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IMPORTANT!

GOLD-PLUS is a precision battery capacity tester.

To test the Ampere-hour (Ah) capacity of a lead acid battery precisely, the battery voltage must be below 6.50 volts for a 6V battery and 13.00 volts for a 12V battery.

If the battery voltage is higher, load the battery for a few seconds to remove any excess charge voltage. Failure to do this will result in low Ah readings being obtained.

QUICK TEST GUIDE

1: Connect tightly to battery posts as shown.



Grip clips tightly around tab terminals



Push clips tightly inside battery terminals



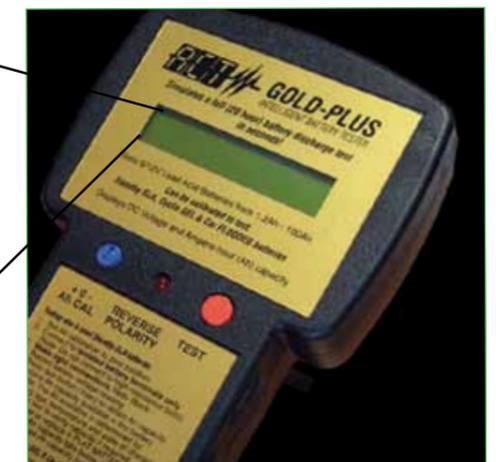
Grip tightly around posts with clip spikes



Do not connect clips to high resistance bolts

2: Follow 20 second test procedure.

- POWERING UP...
- SET CALIBRATE
- TESTING VOLTS...
- PLEASE WAIT...
- 12.66 VOLTS
- PRESS TO TEST
- TESTING Ah...
- 7.2 Ah
- TEST COMPLETE



3: Copy results onto a label and attach to the battery.

Note: The Ah available is determined by battery age, temperature and state of charge (read STEP 5).

WARNING: THE GOLD-PLUS IS DESIGNED TO TEST 6/12 VOLT LEAD ACID BATTERIES FROM 1.2AH - 100AH. DAMAGE OR INJURY MAY RESULT IF CONNECTED TO VOLTAGE ABOVE 15VDC. ISOLATE BATTERY FROM CHARGE SUPPLY BEFORE TESTING. IF THE GOLD-PLUS IS USED IN A MANNER NOT SPECIFIED, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

STEP 1: How the GOLD-PLUS works.

GOLD-PLUS is an Intelligent Battery Capacity Tester designed to test 6V lead acid batteries from 1.2Ah to 12Ah and 12V from 1.2Ah to 100Ah. Its pulse load technology compresses a normal 20 hour battery discharge test to just 20 seconds. A unique Ah calibration control enables Standby SLA, Cyclic GEL and Car FLOODED batteries to be tested. GOLD-PLUS can be used to test batteries repeatedly or continuously as required.

An LED warns against reverse polarity connection. A test button allows verification and repeat testing of battery Ah capacity. The calibrated test leads provided (Part No: ACT-GPTL) must only be used with the GOLD-PLUS.

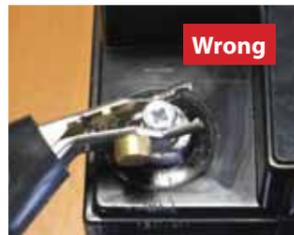
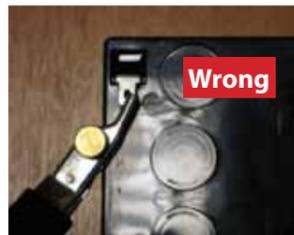
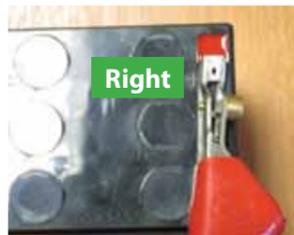
The backlit LCD gives operation and instruction messages and displays accurate voltage and available Ah capacity, based on the batteries age, temperature and state of charge (read Step 5).

User instructions for testing Standby SLA batteries and calibrating to Cyclic GEL and Car FLOODED batteries are printed on the front and a table of popular battery Ah sizes and when to recharge or replace is provided on the back. The ABS case includes a flip stand to enable the meter to be positioned at the required angle.

Step 2: Testing a 6/12V lead acid battery.

To obtain accurate Ah readings, it is important that the battery voltage is below 6.50 volts for a 6V battery and 13.00 for a 12V battery. If the battery voltage is higher, load the battery for a few seconds to remove any excess charge voltage. Failure to do this will result in low Ah readings being obtained. Next, connect the clips **TIGHTLY TO ISOLATED BATTERY POSTS AS SHOWN.**

The bigger the battery, the more critical the connections. IMPORTANT: DO NOT CONNECT TO HIGH RESISTANCE STEEL BOLTS (SHOWN BELOW) AS THEY WILL CAUSE LOW,ERRATIC AH READINGS TO BE OBTAINED.



STEP 3: Testing new and used Standby SLA batteries

- 1: Set Ah calibration to zero position. The zero position is the calibrated setting for testing the Ah capacity of new and used Standby SLA batteries, whatever their state of charge.
- 2: Connect to isolated battery terminals only. Connect exactly as shown in Step 2. The bigger the battery, the more critical the connections.
- 3: Make tight connections to battery terminals Red+, Black-. Connect exactly as shown to obtain accurate Ah readings.
- 4: Record battery voltage reading. A quantity of 25 Labels are included for recording measurements (Part No: ACT-BTL1).
- 5: Press test button (1 sec) to obtain Ah capacity.
- 6: Record Ah capacity available in the battery. The Ah available is determined by battery age, temperature and state of charge (read STEP 5 below).
- 7: Repeat test to verify capacity if required. Testing the same battery repeatedly can cause the Ah capacity to change.
- 8: Recharge or replace if 'FLAT BATTERY' or available Ah capacity falls below 65% of battery stated Ah capacity. See table of popular battery sizes on the back of the meter.

STEP 4: Calibrating to Cyclic GEL and Car FLOODED batteries

- 1: Set Ah calibration to zero position. This is the Standby SLA calibration position.
- 2: Connect to a new, fully charged battery. The GOLD-PLUS must be calibrated to suit the type of battery (e.g. Cyclic GEL, Car FLOODED) so that it can then accurately display the Ah capacity of both new and used batteries of that type.
- 3: Make tight connections to battery terminals Red+, Black-. Connect exactly as shown in Step 2. The bigger the battery, the more critical the connections.
- 4: Record battery voltage reading. Results should be written on a label and attached to the battery.
- 5: Press test button (1 sec) to obtain Ah capacity.
- 6: Adjust Ah calibration as close as possible to match battery stated Ah capacity. If the message shows 'OVER 10Ah' (6V batteries) or 'OVER 100Ah' (12V batteries), it may not be possible to alter the Ah reading. Note: A 6V/12Ah battery should be recharged or replaced below 7.8Ah.
- 7: Repeat test to verify capacity if required.
- 8: Note Ah position to test these types of batteries.

STEP 5: Battery age, temperature and state of charge

AGE: Normally after 3 years, there should be about 90% of the stated Ah capacity available in the battery. After 4 years there should be around 65% and about 40% after 5 years.

TEMPERATURE: The Ah capacity stated on a brand new battery is reached when the battery is fully charged and when the battery temperature is between 20 - 25C (68 - 77F). Be aware that at higher or lower temperatures, the available Ah capacity will vary up to 50% higher or lower than stated on the battery. The colder the climate, the less capacity available, so choose a bigger Ah size.

STATE OF CHARGE: The GOLD-PLUS simulates a 20 hour load test (C20hr) in 20 seconds and accurately displays the Ah capacity available for use in the battery, whatever its state of charge and irrespective of whether its a new out-of-the-box, partially or fully charged used battery.

Battery Testing Tips



1: Don't buy flat batteries!

Because lead acid batteries normally self-discharge about 3% per month, it is very important to decipher the date of manufacture code stamped on the battery. This is essential for inventory rotation and to avoid stocking old discharged batteries. If you cannot decipher the date code, contact your supplier or battery manufacturer. Be aware that new batteries can take many months to ship from far eastern manufacturers, before going through your distributor to you.

2: Check the voltage.

To avoid potential battery failure problems, it is essential to check the voltage level in new lead acid batteries to ensure that they have been sufficiently charged by the manufacturer before leaving the factory. Any new out-of-the-box battery with less than 6.1V for 6V and 12.2V for 12V must be recharged overnight and retested before use. Generally, a new battery will have above 6.2V for 6V and 12.4V for 12V batteries.

3: Constant charge voltage.

Lead acid batteries require a constant voltage, irrespective of Ah capacity size in order to charge efficiently. The optimum charge voltage required is 2.3vpc (volts per cell) which is 6.9V for a three cell 6V battery and 13.8V for a six cell 12V battery. The voltage tolerance is 2.2vpc min and 2.4vpc max. The time taken to fully charge is dependent on battery Ah size.

4: Recharge immediately!

To prevent damage caused by sulphation, lead acid batteries must be recharged immediately after every use. A new 'out-of-the-box' battery should have above 70% of its stated Ah capacity. A battery with a terminal voltage of less than 6.1V for 6V and 12.2V for 12V batteries must be fully charged overnight and retested before use.

5: Batteries hate heat!

For maximum life and performance, a lead acid battery should be maintained at between 20 - 25C (68 - 77F). At significantly higher temperatures or if excessively overcharged, the Ah capacity available can rise by up to 50%. Be aware that lead acid batteries hate heat. The hotter the battery, the shorter the battery life!

6: Equal capacity.

To ensure maximum efficiency and to avoid charging problems, where two or more lead acid batteries are connected in parallel or series, make sure that they are the same make, type and Ah size and after testing have about equal Ah capacity available.

7: When to recharge or replace?

To ensure efficiency, battery manufactures recommend to recharge or replace the battery when its available Ah capacity falls below 65%. However, if your requirements recommend a higher or lower percentage, then recharge or replace accordingly.

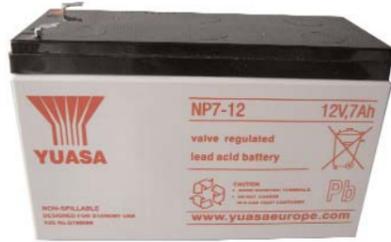
Any questions? Please give us a call on +44 (0)1744 886660 or email batterydoctor@actmeters.com

GOLD-PLUS Specifications

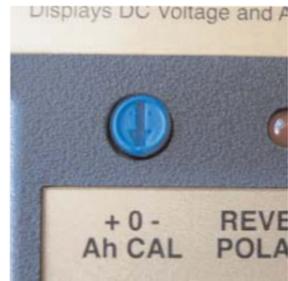
Operating Voltage:	5V - 15V DC Max
Reverse Polarity:	Red LED indication
Battery Types:	Standby SLA, Cyclic GEL & Car FLOODED
Battery Sizes:	6v 1.2Ah - 12Ah 12v 1.2Ah - 100Ah
Ah Capacity Test:	Simulated full 20 hour load test (C20hr) performed in just 20 seconds. Repeat Ah test takes just 5 seconds.
Applied Pulse Load:	6A for 1.2Ah - 9.9Ah batteries 18A for 10Ah - 100Ah batteries
Ah Calibration:	Calibrated at 0 (zero) position to new, fully charged, premium brand Standby SLA batteries at 20 - 25C (68 - 77F). Ah control (00 - 99) for Cyclic GEL and Car FLOODED batteries according to Ah size.
Battery Table:	Recharge or replace battery when 'FLAT BATTERY' or Ah capacity falls below 65%
Display Type:	Back-lit 13 digit LCD
Flat Battery Warning:	6v <5.25VDC, 12v <12.0VDC
Repeat Test Operation:	Can perform repeat tests or continuously as required
DCV Accuracy:	+/- 2% of displayed reading
Ah Accuracy:	+/- 10% fully charge premium brand C20hr rated SLA batteries at 20 - 25C (68 - 77F)
Case Construction:	High impact ABS
Moisture Protection:	IP54
Size:	H210 x W110 x D41mm
Weight:	0.6kg
In The Box:	GOLD-PLUS Intelligent Battery Tester, ACT-GPTL Test Leads, ACT-430N Soft Carry Case, 25xBTL (Battery Tested Labels) Operating Instructions and Declaration of Conformity
Warranty:	1 Year from date of Invoice
Address:	ACT Meters Ltd The Old Smithy Church Road Rainford Merseyside
Post Code:	WA11 8HD
Country:	United Kingdom
Phone:	+44(0)1744 886660
Fax:	+44(0)1744 886661
USA Freecall:	1-877-712-2278
Email:	sales@actmeters.com
Web:	www.actmeters.com

IMPORTANT: To test a lead acid battery accurately, you need to know which type you're testing?

TYPE SLA: Standby SLA (Sealed Lead Acid) batteries. Normally permanently on charge. Used in standby applications such as alarm systems, power supplies, stair lifts etc.



To measure the Ah capacity available in standby SLA batteries, adjust the Ah calibration control with a screwdriver to the '0' Ah CAL position (i.e. approx six-o'clock) below.

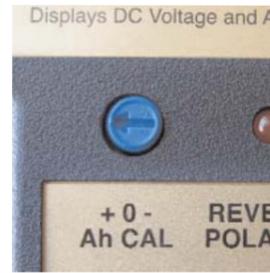


NOTE: This position is calibrated to popular brand SLA batteries. If required, adjustment can be made to suit any specific brand.

TYPE GEL: Cyclic GEL (Gelified Electrolyte) batteries. Normally charged then discharged repeatedly. Often used in mobility scooters and golf trollys etc. These batteries are specified as 'GEL' technology. If it doesn't state 'GEL' on the battery, it should be tested as a standby SLA battery above.



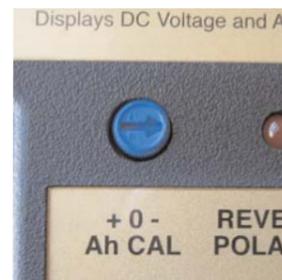
To measure the Ah capacity available in cyclic GEL technology batteries, adjust the Ah calibration control to the '+' Ah CAL position (i.e. approx nine-o'clock) below.



Type FLA: Car FLOODED (Flooded Lead Acid) batteries. Commonly used in motor vehicles and have removable caps so that you can visually check that the acid/water level is above the battery plates.



To measure the Ah capacity available in car FLOODED batteries, adjust the Ah calibration control to the '-' Ah CAL position (i.e. approx three-o'clock) below.

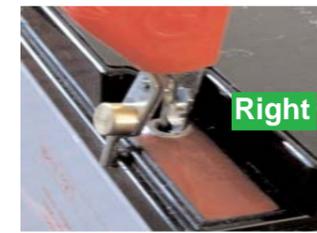


Step by step battery testing sequence.

1: Observing polarity, connect the test leads clips exactly as shown for the types of battery terminals shown above.



Grip clips tightly around tab terminals



Insert clips inside battery terminals



Grip tightly around posts using spikes



Do not connect to high resistance bolts

POWERING UP..

2: After connection, provided there is sufficient voltage in the battery, the message 'POWERING UP' is displayed

SET CALIBRATE

3: The message 'SET CALIBRATE' reminds you to check that the Ah CAL position is adjusted to test a standby SLA, cyclic GEL or car FLOODED battery.

TESTING VOLTS..

PLEASE WAIT..

4: The message 'TESTING VOLTS' followed by 'PLEASE WAIT' indicates that the battery tester is automatically selecting to test a 6V or 12V battery.

12.66 VOLTS

5: When the battery voltage appears, record it onto a label for future reference.

PRESS TO TEST

6: When ready, press and hold the test button (approx 1 second) to test the Ah capacity available in the battery.

TESTING Ah..

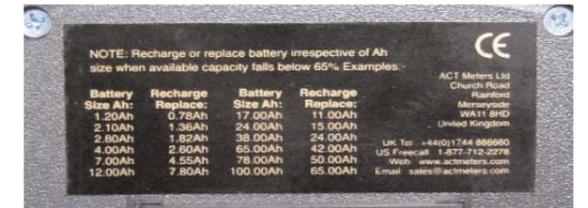
7.2 Ah

7: Record the Ah reading obtained onto a label for future reference.

TEST COMPLETE

8: If required, press the test button again, to verify the Ah reading obtained.

IMPORTANT: Capacities below 8Ah will be displayed with a decimal point up to 7.9Ah. Capacities above will be rounded up from 08Ah - 99Ah). Capacities above 99Ah will be displayed as 'OVER 100Ah'.



9: Recharge or replace when the Ah capacity available in the battery falls below 65% of the stated battery Ah size.

NOTE: Although not listed, a 150Ah battery can be tested and should be recharged or replaced below 97Ah.

FLAT BATTERY

10: This message indicates low battery voltage or Ah capacity. Recharge or replace the battery and re-test.

HIGH VOLTAGE

11: This warning message indicates that the input voltage exceeds 15V, Remove immediately!

12: A picture speaks a thousand words but if all else fails READ THE MANUAL! Still confused? Call or email your question. Tel: +44(0)1744 886660 Email: batterydoctor@actmeters.com