

Hybrid Battery Machine for Charging and Discharging

YESA Machine 言商

The Pragmatic workers for the circular economy

循環經濟的務實工作者

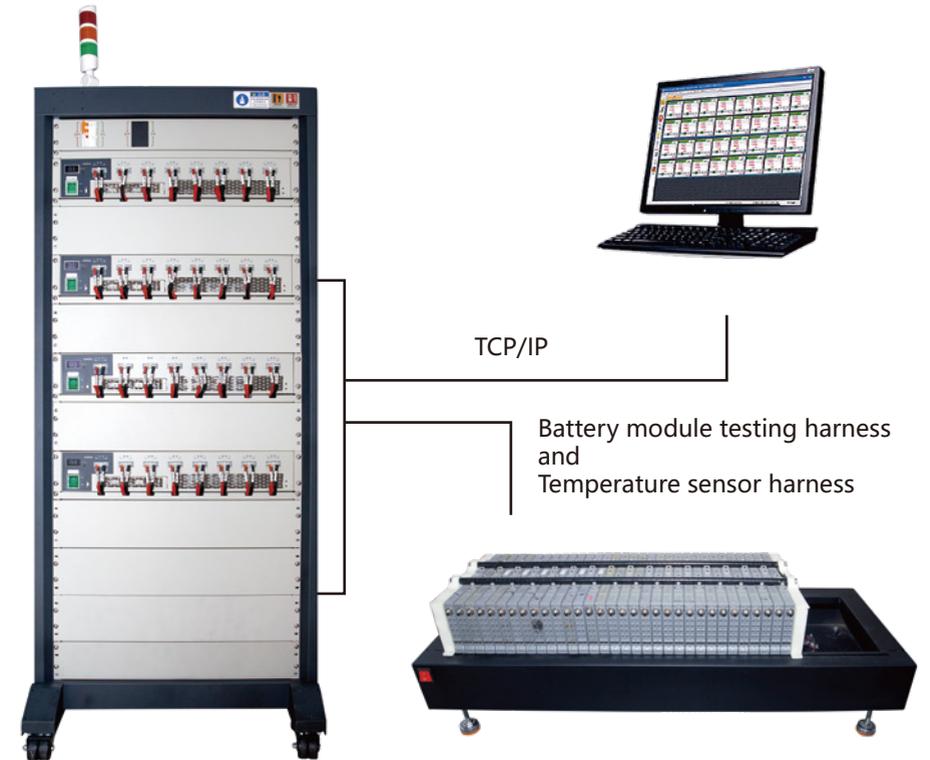
01 Equipment Introduction

- 1-1 Equipment Configuration
- 1-2 Specification and Application

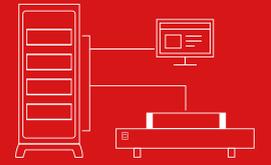
02 Charge and Discharge Procedures

- 2-1 Hardware Preparation
- 2-2 Software Operation
- 2-3 Battery pack reassemble

03 Test Data and Repair Effect View

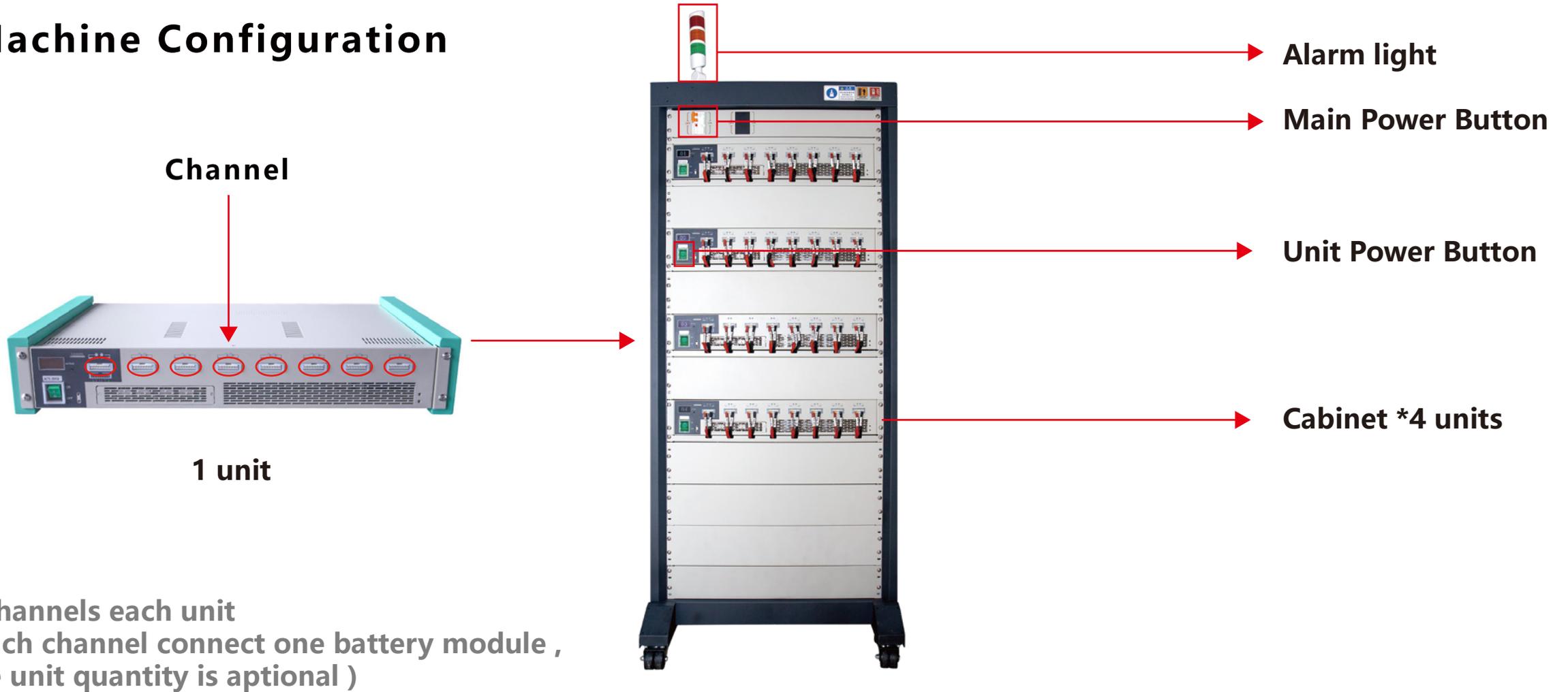


Equipment Introduction

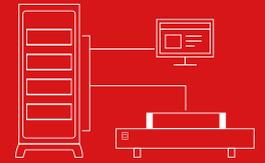


1-1

Machine Configuration



Equipment Introduction



1-2

Testing Machine	
Model	ACTS-20V5A
Power Supply	100~120V or 200~240V
Testing Channels	8 Channels/Unit
Channel Work	Completely Independent
Fit Battery	Ni-Mh/Ni-Cd,Lithium,LifePO4
Voltage Range	0~20V
Voltage Accuracy	0.1%FS + 0.1%RD
Current Range	±5A
Current Accuracy	0.1%FS + 0.1%RD
Work Mode	Charge:CC,CV,CCCV, Discharge:CD,CP,CR
Communication	0.1%FS + 0.1%RD
Protection	Min/Max Voltage/Current Min/Max Temperature
Testing Data	Save as file,Export to Excel or Txt Discharge Capacity Report
Work Power	100W/Channel
Temperature Sensor	8 Channels for each unit
Temperature Range	-25~125
Sensor Function	Next Step,Finish,Stop Testing



For Original Ni-MH Hybrid batteries

- Test
- Screen out repairable and non-repairable batteries
- Capacity Filter
- Reassemble new battery pack

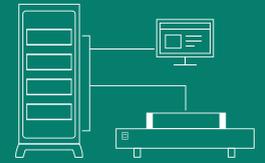


For Replacement batteries

- Stock batteries maintenance
Balancing for stocked over 6 months batteries or different bulk batteries
- Failure batteries checking
Provide the testing data to battery supplier ,to learning about the battery defective condition and entering the fast track of the after-sale claims



Charge and Discharge Procedures



Hardware Preparation

Core steps

-  1.Put battery pack on the cooling table
-  2.Connect testing battery module
-  3.Connect computer

Software Operation

Core steps

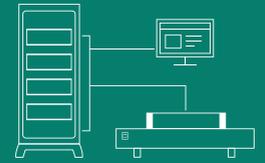
-  1.Launch ACTS software (login/automatically connect)
-  2.Check or reset the IP and ID from the unit (include alarm light)
-  3.Scan battery SN
-  4.Process loading or setting
-  5.Charging & Discharging (according to what program is loaded)

Battery pack reassemble

Core steps

-  1.Data export testing and archive
-  2.Dismount the irreparable battery modules from the battery pack
-  3.Mark the similar voltage and capacity battery modules and put into storage

Charge and Discharge Procedures



2-1

Hardware Preparation

Machine and its accessories

- Machine
- Cooling Table
- Test Cable
- Network Cable
- Temperature Test Cable
- LAN Switch
- Network Adapter Cable
- Power Cable
- Scanner
- USB with Software Program Inside
- Clip



Machine



Cooling Table



USB with
Software Program Inside



Clip



Scanner



Temperature Test Cable



LAN Switch



Power Cable



Network Adapter Cable

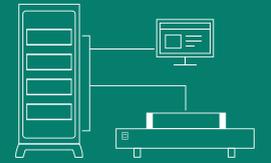


Test Cable



Network Cable

Charge and Discharge Procedures

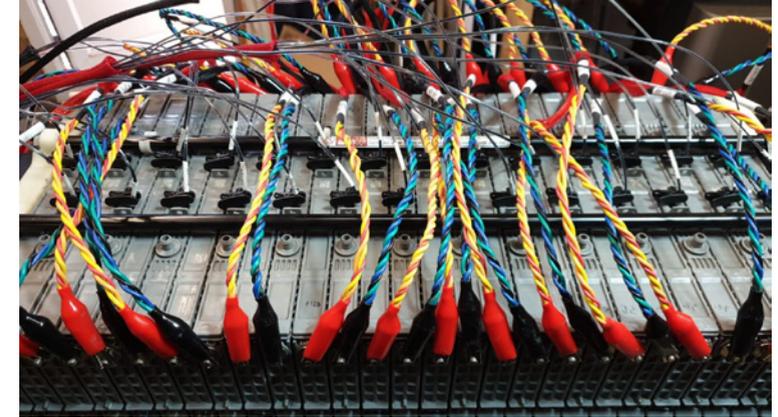


2-1

Hardware Preparation

Installation Procedure

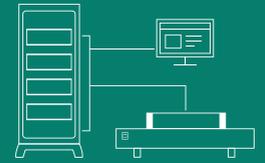
1. Put the battery pack on the cooling table
2. Connecting the battery
3. Connecting the computer



1 | 2
—|—
3



Charge and Discharge Procedures



2-2

Software Operation

ID Editor

To change the ID of unit

CTSMDf 1.7(2019-09-05)

System modification

CTS GGS MTV CDS(Energy) CTS(High Speed) QC Module

Light Led Close Led Change IP

COM BOX No. BOX No. Auto plus 1

Band 19200

IP 192.168.0.5

Send(S) Exit(X)

Set GGS Volt(3.3V@5V)

Modified channel number

Box Channels

Set server IP (MTV)

IP (MTV) 192.168.0. IP (Server) 192.168.0.

Temperature compensation °C Read Write

BMS

Connect

Warning led

Light Red Light Green Light Yellow Clear All Send

Warning:
Set the equipment must be operated by technical personnel! Must refer to the equipment manual before operation, incorrect settings may lead to serious errors!

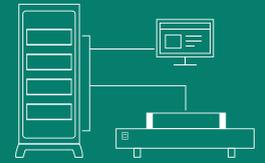
ACTS → Change ID number → CTSBidMaker_V1.7_E.exe

Please watch YouTube and Facebook for more software operation videos

<https://www.facebook.com/battery.yesa/videos/708097831156558>

<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

Charge and Discharge Procedures



2-2

Software Operation

Select Load Process

Click "Start" → Load Process
→ Select "car model"



The screenshot shows the 'Battery test system software' interface. A 'Process Setting' dialog box is open, displaying a table of settings. Below the table, there are sections for 'Security Protection' and 'Recording Conditions'. A file selection window is overlaid on the 'Process Setting' dialog, showing a list of files in the 'RepowerACTS > tplx' directory. The file 'Prius 7.2v Dic 3A Cha2.5A 3step.tplx' is selected. The 'File name' field is empty, and the file type is set to 'Template Files (*.tplx)'. The 'Open' button is highlighted.

Working Mode	GGS	MTV	RC	Main Para.1	Main Para.2	End Time	End Volt	End Cur.	End Temp.	End Capacity	End Energy	RSOC (%)	-ΔV (mV)	NextStep
1	Stop													

Security Protection:

Volt From: 0.5 To: []

Current Scope: []

Temperature Scope: []

Recording Conditions:

Time Interval: 20

Voltage Changes: 100 mV

Current Changes: 100 mA

File name: [] Template Files (*.tplx)

Open Cancel

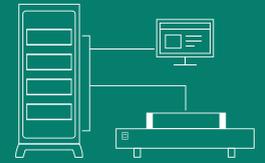
Load Process Save Process Cancel Start Enable BarCode BatteryVersion 001

Detect voltage Auto connection result: COM192.168.0.1 connect 1 boxes. [Admin] 14:35:50

Click "Start" → Load Process → Select "car model"

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<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

Charge and Discharge Procedures

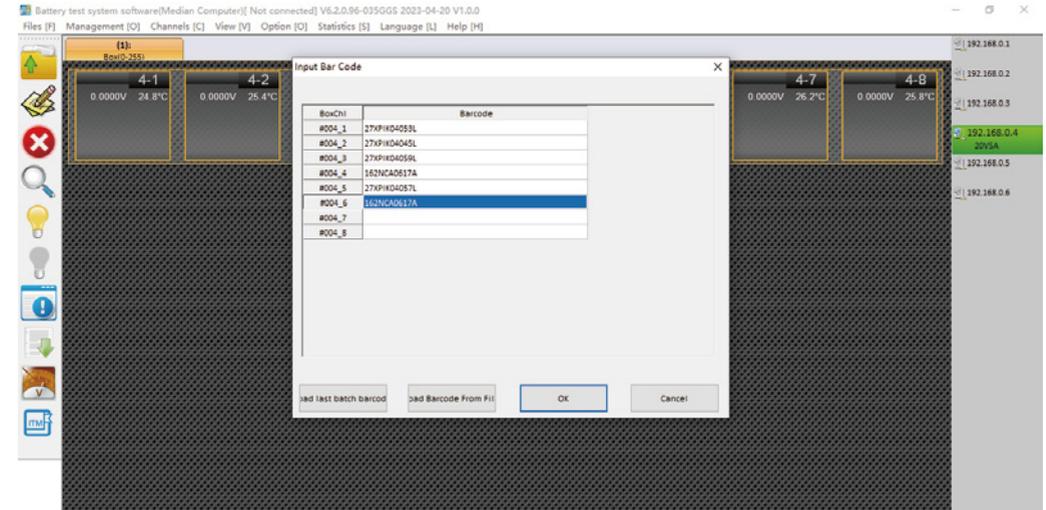


2-2

Software Operation

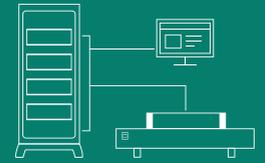
Scanner Using Steps

1. Connect the bar code gun to the computer
2. Create a .txt file
3. Use the scanner to scan the battery code
4. Save the .txt file
5. Import the program



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<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

Charge and Discharge Procedures



2-2

Software Operation

Charging & Discharging
by multi cycles

Battery test system software(Median Computer)[Not connected] V6.2.0.96-035GGS 2021-3-17

Files [F] Management [O] Channels [C] View [V] Option [O] Statistics [S] Language [L] Help [H]

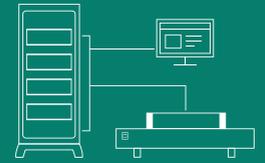
(1):
BoxID-255)

Channel	Voltage	Current	Ah	cych	RST	CC	CV	DC	CP	Temp
1-1	7.6101V	0.0000A	0.000Ah	0cyc	27.0°C					36.68Sec
1-2	7.4090V	0.0000A	0.000Ah	0cyc	27.3°C					36.22Sec
1-3	7.5843V	0.0000A	0.000Ah	0cyc	27.3°C					35.65Sec
1-4	7.5947V	0.0000A	0.000Ah	0cyc	27.4°C					34.68Sec
1-5	7.4034V	0.0000A	0.000Ah	0cyc	27.3°C					34.57Sec
1-6	7.5837V	0.0000A	0.000Ah	0cyc	27.6°C					33.66Sec
1-7	7.5892V	0.0000A	0.000Ah	0cyc	27.3°C					33.57Sec
1-8	7.6280V	0.0000A	0.000Ah	0cyc	27.6°C					32.95Sec
2-1	7.6335V	0.0000A	0.000Ah	0cyc	27.7°C					32.08Sec
2-2	7.7418V	0.0000A	0.000Ah	0cyc	27.5°C					31.97Sec
2-3	7.6790V	0.0000A	0.000Ah	0cyc	27.4°C					31.03Sec
2-4	7.7381V	0.0000A	0.000Ah	0cyc	27.5°C					30.92Sec
2-5	7.6458V	0.0000A	0.000Ah	0cyc	27.3°C					30.01Sec
2-6	7.7128V	0.0000A	0.000Ah	0cyc	27.4°C					29.91Sec
2-7	7.7436V	0.0000A	0.000Ah	0cyc	27.4°C					28.95Sec
2-8	7.6624V	0.0000A	0.000Ah	0cyc	27.7°C					28.87Sec
3-1	7.6882V	0.0000A	0.000Ah	0cyc	27.6°C					27.95Sec
3-2	7.5984V	0.0000A	0.000Ah	0cyc	27.5°C					27.84Sec
3-3	7.6206V	0.0000A	0.000Ah	0cyc	27.6°C					26.89Sec
3-4	7.5892V	0.0000A	0.000Ah	0cyc	27.5°C					26.76Sec
3-5	7.6538V	0.0000A	0.000Ah	0cyc	27.5°C					26.26Sec
3-6	7.7977V	0.0000A	0.000Ah	0cyc	27.6°C					25.70Sec
3-7	7.6501V	0.0000A	0.000Ah	0cyc	27.2°C					25.18Sec
3-8	7.7799V	0.0000A	0.000Ah	0cyc	27.5°C					24.65Sec
4-1	6.9882V	0.0000A	0.000Ah	0cyc	0.0°C					24.11Sec
4-2	7.0362V	0.0000A	0.000Ah	0cyc	0.0°C					23.62Sec
4-3	7.6206V	0.0000A	0.000Ah	0cyc	27.6°C					26.89Sec
4-4	7.5388V	0.0000A	0.000Ah	0cyc	0.0°C					23.01Sec
4-5	6.0169V	0.0000A	0.000Ah	0cyc	0.0°C					22.51Sec
4-6	7.5480V	0.0000A	0.000Ah	0cyc	0.0°C					21.99Sec
4-7	7.6501V	0.0000A	0.000Ah	0cyc	27.2°C					25.18Sec
4-8	7.7799V	0.0000A	0.000Ah	0cyc	27.5°C					24.65Sec

Detect voltage Auto connection result: COM192.168.0.1 connect 4 bo: [Admin] 10:39:30

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<https://www.facebook.com/battery.yesa/videos/708097831156558>
<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

Charge and Discharge Procedures



2-2

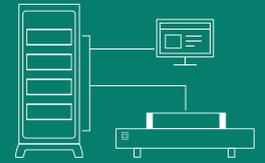
Software Operation

Data Viewing



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<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

Charge and Discharge Procedures



2-3

Battery pack reassemble

Extract the capacity data of each battery cycle, make excel and on-file, as to query and repack the battery pack in the future.

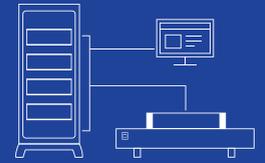
Right-click a single channel and select Export EXCEL

	A	B	C	D	E	F	G	H	I	J
1	Date	Group No.	Cell No. (Barcode)	1-Discharge Capacity (mAh)	2-Discharge Capacity (mAh)	3-Discharge Capacity (mAh)	4-Discharge Capacity (mAh)	5-Discharge Capacity (mAh)		
2	1	001_1	27XPIK04043L	1910	4761	5029	5142	5200		
3		001_2	27XPIK04044L	2410	4910	5183	5282	5331		
4		001_3	27XPIK04045L	2307	4849	5123	5218	5267		
5		001_4	27XPIK04046L	2347	4915	5176	5266	5311		
6		001_5	27XPIK04047L	1067	4559	4783	4869	4936		
7		001_6	27XPIK04048L	2395	4955	5227	5325	5369		
8		001_7	27XPIK04049L	2203	4919	5170	5257	5303		
9		001_8	27XPIK04050L	2400	4860	5146	5250	5301		
10	2	002_1	27XPIK04051L	2350	4925	5176	5268	5311		
11		002_2	27XPIK04052L	2432	4899	5180	5281	5326		
12		002_3	27XPIK04053L	2481	4936	5200	5292	5332		
13		002_4	27XPIK04054L	2533	4865	5150	5256	5304		
14		002_5	27XPIK04055L	1929	4764	5026	5122	5174		
15		002_6	27XPIK04056L	2539	4915	5188	5290	5335		
16		002_7	27XPIK04057L	2263	4873	5141	5233	5280		
17		002_8	27XPIK04058L	2575	4867	5147	5253	5301		
18	3	003_1	27XPIK04059L	2605	4870	5150	5253	5299		
19		003_2	27XPIK04060L	2467	4854	5112	5206	5251		
20		003_3	27XPIK04061L	2583	4879	5144	5239	5279		
21		003_4	27XPIK04062L	2615	4935	5204	5304	5347		
22		003_5	27XPIK04063L	2633	4856	5124	5224	5264		
23		003_6	27XPIK04064L	2702	4871	5153	5260	5306		
24		003_7	27XPIK04065L	2651	4915	5164	5255	5292		
25		003_8	27XPIK04066L	2695	4885	5157	5260	5302		
26	4	004_1	27XPIK04067L	2684	4840	5122	5230	5277		
27		004_2	27XPIK04068L	2626	4931	5187	5288	5332		
28		004_3	27XPIK04069L	2750	4870	5152	5261	5307		
29		004_4	27XPIK04070L	2028	4780	5092	5202	5259		
30		004_5	27XPIK04071L	2820	4884	5167	5278	5326		
31		004_6	27XPIK04072L	2803	4832	5123	5238	5288		
32		004_7	27XPIK04073L	1726	4516	4844	5000	5104		

Right-click a single channel and select Export EXCEL

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<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

Test Data and Repair Effect View

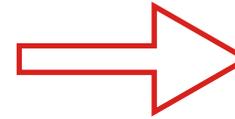


3

Repair effect instance

Capacity increases by 9% to 12% on average

Toyota Prius Battery Data
(Before Reconditioning)
Capacity Low



Toyota Prius Battery Data
(After Reconditioning)
Capacity Increased

Group No.	Cell ...	1-Discharge Capacity(mAh)	2-Discharge Capacity(mAh)	3-Discharge Capacity(mAh)	4-Discharge Capacity(...)	5-Discharge Capacity(mAh)
<input type="checkbox"/>	01_1	1910.064	4761.298	5028.825	5142.378	5199.847
<input type="checkbox"/>	01_2	2410.381	4910.254	5182.758	5282.289	5330.578
<input type="checkbox"/>	01_3	2307.310	4848.755	5122.607	5218.310	5267.061
<input type="checkbox"/>	01_4	2347.477	4915.054	5175.820	5265.689	5310.629
<input type="checkbox"/>	01_5	1067.036	4558.706	4782.805	4868.576	4936.209
<input type="checkbox"/>	01_6	2395.437	4955.339	5227.393	5324.725	5368.990
<input type="checkbox"/>	01_7	2203.324	4918.984	5170.184	5257.234	5302.697
<input type="checkbox"/>	01_8	2400.452	4859.787	5146.139	5249.614	5300.500
<input type="checkbox"/>	02_1	2350.066	4924.531	5175.562	5267.774	5310.847
<input type="checkbox"/>	02_2	2432.050	4899.337	5180.473	5280.784	5326.035
<input type="checkbox"/>	02_3	2480.898	4935.773	5199.806	5292.314	5331.587
<input type="checkbox"/>	02_4	2532.756	4864.837	5150.403	5256.095	5303.777
<input type="checkbox"/>	02_5	1928.597	4763.936	5026.048	5121.593	5174.159
<input type="checkbox"/>	02_6	2539.225	4915.095	5188.400	5289.576	5334.584
<input type="checkbox"/>	02_7	2262.780	4872.828	5140.788	5233.083	5280.428
<input type="checkbox"/>	02_8	2575.323	4866.800	5146.973	5252.968	5300.729
<input type="checkbox"/>	03_1	2604.931	4870.418	5149.542	5253.397	5299.307
<input type="checkbox"/>	03_2	2467.235	4854.169	5111.653	5205.613	5251.205
<input type="checkbox"/>	03_3	2582.844	4879.293	5144.289	5238.904	5279.052
<input type="checkbox"/>	03_4	2615.342	4934.622	5204.140	5303.716	5347.378
<input type="checkbox"/>	03_5	2633.489	4855.843	5124.295	5223.779	5264.343
<input type="checkbox"/>	03_6	2702.135	4870.741	5152.577	5259.858	5305.777
<input type="checkbox"/>	03_7	2650.526	4914.946	5163.898	5254.960	5291.635
<input type="checkbox"/>	03_8	2694.581	4885.420	5157.356	5260.020	5301.691
<input type="checkbox"/>	04_1	2683.792	4839.678	5122.016	5230.385	5277.084
<input type="checkbox"/>	04_2	2626.072	4931.020	5187.228	5287.770	5331.986



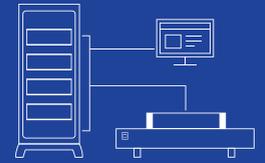
mAh



mAh

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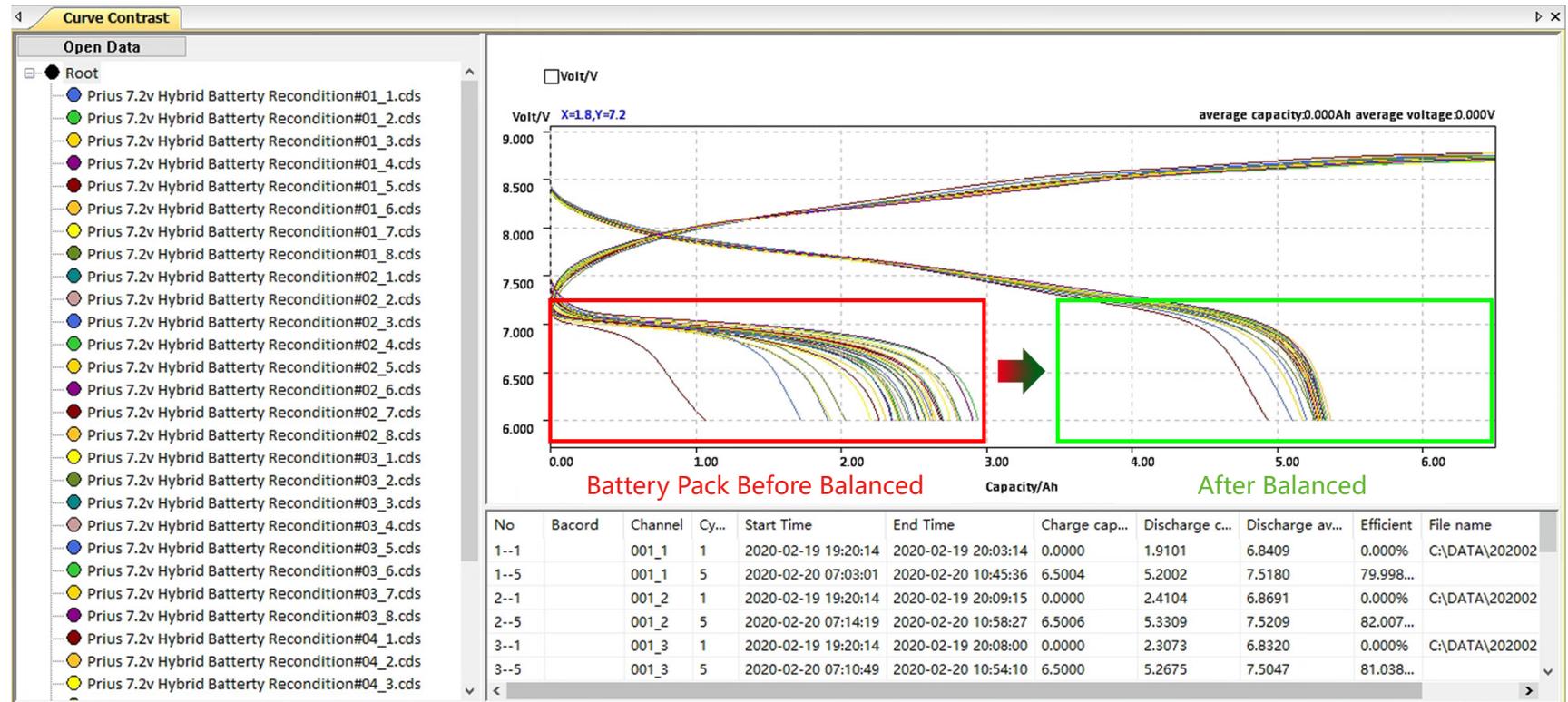
Test Data and Repair Effect View



3

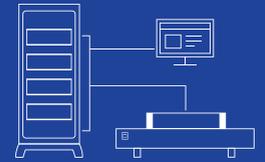
Balancing effect instance

Toyota Prius Battery Data (After Reconditioning)



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<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

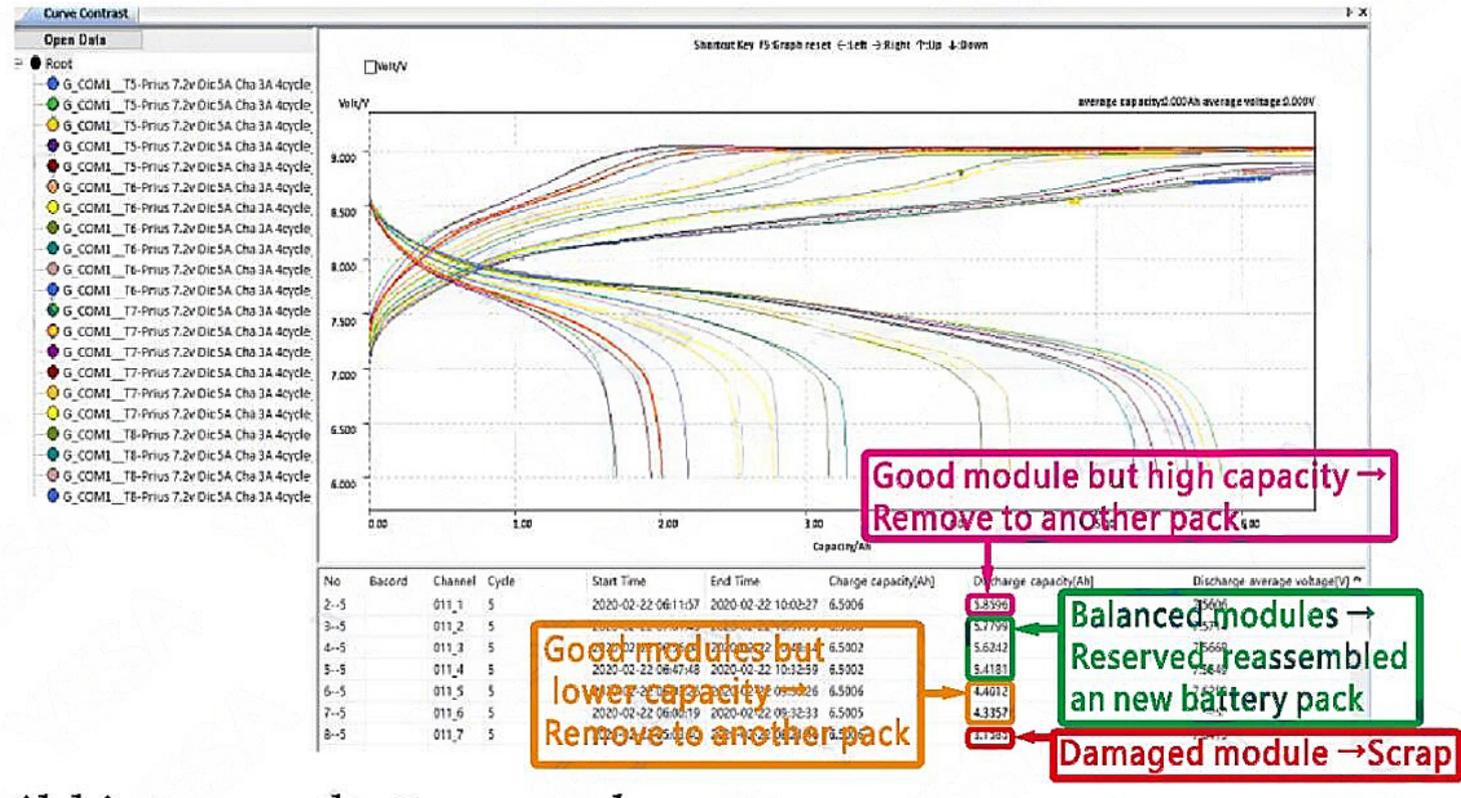
Test Data and Repair Effect View



3

Battery capacity division

Grade and store the battery according to the repaired capacity. The newly constituted battery pack must be of the same capacity, otherwise, after installation on the car, a battery error code will appear.



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<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

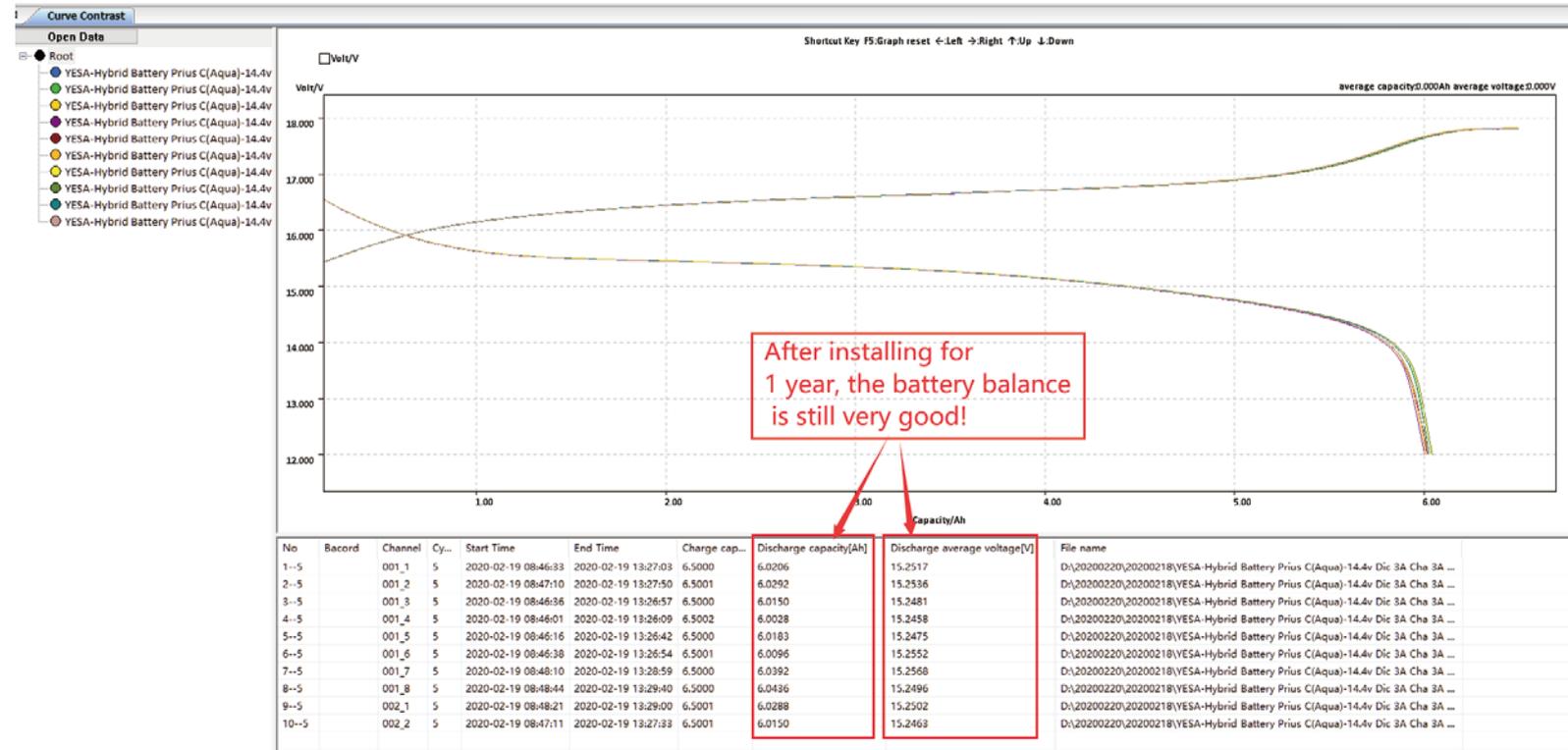
Test Data and Repair Effect View



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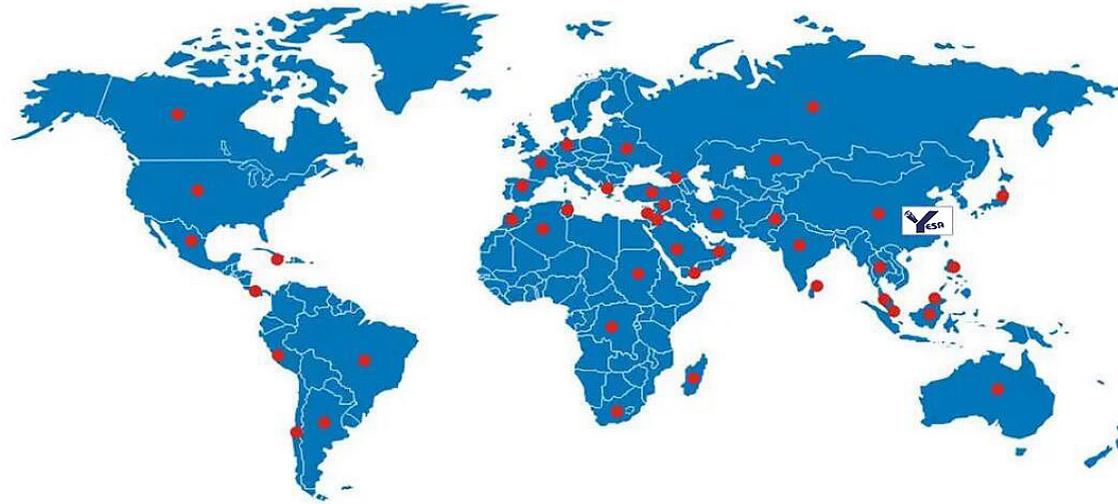
After 1 year

After installing on car for 1 year, the battery balance is still very good!



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<https://www.youtube.com/watch?v=sM0n8CAZw7Q>

T H A N K S



YESA machines are used all over the world

Up to August ,2023 ,the customers from all over the world use
YESA Machine more than 4000 channels

CONTACT US



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