上位机软件将实时显示运行数据并自动记录保存，如图12所示。

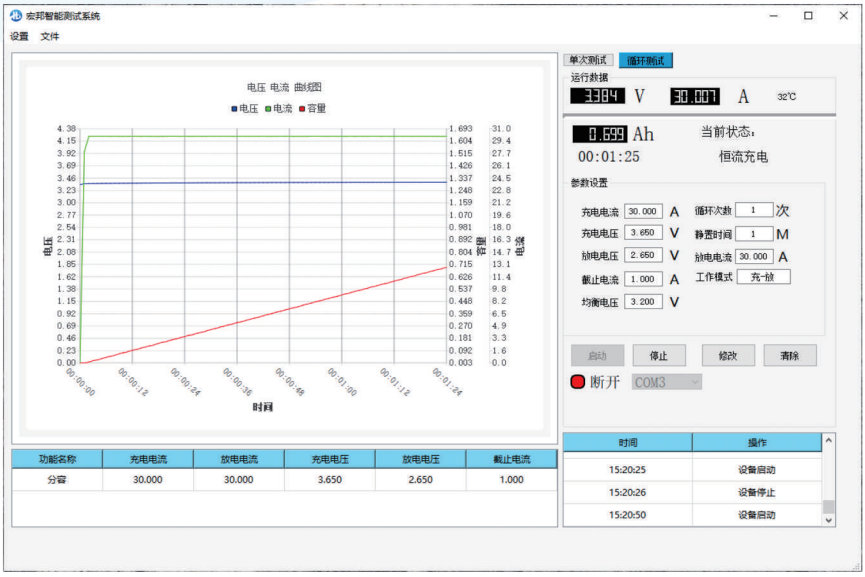


图12 运行状态界面

运行完成后，点击【文件】，可查看历史运行数据文件，也可导出为Excel文档查看数据，如图13。其中历史数据编号规则为测试的开启时间。

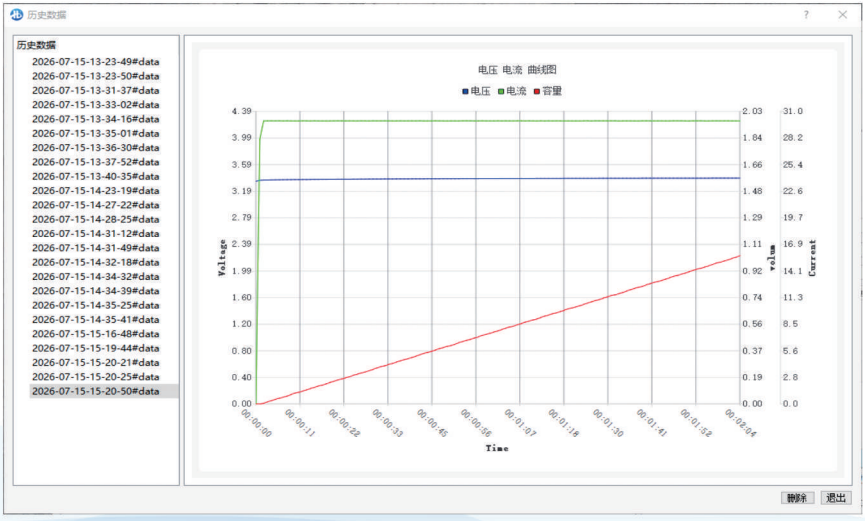


图13 历史数据查看

三、常见故障及排除方法

1、点击【修改】无法有效修改参数设置

原因1：COM串口未有效连接

解决办法：选择其他串口，连接，确认运行数据与设备显示一致

原因2：COM串口数据传输延迟/混乱

解决办法：更换数据线。注：受限于不同电脑的串口速度，可能更换串口线也无法达到有效解决，此种情况下，可多尝试设置几次参数，直至参数设置满足要求；或者通过设备触摸屏设置参数亦可。

2、点击【设置】无法更改参数

原因：为保障设备运行不出异常，该功能未开放给消费者

解决办法：若需调整，可联系厂家调整。

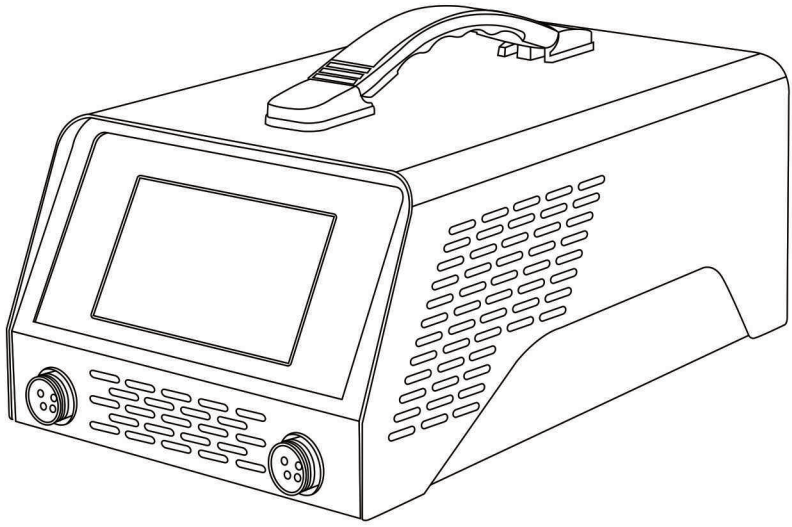
3、连接串口后上位机运行数据依然与设备运行数据不一致

原因：选择的串口并非为连接测试仪的串口

解决办法：更换串口连接，若无其他串口选项，确认是否正确安装USB串口驱动

HOBAG 宏邦智能

BV0550S/60S Intelligent Lithium Battery Tester User Manual



Please operate this equipment under the guidance of qualified professionals.
Incorrect settings or improper operation may cause battery explosion and fire!

Sichuan Hongbang Intelligent Equipment Co., Ltd. Tel: 400-028-3090

Due to the extremely high risk associated with battery operation, it must be used strictly in accordance with the instructions provided. Any unauthorized operation or setting without knowledge of the battery specifications can easily pose a danger. Our company will not be responsible for any direct or indirect consequences arising from the use of BV0550S/60S series products!

Item	Specification
Model	BV0550S/60S
Applicable Range	Single cell: Voltage 0.5V~5V, Capacity 0~9999Ah
Charge Range	Adjustable voltage: 0.5V~5V; Current: 0.2A~50A/60A
Discharge Range	Adjustable voltage: 0.5V~5V; Current: 0.2A~50A/60A
Functions	Charge, Discharge, Capacity Grading, Balancing
Voltage Accuracy	**±0.02%FS ± 2 digits**
Current Accuracy	**±0.05%FS ± 10 digits**
Communication	USB Communication, Serial Communication
Power Supply	AC 220V 50Hz
Operating Environment	Ambient temperature 0~40°C, well-ventilated and dry area
Protection Functions	Battery Reverse Connection, Disconnection, Over Voltage / Over Current / Over Temperature

The BV0550S/60S series supports cells rated 0~5V. Do not test cells exceeding5V. Ensure adequate ventilation during operation to avoid equipment overheating caused by poor heat dissipation.

Operation Instructions:

1.Connect positive and negative current output cables. Insert plugs according to the marking on the front panel: red plug for positive terminal, black plug for negative terminal.

2.Connect the cell: Clamp the red output clip to the cell positive tab and the black clip to the cell negative tab. Ensure firm and reliable contact between clips and tabs. Note: Distinguish cell positive and negative polarity. The buzzer will trigger an alarm if clips are connected reversely. Do NOT start operation under this condition.

Operating Instructions for Capacity Tester Touchscreen

1、 Home Page Introduction

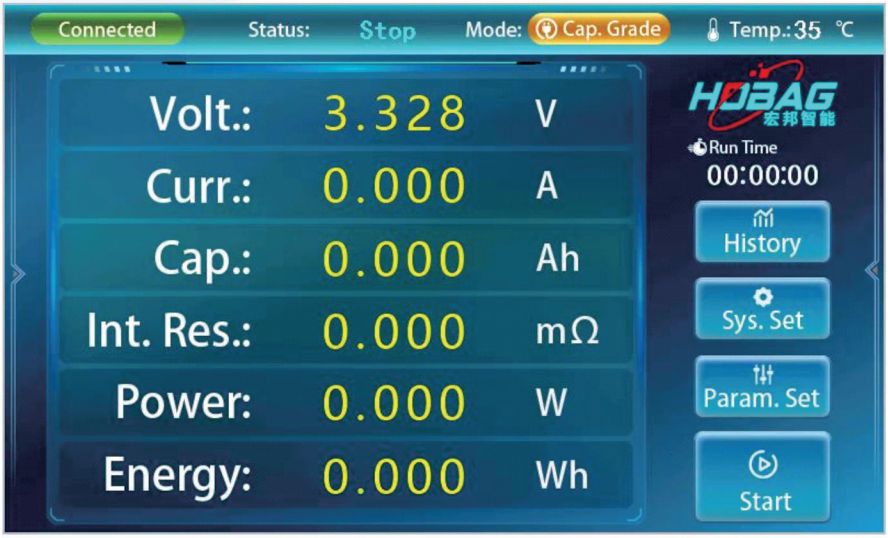


Figure 1 Home Page Interface of Capacity Tester

The home page displays the operating status of the tester and cell information.
Detailed descriptions are as follows:
Connected: Normal communication between equipment and cell.
Status: Stop: The tester is in stopped state.
Mode: Capacity Grading: Current operating mode is capacity grading.
Temperature: 35℃: Internal temperature of the tester is 35℃.
Voltage, Current, Capacity, etc.: Status information and test data of the connected cell.

Special Note on Internal Resistance

The displayed internal resistance refers to the DC internal resistance of the cell. Based on measurement characteristics, internal resistance measurement will only be executedwhen the cell voltage falls within a specified range and the tester is running.
The applicable voltage range depends on the type of the first step:
When the first step is Discharge: 2.318 ~ 2.390 V / 3.220 ~ 3.320 V / 3.606 ~ 3.718 V
When the first step is Charge: 2.376 ~ 2.462 V / 3.212 ~ 3.328 V / 3.696 ~ 3.830 V
Notice: DC internal resistance is affected by cell condition and various environmental factors. All measured values are for reference only.

2. System Settings

Tap Sys. Set on the right side of the home page to access the control interface shown below. Two test modes are available on this interface: Professional and Smart. You may enable or disable the temperature control fan. When enabled by default, fan speed adjusts according to temperature. If disabled, the fan runs at full speed continuously. The buzzer toggle controls audible feedback for button operations. Data Calibration

allows adjustment of voltage and current calibration values. Modification is prohibited for non–authorized personnel.

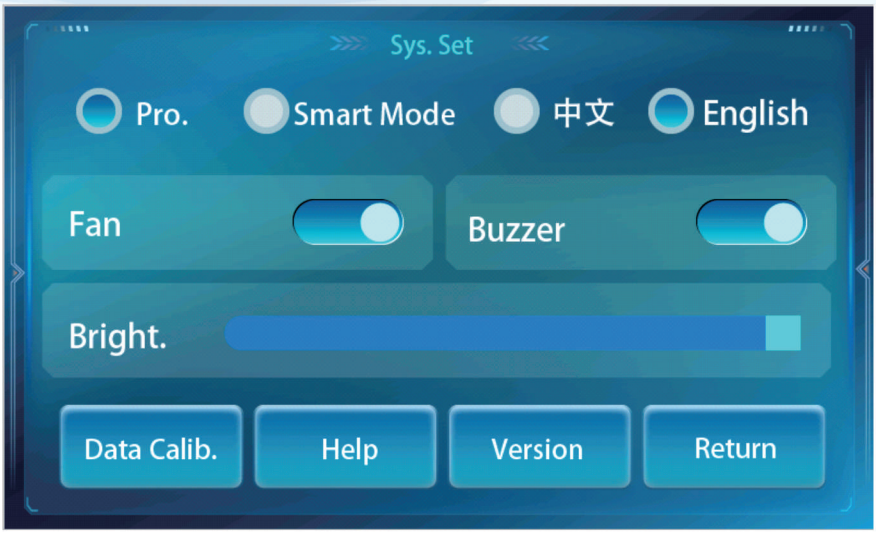


Figure 2 System Settings Interface

3. Parameter Settings

Tap Param. Set on the right side of the home page. In Professional mode (as shown below), step parameters can be configured in detail.In Capacity Grading mode, select the cycle type: Chg–Dis Cycle(charge first, then disc harge) or Dis–Chg Cycle (discharge first, then charge). Tap Terminationcapacity to set the stop termination capacity or voltage of the cell after all cyclesare completed.

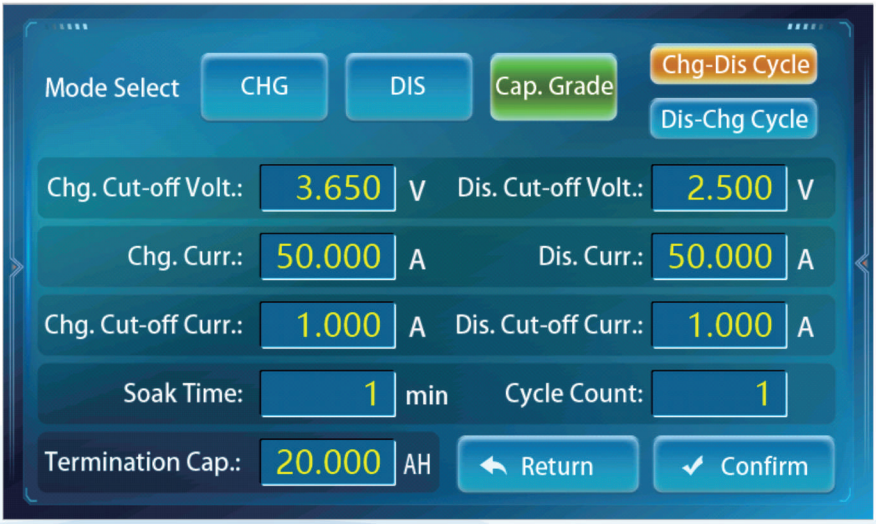


Figure 3 Capacity Grading Setting Interface (Professional Test Mode)

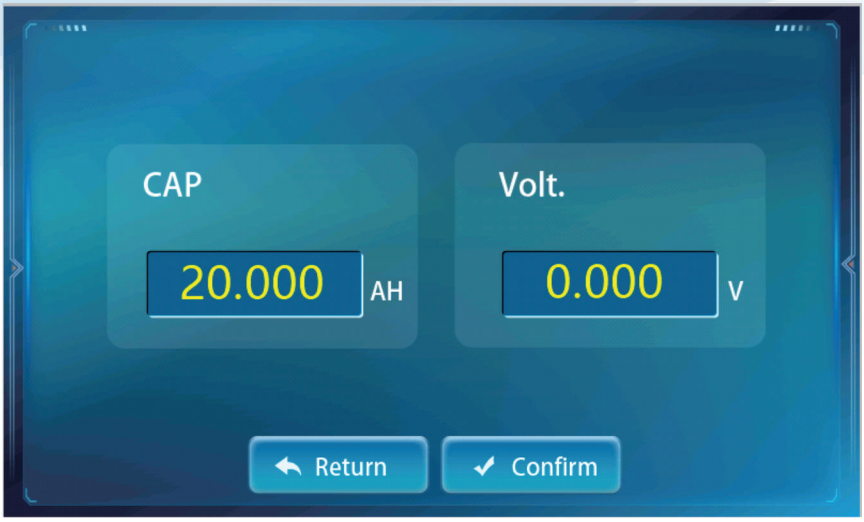


Figure 4 Termination Voltage / Termination Capacity Setting Interface

Parameter Setting Tips

Charge Cut-off Voltage

LTO: 2.7 ~ 2.8 V

NCM / Polymer: 4.1 ~ 4.2 V

LFP: 3.6 ~ 3.65 V

Charge Current

It is recommended to set the value to 10% ~ 20% of the cell capacity to minimize cell heating. (Refer to the cell specification sheet.)

Charge Cut-off Current

After switching from constant-current charging to constant-voltage charging, the cell is deemed fully charged when the charging current drops to this value. Recommended range: 0.2 ~ 1 A.

Discharge Cut-off Voltage

LTO: 1.6 ~ 1.7 V

NCM / Polymer: 2.75 ~ 2.80 V

LFP: 2.4 ~ 2.5 V

Discharge Current

It is recommended to set the value to 10% ~ 50% of the cell capacity to minimize cell heating.(Refer to the cell specification sheet.)In Smart mode (as shown below), simply select the cell type and test function, enter the estimated cell capacity, and the tester will automatically configure all test parameters.



Figure 5 Parameter Setting Interface (Smart Test Mode)

4. Historical Data

When the tester is stopped, tap History on the right of the home page to view test data of the latest 10 cell tests. You may select data for up to three cells; tap Confirm to load their data curves. On the curve page, select the corresponding cell number at the bottom to view detailed curve information.



Figure 6 Historical Data

On the curve page, the correspondence between axes and curve colors is defined as follows:

Red axis and red curve: Voltage

Yellow axis and yellow curve: Current

A normal cell shall display a smooth voltage curve. Sharp voltage rises or drops may be caused by excessive current setting, entry into rest phase, or degradation of cell performance. If the equipment running duration is too short, data curves may not appear or curve variations may be indistinct.

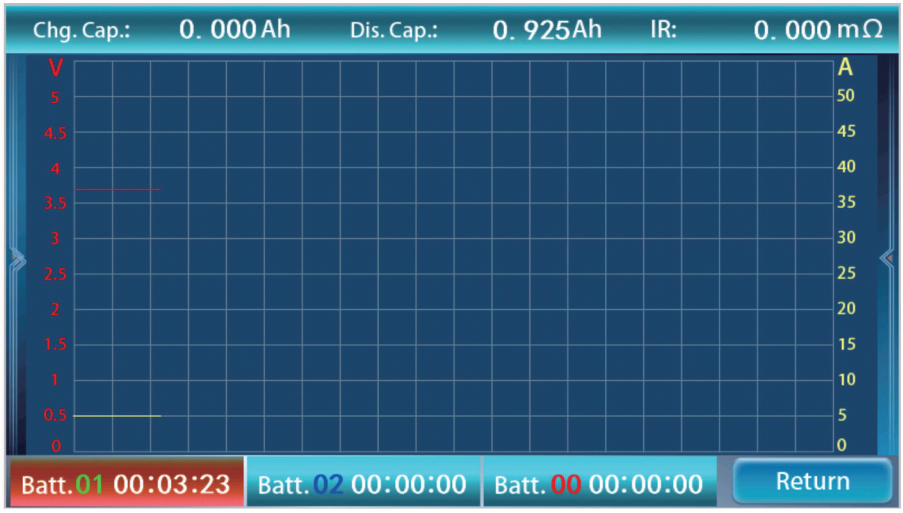


Figure 7 Historical Data Curves

5. Precautions

Test result data will only be generated after the test completes fully.

No data will be recorded if the running duration is too short.

Press the Stop button before performing any operations while the unit is running.

It is prohibited to perform repeated 0V charging activation on non–chargeable, zero–voltage or swollen damaged cells.

Do NOT test cells with voltage exceeding 5 V.

6. Troubleshooting

(1) Alarm triggered when clamps are connected to cell

Cause: Cell polarity is reversed against the clamps.

Solution: Swap the positive and negative clamps and secure them properly to the cell tabs. If the alarm persists after confirming correct connection, power off and restart the unit. If the alarm still appears, the chip may be damaged due to static electricity or short circuit. Please contact the manufacturer.

(2) Severe deviation in test results

Cause 1: Incorrect settings for charge cut–off voltage, charge current or cut–off current.

Solution: Configure parameters properly referring to the cell specification sheet.

Cause 2: Incorrect settings for discharge cut–off voltage or discharge current.

Solution: Configure parameters properly referring to the cell specification sheet.

Cause 3: Insufficient contact area between clamps and cell tabs / sampling clamps fail to grip cell tabs.
Solution: Increase contact area; attach small alligator clips to the root of cell tabs.

(3) Cell voltage exceeds set value during charging
Cause 1: Current exceeds cell tolerance; target voltage is close while current remains high.
Solution: Set current according to the cell specification sheet.
Cause 2: Poor contact or insufficient contact area between clamps and cell tabs.
Solution: Expand contact area to guarantee stable connection.

(4) Clamps become extremely hot or burnt during charge/discharge
Cause 1: Set current reaches or exceeds the maximum allowable current of the clamps.
Solution: Reduce set current or contact manufacturer for replacement clamps.
Cause 2: Poor contact between clamps and tabs.
Solution: Increase contact area between clamps and cell tabs for stable connection.

(5) Data curves not displayed
Cause 1: Equipment running time is insufficient.
Solution: View curves after running for more than 2 minutes. Curve information will become more complete with longer test duration.
Cause 2: SD card damage leading to failed data storage.
Solution: Replace SD card and restart the test.

(6) Cell voltage rises or drops after constant voltage charging completes
Cause: Voltage rebound or drop occurs after charge/discharge due to inherent physical characteristics of cells.
Solution: This is an inherent cell characteristic and cannot be modified.

(7) Cell overheats severely during charge or discharge
Cause 1: Charge/discharge current is set beyond cell tolerance without following cell specifications.
Solution: Adjust charge/discharge current according to cell specification sheet.
Cause 2: Cell performance degradation.
Solution: Replacement is recommended; the cell carries potential failure risks.

(8) No current output after starting test upon parameter setup
Cause 1: Clamps fail to make effective contact with tabs.
Solution: Re-clamp the cell to ensure cell voltage can be read normally before startup.
Cause 2: Charge/discharge power module failure.
Solution: Contact manufacturer for repair. Do NOT disassemble the unit arbitrarily, which may cause irreversible damage.
Cause 3: Parameter setup failure or severe ambient interference leading to communication loss.
Solution: Tap Stop, reconfigure parameters and move the unit away from interference sources.

Appendix
1.Under standards applicable within China, the product supports 7-day replacement and an 18-month limited warranty.
2.The warranty is valid only under normal operating conditions. The following cases are NOT covered by free warranty: man-made damage, unauthorized disassembly, modification or repair, operation not complying with this manual, damage caused by external force majeure.
3.Test clamps and other accessories are consumables and excluded from warranty coverage.
4.For warranty service, please contact your local distributor. If the distributor cannot be reached, contact our company for further arrangement.

Operating Instructions for Capacity Tester Upper Computer Software

1. Install Upper Computer Software

Open the installation package and follow the steps to install the USB serial port driver and upper computer software. Note: The installation directory of the upper computer software must use only English characters.



Figure 8 USB Serial Port Driver Installation Interface

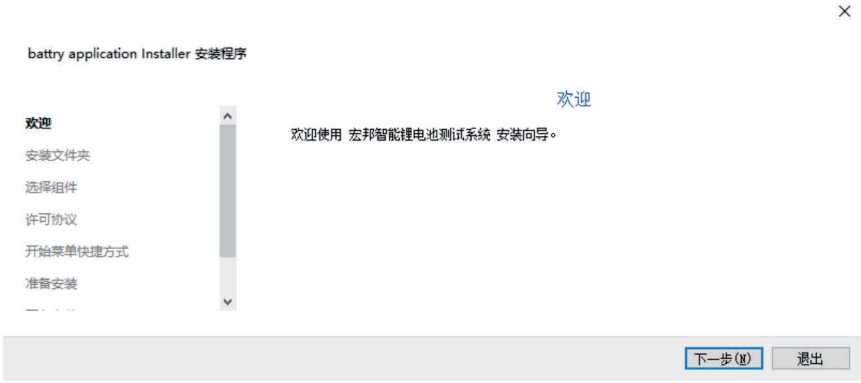


Figure 9 Upper Computer Software Installation Interface

1. Introduction to Upper Computer Functions

After launching the upper computer software, the interface is shown in Figure 10. Select the corresponding COM port in the lower-right corner and click Connect.Once the correct COM port is selected, real-time operating data and parameters displayed

on the interface will be consistent with those shown on the tester, as illustrated in Figure 11.

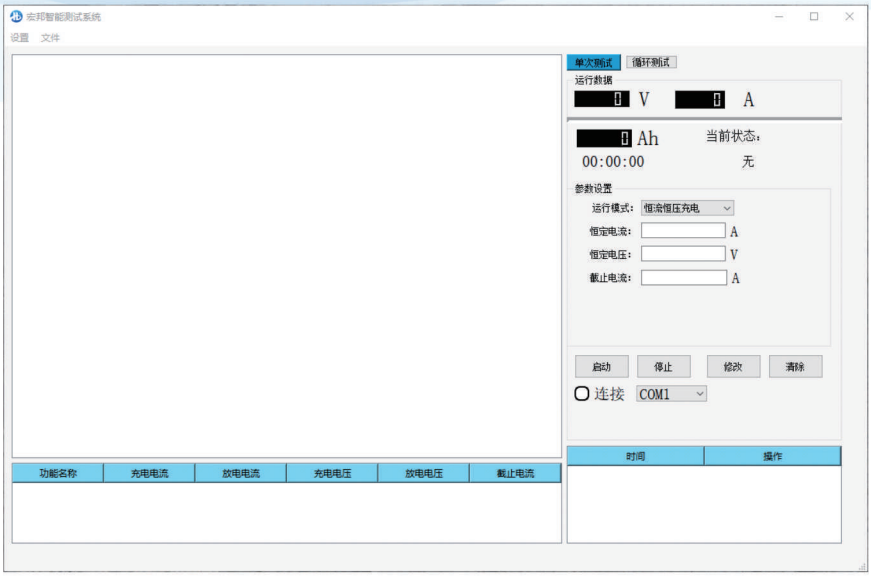


Figure 10 Main Interface of Upper Computer Software



Figure 11 Interface Status after Successful Device Connection

After connecting the device, click Modify to adjust the operating mode and corresponding parameters. (Configure test parameters strictly in accordance with the cell specification sheet; improper settings may lead to thermal runaway of lithium cells.)

Once parameter configuration is finished, click Start. The upper computer software will display real–time operating data and automatically record and save data, as shown in Figure 12.

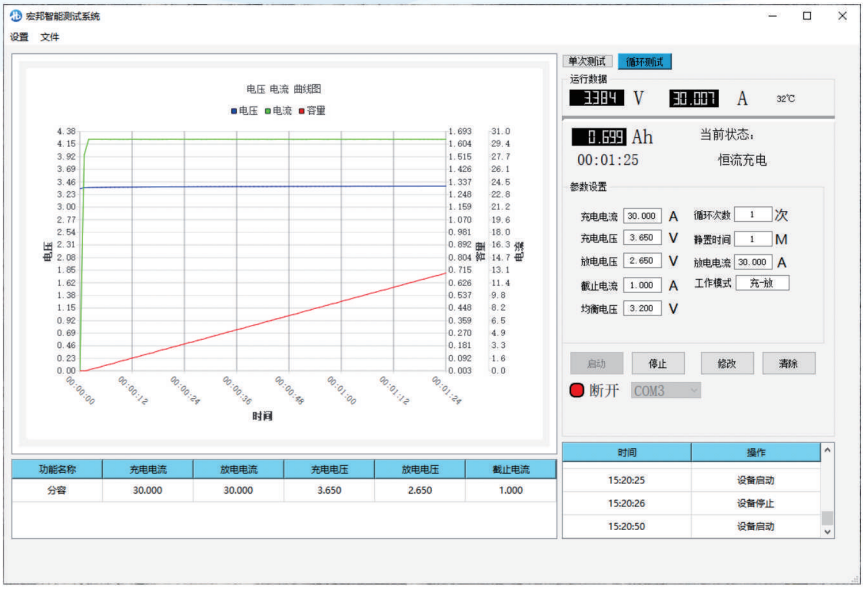


Figure 12 Operating Status Interface

When the test is completed, click File to view historical test data files. Data can also be exported as Excel documents for review, as shown in Figure 13. The namingrule for historical data files adopts the test start time as the file identifier.

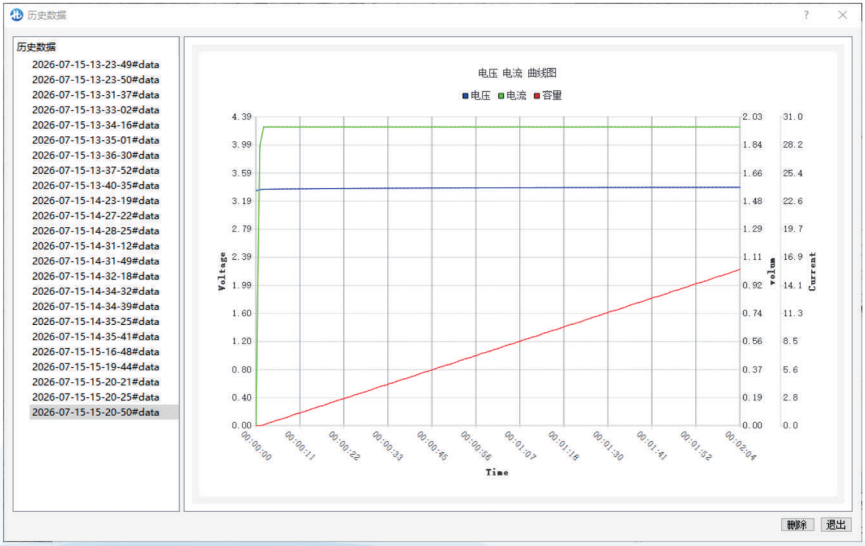


Figure 13 Historical Data View

1. Troubleshooting

(1) Failed to modify parameters after clicking Modify

Cause 1: The COM port connection is invalid.

Solution: Select another COM port and connect. Confirm that the operating data matches the display on the device.

Cause 2: Data transmission delay or signal disorder occurs on the COM port.

Solution: Replace the data cable. Note: Serial port speed varies among different computers; replacing the cable may not resolve the problem. Under such circumstances, attempt parameter configuration multiple times until the settings take effect. Parameters can also be set via the device touchscreen.

(2) Parameters cannot be changed after clicking Settings

Cause: This function is not available to end users to prevent abnormal equipment operation.

Solution: Contact the manufacturer if parameter adjustment is required.

(3) The operating data displayed on the upper computer remains inconsistent with the tester after serial port connection

Cause: The selected COM port is not the port connected to the tester.

Solution: Switch to another COM port. If no alternative port is available, verify whether the USB serial port driver is installed correctly.