

YA302

User Manual

Automotive Diagnostic tool (OBDII Scan + Battery Test)



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Safety Information

For your own safety and the safety of others, and to prevent damage to the equipment and vehicles, read this manual thoroughly before operating your OBDII Diagnostic Tool. The safety messages presented below and throughout this user manual are reminders to the operator to exercise extreme care when using this device. Always refer to and follow security information and test procedures provided by vehicle manufacturer. Read, understand and follow all safety messages and instructions in this manual.

Safety Message Conventions Used

We provide safety messages to help prevent personal injury and equipment damage. Below are signal words we used to indicate the hazard level in a condition.

Danger

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.

Warning

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.

Caution

Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

Important Safety Instructions

And always use your OBDII Diagnostic Tool as described in the user manual, and follow all safety messages.

Warning

- * Do not route the test cable in a manner that would interfere with driving controls.
- * Do not exceed voltage limits between inputs specified in this user manual.
- * Always wear ANSI approved goggles to protect your eyes from propelled objects as well as hot or caustic liquids.
- * Fuel, oil vapors, hot steam, hot toxic exhaust gases, acid, refrigerant and other debris produced by a malfunction engine can cause serious injury or death. Do not use the OBDII Diagnostic Tool in areas where explosive vapor may collect, such as in below-ground pits, confined areas, or areas that are less than 18 inches (45 cm) above the floor.
- * Do not smoke, strike a match, or cause a spark near the vehicle while testing and keep all sparks, heated items and open flames away from the battery and fuel/ fuel vapors as they are highly flammable.
- * Keep a dry chemical fire extinguisher suitable for gasoline, chemical and electrical fires in work area.
- * Always be aware of rotating parts that move at high speed when an engine is running and keep a safe distance from these parts as well as other potentially moving objects to avoid serious injury.

- * Do not touch engine components that get very hot when an engine is running to avoid severe burns.
- * Block drive wheels before testing with engine running. Put the transmission in park (for automatic transmission) or neutral (for manual transmission). And never leave a running engine unattended.
- * Do not wear jewelry or loose fitting clothing when working on engine.

1. Product introduction

1.1 Product introduction

YA302 is a two-in-one vehicle diagnostic tool of vehicle detection plus professional battery detection.

YA302 automobile diagnostic tool is applicable to all 12V gasoline and diesel engines conforming to OBDII from 1996 to now. It can check the cause of the engine fault and repair it without visiting the dealer. It can also help you easily pass the annual electronic inspection test. It covers the complete OBD diagnostic function of the engine system. The oxygen sensor test, on-board monitoring system test and component test can let you fully understand the running status of the vehicle, while the graphical and digital real-time data flow display can help you find the vehicle fault more clearly.

YA302 battery tester can test all automotive starting lead-acid batteries, including ordinary lead-acid batteries, AGM flat batteries, AGM spiral batteries and gel batteries. It uses the world's most advanced conductance testing technology to conveniently, quickly and accurately measure the actual cold starting current capacity of the car starting battery, the health status of the battery itself, and the common faults of the vehicle starting system and charging system, which can help maintenance personnel quickly and accurately find problems, so as to achieve rapid maintenance.

1.2 Technical parameters

Technical indicators:

Products	6V / 12V Battery Test	24V Battery Test
Applications	Supports Regular Flooded / AGM Flat Plate / AGM Spiral / GEL / EFB batteries	Supports Regular Flooded / AGM Flat Plate / AGM Spiral / GEL / EFB batteries
Battery Capacity	2AH ~ 220AH	2AH ~ 220AH
CCA Measurements	100 ~ 2000	100 ~ 2000
Voltage Measurement	4.9V ~ 20V	4.9V ~ 32V
Working Temperature	-20°C ~ 50°C	-20°C ~ 50°C
Measurement Method	Four-line Kelvin Test	Four-line Kelvin Test

Cold Cranking Ampere (CCA) Measurement Range:

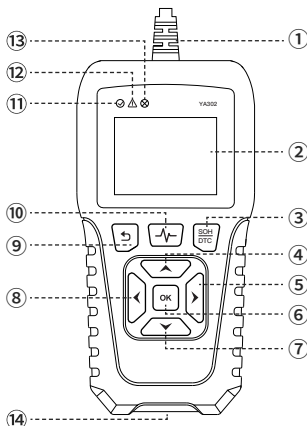
Standard	Description	Scope
CCA	CCA	100 ~ 2000
IEC	International Electrotechnical Commission Standards	100 ~ 1400
EN	European Industrial Standards	100 ~ 2000
DIN	German Industrial Standards	100 ~ 1400
JIS# (notes)	Japanese Industrial Standards	From 26A17 to 245H52
SAE	Automotive Engineering Association Standards	100 ~ 2000

Note: JIS# needs to check the table to compare with CCA, SAE refer to CCA.

2. Operation mode

1.1 Equipment display

The scanning tool is designed for ease of use. All menus and lists operate in the same way.



							
UP	Down	Left	Right	OK	Back	Wave form	Test

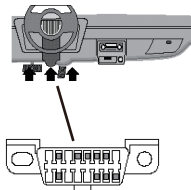
1.2 Key description

- (1) OBDII connector -- Data link connector (DLC) that connects the scan tool to the vehicle.
- (2) Display screen -- visual display, 320 x 240 resolution, 2.4 inch TFT true color display.
- (3) SOH/DTC -- key detection - fast detection of vehicle faults or battery life.
- (4) Up key -- Use the up key to select between each interface to realize the incremental and page turning functions.
- (5) Right key -- Use the right key to select between each interface to realize the page turning function.
- (6) Confirm key - confirm the selected content and enter.
- (7) Down button -- Use the down button to select between each interface to realize the function of decrement and page turning.
- (8) Left key -- Use the left key to select between each interface to realize the page turning function.
- (9) Return key -- Cancel the selection or cancel it, and return to the previous interface.
- (10) One button waveform detection -- One button waveform detection of automobile OBDII or battery.
- (11) Green LED indicator -- indicates that the engine system is operating normally (all monitors on the vehicle are active and performing diagnostic tests) and no diagnostic trouble codes are found.
- (12) Yellow LED indicator -- indicates that the tool finds possible problems. There are pending diagnostic trouble codes or the emission monitors for some vehicles have not run diagnostic tests.
- (13) Red LED indicator -- indicates that there is some problem with the system of one or more vehicles. In this case, the MIL indicator on the instrument panel is illuminated.
- (14) USB interface -- Connect USB to the computer, and the removable disk will be displayed. Just copy and paste the upgrade file to the removable disk to complete the upgrade.
- (15) Up+Down - screen capture function. (The device can store up to 5 pictures).

3. Universal reading card

1.1 Diagnostic interface position

- Find the interface location (usually under the dashboard on the driver's side or under the steering wheel).
- If the location of the data transmission interface is uncertain, it is recommended to check the vehicle manual or the automobile service center to confirm the location of the interface.



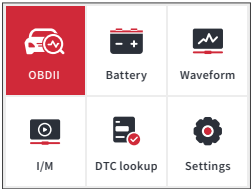
1.2 Device connection

1. Find the data connection interface under the steering wheel.
2. If necessary, open the cover plate of the data connection interface.
3. Turn the ignition switch to the power on state, but do not start the engine.
4. Insert OBDII connector into vehicle diagnostic seat.
5. The tool will attempt to identify the vehicle. If successful, the identified vehicle will be displayed. If the vehicle is not recognized, a menu will be displayed and you can select the vehicle manually.
6. Perform a quick test, select the diagnosis menu by using the up, down, left and right scroll keys, and press the OK key to enter.

4. Function use and description

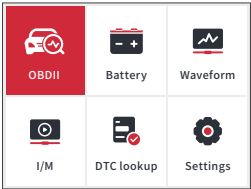
Main page:

OBdII diagnostic, Battery test, waveform livedata, I/M readiness, DTC lookup and settings.



1.OBDII diagnosis

Press the < ▲ > < ▼ > key to select "OBdII diagnosis " for diagnosis.



1.1 Diagnostic menu

After entering the OBdII diagnosis, select "OK" or "Back" to enter the next step and check the following functions.

Information	
MIL STATUS	OFF
DTC CNT	0
MONITOR OK	1
MONITOR INC	0
MONITOR N/A	10
IGN TYPE	SPARK

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component twst	

1. 2 Read code

Press the < ▲ > < ▼ > key to select the read code item and press the "OK" key to read.
If there are some codes, the screen will display the codes shown below.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component twst	

P0123
Query the fault code

1. 3 Clear code

Press the < ▲ > < ▼ > key to select the clear code item and press the "OK" key to clear it until the relevant diagnostic information is cleared.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component twst	



1. 4 Live data

Press the < ▲ > < ▼ > key to select the Live Data item and press "OK" to enter and view the Live Data.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component twst	

Live Data	
All datastream	
Graph Display	
Record	
Playback	

1.4-1 All Datastreams

Press the < ▲ > < ▼ > key to select all data flow items and press the "OK" key to enter and view all data stream displays. (Long press the "OK" key for three seconds to set the selected data stream to the top).

Live Data	
All datastream	
Graph Display	
Record	
Playback	

Inrormation	
DTC	0
MIL STS	MIL OFF
FUELSYS1	OL
FUELSYS2	Not Used
LOAD_PCT	0.0%
ECT	-39°C
SHRTFT1	-0.0%
LONGFT1	-0.0%
IMAP	13kPa
RPM	0Rpm

1.4-2 Graphic display

Press the < ▲ > < ▼ > key to select graphic display items and press "OK" to enter, press "OK" to select, and press "Back" to enter viewing.

Live Data	
All datastream	
Graph Display	
Record	
Playback	

Information	
Press <OK> to Select Press <BACK> to Enter	

Press the "OK" key to select, and press the "Back" key to view the graphic display.

Information	
LOAD_PCT	<OK>
ECT	
IMAP	
RPM	
VSS	
IAT	
MAF	
TP	

Graph Display	
MAX 0.0	
	
MIN 0.0	
■ LOAD_PCT=0.0%	

1.4-3 Records

Press the < ▲ > < ▼ > key to select the record item and press the "OK" key to view the saved record, press the "OK" key to select, and press the "Back" key to view.

Live Data	
All datastream	
Graph Display	
Record	
Playback	

Information
Press <OK> to Select Press <BACK> to Enter

Press the "OK" key to select, and press the "Back" key to view the relevant records.

Inrormation	
DTC	<OK>
MIL STS	
FUELSYS1	
FUELSYS2	
LOAD_PCT	
ECT	
SHRTFT1	
LONGFT1	
IMAP	
RPM	

Select Save Slot	
Memory Solt 1	----
Memory Solt 2	----
Memory Solt 3	----

1.4-4 Data playback

Press the < ▲ > < ▼ > key to select the playback item and press the "OK" key to view the playback record.

Live Data	
All datastream	
Graph Display	
Record	
Playback	

Select Save Slot	
Memory Solt 1	----
Memory Solt 2	----
Memory Solt 3	----

1.5 Read frozen frame data

Press the < ▲ > < ▼ > key to select the read frozen frame data item and press the "OK" key to enter, and check the vehicle conditions recorded by the on-board computer.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component test	

Information	
DTC	4
MIL STS	MIL OFF
DTCFRZF	PO103
FUELSYS1	Not Used
FUELSYS2	CL
LOAD_PCT	25.1%
ECT	90°C
SHRTFT1	-21.1%
LONGFT1	18.7%
SHRTFT2	68.7%

1.6 View vehicle information

Press the < ▲ > < ▼ > key to select the item of viewing vehicle information and press the "OK" key to enter to view the required vehicle information.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component test	

Information	
VIN	
CALID	
CVN	

1.7 I/M Readiness

Press the < ▲ > < ▼ > key to select the I/M readiness test item and press the "OK" key to enter and check the vehicle OBDII monitor status.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component test	

I/M Readiness			
MIL	OFF	IGN	SPARK
DTC	3	PdDTC	0
MIS	⊗	EVAP	⊗
FUE	⊗	AIR	⊗
CCM	✓	O2S	⊗
CAT	⊗	HTR	✗
HCAT	⊗	EGR	⊗

Remarks:

- * To check the I/M ready status, make sure that the ignition key is turned on with the engine off.
- * Not all monitors are supported by all vehicles.

There are two types of I/M Readiness tests:

- * Since DTCs Cleared -- shows status of the monitors since the DTCs were last cleared.
- * This Drive Cycle -- shows status of monitors since the start of the current drive cycle.

Abbreviations Explanation of IM Readiness:

No.	Abbreviation	Name	No.	Abbreviation	Name
1	MIL	Malfunction Indicator Lamp (MIL) Status	8	IGN	Ignition Key
2	DTC	Data Link Connector	9	PdDTC	Pending DTC
3	MIS	Misfire Monitoring	10	EVAP	Evaporative System Monitor
4	FUE	Fuel System Monitor	11	AIR	Air Conditioning Refrigerant Monitor
5	CCM	Comprehensive Components Monitor	12	O ₂ S	Oxygen Sensor Monitor
6	CAT	Catalyst Monitor	13	HTR	Heated catalyst monitor
7	HCAT	Heated Catalyst Monitor	14	EGR	Exhaust Gas Recirculation System Monitor

When the monitor's status is:

- ✓ OK — vehicle was driven enough to complete the monitor.
- ✗ INC (Incomplete) — vehicle was not driven enough to complete the monitor.
- ⊗ N/A (Not Applicable) — vehicle does not support that monitor.

Colored LED's and a beeper provide the user with both a visual and an audible status of vehicle emission check status and DTCs. See information below for more details on this functionality.

When the LED is during vehicle detection:

* **Green** — Indicates that all engine systems are OK and working properly – all Monitors have run, self-diagnostics have passed and MIL is OFF. No stored and/or pending DTCs exist. The vehicle is ready for an Emissions Test..

* **Yellow** — The YA-301 has detected a potential problem. This can indicate one of the two following conditions:

(1) Pending DTCs exist. DTCs can be viewed by using the Read Codes function available on I/M Readiness Test Result screen.

(2) Some of the vehicle's emission monitors have not completed or have malfunctioned. If the I/M Readiness screen shows no DTCs (either Active or Pending) and the yellow LED is illuminated, it indicates a "Monitor Has Not Run."

* **Red** — Indicates that the ECM has detected issues with one, or more, of the vehicles systems. Vehicle is not ready for an Emissions Test. DTCs have been detected. The MIL lamp is ON. Issues causing the DTCs should be fixed prior to an Emissions Test or driving the vehicle.

When the LED lights up during battery detection:

- * **Green** — the battery is in good condition and has a good service life.
- * **Yellow** — the battery is in normal condition and has an average service life.
- * **Red** — the battery is in poor condition and has a short service life. It is recommended to replace it immediately.

The built-in beeper works with the colored LED simultaneous, as an assistance to reflect the I/M readiness test results:

- *Green — two long beeps.
- *Yellow — short, long, short beeps.
- *Red — three short beeps.

Remarks:

* The various tones, provided by the beeper, are invaluable when the I/M Readiness Test is performed while driving, or when ambient light is bright enough to render the LEDs not visible.

1.8 Mode 6

Press the < ▲ > < ▼ > key to select mode 6 and press the "OK" key to enter to view specific components or system on-board monitoring.

Diagnostic Menu
Read Codes
Erase Codes
Live Data
Freeze Frame
Vehicle Info
I/M Readiness
Mode 6
O2 Sensor Test
Component test

Information
Test ID:\$05
Test ID:\$06
Test ID:\$07
Test ID:\$0A
Test ID:\$0C

1.9 Oxygen sensor test

Press the < ▲ > < ▼ > key to select the oxygen sensor test item and press the "OK" key to access, obtain and view the test results of the latest oxygen sensor test from the on-board diagnostic computer. The oxygen sensor test is not an on-demand test.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component test	

Information	
B1S2	
B1S1	

1.10 Component test

Press the < ▲ > < ▼ > key to select the component test item and press the "OK" key to enter, displaying the component list and its position on the vehicle. This function will always be displayed on the main menu. This selection will only appear on the diagnostic menu if the tool has a list of component locations for the currently selected vehicle.

Diagnostic Menu	
Read Codes	
Erase Codes	
Live Data	
Freeze Frame	
Vehicle Info	
I/M Readiness	
Mode 6	
O2 Sensor Test	
Component test	

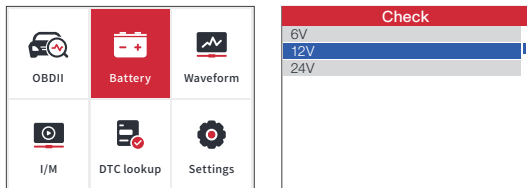
Information	
Evap Leak Test	

2. Battery test

After connecting the battery, the tester will display the main menu.

Press the < ▲ > < ▼ > key to select the battery test to enter it.

Before the test, set the test battery voltage according to the battery voltage type. Select 6V test item corresponding to 6V battery; Select 12V test item for 12V battery; For 24V battery, select 24V test item. Select the battery voltage before proceeding to the next step of project testing. As shown in the figure, select 12V as an example:



2.1 Battery detection

There are two test settings in this battery tester: quick test and precise test.

Quick test: It is convenient to roughly determine the cold start current of the battery according to the battery capacity as the basis for judging the test results when the precise cold start current reference parameters of the battery cannot be obtained from the battery. This method has a certain range of reference significance.

Note: Since the cold start current factory parameters of each battery are different, even though the cold start current factory parameters of different series of batteries of the same brand and capacity are different, if users can obtain the accurate cold start current parameters of the battery from the battery, it is recommended to use accurate testing methods to test the battery.

2.1-1 Preparation before test

1. If the engine is running, please turn off the engine firstly, then turn the key to "OFF" position.
2. After the vehicle has been running for a while, the voltage of the battery will be slightly higher than the normal value when it is just fully charged. Please turn on the headlights for 2~3 minutes, and measure after the voltage drops back to the normal value.
3. Observe the standard parameters of cold start current on the tested battery and the cold start current unit of the battery.

2.1-2 Operation steps

The test clamp is connected to the positive and negative electrodes of the tested storage battery (there is no difference between the positive and negative electrodes in the test clamp of this equipment, and the equipment will not be damaged if it is connected incorrectly). Attention must be paid to check whether it is in good contact with the extended body iron frame. If there is an iron hoop on the battery pole, please ensure that the iron hoop is in good contact with the battery pole or conduct the test after unloading the iron hoop.

2.2 Quick test

Note: The quick test is a simulated AH battery capacity test. The accuracy of the quick test is lower than that of the accurate test. It is recommended to give priority to the accurate test!)

Press the < ▲ > < ▼ > key to select the quick test item, and then press the "OK" key to enter.

Check
6V
12V
24V

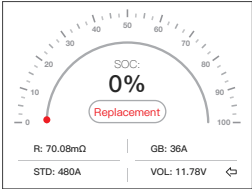
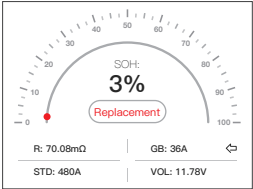
12V
Quick Test
In Vehicle
Out of Vehicle

After entering the quick test, adjust the AH battery capacity standard value of the tested battery. Long press and hold the < ▲ > < ▼ > key to realize continuous adjustment of values. (Please confirm that the engine is off! Otherwise, the test results will be affected.)

Quick Test
Please confirm that the engine is turned off !!! Otherwise, the test result will be affected.

Rated Capacity
Please enter the AH value on the battery label.
220 AH

After adjusting the standard value, press the "OK" key to conduct the test, and press the < ▲ > < ▼ > keys to view the battery life (SOH) and power (SOC) respectively.

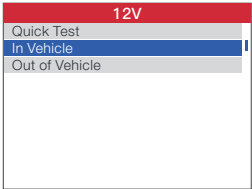


2.3 Vehicle test

The test clamp is connected to the positive and negative electrodes of the tested storage battery (there is no difference between the positive and negative electrodes in the test clamp of this equipment, and the equipment will not be damaged if it is connected incorrectly). Attention must be paid to check whether it is in good contact with the extended body iron frame. If there is an iron hoop on the battery pole, please ensure that the iron hoop is in good contact with the battery pole or conduct the test after unloading the iron hoop.

Precision test is divided into 【 On vehicle test 】 and 【 Off vehicle test 】. Here, 【 On vehicle test 】 is listed.

Press the < ▲ > < ▼ > key to select the in vehicle test item, and then press the "OK" key to enter.



Press the < ▲ > < ▼ > key to select the battery test, and then press the "OK" key to enter.

In Vehicle	
Battery Test	
Charging Test	
Startup Test	
Load Test	

Press the < ▲ > < ▼ > key to select the corresponding type of the tested storage battery. Then press the "OK" key to enter. (Please confirm that the engine is off! Otherwise, the test results will be affected.)

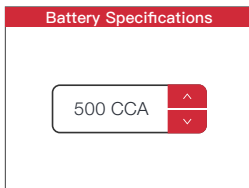
Quick Test
Please confirm that the engine is turned off !!! Otherwise, the test result will be affected.

Select Type
Regular Flooded
AGM Flat Plate
AGM Spiral
GEL
EFB

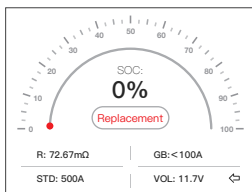
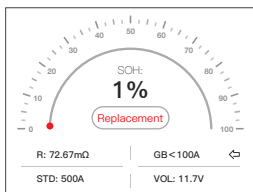
According to the standard of the battery, press the < ▲ > < ▼ > key to select and set the test standard. If the battery is a "JIS" standard, you can enter CCA directly (when CCA parameters are known) or select "CCA" (SAE) as the test standard after comparing CCA by looking up the table (looking up JIS setting operation items). After selecting the test standard, press the "OK" key to enter the selection.

Battery Type
CCA
IEC
EN
DIN
CA
BCI
MCA
SAE
GB
JIS

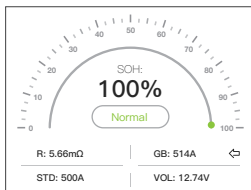
According to the standard value marked on the tested storage battery, press the < ▲ > < ▼ > key to adjust the reference standard value of the storage battery test (take a 500CCA storage battery as an example). Long press the < ▲ > < ▼ > key to achieve continuous adjustment of the value.



After adjusting the standard value, press the "OK" key to conduct the test, and press the < ▲ > < ▼ > keys to view the battery life (SOH) and power (SOC) respectively.



2.4-1 Description of battery test results



Battery voltage: 12.74V, normal.

Battery voltage	Battery voltage (SOC)	Remarks
12.78V	100%	Fully charged
12.54V	75%	
12.30V	50%	
12.12V	25%	
11.94V	0%	Discharged

CCA value: 500 CCA

The test determines the actual output cold cranking ampere of the battery. Generally speaking, there is a minimum CCA standard for cars (gasoline / diesel) when starting, and it is best if the output CCA of the battery is higher than the starting standard of the car.

★ When using 24V test, CCA is 1 / 2 of the series sum of two sets of 12V batteries.

Internal resistance: 5.66mΩ

The higher the CCA value of the battery, the lower the internal resistance will generally be.

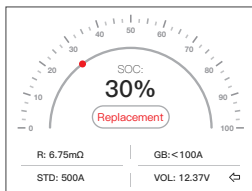
Notice: The standard of internal resistance varies depending on the battery made of different materials used by various manufacturers, so there is no certain standard. However, for batteries of the same model from the same manufacturer, the internal resistance values will not differ too much when leaving the factory.

★ When using 24V test, the internal resistance is the sum of two sets of 12V batteries in series.

Life: The life measured and evaluated by the instrument is the use state of the battery under comprehensive operating conditions. It is recommended to replace the battery when the battery life is less than 45%.

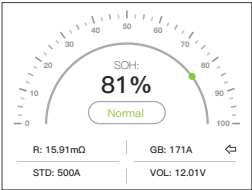
★ It is recommended to replace the test results:

The test result is poor. The battery life is only 30%, and the performance is poor. It is recommended to replace it.



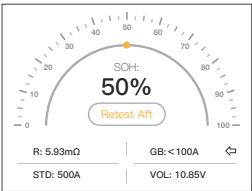
★ Life test is normal, battery voltage is low Test results:

In the test results, the battery life is 81%, but the battery voltage is only 12.01V, the battery performance is not good.



★ Life test is normal, battery voltage is too low Test results:

In the test results, the battery voltage is only 10.85V. The voltage is too low, which may affect the test results. It is recommended to test after charging.

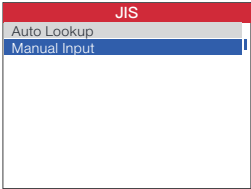


2.4-2 JIS# standard name battery starting current standard setting:

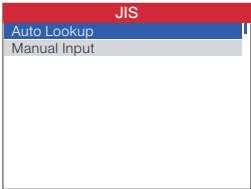
For the battery with the name of JIS# standard, if the value of the battery starting current clearly marked can be found on the surface of the battery body, this value will be used as the test judgment standard during the test, and "JIS" will be selected in the battery test -- precise test.

Battery Type	
CCA	
IEC	
EN	
DIN	
CA	
BCI	
MCA	
SAE	
GB	
JIS	

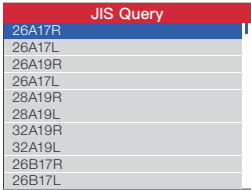
Press the < ▲ > < ▼ > key to select the manual input item to adjust the reference standard value of the input battery starting current for testing.



If the value is not marked on the battery body, the user can retrieve the reference standard value of the battery starting current according to the model by using the JIS model of the battery through the automatic check entry in the meter, and press "OK" to proceed to the next step.



The automatic table lookup page is displayed, press the < ▲ > < ▼ > key to turn the page, the storage battery specifications to be measured can be found in sequence according to the serial number.



Press the < ▲ > < ▼ > key to after finding the corresponding battery model of the battery under test (take "75D23L" as an example), press the "OK" key to enter the selection screen.

JIS Query	
65D31R	
65D31L	
70D23R	
70D23L	
75D23R	
75D23L	
75D26R	
75D26R	
75D31R	
75D31L	

Press the < ▲ > < ▼ > key and "OK" key to select the type to be marked on the final battery (take a type "75D23L MF" storage battery as an example). Press the "OK" button to store the battery for battery test.

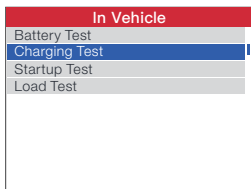
JIS Query	
75D23L	
75D23L MF	
75D23L CMF	

2.5 Charging Test

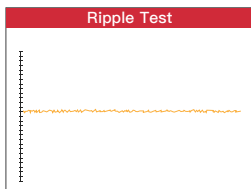
Test preparation: If the car is in the shutdown state, please start the car engine first.

Operation procedure: When the car is in the starting state, the test clamp is connected to the positive and negative terminals of the battery under test (this device test clamp has no positive and negative terminals, access error will not damage the equipment). Ensure that the battery pole is in good contact with the battery pole, and do not clamp it to the iron frame of the extended body. If there is an iron collar on the battery pole, ensure that the iron collar is in good contact with the battery pole, or uninstall the collar to test.

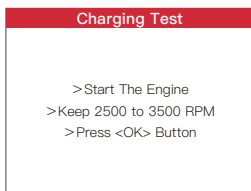
Press the < ▲ > < ▼ > key to select the charging test item and press the "OK" key to enter the test.



The waveform test screen is displayed. The smaller the waveform fluctuation, the more stable the voltage.



Waveform test interface wait 10 seconds, the instrument will prompt the following interface.



Press the "OK" key to get the charging test result after following the instructions shown in the steps above.

Final charging test results: normal (indicating that the battery is normally charged); High output (indicating that the battery charging voltage is too high); There is no output (indicates that the battery is not charging).

Charging Test	
Loaded	11.97V
Unloaded	12.20V
Ripple	10mV
Results	No Output

Charging test instructions:

- ★ If the voltage reading is greater than 15.0V (or 30.00V for 24V systems), check the voltage regulator.
- ★ If the voltage reading is less than 13.3V (or 26.60V for 24V systems), check the connection points, wires and engine.

Data Reference Table (12V System)		
Status	Battery Voltage	Engine Output
(Need to step on the accelerator to check)	14.5V the above	High (need to enter the factory for inspection)
	13.6 ~ 14.5V	Normal
	13.6V the following	No output, battery may be damaged

2.6 Startup Test

Test preparation: If the car is starting, please turn OFF the engine and turn the car lock key to the "OFF" position.

Operation procedure: When the car is in the starting state, the test clamp is connected to the positive and negative terminals of the battery under test (this device test clamp has no positive and negative terminals, access error will not damage the equipment). Ensure that the battery pole is in good contact with the battery pole, and do not clamp it to the iron frame of the extended body. If there is an iron collar on the battery pole, ensure that the iron collar is in good contact with the battery pole, or uninstall the collar to test.

Press the < ▲ > < ▼ > key to select the Starting Test item and press the OK key to start the test.

In Vehicle	
Battery Test	
Charging Test	
Startup Test	
Load Test	

After starting test, the instrument will prompt the following interface.

Start Load Test
Start Engine

After following the prompts to complete the operation, you can get the startup load test results.

Start Load Test	
Time	260ms
Starting Ability	Normal
Volyage	11.47V

The figure shows that the current startup voltage is 11.47V, the startup time is 260ms, and the final startup ability test result is normal.

Starting load test instructions:

- ★ If the starting voltage reading is greater than 9.6V (for a 24V system, the reading is greater than 16V), the operating system is in good condition.
- ★ If the starting voltage reading is less than 9.6V (or 16V for 24V systems), there is a problem with the starting system.

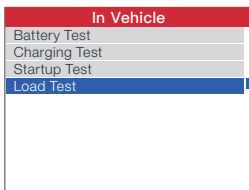
Data Reference Table (12V System)		
Start Meter Voltage	Battery Starting Ability	Dispose Of Batteries
13.5V the above	Low	Need to return to the factory for maintenance
9.6 ~ 13.5V	Normal	No need to replace
9.6V the following	Low	Need to return to the factory for maintenance

2.7 Load test

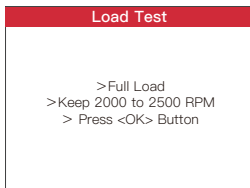
Preparation before testing: If the car is turned off, please start the car engine first.

Operation procedure: When the car is in the starting state, the test clamp is connected to the positive and negative terminals of the battery under test (this device test clamp has no positive and negative terminals, access error will not damage the equipment). Ensure that the battery pole is in good contact with the battery pole, and do not clamp it to the iron frame of the extended body. If there is an iron collar on the battery pole, ensure that the iron collar is in good contact with the battery pole, or uninstall the collar to test.

Press the < ▲ > < ▼ > key to select a load test item and press the OK key to enter the test.



After entering the load test, the device will prompt the following interface.



Press the "OK" key to get the load test results after following the steps shown in the figure above.

Load Test	
Current	14.20V
Min	13.43V > 12.8V
Load Capacity	Good

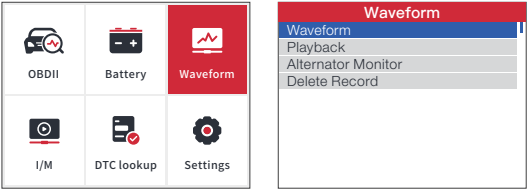
The figure shows the current test voltage of 14.20V, standard voltage of 12.80V (for 24V systems, standard voltage of 25.60V), and minimum voltage of 13.43V.

Read the minimum voltage value. If the voltage reading is greater than 12.80V (or 25.60V for a 24V system), the load system is normal.

★ If the voltage reading is less than 12.80V (or 25.60V for a 24V system), check the generator belt for wear and short circuit.

3.Waveform monitoring

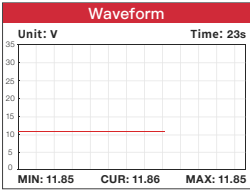
Press the "OK" key to select waveform monitoring items and press the "OK" key to enter the test.



3.1 Waveform display

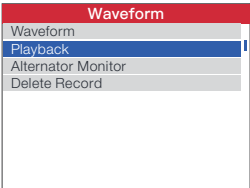
Enter the waveform monitoring interface, you can monitor the voltage fluctuation in real time, and the device will automatically save the record.

The figure shows that the current test voltage is 11.86V, the minimum voltage is 11.85V, and the maximum voltage is 11.86V.



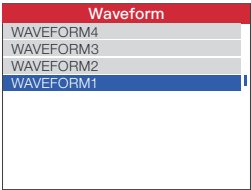
3.2 Recording playback

On the waveform monitoring interface, press the < ▲ > < ▼ > key to select the playback item and press the OK key to enter the selection interface.

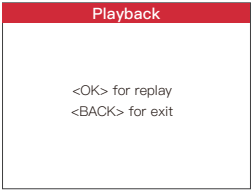


Press the < ▲ > < ▼ > key to select the playback of the saved waveform monitoring record (WAVEFORM1 for example). Press the OK key to view the playback.

Note: The first waveform monitoring record to be saved is sequence 1, which is sorted in sequence. The device can save a maximum of 5 records. If more than 5 records are saved, the previous records will be overwritten.

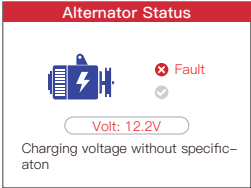
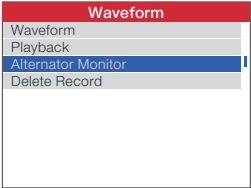


After entering playback, the instrument will prompt the following interface. Press the "OK" key to play again, and press "Back" to exit playback.



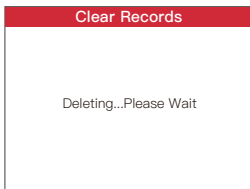
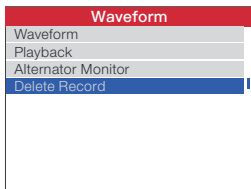
3.3 Alternator monitor

Press the < ▲ > < ▼ > key to select the alternator monitor item, press the "OK" key to enter, check the generator status.



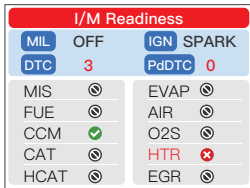
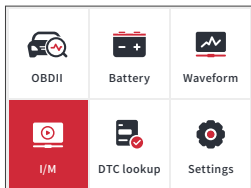
3.4 Delete Record

Press the < ▲ > < ▼ > key to delete the record and press the OK key to delete the playback record.



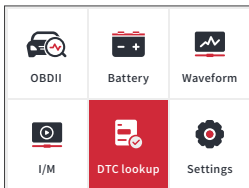
4. I/M readiness

Press < ▲ > < ▼ > key to select the I/M readiness test and press the "OK" key to view (same function usage and instructions -- 1.7 I/M ready test).



5. DTC lookup

Press the < ▲ > < ▼ > key to select the fault code query item and press the OK key.



Press < ▲ > < ▼ > key to select the car brand, select good press "OK" key to enter, and then enter your fault code to see the corresponding solution.

Select Brand
Generic
Acura
Alfa Romeo
Audi
Bentley
Benz
BMW
Buick
Chevrolet
Chrvsler

Generic
Please enter the trouble code number
P001

6.System Settings

Press the < ▲ > < ▼ > key to select the Settings and press the OK key to enter.

 OBDII	 Battery	 Waveform
 I/M	 DTC lookup	 Settings

6.1 Language settings

Press < ▲ > < ▼ > key to select the language option, press the "OK" key to select the required language, and then press the "OK" key to confirm.

Settings
Languages
Unit
Beep
Self-Test
System Info

Languages
English
Français
русский
Deutsch
Italiano
Español
Português
Polski

6.2 units

Press < ▲ > < ▼ > key to select the unit item, press the "OK" key to enter the change measurement unit display metric or British system.

Settings	
Languages	
Unit	
Beep	
Self-Test	
System Info	

Unit	
METRIC	
ENGLISH	

6.3 Buzzer

Press the < ▲ > < ▼ > key to enter the buzzer item, select the open/close item and press the "OK" key to confirm.

Settings	
Languages	
Unit	
Beep	
Self-Test	
System Info	

Beep	
ON	
OFF	

6.4 System self-check

Liquid crystal self-test: used to detect whether there are bad spots on the display screen of the equipment, so as not to cause incomplete display of the screen content.

Keyboard self-test: used to detect whether the keys of the equipment are out of order and cannot be used.

Settings	
Languages	
Unit	
Beep	
Self-Test	
System Info	

Self-Test	
DISPLAY TEST	
KEYBOARD TEST	

6.5 System Information

Press the < ▲ > < ▼ > key to select a system item, and press the OK key to view the system information.

Settings
Languages
Unit
Beep
Self-Test
System Info

About
S/N: YH221112G3AC
HW VER: 1.0
SW VER: 1.0
DATE: 12/11/2022

5. Common problems

1.OBDII Common Problems

1. What is the scope of application?

Applicable to vehicles with OBDII agreement after 2000 (OBDII standard is mainly related to vehicle year, generally imported joint-venture vehicles after 2000, domestic vehicles after 2008 OBDII support) Support all OBDII communication protocols, such as: CAN,J1850PWM,IS09141 and KWP2000, etc.

2. How to remove the vehicle with a fault code?

1. If the indicator is off and there is a fault code, update the software and OBD in time.
2. If the fault code is still detected after the update, please keep the vehicle running and go to the 4S shop to check whether there is really a fault code. If there is a fault code, it will be cleared.
3. If the fault code is cleared and diagnosed again, there is a fault code, then your car may really have a fault, it is recommended to repair it quickly.
4. If there is no fault code detected by the 4S shop, please consult them whether they can upgrade to the latest version of ECU system. Meanwhile, you can rest assured that the upgraded ECU system provided by the official will not damage the vehicle, but only improve the vehicle performance.

3. What can I do if the OBD fails to communicate or connect?

1. Check whether the OBD port of the vehicle is dusty and clean it up before connecting it.

2. For early low-equipped vehicles, the on-board ECU system may not contain the emission monitoring function, please upgrade the system at the 4s shop.

4. What can I do if there are more than two unfinished items in the ready state?

1. Pay attention to maintenance at ordinary times. If the car is in good condition, please fully exercise the recheck after the sensor reaches the best state.
2. If the car is not maintained and the car is in poor condition, it is recommended to clean the assembly.
3. If the vehicle has been driving for a long time and the number of kilometers is long, there is a power loss phenomenon, it is recommended to install the road. Carburetor, for electronic components Perform the upgrade.
4. If methods 1, 2 and 3 fail to solve this problem, it is necessary to upgrade the ECU to the new version at the 4S store.

5. The OBD information of some vehicles cannot be queried at the detection station, but all OBD information can be read in the 4S shop.

The 4S shop is the original agreement of the car factory, so it must be able to read its own model information, so that the 4S shop can quickly diagnose the vehicle condition through OBD data for maintenance. The diagnostic instrument of the detection unit is designed according to the national standard. If the vehicle fails to read it, it may be that the ECU system does not meet the requirements of the national standard to design the open query interface protocol. At the same time, the system reading mode of each ECU manufacturer is not uniform.

2. Battery common problems

1. The measuring principle of this tester?

As time goes by, the battery will gradually age. The main reason is that the surface of the battery plate is aging and can no longer carry out effective chemical reactions. This is the main reason why most batteries cannot continue to be used. The International Institute of Electrical and Electronics Engineers (IEEE) formally adopted the conductance test method as one of the testing standards for the detection of lead-acid batteries. The IEEE standard 1118-1996 clearly pointed out: "The measurement of battery conductance is to use an AC signal of known frequency and amplitude Add it to both ends of the battery, and then measure the generated alternating current. The alternating current conductance value is the ratio of the alternating current signal that is in phase with the alternating voltage to the alternating voltage. "This product is developed based on this judgment.

2. If the reverse current is installed on the car, will it affect the result?

All reverse currents will affect the test results of the instrument, so please remove the reverse current before measuring to ensure the accuracy of the test.

3. Can this product accurately predict when the battery will expire?

The internal resistance of a sealed lead-acid battery is complicated, which includes the

ohmic internal resistance of the battery, the internal resistance of the concentration difference polarization, the internal resistance of the electrochemical reaction, and the interference effect during charging of the double-layer capacitor. The components contained in the internal resistance values are measured with different test methods, at different times and their relative contents are different, so the measured internal resistance values are also different. There is no strict mathematical relationship between the internal resistance (or conductance) of the sealed lead battery and the battery capacity, and it is impossible to predict the battery life based on the internal resistance (or conductance) of a single battery. But when the internal resistance of the battery suddenly increases or the conductance decreases suddenly, it indicates that the battery life is about to end.

4. Is the CCA value measured by this product correct?

CCA is a control standard during battery production. According to the accumulated results, the new battery measured value will be higher than the label value (10%~15%) As the change of user's use condition, it will be closer to the label value and then lower than the label value.

5. The difference between this product test method and the load test method?

★ Load test method:

According to the physical formula $R=V/I$, the test equipment forces the battery to pass a large constant direct-current in a short period of time (usually 2 ~ 3 seconds) (currently, a large current of 40A ~ 80A is generally used). Measure the voltage across the battery at this time, and calculate the current battery internal resistance according to the formula. This method has obvious shortcomings:

1. Only large-capacity batteries or batteries accumulators can be measured. Small-capacity batteries cannot load a large current of 40A ~ 80A within 2 to 3 seconds.
2. When the battery passes a large current, the electrodes inside the battery will be polarized, resulting in polarized internal resistance. Therefore, the measurement time must be very short, otherwise, the measured internal resistance has a large error.
3. High current passing through the battery will damage the internal electrodes of the battery.

★ Test method of this product:

The battery is actually equivalent to an active resistance because we apply a fixed frequency and a fixed current (small current) to the battery, then sample its voltage and calculate the internal resistance of the battery through the arithmetic circuit after a series of processing such as rectification and filtering. The advantages of this method:

1. This method can be used to measure almost batteries, including small-capacity batteries. It is generally used to measure the internal resistance of laptop batteries.
2. This method will not cause much damage to the battery itself.

6. Other Instructions

★ Quick Test

The quick test is to use the capacity (AH) marked by the battery to detect the life of the battery. The amount of charge that a battery can hold is the "capacity" of the battery, which is characterized by "Ah" and the symbol "Ah".

For example 120Ah. According to national standards, the battery capacity is specified as a 20-hour discharge rate. For a 120Ah battery, it is discharged with a current of 6A and can be discharged for 20 hours. The battery capacity (AH) is always constant, and AH can only be used to roughly determine the battery life. This meter does not have a discharge function. It uses analog methods to measure AH. The measured parameters are voltage, internal resistance, and actual CCA. Other data are only for reference.

★ Accurate Test

The accurate test is to use the Cold Cranking Ampere (CCA) marked by the battery to detect the life of the battery. The CCA value refers to: under a certain low-temperature state (usually specified at 0°F or - 17.8°C) The amount currently released by the battery for consecutive 30 seconds before the voltage drops to the limit depletion voltage.

1. CCA has nothing to do with battery capacity.

For example, there is a 12-volt battery casing marked with a CCA value of 600, which means that at 0°F, before the voltage drops to 7.2 volts, it can provide 600 amperes for 30 seconds. The CCA test focuses on assessing the discharge capacity of the battery, so as to ensure true energy for the use of the starter.

2. For a 600CCA battery, if it is detected as 480CCA by the device that does not mean the battery capacity has become 80% of the original.

3. The high or low value of CCA is the main factor that really affects battery life. The battery with too low CCA value is difficult to start after ignition, which has a great relationship with the quality and uses the time of the battery! And it has nothing to do with the battery capacity (AH) .

6. Battery specification

(The following table is for reference, the actual value is based on the factory data.)

1. JIS code conversion table

Specifications		Cold Cranking Ampere			Specifications		Cold Cranking Ampere		
JIS (New)	JIS (Old)		MF	CMF	JIS (New)	JIS (Old)		MF	CMF
26A17R		200			55B24RS	NT80-S6S	430	420	500
26A17L		200			55B24LS	NT80-S6LS	430	420	500
26A19R	12N24-4	200	220	264	55D26R	N50Z	350	440	525
26A19L	12N24-3	200	220	264	55D26L	N50ZL	350	440	525
28A19R	NT50-N24	250			60D23R		520		
28A19L	NT50-N24L	250			60D23L		520		
32A19R	NX60-N24	270	295		65D23R		420	540	580
32A19L	NX60-N24L	270	295		65D23L		420	540	580
26B17R		200	220	265	65D26R	NS70	415	520	625
26B17L		200	220	265	65D26L	NS70L	415	520	625
28B17R		245			65D31R	N70	390	520	625
28B17L		245			65D31L	N70L	390	520	625
28B19R	NS40S	245			70D23R	35-60	490	540	580
28B19L	NS40LS	245			70D23L	25-60	490	540	580
32B20R	NS40	270			75D23R		500	520	580
32B20L	NS40L	270			75D23L		500	520	580
32C24R	N40	240	325	400	75D26R	F100-5	490		
32C24L	N40L	240	325	400	75D26L	F100-5L	490		
34B17R		280			75D31R	N70Z	450	540	735
34B17L		280			75D31L	N70ZL	450	540	735
34B19R	NS40ZA	270	325	400	80D26R		580	580	630
34B19L	NS40ZAL	270	325	400	80D26L		580	580	630
36B20R	NS40Z	275	300	360	85B60K				500
36B20L	NS40ZL	275	300	360	85BR60K				500
36B20RS	NS40ZS	275	300	360	95D31R	NX120-7	620	660	850
36B20LS	NS40ZLS	275	300	360	95D31L	NX120-7L	620	660	850
38B20R	NX60-N24	330	340	410	95E41R	N100	515	640	770
38B20RS	NT60-N24S	330	340	410	95E41L	N100L	515	640	770
38B20L	NX60-24L	330	340	410	105E41R	N100Z	580	720	880

38B20LS	NX60-24LS	330	340	410	105E41L	N100ZL	580	720	880
40B20L		330			105F51R	N100Z	580		
40B20R		330			105F51L	N100ZL	580		
42B20R		330			115E41R	NS120	650	800	960
42B20L		330			115E41L	NS120L	650	800	960
42B20RS		330			115F51R	N120	650	800	960
42B20LS		330			115F51L	N120L	650	800	960
46B24R	NS60	325	360	420	130E41R	NX200-10	800		
46B24L	NS60L	352	360	420	130E41L	NX200-10L	800		
46B24RS	NS60S	325	360	420	130F51R		800		
46B24LS	NS60LS	325	360	420	130F51L		800		
46B26R		360			145F51R	NS150	780	920	
46B26L		360			145F51L	NS150L	780	920	
46B26RS		360			145G51R	N150	780	900	1100
34B19RS	NS40ZAS	270	325	400	80D26R	NX110-5	580	580	630
34B19LS	NS40ZALS	270	325	400	80D26L	NX110-5L	580	580	630
46B26LS		360			145G51L	N150L	780	900	1100
48D26R	N50	280	360	420	150F51R	NT200-12	640		
48D26L	N50L	280	360	420	150F51L	NT200-12L	640		
50D20R		310	380	480	165G51R	NS200	935	980	
50D20L		310	380	480	165G51L	NS200L	935	980	
50D23R	85BR60K	500			170F51R	NX250-12	1045		
50D23L	85B60K	500			170F51L	NX250-12L	1045		
50B24R	NT80-S6	390			180G51R	NT250-15	1090		
50B24L	NT80-S6L	390			180G51L	NT250-15L	1090		
50D26R	50D20R		370		195G52R	NX300-51	1145		
50D26L	50D20L		370		195G52L	NX300-51L	1145		
55D23R		355	480	500	190H52R	N200	925	1100	1300
55D23L		355	480	500	190H52L	N200L	925	1100	1300
55B24R	NX100-S6	435	420	500	245H52R	NX400-20	1530	1250	
55B24L	NX100-S6L	435	420	500	245H52L	NX400-20L	1530	1250	

2. Comparison table of DIN and EN models

Model	Same Mode	DIN	EN	Model	Same Mode	DIN	EN
52805	52815	180	240	56420	56322 88066	300	510
53517		175	300	56530	56618 56638	300	510
53520	53521 53522	150	240	56618	56619 56620	300	510
53625	53638 53836	175	300	56633	56647 56641	300	510
53646	53621 88038	175	300	56820	56821 56828	315	540
53653	53624 53890	175	300	57024	57029	315	540
54038	54039	175	300	57113	57539	400	680
54232		175	300	57114	56821 88074	400	680
54313	54324 54464	220	330	57218	57219	420	720
54317	54312 88146	210	360	57220	57217	420	720
54437	54466 54459L	210	360	57230		380	640
54459	54434 88046	210	360	57412	57413 57412L	400	680
54469	54449 54465	210	360	57512	57513 57513	350	570
54519	54533 54612	210	360	58515	58424	450	760
54523	54524	220	300	58521	58513	320	540
54537	54545 54801	190	300	58522	58514	320	540
54551	54580	220	300	58815	58821	395	640
54533	54577 54579	220	300	58820	58515 58527	395	640
54584	54578	220	300	58827		400	640
54590		210	330	58838	58833 88092	400	680
54827		240	360	59040	59017 59018	360	600
55040	88056	265	450	59218	59219	290	480
55041	55042	220	360	59226	59215	450	760
55044	55414 88056	265	450	59515		320	540
55046		300	510	59518	59519	395	640
55056		320	540	59615	59616	360	600
55057	54827 88156	320	540	60018	60019	250	410
55068	55069 55548	220	390	60026	58811	440	720
55218		255	420	60044	60038	500	760
55414	55415 55421	265	450	60527	60528	410	680
55422	55566 55040	265	450	61017	61018	400	680
55428	55423 55427	300	510	61023	62529	450	760
55457		265	450	61047	61048	450	760
55529		220	360	62034	62038 62045	420	680
55531	55545 55559L	255	420	63013		470	680

55559	55530 88056	255	420	63545	63549	420	680
55564	55552 55563	255	420	64020	64317 64318	325	550
55564	55565 55548	255	420	64028	64035	520	760
55570	55567 55565L	255	420	64036		460	760
56012		230	390	64317	64318 64323	540	900
56048	56068 56069	250	390	65513		540	900
56049	56069 56073	250	390	65514	65515	570	900
56077	56030	300	510	67043	67045	600	1000
56091	55811	360	540	68032	68034	600	1000
56111	55048	300	540	70029	70038 70027	630	1050
56218	56092	300	510	70036	68040 68021	570	950
56219	56216	300	510	71014	71015	700	1150
56220		280	510	72512		680	1150
56225	56323	300	510	73011		740	1200
56318	56312 56311	300	510				

3. Yuasa battery specification table

Yuasa Battery Model	CCA Value	Yuasa Battery Model	CCA Value
GT50L-MF	356CCA	75A-72	630CCA
GTH55DL-MF	356CCA	78A72	670CCA
GTH60DL-MF	325CCA	34-610MF	610CCA
GTH75DL-MF	520CCA	75-6MF	615CCA
GTH40S	275CCA	58-6MF	530CCA
GTH40L	276CCA	34-6MF	500CCA
GTH40	277CCA	24-500	500CCA
GTH60L	325CCA	34-710	710CCA
GTH75DL-MF (競技版)	520CCA	41-580	580CCA
GTH75D-MF (競技版)	521CCA	58-530	530CCA
55D23R-MF	522CCA	65-730	730CCA
34-60	525CCA	75-660	660CCA
58-60	525CCA	78-710	710CCA
65-70	700CCA	GR40R-MF	700CCA
74-60	525CCA	GR40R-CMF	820CCA
75-72	500CCA	GR96R-MF	500CCA

35-580	580CCA	GR96R-CMF	580CCA
65-900	580CCA		

7. Vehicle Battery Analysis

1. Different types of batteries have different internal resistances:

The same type of battery has different internal resistance due to inconsistent internal chemical characteristics. The internal resistance of the battery is very small, we generally use the unit of milliohm to define it. Internal resistance is an important technical indicator to measure battery performance. Under normal circumstances, a battery with a small internal resistance has a strong high-current discharge performance, and a battery with a large internal resistance has a weak discharge capacity.

2. The battery's capacity can't be measured by feeling:

You can use a hydrometer to measure the working status of the battery. The battery water is prepared with the specific gravity of distilled water + pure sulfuric acid at 1.260 / 20°C. For the new battery, if the battery water volume is within the normal range, the acidity is fixed. If the battery water is less, add distilled water, except for maintenance. In addition to a certain amount of water, the pH value can also be maintained. If the battery is working normally, in addition to the fixed pH value, the specific gravity value will also be in a certain range.

Battery For A Small Car		
Voltage (V)	Electricity (%)	Proportion
12.7 the above	100%	1.26~1.28
12.6	90%	1.24
12.4	70~80%	1.22
12.1	50%	1.16
12 the following	25%	1.13 the following

If the specific gravity value of the battery water cannot reach 1.26~1.28 after being fully charged, and the measured voltage cannot reach 12.7V or more, it means that the battery's capacity has dropped. At this time, If you deliberately adjust the specific gravity of the battery water to 1.26 (increasing the ratio of sulfuric acid to water) , not only the battery cannot be repaired, but it will also speed up the scrapping of the battery, because the acidity of the bottled water will also increase, therefore this method can't increase the voltage.

3. The meaning of common battery standard abbreviations:

★ RC—Reserve Capacity:

At 80°F (27°C) , each battery has an average load of 25 amperes of electricity per minute and can maintain a minimum voltage of about 10.5 volts.

★ CCA—Cold Cranking Ampere:

Under the solid current intensity, each battery that is cooled and immersed in 0°F (-18°C) ~ -20°F (-29°C) can last 30 seconds and maintain a minimum voltage of 7.2 volts. The unit of cold start current is ampere. General vehicles, especially those that are too old, often fail to start the engine smoothly when the motor is turned on and must be maintained for more than a few seconds or start for the second time. In fact, the battery consumes the most power when starting the engine, the voltage of the battery can drop from the normal 12.5V to 10.5V or even below at the moment of high current output in a short time. The greater the Cold Cranking Ampere, the greater the effect on improving the start-up irregularity.

★ CA—Cranking Ampere:

Its main meaning is similar to CCA, and the unit is also ampere. The only difference from CCA is the temperature at the time of measurement. CCA is the result obtained in an environment of minus 17.8°C, and CA is the result obtained in an environment of zero Celsius. If both CCA and CA are marked on the same battery, the value of CCA will be lower than that of CA, because of the lower the temperature, the worse the performance of the battery

★ AH—Ampere Hour:

It is a standard established by the Japanese Industrial Standards (JIS) . Simply put, the battery can last for 20 hours when discharged at a fixed amperage and the voltage is maintained above 10.5 volts. This fixed amperage is multiplied by the number of hours, which is the ampere-hour. For example, if the battery is discharged at 20 amperes for 20 hours, the ampere-hours of the battery are 400 AH.

★ DIN—German System Standard:

At a cold temperature of 0°F (-18°C) , the battery's reachable amperage is 9.0 volts for 30 seconds, and maintains the minimum voltage, while at 8.0 volts for 150 seconds.

★ IEC—International Electronic Technology Association:

At the average current intensity, each battery that is cooled and immersed at 0°F (-18°C) can carry a minimum voltage of 8.4 volts for 60 seconds.

★ **BSR—British Verification Standard:**

At the average current intensity, each battery that is cooled and immersed at 0°F (-18°C) can be loaded with a minimum voltage of 6.0 volts for 180 seconds.

★ **BCI—International Battery Association:**

At the average current intensity, each battery that is cooled and immersed in 0°F (-18°C) ~ -20°F (-29°C) can carry a minimum voltage of 7.2 volts for 30 seconds.

8. Guarantee Card

Hello! Thank you for purchasing the products in order to better serve you, please read carefully, fillin and properly keep this guarantee card after purchasing the products.

Name		Email	
Purchase Date		Cotact Number	
Address		Product Name	
Order Number			
Repair Records	Date	Cause of failure and solution	

Warranty Statement:

If there is any quality problem of the product that needs to be repaired, please send this warranty card together with the purchased product back to our company to provide after-sales service.

