

## Storage Battery Multimeter



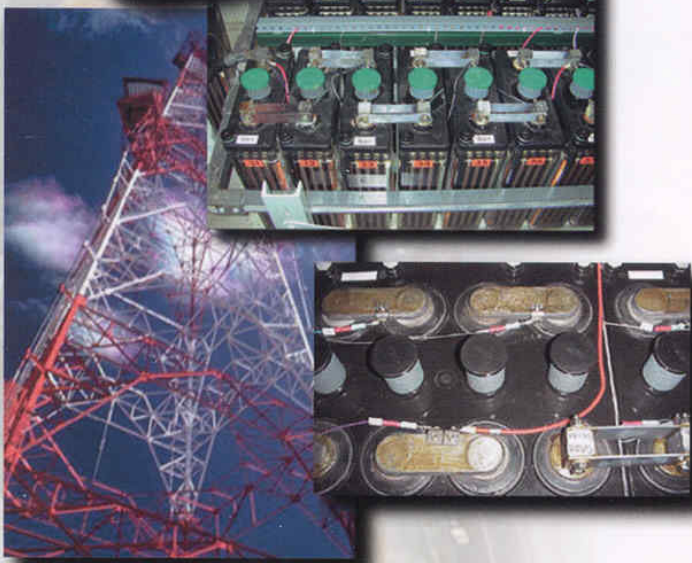
*Storage Battery Test Equipment  
“for Experts...from the Experts!”*

**Albercorp.**

# Albércorp.



Recognized as the industry leader, Albércorp has been designing and manufacturing storage battery test equipment since 1972. Commonly referred to as "The Battery Test Experts," Albércorp's visionary technology continues to set the standards for battery testing and low resistance measurements. Through our customer support program, consulting, and individual and corporate training in this highly specialized field, Albércorp has been instrumental in developing battery maintenance and test programs that have greatly improved the reliability of DC power systems worldwide.





## Storage Battery Multimeter



**Our Cellcorder is a  
three time winner!**

### ***The Cellcorder replaces three instruments that each cost more than this one unique instrument!***

The Albercorp Cellcorder data storing battery multimeter provides fast, accurate information in a fraction of normal test time. Compact and light weight, this intelligent test unit displays and records cell voltage, internal cell resistance, and intercell connection resistance. Overall voltage can be manually entered, and data, such as specific gravity and temperature, can be entered manually or automatically using a Cellcorder compatible hydrometer.

The Cellcorder may be used on a single cell or a multicell module with a rating up to 8000 amp hours. The instrument stores readings of seven strings of 256 cells each or 28 strings of 64 cells each in its nonvolatile RAM. Readings are displayed on a bright, easy-to-read display. The Cellcorder also features a standard PC link and software that allows transfer of readings to a computer for analysis and report generation.

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# Albér Corp.

## The Cellcorder Multimeter Product Highlights

### System Features

**Float Voltage Readings** The Cellcorder measures the voltage applied during full float operation. The voltage range covers all cells or modules up to 16 volts. Reading accuracy is four full digits.

**Internal Cell Resistance** The internal resistance of a cell can be determined by how the cell responds to a momentary load. The instantaneous voltage drop and the load current applied are used to calculate the resistance. The built-in hardware and software algorithm makes this measurement possible on cells that are off-line or floating on-line. This test method is extremely useful for determining weak, potentially failing

cells, when comparing the internal resistance to baseline numbers.

**Intercell Resistance** The Cellcorder measures and displays the total resistance of the connection between the terminals of two cells electrically connected together. This measurement includes the resistance of the connector and the contact resistance at the points of connection to the cell terminals.

**Auto Ranging** The Cellcorder automatically selects the correct voltage range, load resistor, and timing requirement for the cell being tested.

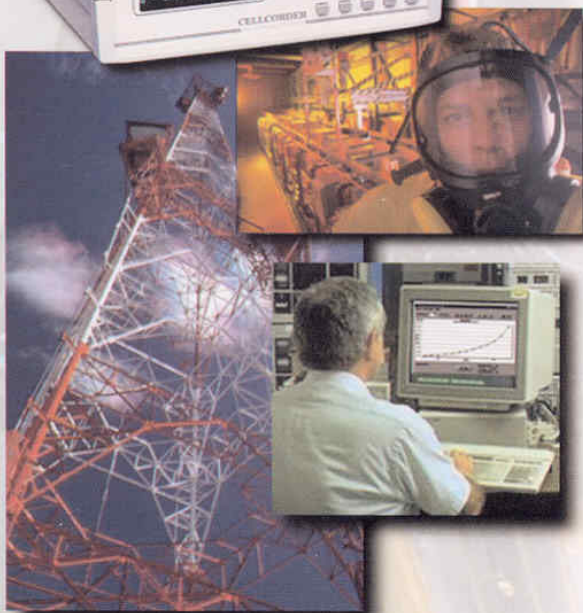
**Built In Diagnostics** The unit automatically detects if the test leads are connected properly and identifies potential connection problems. Screen messages inform you of potential problems and where to look for the improper connections.

**Data Extraction and Analysis** When testing is completed, the Cellcorder can be connected to a PC-compatible computer with the supplied RS-232 cable. The program extracts the test data from the Cellcorder RAM, analyzes the data, and displays it in bar graph or tabulated format.

A standard test report, using generally accepted analytical criteria, can be printed or saved to a file. The file can be exported in an ASCII or comma-delimited format, allowing the use of off-the-shelf programs or the Cellcorder trending software for customized reports.

**System Display** The results of the test sequence and instructions on proper methods of operation are provided on the unit's display. The display window is made up of a bright 4-line by 20 character display.

**Power** The Cellcorder is powered by a self-contained, rechargeable battery. Recharge or AC power operation is provided from a wall plug transformer module (supplied).



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## Test Procedure

The Cellcorder is a self contained, battery powered unit comprised of a microprocessor, load resistor, display and rechargeable battery. The instrument has two sets of test leads: a set of standard digital voltmeter probes, and a three-clip set for use in multimeter mode. When in multimeter mode, connect the two dual conductor test clips across the cell and its associated intercell connector (from the positive post of the cell being tested to the positive post of the next cell), and connect the third, single conductor clip to the negative post of the cell being tested.

After connection, initiate the test sequence. The unit reads the cell float voltage, then connects a fixed resistance across the cell and intercell being tested, forcing a current of approximately 70 amps. During the load condition, the Cellcorder reads the current and voltage and calculates the intercell connection resistance and the internal cell resistance.

After testing, connect the Cellcorder to a PC, via the RS-232 serial port, and initiate the Windows-based program for data extraction, reporting and cell trending. The information is displayed in an easy-to-read bar graph or tabular format. Using the analysis program, you can then print the generated report or export in common file formats.

Use the analysis and trending software to set up an Accumulated Data File (.adf) for each site. Each time a new set of readings is recorded, it is appended to the site file. The program also lets you set parameter alarm levels for analysis. The trending software can inform you that particular readings are out of range and that the cell being tested requires further investigation. The state of health of a cell can be trended by plotting internal resistance versus time. (See Graphical Display.)



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## Data Analysis and Trending Software

### Software Review

An important part of any test equipment is the data analysis package. The Cellcorder data analysis and trending software downloads data, generates reports, prints the measured parameters, fully analyzes data, and performs trending of measured parameters such as internal cell resistance and float voltage.

Trending of internal resistance measurements has proven to be very beneficial in determining which cells or mono-blocks are experiencing internal problems that may result in decreased battery capacity. This nondestructive analysis can pinpoint conditions such as sulfation, dry-out, loss of plate compression, and metallic path deficiencies. Trending internal resistance measurements helps determine if further action, such as load testing, is required.

Use the data analysis and trending software to set up accumulated data files (.adf) for a site, location or battery. After setup, the data from subsequent tests are appended to previous results in the accumulated data file. You can then trend the test results, identify failing conditions, and schedule corrective action before a catastrophic failure occurs.

The software also lets you view parameters in a tabular or a user-defined graphical display, and set up threshold levels to determine when measured parameters are out of range. Additionally, the program can generate reports and send information to a printer or file, or export different file types, such as ASCII or comma delimited. Graphs can be exported to a meta file or bit map file for use by other off-the-shelf programs.

### Graphical Display

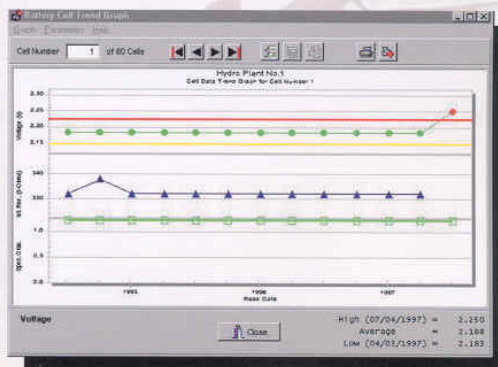
Graphical analysis includes bar graph displays of cell voltage, intercell connection resistance, and internal resistance. In addition, you can view

specific gravity, temperature, and all other parameters not displayed in the current graph. User-defined threshold levels identify failing parameters in different colors. Graphic styles are also user selectable.



### Trending and Analysis

Trending of selected parameters allows you to view and print results in a graphical format. Trending processes the selected parameters and graphs them according to read dates. If you choose to customize the graphical display by setting preferences in the program, the results are then displayed to these settings.



# Storage Battery Multimeter

## Advantages and Test Modes

### System Advantages

**Low Cost** The Cellcorder replaces three instruments that individually cost as much as or more than this one unique instrument.

### Time Savings

This one instrument should pay for itself with less than one year's usage. Significant labor savings will result from being able to take more readings and analyze more data in less time.

### Multicell Capability

The Cellcorder can provide readings on either single cells or multicell modules.

### Reliable Readings

The Cellcorder has been designed to work in high ripple, high noise environments. The unit is designed to operate off-line, or on-line without disconnecting the battery from service. The meter circuitry rejects the power line frequency signals that can be troublesome to AC based impedance and conductance meters.

### Data Storage

Automatic data storage for seven strings of 256 cells each or 28 strings of 64 cells each. This storage device not only saves time, but guarantees a legible, permanent record of all readings.

### Data Analysis

Cellcorder test reports highlight problem cells using standard, accepted criteria, to make analysis simple, even for newly trained maintenance personnel.

### Battery Operation

Six continuous hours of testing is possible with a fully charged battery that provides cord-free operation. This fully isolated operation provides additional safety and makes the unit easy to move around the battery room.

### Carrying Case

The instrument comes with a nylon carrying case and a convenient shoulder strap that allows a single individual to carry and operate the Cellcorder.

### Display and Signaling

The bright display window makes instructions and results easy to read. A built-in audio alert lets you know when a reading is out of set tolerance or an improper connection has been made.

### Test Modes

#### Voltmeter

In the voltmeter mode, the Cellcorder is used with a set of standard digital voltmeter probes. When the probes access the first cell, the unit displays the reading. Within two seconds, the unit beeps and indicates that the reading has been stored, then automatically increments to the next cell number.

#### Multimeter

Use multimeter mode to take float voltage, internal cell resistance, and intercell connection resistance readings on each cell. Once connected, the instrument tests all parameters and stores the readings in its memory.

#### Specific Gravity/Temp/OV

In the Specific Gravity and Temperature mode, the display prompts you to either manually enter the specific gravity and temperature readings or download them automatically from a digital hydrometer. You can also manually input the overall string voltage of the battery string. All data then becomes part of the record and is displayed in the report of each cell after download.

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### Specifications

Reading	Range	Measurement Accuracy
<b>Voltage</b>	0 to 4.000V 0 to 16.00V	0.1% of reading $\pm$ 1 LSD
<b>Cell Resistance</b>	0 to 99.99m $\Omega$	Readings are repeatable from $\pm$ 2% to $\pm$ 5%.
<b>Intercell Resistance</b>	0 to 2.000m $\Omega$	0.25% of reading $\pm$ 2 $\mu\Omega$
<b>Power Source</b>	8vdc, 5A-hour (Will power the unit for up to 6 hours)	
<b>Display Screen</b>	4 Line x 20 Character Visible in any ambient condition	
<b>Weight</b>	8.5 Pounds (Not including leads or carrying case)	
<b>Dimensions</b>	11.5" wide x 10" deep x 4" high	
<b>Warranty</b>	Full one year from date of purchase	

Optional lead sets available.

\*Specifications subject to change without notice  
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