
USER MANUAL

BATTERY TESTER

01 FOREWORD

Related knowledge

The batteries will gradually age over time after being made. As the battery electrode plate surface age and produces sulfides, the batteries can not undergo the chemical reactions effectively, this is the main reason the most batteries cannot continue to be used. At this time, the internal resistance of the batteries increases. The older batteries, the greater the internal resistance. By accurately measuring the value of internal resistance, you can determine the aged of the batteries. Currently, conductance method is the most advanced method to measure the internal resistance of the batteries.

It has a proven result of electric conductance test and 1/2 CCA discharging measurement test can be identical. Given result fully shows the accuracy of this tester. During operation, avoiding large current to discharge the battery can protect the battery from possible damages and heat generation. This allow the machine operator perform tests several times within a short time period. In recent years, the conductance method to measure the internal resistance of a battery is being widely used around the world.

ABOUT **02**

Technical parameters

The tester can detect out the battery's voltage(V), cold cranking ampere(CCA), battery life(%), internal resistance(mΩ) and the state of health(%) in 5 seconds, it can also detect out if the battery needs to be charged or damaged. The tester suitable for automotive start system and charging system, convenient and practical.

Applications: Suitable for 12/24V automotive batteries (Ordinary, AGM, GEL), automotive start system and charging system test. Suitable for CCA, DIN, IEC, EN, JIS Standard batteries and unknown standard batteries.

Voltage range: DC 9-30V

Working temperature: 0-40°C

Working humidity: 20%-80%

Paper: Thermal paper

Language: English(US), Chinese (Simplified)

Screen parameter: LCD, LED backlit, resolution 128×64

Case material: ABS, TPR rubber cover

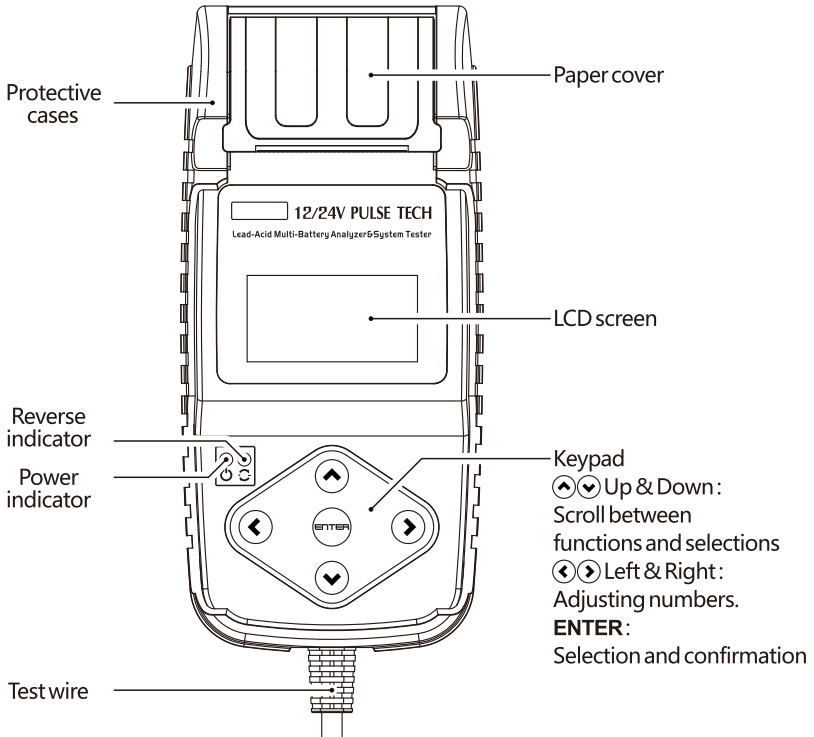
Wire: PVC material, 20AWG/4 wire, length 1100mm

Dimension: 122×256×56mm

Gross weight: 1.0kg

03 INTRODUCTION

Part names and functions



List of products :

- Battery tester (Thermal paper inside)
- Thermal paper×1 (Φ 40mm, width: 57mm)
- User manual

PREPARATION

Precautions **04**

- The tester is designed to test 12/24 volt automotive batteries. It can not be used for other batteries.
- A freshly charged battery will show a higher voltage than normal voltage; if this is the case, switch on the headlights for two or three minutes to allow the voltage to stabilize.
- Always connect directly to the leads of the battery terminals; connection to a remote post or vehicle ground will affect test result.
- Always connect single battery; read the user manual carefully and use correctly.

Battery Suitability

- CCA — 100-1700
- IEC — 100-1000
- EN — 100-1700
- DIN — 100-1000
- JIS — 26A17-245H52

CCA — Cold Cranking Ampere

IEC — International Electrotechnical Commission

EN — European Industrial Standard

DIN — German Institute for Standardization

JIS — Japanese Industrial Standard

Note:

The common battery abbreviations turn to Appendix 1;
The conversion tables of battery size range turn to Appendix 2.

05 SYSTEM SETTINGS

Time / Language setting

Connect the tester to the battery, red clip to the positive electrode and black clip to the negative electrode. The analyzer will start automatically and show the voltage of the battery. If the reverse indicator lights, that means the clip connect the wrong electrode.

Time Setting

Press and hold the **UP** key before connecting the battery, the screen will show the time setting interface. Use **LEFT** and **RIGHT** keys to select the options, **UP** and **DOWN** keys to adjust the value, **ENTER** key to confirm.



Setup time

2013-08-15
10H 00M 00S

Language Setting

Select the **LANGUAGE** option, then press **ENTER**. Use **UP** and **DOWN** keys to select the language and **ENTER** key to confirm. The tester will record the last used language and each boot without re-selection.



1. 中文
2. ENGLISH

BASIC OPERATIONS

Main menu / Battery test

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Main Menu

The screen will show the voltage of the battery when the analyzer starts. Use **LEFT** and **RIGHT** keys to select 12V or 24V according your battery. Then press **ENTER** to access the **MAIN MENU**.

There are three sub-menus: **BATTERY TEST**, **SYSTEM TEST** and **LANGUAGE**.

```
BATTERY VOLTS
12.61V
12V          24V
PRESS<ENTER>
```

```
MAIN MENU
1. BATTERY TEST
2. SYSTEM TEST
3. LANGUAGE
```

Battery Test

- Vehicle's ignition is switched OFF and all electrical equipment is OFF.
- Select **BATTERY TEST** then press **ENTER**.
- If the battery voltage capacity is too low, the tester will display a warning, it is recommended to charge the battery to achieve an accurate assessment of the battery condition. Press **ENTER** to continue.
- Select the battery capacity rating standard and capacity, use **UP** and **DOWN** keys to switch between options, **LEFT** and **RIGHT** keys to change the option or adjust the value. Then press **ENTER** to continue.

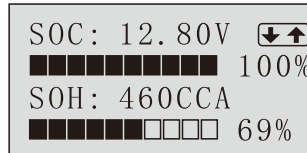
```
SELECT RATING
↓↑←→      CCA
SET CAPACITY
↓↑←→      500
```

07 BASIC OPERATIONS

Battery test

- Press **ENTER** again to start the test, or press **UP** key to return to the last step and re-enter the value.

- The results will be shown on the screen in two pages, use **UP** and **DOWN** key to turn the page:

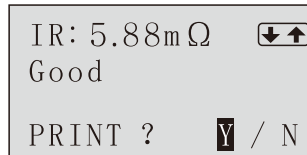


SOC: State of Charge

SOH: State of Health

IR: Internal Resistance.

Status: Status of the battery which is judged by SOH.



- Select if you want to print, Y to confirm, N to exit.

State of Health (Battery Condition)

Battery Condition The result and advice	
SOH > 80%	Battery in peak condition
SOH 60%~80%	Serviceable / good
SOH 45%~60%	Poor condition, will need replacement soon
SOH < 44%	Replace battery

Note: If rating standard and range is unknown, please select "?". Testing result will show SOC (state of charge) and internal resistance but no the SOH (state of health) and state. If the battery capacity found on the sticker on the top of the battery is inaccurate, this will lead the SOH (state of health) inaccurate.

BASIC OPERATIONS

System test **08**

System Test

- Vehicle's ignition is switched OFF and all electrical equipment is OFF.
- Select **SYSTEM TEST**, press **ENTER**.
- Following the instruction on the screen, turn off all loads and start engine (the tester will skip automatically).
- Start voltage and result will be displayed. Press **ENTER** to continue.
- Press **ENTER** to start Charging System Test.

- Confirming all loads is off and press **ENTER** to continue.

- Idling charging voltage and result will be displayed. Press **ENTER** to continue.

TURN OFF LOADS
START ENGINE

CRANKING VOLTS
9.48V NORMAL

PRESS ENTER FOR
CHARGING TEST

MAKE SURE ALL
LOADS ARE OFF

ALT. IDLE VOLTS
13.84V NORMAL

09 BASIC OPERATIONS

System test

- Following the instruction on the screen, turn on all loads and bring engine to 2500RPM. Then press **ENTER** to continue.

```
TURN OFF LOADS  
RUN ENGINE UP TO  
2500RPM  
PRESS ENTER
```

- Ripple voltage and result will be displayed. Press **ENTER** to continue.

```
RIPPLE DETECTED  
0.44V    NORMAL
```

- Alt. load voltage and result will be displayed. Press **ENTER** to continue.

```
ALT. LOAD VOLTS  
13.49V    NORMAL
```

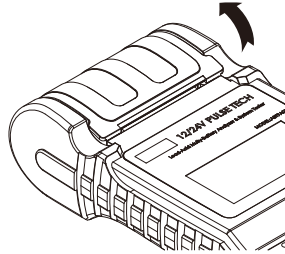
- Following the instruction on the screen, turn off engine and all loads. Press **ENTER** to finish testing and return to main menu. Select if you want to print, Y to confirm, N to exit.

```
TEST OVER, TURN  
OFF LOADS&ENGINE  
PRINT ?    Y / N
```

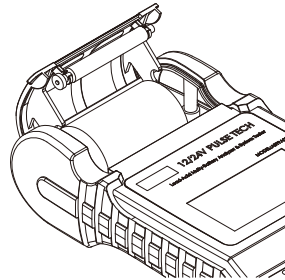
MAINTENANCE **10**

Replace the thermal paper

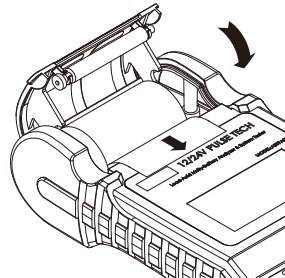
- To get access to paper roll, lift the paper cover up from tester.



- Replace the thermal paper roll.



- Pull out the head of paper and put it under the black rubber roller and close the paper cover back.



Appendix 1: Common Abbreviation Of Batteries

BSR (British Standards). Continuous output on average current intensity at 0°F(-18°C), the minimum voltage can be maintained over 6.0 volts for 150 seconds.

DIN (German Institute for Standardization). For 100DIN, each 100DIN battery at 0°F(-18°C), the battery needs to carry 100 amperes, and over 8.0 volts for 150 seconds.

IEC (International Electrotechnical Commission). Continuous output on average current intensity at 0°F (-18°C), the minimum voltage can be maintained over 8.4 volts for 60 seconds.

JIS (Japanese Industrial Standards). Calculate with amperes / hour, 20 hour rate.

AH (Ampere Hour)(20 hour rate). Each 100AH battery at 80°F(27°C), the battery needs to carry 5 amperes, the minimum voltage can be maintained over 10.5 volts for 20 hours.

RC (Reserve Capacity)(IEC). Is the time (minute) each battery at 80°F(27°C), the average power load reach 25 amperes per minute and the minimum voltage can be maintained over 10.5 volts. For a RC 110MIN battery, the battery can provide the vehicle continued to drive 110 minutes in case of failure of the vehicle generator.

CCA (Cold Cranking Ampere)(IEC). Every full battery after high intensity discharge for 30 seconds, the minimum voltage can be maintained over 7.2 volts.

For a 500CCA battery, the battery needs to carry 500 amperes for 30 seconds, the minimum voltage can be maintained over 7.2 volts.

CA (Cranking Ampere). The significance is similar with CCA, the difference between CCA and CA is the testing temperature, CA is the result at 0 degrees Celsius. The value of CCA will be lower than CA, because the low temperatures result in poor performance of the battery.

Appendix 2: The Conversion Tables Of Battery Size Range

EN and DIN Conversion Tables									
Specification			CCA		Specification			CCA	
Type	Same Type		DIN	EN	Type	Same Type		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		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	57531	350	570
54519	54533	54612	210	360	58515	58424		450	760
54523	54524		220	300	57521	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	640
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	59514			320	540
55046			300	510	59518	59519		395	640
55056			320	540	59615	59616		360	600
55057	54827	88156	320	540	60018	30019		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	56530		300	510	67043	67045		600	1000
56091	55800		360	540	68032	68034		600	1000
56111	55048		300	540	70029	70038	70027	630	1050
56218	55092		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					

JIS Specification Conversion tables of batteries									
Specification		CCA			Specification			CCA	
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	NT60-N24	270	295		65D23R		420	540	580
32A19L	NT60-N24L	270	295		65D23L		420	540	580
26B17R		200			65D26R	NS70	415	520	625
26B17L		200			65D26L	NS70L	415	520	625
28B17R		245			65D31R	N70	390	520	630
28B17L		245			65D31L	N70L	390	520	630
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	NS40LS	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	80D23R		580		
34B19L	NS40ZAL	270	325	400	80D26L		580		
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	360	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		410	105F51R	N100Z	580		
40B20R		330			105F51L	N100ZL	580		
42B20R		330			115E41R	NS120	650	800	960
42B20L		330			115E41L	NS120L	650	800	960
40B20RS		330			115F51R	N120	650	800	960
40B20LS		330			115F51L	N120L	650	800	960
46B24R	NS60	325	360	420	130E41R	NX200-10	800		
46B24L	NS60L	325	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	280	630
34B19LS	NS40ZALS	270	325	400	80D26L	NX110-5L	580	280	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		195G51R	NX300-51	1145		
50D26L	50D20L		370		195G51L	NX300-51L	1145		
55D26R		355	480	500	190H52R	N200	925	1100	1300
55D23L		355	480	500	190H52L	N200L	925	1100	1300
55B26R	NX100-S6	435	420	500	245H52R	NX400-20	1530	1250	
55B24L	NX100-S6L	435	420	500	245H52L	NX400-20L	1530	1250	

