

Battery Capacity Analyzer  
with record storage  
Model 603B

The 603B handheld battery capacity analyzer tests 6 and 12 volt sealed lead acid batteries with capacities up to 100 ampere hour (Ah). Test results include voltage, state of charge, and internal resistance. This analyzer also features a built-in USB port and internal memory to store battery information, test configuration, and measurement results for up to 50 batteries.

**Application**  
Ideal choice for testing sealed lead acid batteries commonly used in intrusion detection, fire alarm, security camera, access control, industrial control and other battery backup systems.

**Fast results**  
Getting battery measurement results fast is critical in the field. Immediately upon connection, the 603B measures and displays open battery voltage. Battery voltage under load, state of charge and internal resistance are determined within seconds, by simply entering the battery ampere hour (Ah) rating. Additionally, the 603B features a charger circuit test for a complete evaluation of the battery system.

**Measurement recording**  
Battery maintenance programs typically include periodic testing and record keeping. The 603B stores battery measurement data to internal memory for up to 50 batteries tracked by serial number. Information like test date, test time, building name, panel location and system type are also recorded. The 603B includes computer software to pre-configure the analyzer before field testing. Once the analyzer is configured, simply select the building record, verify the battery serial number and start the test. This saves time while minimizing data entry errors and simplifies compiling inspection data for an unlimited number of battery records.



- Features & benefits**
- Test 6 and 12 volt batteries up to 100 Ah
  - Test both open and loaded battery voltage
  - Powered by the battery under test (no need to replace battery)
  - Fast test cycle time for quick sorting of batteries
  - Measurements are stored to internal memory
  - Pre-load up to 50 test configurations from the computer via USB
  - Test configurations include site, panel, battery information and more
  - Add or edit records using the key pad or remote computer
  - Real-time clock for date and time stamp of measurement records
  - Export record data to a CSV file for further analysis
  - User configurable Pass/Fail criteria
  - Built-in charger circuit test
  - Twist-lock test leads can be changed in seconds
  - Field programmable DC load for testing system output circuits
  - 3 user configurable SOC tables for each voltage
  - Closed case calibration and firmware updates via USB

| Model   | 603B | 601B | 600B      |
|---|------|------|-----------|
| Powered by battery under test                           | √    | √    | √         |
| Test 6 and 12 volt batteries                            | √    | √    | 12 V only |
| Instant on with voltage reading                         | √    | √    | √         |
| Fast test cycle time                                    | √    | √    | √         |
| State of charge (SOC) %                                 | √    | √    | √         |
| Open and loaded voltage                                 | √    | √    | -         |
| Battery internal resistance (IR) test                   | √    | √    | -         |
| Charger circuit test with open and loaded voltage       | √    | -    | -         |
| DC load test  | √    | -    | -         |
| Record mode for storing test configurations and results | √    | -    | -         |
| Removable test leads                                    | √    | -    | -         |

## Front panel

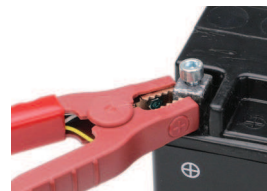


### Removable test leads

Twist-lock connectors make it easy to change test leads. Two sets of test leads are included. One set is for connecting to smaller tab terminals and one for larger screw terminal batteries.

### Test leads

Two types of test leads are included, one set with terminal type connectors, and the other set with tab type connectors.



Terminal type connectors



Tab type connectors



Terminal type test leads



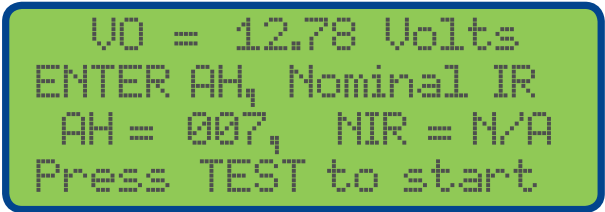
Tab type test leads



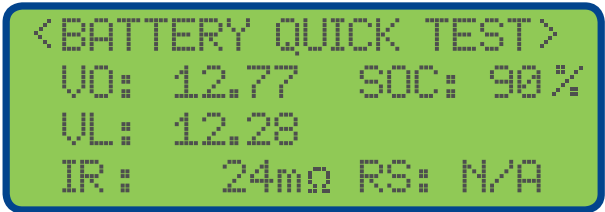
Charger adapters

Operation highlights

Quick test mode



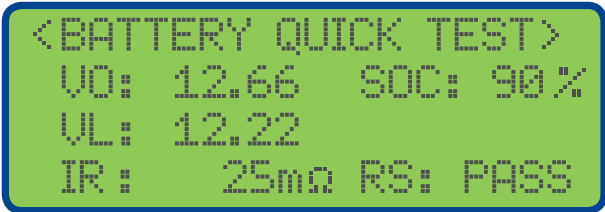
Simply enter the battery's Ah value and press the Test button.



Results display in seconds and include the following:

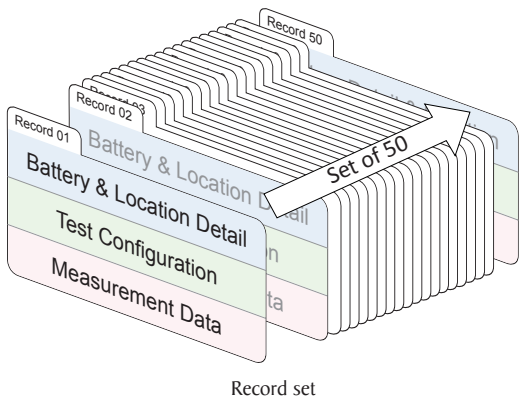
|     |                                   |
|-----|-----------------------------------|
| VO  | Voltage open                      |
| VL  | Voltage loaded                    |
| IR  | Internal resistance               |
| SOC | State of charge percent remaining |

The last settings used are stored in memory to support quick testing of batteries of the same type.



By providing the nominal internal resistance (NIR), the pass/fail indicator makes it easy to identify a battery that has reached the end of its useful life.

Built-in database



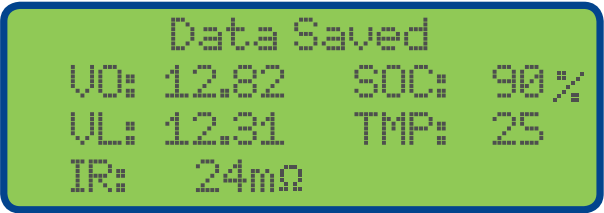
The 603B stores battery and location details, test configuration, and measurement data within the 50 battery records available in the unit. These records are easily transferred to a computer, which allows for storage of an unlimited number of record sets.



Application software

Used to upload and download record sets. Edit and save records in row and column format. Resulting measurement data can be viewed or exported in spreadsheet format for detailed analysis.

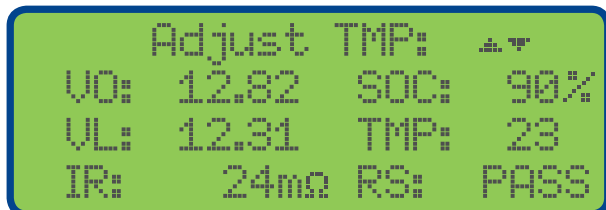
Internal resistance



The internal resistance (IR) is a useful indicator of the battery's health. As the battery reaches its end of life, the IR will ramp up quickly, which reduces the battery capacity and the amount of current available. In Record mode the IR measurement is recorded in the 603B memory and can be uploaded to a computer for later analyses.

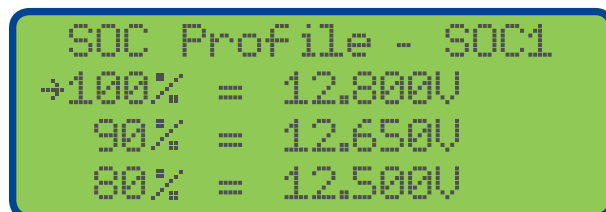
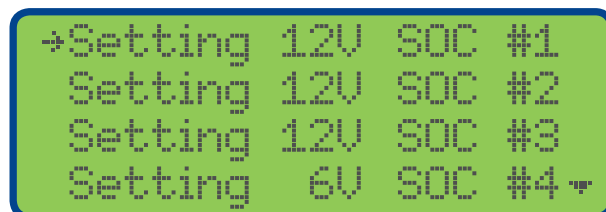
## Operation highlights

### Temperature record



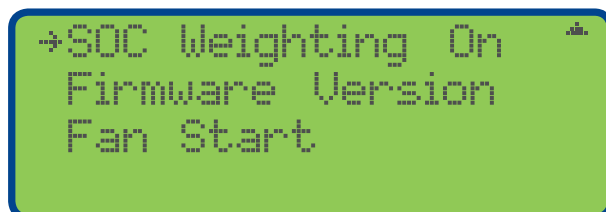
Keeping records of the battery's operating environment such as temperature is helpful for understanding the battery's life. The 603B records the predefined temperature and prompts the user for adjustment after the test is completed.

### State of Charge (SOC) profiles



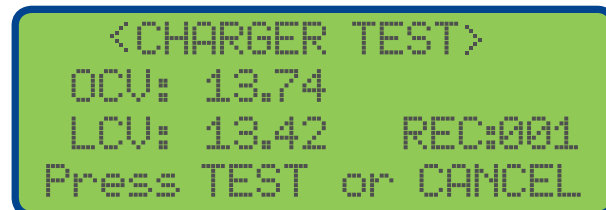
SOC profile tables are used to evaluate the battery's state of charge. One default and 3 user-configurable tables are available for characterizing 6 V and 12 V batteries. The user defined tables allow advanced users to tune the 603B to meet their specific needs.

### State of Charge (SOC) weighting



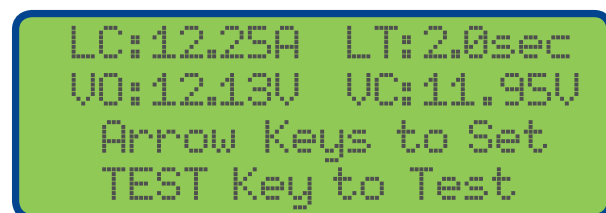
When the battery's internal resistance (IR) is above the user-set nominal value, the open voltage measurement no longer results in an accurate SOC value. The 603B uses weighted values to more accurately represent the SOC. This feature can be enabled by the user and its state is recorded in Record mode.

### Charge circuit testing



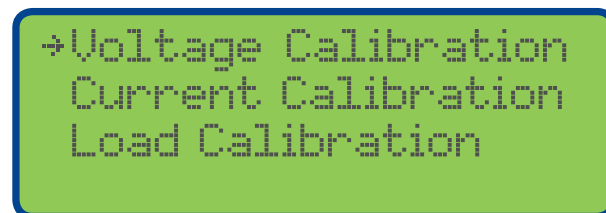
Both the open voltage (VO) and the voltage under load (VL) are displayed to provide additional information about the charger regulator circuit. Using Record mode enables storage of results to internal memory. An adapter is included to make it easy to connect to standard tab-type charger circuits.

### Load test mode



At the core of the 603B is a programmable DC electronic load. This load can be programmed in the field to test control panel outputs or end of line output circuits. Load current can be set from 0.5 to 10 Amps and the time can be set from 0.5 to 5.0 seconds. Open and loaded voltage is displayed after the test is completed.

### Closed case calibration and firmware updates



The 603B can be calibrated by the user through the USB port using a computer and reference power supply. Firmware updates are also installed via the USB port.

## Specifications

| 603B            |     |  |
|-----------------|-----|--|
| Displayed       |     |  |
| Quick Test Mode | VO  | Voltage open                                 |
|                 | VL  | Voltage loaded                               |
|                 | IR  | Internal resistance                          |
|                 | SOC | State of charge percentage                   |
|                 | RS  | Resistance status, pass/fail user configured |
| Record Mode     | VO  | Voltage open                                 |
|                 | VL  | Voltage loaded                               |
|                 | IR  | Internal resistance                          |
|                 | SOC | State of charge percentage                   |
|                 | SOT | SOC table used for test                      |
|                 | Tmp | User provided temperature                    |
|                 | RS  | Resistance status, pass/fail user configured |
| Recorded        |     |  |
| Data            | Rec | Record number                                |
|                 | Dat | Date   |
|                 | Tme | Time   |
|                 | Bld | Building                                     |
|                 | Loc | Location                                     |
|                 | Typ | Type of system                               |
|                 | Ser | Battery serial number                        |
|                 | Mfd | Battery manufacturer or in-service date      |
|                 | Tmp | User provided temperature                    |
|                 | V   | Battery voltage (as labeled)                 |
|                 | Ah  | Battery ampere hour (as labeled)             |
|                 | VO  | Voltage open                                 |
|                 | VL  | Voltage loaded                               |
|                 | RC  | Remaining capacity (SOC)                     |
|                 | NIR | Nominal internal resistance used for test    |
|                 | IR  | Measured internal resistance                 |
|                 | OCV | Open charger voltage                         |
|                 | LCV | Loaded charge voltage                        |
|                 | WEI | Weighting state during test, Y or N          |
|                 | SOT | SOC table used for test                      |
|                 | SOV | SOC voltage used for test                    |
| Accuracy        |     |  |
| Voltage         |     | 0.2% ±10 mV                                  |
| Current         |     | 0.2% ±10 mA                                  |
| Resistance (IR) |     | 5% ±1 mΩ                                     |

| Range  |   |   |
|--|---|---|
| Open voltage   | 5.5 V to 30 V   |   |
| 6 Volts  | Battery test  | 5.5 V to 6.8 V                                  |
|  | Charge circuit test   | 5.5 V to 8.5 V                                  |
| 12 Volts   | Battery test  | 8 V to 14 V                                     |
|  | Charge circuit test   | 8 V to 17 V                                     |
| 24 Volts   | Battery test  | N/A   |
|  | Charge circuit test   | 16 V to 28 V                                    |
| Current  | 1 A to 10 A   |   |
| Resistance (IR)  | 1 mΩ to 100 mΩ  |   |
| Setting  |   |   |
| Voltage (record mode)  | 6 V, 12 V   |   |
| Ah (record mode)   | 1 Ah – 100 Ah in 1 A steps  |   |
| Current (load test mode)   | 0.5 A to 10 A in 0.5 A steps  |   |
| Time (load test mode)  | 0.5 sec to 5 sec in 0.5 sec steps   |   |
| Nominal Internal Resistance (NIR)                                    | N/A, 0.1 mΩ to 199 mΩ   |   |
| Temperature (record mode)  | User settable   |   |
| Real Time Clock  | √   |   |
| Data Time Log  | √   |   |
| Cycle Time   | ≤ 5 seconds, typical  |   |
| Battery Load current   | 0.1 C based on Ah value entered by user   |   |
| SOC tables   | 2 default tables, one for 6 and one for 12 V  |   |
|  | 3 user configurable tables for 6 V  |   |
|  | 3 user configurable tables for 12 V   |   |
| Battery Charger Circuit Test<br>6, 12 or 24 Volt Charger<br>Circuits | Quick Test mode   | Measurement data is displayed but not recorded  |
|  | Record mode   | Records open and loaded charger circuit voltage |
| Pass / Fail  | Optional, calculated based on user provided NIR   |   |
| General  |   |   |
| Internal Memory  | 50 records  |   |
| Minimum Operating Voltage  | 5.5 V   |   |
| Minimum Operating Current  | 0.45 A with back light on, typical  |   |
| Display  | 20 x 4 LCD with back light  |   |
| Remote Communication   | USB Cable (type B)  |   |
| Test Leads Type  | Detachable  |   |
| Storage Temperature  | -10° C to 70° C   |   |
| Dimensions (W x H x D)   | 2.91" x 10.44" x 2.28" (74 x 265.1 x 58 mm)   |   |
| Weight   | 2.65 lbs (1.2 kg)   |   |
| Warranty   | One year  |   |
| Included Accessories   | USB (type B) cable, two sets alligator test leads, adapter for testing charger circuit, test report, certificate, user manual available for download. |   |