Data Sheet

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

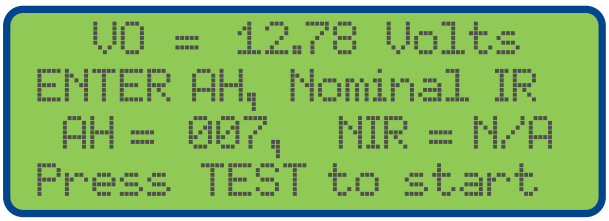

Terminal type test leads


Tab type test leads


Charger adapters

Operation highlights

Quick test mode

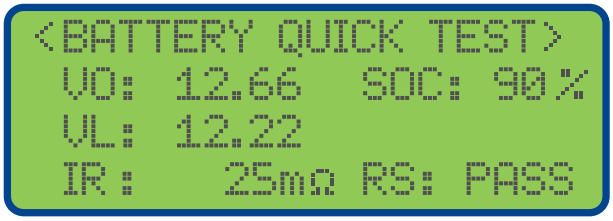


Simply enter the battery's Ah value and press the Test button.

Results display in seconds and include the following:

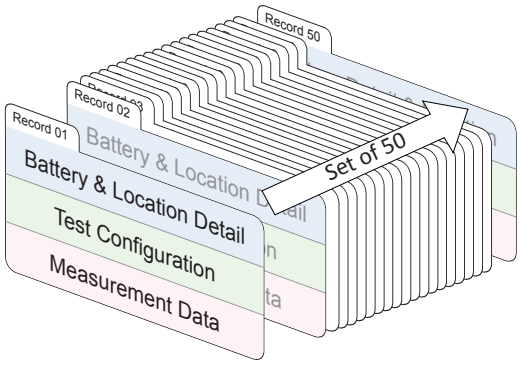
VO	Voltage open
VL	Voltage loaded
IR	Internal resistance
SOC	State of charge percent remaining

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



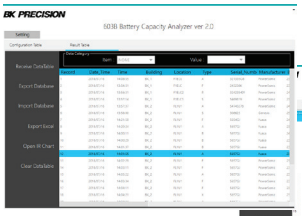
By providing the nominal internal resistance (NIR), the pass/fail indicator makes it easy to identify a battery that has reached the end of its useful life.

Built-in database

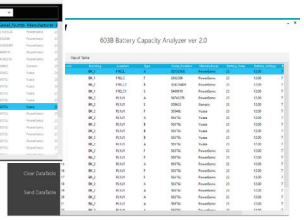


Record set

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.



Configuration screen

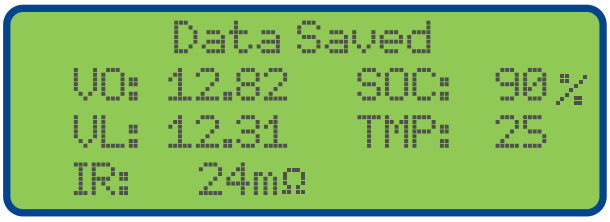


Results screen

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.

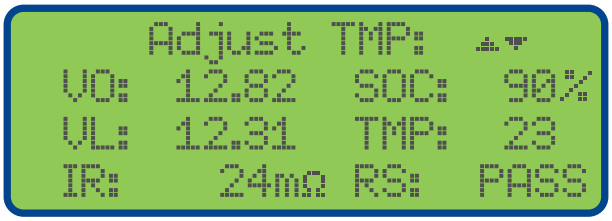
Internal resistance



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.

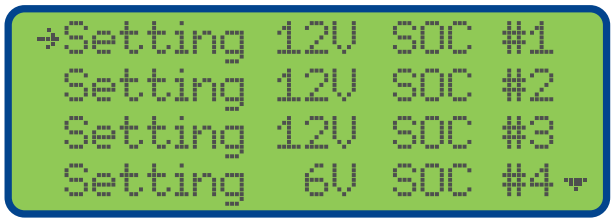
Operation highlights

Temperature record



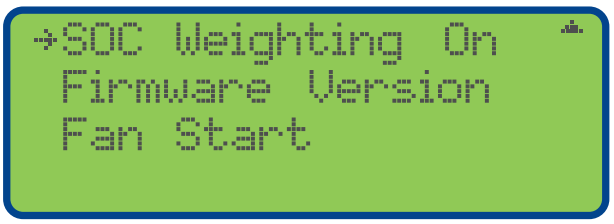
Keeping records of the battery's operating environment such as temperature is helpful for understanding the battery's life. The 603B records the predefined temperature and prompts the user for adjustment after the test is completed.

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

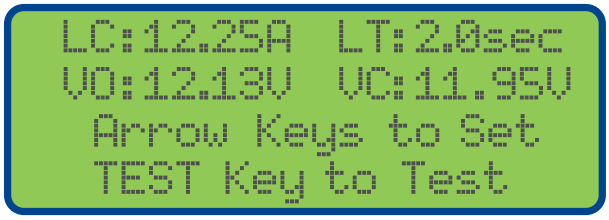


When the battery's internal resistance (IR) is above the user-set nominal value, the open voltage measurement no longer results in an accurate SOC value. The 603B uses weighted values to more accurately represent the SOC. This feature can be enabled by the user and its state is recorded in Record mode.

Charge circuit testing

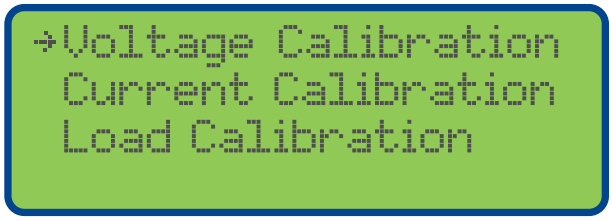
Both the open voltage (VO) and the voltage under load (VL) are displayed to provide additional information about the charger regulator circuit. Using Record mode enables storage of results to internal memory. An adapter is included to make it easy to connect to standard tab-type charger circuits.

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% ±2% F.S.
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 6, 12 or 24 Volt Charger 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.	

About B&K Precision

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B&K Precision group member Independent service center Service center location

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