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CE

Automotive Specialty Tool

Digital Vehicle Battery Tester

Part No. EAAD0112

Operational Manual

Operation Instructions:
Before operate the vehicle battery tester, please read this manual thoroughly and retain it for future reference.

Product Features

- Specially designed for testing 12 volt vehicle batteries, starting system and charging system
- Suitable for Lead-Acid Battery (Sealed Maintenance Free Battery, Maintenance Free Battery, Standard Type Battery), EFB Battery, AGM Battery
- Quickly obtains the test result by keying in the rated value (CCA/CA) of the battery
- Easy to read illuminated LCD display
- 0.85 meter long cable allows for flexible work

Testing Standard

SAE: Cold cranking amperes standard for United States
DIN: Cold cranking amperes standard for Germany
EN: Cold cranking amperes standard for Europe
IEC: Cold cranking amperes standard from International Electrotechnical Commission
CA (MCA): Cranking amperes / Marine cranking amperes

CCA: Cold Cranking Ampere

- This is the value to define the ability to start the engine
- When battery is in the low temperature environment as 0°F (-17.8°C). The higher the value, the higher the output efficiency of the battery
- If the vehicle is very old and difficult to start the engine, the higher CCA will be helpful for the engine to start more easily

CA: Cranking Amperes

- It is similar with CCA, but the value is measured with 0°C
- The CCA value will be lower than CA value with same battery; it is because the lower the temperature, the worse the performance
- CA standard is same as MCA (Marine cranking amperes)

Safety Instruction

⚠WARNING

To make sure that the Vehicle Battery Tester is used safely, the user must follow the instruction while using the instrument

1. The approved eye protector and protective apparel shall be worn when operating this tool.
2. Avoid touching eyes while working near battery.
3. Wash immediately with soap and water if battery acid contacts skin or clothing.
4. If acid enters eye, flush eye immediately with cool, clean water for at least 15 minutes and seek immediate medical attention.
5. To prevent the risk of sparking, short circuit and possible explosion, do not wear metal objects, such as rings, necklaces, watches or allow metal objects to touch the battery terminals.
6. Ensure that hands, clothing, hair are away from fan blades and other moving or hot parts of engine in order to reduce the risk of being scald or drawn into the rotating spindle.
7. Ensure the vehicle handbrake is applied and move the selector lever to position Park (P) or Neutral (N) on before starting the engine.
8. Test in a well ventilated area. Lead-acid batteries generate explosive gas when overcharged. Do not smoke or cause sparks near the battery.
9. Only qualified and trained operators should use the tester.
10. Do not disassemble the tester for any reason.
11. Store battery tester in a dry, childproof area when not in use.
12. If the battery terminals are corroded or dirty, clean them before using the tester.
13. Ensure positive (Red) clamp is to positive terminal and negative (Black) clamp is to negative terminal.
14. Do not use the tester in damp, or wet locations and do not use in the vicinity of flammable liquids or gases.

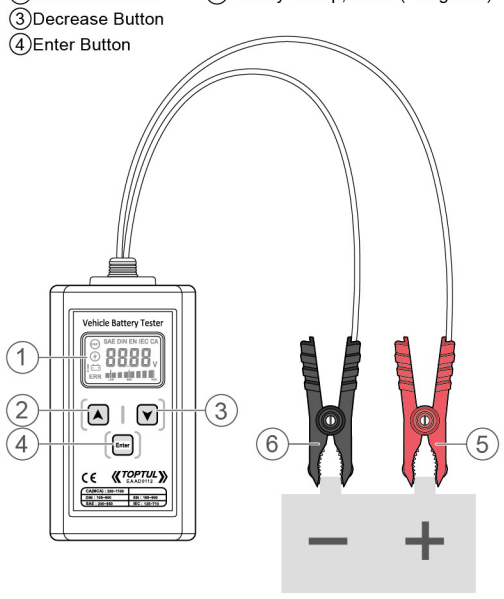
Product Specifications

Function	Voltage measurement
	Battery test according to SAE, DIN, EN, IEC, CA (MCA) standard
	Measure the minimum voltage when the engine starts
	Measure the maximum charging voltage when the engine is running
Battery Test Ranges	CCA*SAE: 200~950A
	CCA*DIN: 105~600A
	CCA*EN: 185~900A
	CCA*IEC: 125~710A
	CA (MCA): 250~1190A
Voltage Range	9~15V
Resolution	Voltage: 0.01V
	CCA (CA): 1
Accuracy	Voltage: ±0.05V
Type of Battery Applicable	Lead-Acid Battery (Lead Calcium Alloy) Including Sealed Maintenance Free Battery, Maintenance Free Battery, Standard Type Battery
	EFB (Enhanced Flooded Cell Battery)
	AGM (Absorbent Glass Mat) Battery
	Not Applicable for Lithium Battery
Reverse Polarity Protection	< 20V DC
Operating Temperature	0~50°C (32~122°F)
Storage Temperature	-30~70°C (-22~158°F)
LCD Display	LCD with Background Light
Dimension	135(L) x 80(W) x 35(H) mm
Weight	Approx. 330g

Main Product Feature

A. Digital Vehicle Battery Tester

①LCD Display
②Increase Button
③Decrease Button
④Enter Button
⑤Battery Clamp, Red (+ Positive)
⑥Battery Clamp, Black (- Negative)

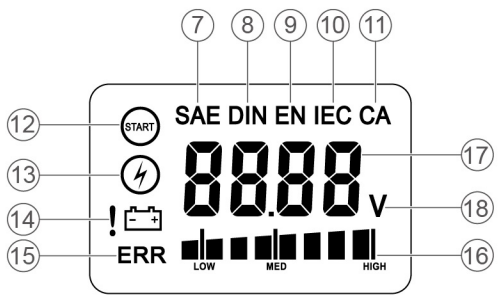


B. LCD Display

⑦SAE Test Mode
⑧DIN Test Mode
⑨EN Test Mode
⑩IEC Test Mode
⑪CA (MCA) Test Mode
⑫Engine Start Voltage Test Mode
⑬Charging Voltage Test Mode
⑭Battery Power Indication (※1)
⑮An Error has Occurred
⑯CCA Level Bar Indication
⑰Value for Voltage or CCA
⑱Voltage

※1: Battery power is normal

Battery power is too low, please charge the battery



CCA Level Bar Indication

- The tester will base on the measured CCA divided by the CCA rating to calculate the health condition of the battery (SOH).
- SOH (State of Healthy) is an ration between measured CCA and entered CCA rating. The higher level of bar indication, the better SOH.
- There are 8 levels of the CCA Level Bar Indication. If the CCA measure from the battery is 0, the bar indication will not appear on the LCD Display.
- User can get more accurate SOH by calculating the CCA value.

Operating Instruction

Before testing, make sure the battery terminals are really clean as grease and dust could lead to errors in the test results. If the battery is still fitted to a motor vehicle, make sure that all the electronics are turned OFF, and that the ignition is turned OFF.

A. Connect the Battery Tester / Voltage Measurement

1. Connect the red (+) clamp to the (+) positive terminal and the black (-) clamp to the (-) negative terminal of the battery. **Please make sure the clamps are firmly fixed on the two terminals of the battery.**
2. The tester will be started if the battery is connected correctly. The buzzer will beep shortly, the background light will light up, and all icons will be displayed for about two seconds. (Fig.1)
3. The tester will measure the battery voltage automatically. The measured value will be displayed on the LCD Display. (Fig.2)

Fig.1

Fig.2

B. Battery Test - CCA*SAE / CCA*DIN / CCA*EN / CCA*IEC / CA (MCA) Standard

The battery voltage will be a bit higher than its nominal voltage if the battery has just fully charged (the battery voltage will be a bit higher than 13V). For more accurate testing result, user can turn off the engine, turn on the headlight for 3~5 minutes, and wait for another 5 minutes before starts the test.

1. Press the Increase/Decrease Button to select an appropriate battery test mode (SAE / DIN / EN / IEC / CA).
2. For example, if you want to test with SAE standards. Press the Increase/Decrease Button until SAE appears on the LCD Display. (Fig.3)
3. Press Enter Button to enter the SAE mode and enter the CCA value of the battery.

Fig.3

NOTE:

- The CCA values can be increase/decrease by pressing Increase/Decrease Button; a single press Increase/Decrease Button will increase/decrease by 1 value intervals, press and hold Increase/Decrease Button will increase/decrease the values rapidly.
- The buzzer will beep shortly when user press the button.
- The CCA rating may be marked on the battery or inquired through the manufacturer's website.
- The tester will base on this value and measured value to show the battery condition with CCA Level Bar Indication.
- Wrong value will cause the CCA Level Bar Indication to show the wrong level indication.

4. After entering the correct CCA value, press the Enter Button, and the tester will start the test. The result will come out within few seconds, it will show the measured CCA value. The battery condition will indicate by the CCA Level Bar Indication. (Fig.4)
5. To start another test, you can press the Enter Button to return to voltage measurement mode. To end the test, please remove the two battery clamps.

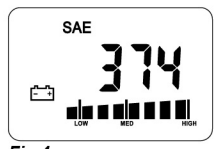


Fig.4

NOTE:

- CCA is only an index to control the battery manufacturing quality; in general, the CCA value of new battery will be higher than its rated value.
- If user gets a CCA value higher than its rated value, it is normal.
- The value will be decreased as it has been used, and it will be lower than its rated value eventually.
- It is suggested to test the battery more frequently if the measured CCA is lower than 70% of the CCA rated value.

C. Engine Starting Voltage Test

- The battery voltage will drop down when engine is starting. The tester is able to measure the minimum voltage during the engine starting.
- In general, the battery voltage will not be lower than 8.8V during the engine starting, otherwise it means the battery capacity is too low.
- If the battery is normal but the voltage has dropped lower than 8.8V, user shall check whether the starter motor or the engine is normal.
- 8.8V is an approximate value because it will vary by vehicle type and manufacturer.

1. Please make sure the clamps are firmly fixed on the two terminals of the battery, and so the clamps will not drop off during the measurement.
2. Press the Increase/Decrease Button to select the Engine Start Voltage Test Mode. (Fig.5)
3. Press Enter Button to start the test, the voltage will be shown on the LCD Display. (Fig.6)
4. Start the engine. The tester will keep updating the lowest voltage and hold the value on the LCD Display during the measurement.
5. To start another test, you can press the Enter Button to return to voltage measurement mode. To end the test, please remove the two battery clamps.

Fig.5

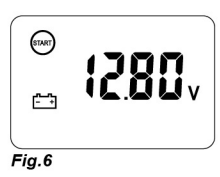


Fig.6

⚠WARNING

1. Ensure that hands, clothing, hair and tools are away from fan blades and other moving or hot parts of engine in order to reduce the risk of being scald or drawn into the rotating spindle.
2. Ensure the vehicle handbrake or footbrake is applied, move the selector lever to position Park (P) or Neutral (N) on and all electrical device are switched off before starting the engine.
3. Test in a well ventilated area.

D. Charging Voltage Test

- The battery voltage will increase when engine is running. The tester is able to measure the maximum voltage during the engine running.
- Normally, the maximum charging voltage is about 14.7V when all other electronic device has switched off (e.g. Hi-Fi, any lights on the vehicle).
- 14.7V is an approximate value because it will vary by vehicle type and manufacturer.
- If the voltage is too high, the battery will be damaged.
- If the voltage is too low, the battery will not be fully charged.

1. Please make sure the clamps are firmly fixed on the two terminals of the battery, and so the clamps will not drop off during the measurement.
2. Press the Increase/Decrease Button to select to Charging Voltage Test Mode. (Fig.7)
3. Press Enter Button to start the test, the voltage will be shown on the LCD Display. (Fig.8)
4. Start the engine. Increase the rotational speed to 3000~4000 RPM for about 5 seconds. The tester will keep updating the highest voltage and hold the value on the LCD Display during the measurement.

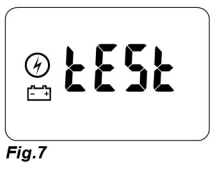


Fig.7

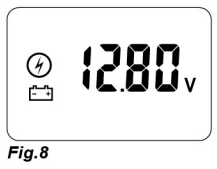


Fig.8

⚠WARNING

1. Ensure that hands, clothing, hair and tools are away from fan blades and other moving or hot parts of engine in order to reduce the risk of being scald or drawn into the rotating spindle.
2. Ensure the vehicle handbrake or footbrake is applied and move the selector lever to position Park (P) or Neutral (N) on before starting the engine.
3. Test in a well ventilated area.

Error Message

- There are some error messages will be shown on the LCD Display during the measurement.
- In general, it happens because the battery is too old, the CCA value of the battery is too small, or the battery is not properly charged.
- These circumstances will bring mistake during the test, and so below error message will be shown.

SAE OL	• Indicates the value is over the measurement range of the tester. • It may be the battery capacity is too large and exceeded the measurement capacity. • Please check the specification of the battery, make sure the battery capacity is within the set up range of the tester.
SAE Lo	• Indicates the value is too low to be measured. • It may be the battery is too old, or may be the charging condition of the battery is not good. • Please make sure the battery capacity is within the set up range of the tester, then charging the battery according to battery supplier's information. • Before re-test the battery, place the battery still for at least half hour after it is fully charged. • If "Lo" message is shown on LCD again, it means the battery is too old to be fully charged; please replace the battery.

SAE Conn ERR	• The connection between the tester and the battery is loose, please check the connection. • Make sure the red clamp is connected with positive, and the black clamp is connected with negative. • The clamps has to be fastened on the battery terminal tightly for accurate testing result.
HI-- V ERR	• It will appear when the voltage is higher than 16 volt. • The tester will stop the measurement and reduce the brightness of the background light to protect the tester. • Please check the specification of the battery, or ask the technician to check the alternator. In general, the charging voltage from the alternator will be around 14.7V. Alternator voltage is higher than this value is abnormal. • The maximum voltage measurement of the tester is 15V. It is suitable for 12V vehicle system only, voltage higher than specified value may damage the tester and the vehicle.