

Battery Capacity Tester

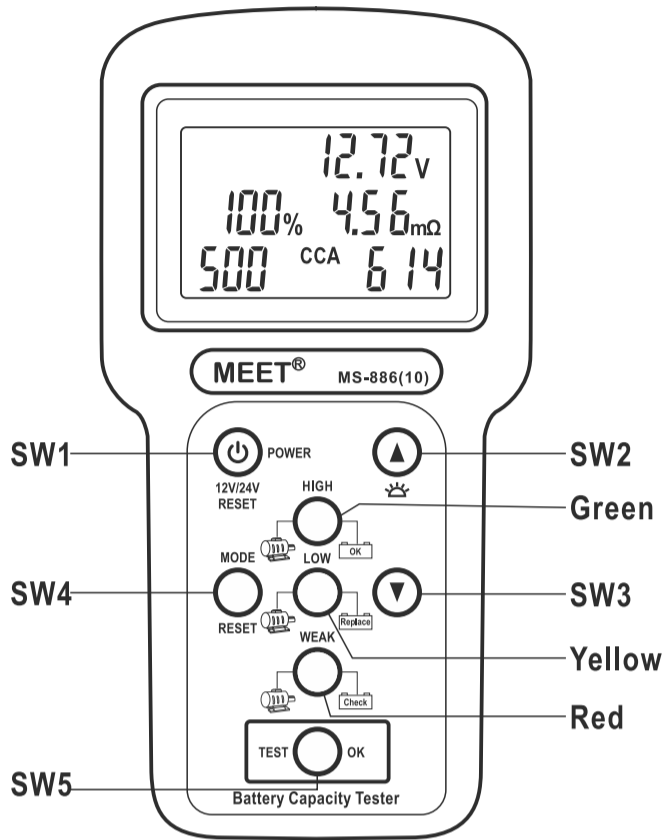
Model No.: MS-886(10)



Introduction:

Thank you for selecting MEET battery tester MS-886(10). The tester is specially designed for different standard (Ah / CCA / EN / DIN / IEC) of 12V or 24V battery tests, include voltage; internal resistance; capacity; current; battery performance / condition such as starting, charging and operating as well as performance of Auto alternator.

It is well designed, easy to operate; accurate results are achieved using a 4 terminal measurement method that eliminates test leads and contact resistance; and applied ON LOAD test current with less than 1 sec. measurement which produce less harm to the battery.



Definition of the press button:

- SW1** POWER
12V/24V RESET
1) Press > 3 secs. to ON/OFF
2) Press once to select 12V/24V battery test (disabled 24V for 'Ah' mode)
3) Press once to go back 'TEST' mode when after error reading
- SW2**
1) When at 'TEST' mode, press once to ON / OFF backlight
2) When at 'Apply current setting' of 'Ah' / CCA / EN / DIN / IEC, (except 'BTT Test' / 'ALT Test' mode) press once or press and hold to increase the current value between 1 to 200 (Ah) or 1 to 1900 (CCA / EN / DIN / IEC) with a bi (short) or bi...bi...bi (rapid and continuous) sound. Release to stop.
- SW3**
When at 'Apply current setting' of 'Ah' / CCA / EN / DIN / IEC, (except 'BTT Test' / 'ALT Test' mode) press once or press and hold to decrease the current value between 200 to 1 (Ah) or 1900 to 1 (CCA / EN / DIN / IEC) with a bi (short) or bi...bi...bi (rapid and continuous) sound. Release to stop.
- SW4** MODE
RESET
1) At 'TEST' mode, press once to enter 'SEt' setting mode
2) After, press once to select by looping through 'Ah' → 'CCA' → 'EN' → 'DIN' → 'IEC' → 'bEt tEtSt' (battery test) → 'Alt tEtSt' (Alternator test) →
3) 'Reset' press once
NOTE: When at 'BTT test' mode, must finish the test, then switch to other mode.
- SW5** TEST OK
1) At 'TEST' mode, press once to test 'battery' or 'alternator'
2) At 'BTT test' mode, press once to switch between 'test' and 'stop test'
3) After select the desired test mode, press and hold for 3 secs. to conform and then enter 'Apply current setting' (at 'Ah' / 'CCA' / 'EN' / 'DIN' / 'IEC' mode); or go back directly to 'TEST' mode (at BTT Test / ALT Test mode)
4) After set the proper current value, press and hold for 3 secs. to conform and then ready to test. (at 'Ah' / 'CCA' / 'EN' / 'DIN' / 'IEC' mode).

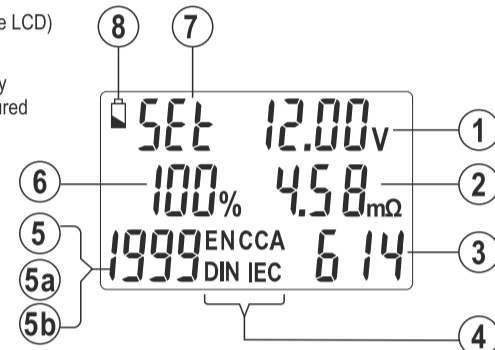
Definition of LED indication:

- 1) Green / Yellow / Red, either LED lights up which indicates quick results of battery or alternator, ie. OK / Recharge / Check
- 2) Green / Yellow / Red, all blinks which indicates error result

For more information, please refer to the LED indication explanation in page 7

Definition of LCD display:

- ① a) 12V or 24V battery test mode (when at 'Ah' mode, only the icon '12V' displays on the LCD)
b) Display test results of the battery or alternator voltage
- ② a) Display test results of internal resistance of the battery
b) Display the lowest starting crank voltage value measured without 'unit' icon when at 'battery test' mode
- ③ a) CCA, Cold Cranking Amperes
b) Display 'tEtSt' (test) when at battery or alternator test mode
c) Battery capacity left when at 'Ah' mode
- ④ Display setting mode 'CCA / EN / DIN / IEC', when at 'Ah' mode, the area is blank without any icon.
- ⑤ a) Current setting applied to test the battery from 1 to 200 (Ah) or 1 to 1900 (CCA / EN / DIN / IEC)
b) Display 'bEt t' (battery) when set at battery performance test mode
c) Display 'Alt t' (Alternator) when set at alternator performance mode
- ⑥ a) Display test results of the battery capacity left in '%'
b) Display 'Ah' when at 'Ah' mode
- ⑦ a) 'SEt' Setting mode, when pressed once the 'SW4' button
b) 'rUn' icon indicates the battery test (starting crank mode) is ready to progress
- ⑧ Low battery indication (when <7.00 +0.2V)



OPERATION

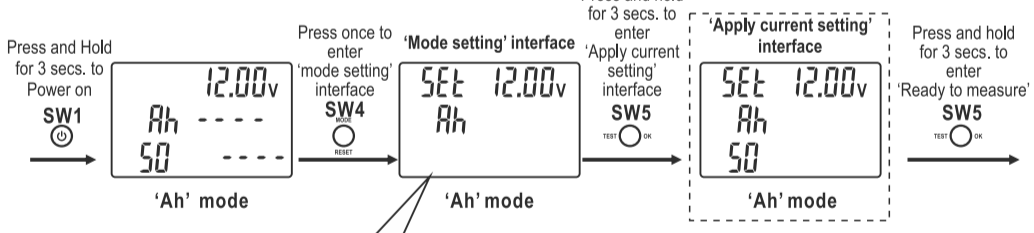
Before test:

- 1) If the car is starting up, please switch off the engine and turn the key to 'OFF' position
- 2) After certain period of driving, battery is fully charged, the voltage is a little higher than the normal value, please turn on the headlights for 2~3 minutes, after the voltage back to normal you may start to test.

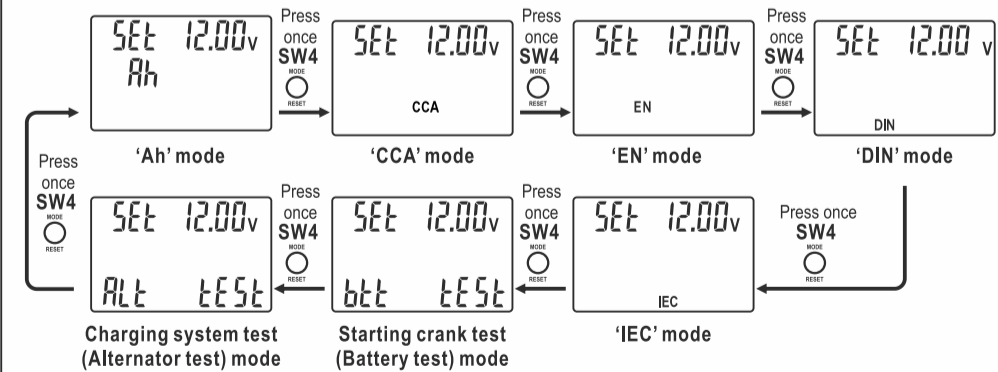
Mode setting:

1) Select 'Ah' mode (only for 12V battery)

Press and hold the SW1 for 3 secs. to power on the meter, then press once the SW4 to enter 'mode setting' interface.



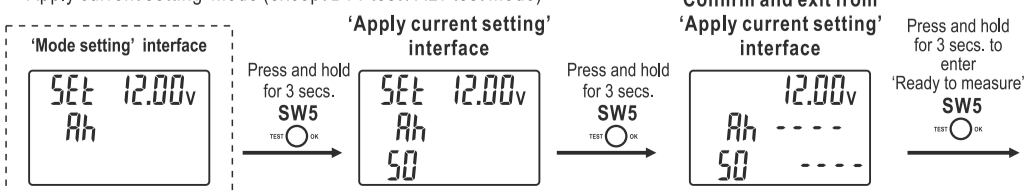
Press once SW4 to select by looping through 'Ah' → CCA → EN → DIN → IEC → BTT TEST → ALT TEST



Note: After select 'BTT Test' / 'ALT Test' mode, press and hold the SW5 for 3 secs. to confirm and exit directly from the 'mode setting' interface (no need to set the range). Now you are ready to test the battery.

2) Select 'Apply current Setting' (for 'Ah' / 'CCA' / 'EN' / 'DIN' / 'IEC' only)

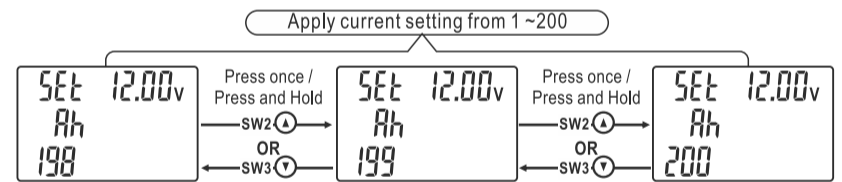
After select the 'mode setting', press and hold the SW5 for 3 secs. to confirm and enter to 'Apply current setting' mode (except BTT test / ALT test mode)



a) 'Apply current setting' at 'Ah' mode (only for 12V battery)

According to the rating marked on the battery (Ah), you can adjust the value via the SW2 or SW3 , the minimum is '1' the maximum is '200'.

From 1~200, increase or decrease in steps of 1 by press once the SW2 or SW3 with a short 'Bi' sound or by press and hold for more than three seconds to rapidly increase or decrease with 'Bi...Bi...Bi...Bi...' (continuous and rapid) sound. Release to stop.

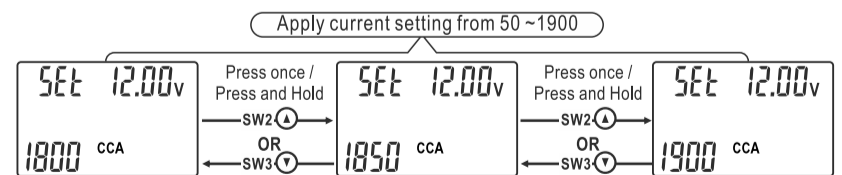
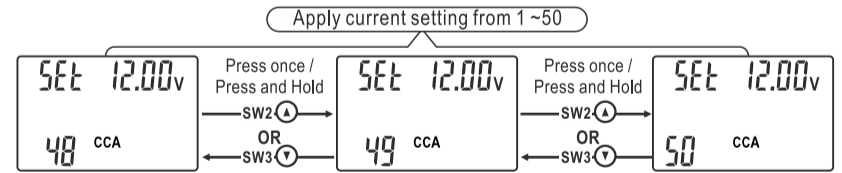


b) 'Apply current setting' at 'CCA' / 'EN' / 'DIN' / 'IEC' mode

According to the rating marked on the battery (ie. CCA570A), you can adjust the value via the SW2 or SW3 , the minimum is '1' the maximum is '1900'.

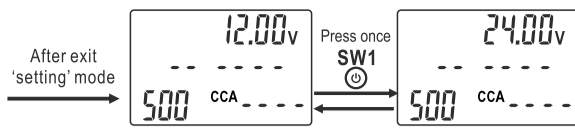
- From 1~50, increase or decrease in steps of 1 by press once the SW2 or SW3 with a short 'Bi' sound or by press and hold for more than three seconds to rapidly increase or decrease with 'Bi...Bi...Bi...Bi...' (continuous and rapid) sound. Release to stop.

- From 50~1900, increase or decrease in steps of 50 by press once the SW2 or SW3 with a short 'Bi' sound or by press and hold for more than three seconds to rapidly increase or decrease with 'Bi...Bi...Bi...Bi...' (continuous and rapid) sound. Release to stop.



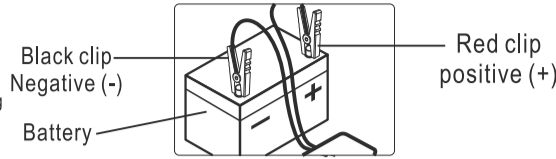
3) Select the battery voltage (for CCA / EN / DIN / IEC / BTT Test / ALT Test mode only)

Before test, you need to select the tested battery voltage range 12V or 24V. Press and hold 3 secs. to power on the meter, according to the measured battery voltage to select the corresponding range, the default range is 12V, press once the SW1 '⏻' to select measuring range between 12V and 24V.



Make Connection with the battery

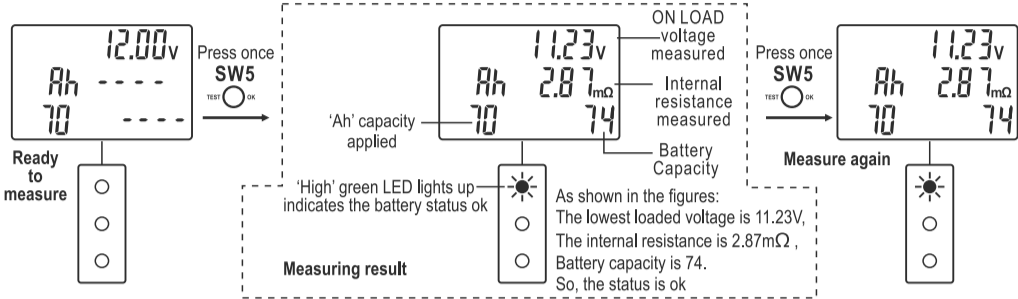
After all setting, connect the red clip to the positive terminal; the black clip to the negative terminal. Make sure clips are connected securely hence not to avoid affecting the results measured.



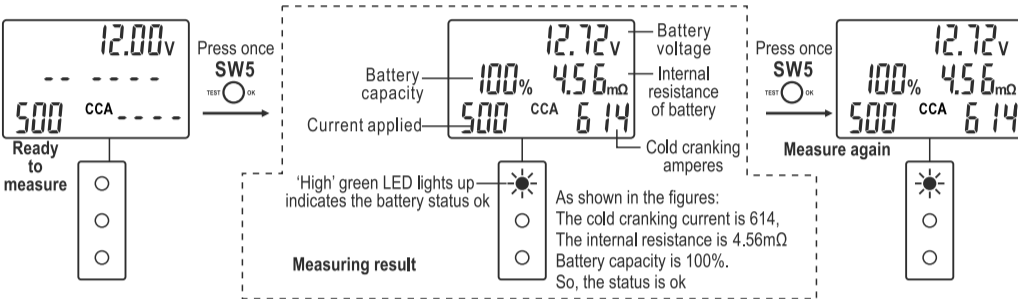
Start to test:

After connected with the battery properly and securely, press the SW5 '⏻' to start testing, press another to test again if necessary.

a) Testing method at 'Ah' mode (for 12V battery only)



b) Testing method at 'CCA' / 'EN' / 'DIN' / 'IEC' mode



Explanation:

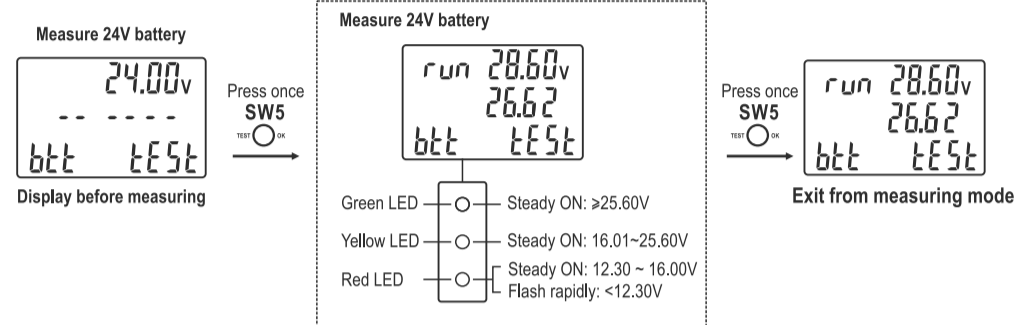
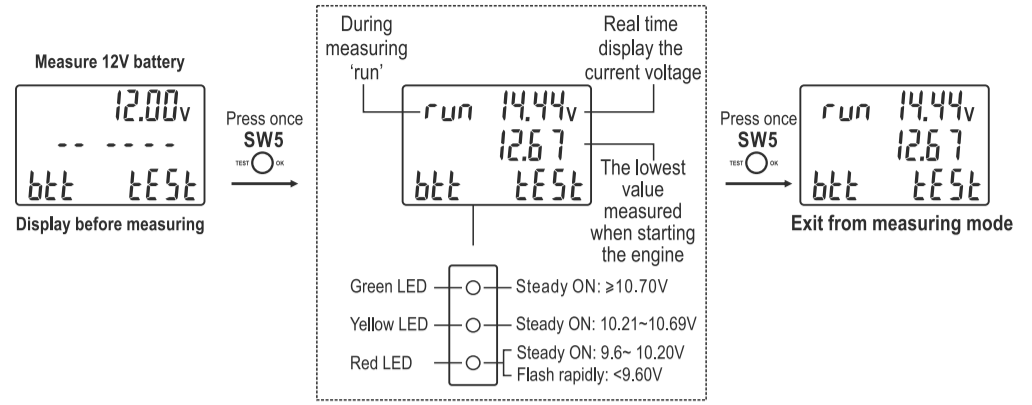
- **CCA (Cold Cranking Amps) value** : the higher the CCA value of the battery, the lower the internal resistance and the better performance of the battery.
- **Internal resistance of the battery** : The internal resistance test standard varies with the battery made of different materials by different manufacturers, so there is no certain standard. If the battery of the same model is made by the same manufacturer, the internal resistance value will not differ too much when it leaves the factory
- **Battery Capacity** : show the status of the battery, when the battery capacity is lower than 45%, recommend to replacing the battery

Note : For more information, please refer to the LED indication explanation in page 7

Starting Crank Test ('btt TEST' battery test) / Alternator Test ('ALT TEST') (charging system)

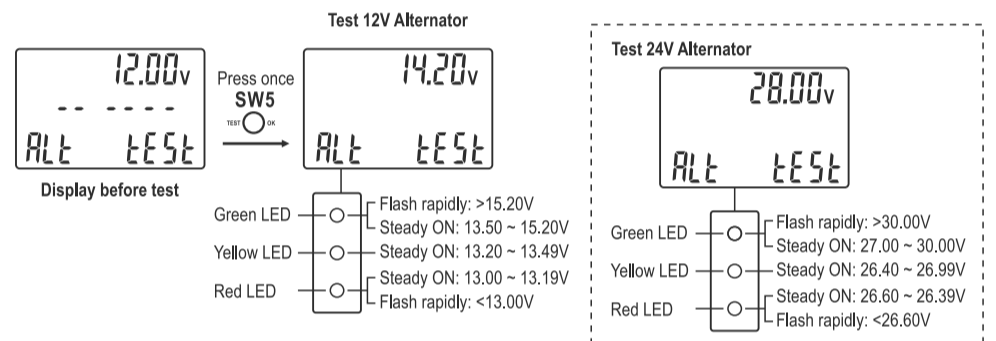
c) Starting crank test of the battery:

- 1) Before test, please switch off the engine and turn the key to OFF position
Set the tester at 'BTT Test' mode and connect clips to the positive and negative terminals of the battery securely.
- 2) Then, press once SW5 and start the engine
The tester will automatically record the battery's minimum output voltage when starting the engine



d) Alternator test ('ALT TEST') (charging system):

Note: Must start the engine before measuring at charging system test mode
Set the tester at 'ALT Test' mode, connect the clips to positive and negative terminals of the battery, and observe the reading



LED indication explanation

- 1) Green / Yellow / Red, either LED is steady on or flash which indicates the result of battery or alternator, ie. OK / Recharge / Check.
- 2) Green / Yellow / Red, all blinks which indicates error result (bad cont), you may test again after reconnected.
3. When the battery voltage is too high, green LED will flash with 'Hi btt' displaying on the screen. After selecting proper measuring mode (12V / 24V) you can test the battery to check if it is abnormal.
When the battery is too low, red LED will be steady on or flash with 'Lo batt' displaying on the screen, suggest to test after charging the battery fully.

Reference table for performance of the battery ('Ah' / CCA / EN / DIN / IEC)

LEDs status	12V 'Ah'	CCA/EN/DIN/IEC			
		Battery capacity	Performance	Suggestions	
HIGH Green	Steady ON	>10.00V	>80%	Very good	No need to replace
LOW Yellow	Steady ON	6.01 ~ 9.99V	60%~80%	Good	
WEAK Red	Steady ON	<6.00V	<60%	Weak (45~60%) Very weak (<45%)	Pay attention Replace

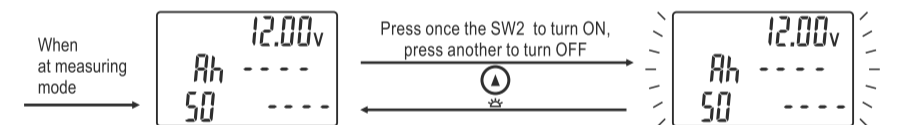
Reference table for abnormal of the battery (Too high / Too low)

LEDs status	CCA/EN/DIN/IEC		
	12V	24V	
Too high HIGH Green	Flash	>15.20V	>28.00V
Too low WEAK Red	Steady ON	9.61~10.20V	12.31~16.00V
	Flash	<9.60V	<12.30V

Reference table for performance of the Alternator measured

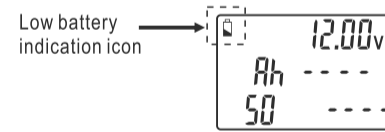
LEDs status	Starting crank test				Charging system		
	12V	24V	condition	Suggestions	12V	24V	Performance
HIGH Green	Flash	>15.20V	>28.00V	Very Good	No need to replace	>13.50V >30.00V	Check battery Very good
LOW Yellow	Steady ON	10.21~10.69V	16.01~25.59V	Good	Pay attention	13.20~13.49V 26.40~26.99V	Good
WEAK Red	Steady ON	9.60~10.20V	12.30~16.00V	Weak	Replace ASAP	13.00~13.19V 26.00~26.39V	Pay attention
	Flash	<9.60V	<12.30V	Very weak	Replace immediately	<13.00V <26.00V	Need to check

Backlight



Battery replacement

- Using a low voltage battery will lead to the result measured inaccurate, when battery voltage lower than 7V (±0.2V), the warn icon '⚠' appears on the LCD, you need to replace a fresh battery immediately.
- Loosen the screw on the reverse of the meter and remove the battery cover. Install a fresh 9V battery (6F22 / 6LR61 / 1604) as correct polarity, then replace the battery cover and tighten the screw.
- Dispose of used battery in accordance with local regulations- Never incinerate the battery !
- To avoid chemical leakage from the battery, remove the battery If you are not intended to use the meter in short time.



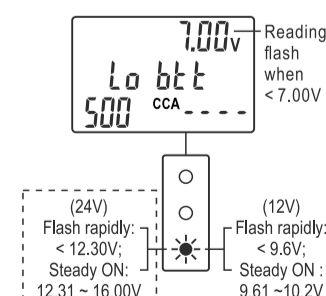
⚠ DON'T OPERATE IN CASE OF OPENING THE BATTERY COVER

APO (Auto Power OFF)

- To preserve battery life, when not in use, the MS-886(10) will automatically power down after 15 minutes of inactivity.
- To resume use after pressing and holding the SW1 '⏻' for 3 seconds.

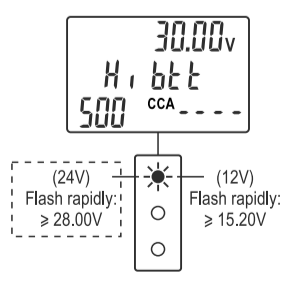
Trouble shooting

Low battery (Lo btt)



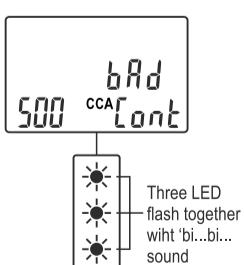
When the battery voltage is too low which might affect the measured results, when lower than 9.60V (12V battery) or 12.30V (24V battery) it is unable to test properly, so it is recommended to test after charging.

High battery (Hi btt)



When the battery voltage is too high that is abnormal, such as measuring 12V battery the measured value is greater than or equal to 15.20V or 24V battery the measured value is greater than or equal to 28.00V, you should check if the battery is abnormal.

Clips are not securely connected with positive and / negative terminal / s of the battery (Bad Cont)



Clips haven't been securely connected with terminals of the battery, test again after reconnected.