



Cadex C7000 C-Series Battery Analyzers

The **Cadex C7000 Series** battery analyzers offers a platform that fulfills virtually all battery testing and conditioning needs. With features such as **QuickSort™** to check lithium-ion batteries in 30 seconds and **Boost** for reviving dead packs, the C7000 truly masters battery testing. Slide a battery into one of 1000 configured Battery Adapters or use a Universal Adapter and you will discover why the C7000 is so simple to operate. Enhance the system with **BatteryShop™** software, capture test data and view graphical real-time results on your PC monitor. Combine all this with a competitive price and it becomes clear why the Cadex C7000 Series has become the world's leading battery analyzer.

We make batteries run longer

Cellular phones

Batteries are blamed for almost all problems. To satisfy the customer, the pack is replaced, often without testing. This liberal battery-return policy is costing the industry millions of dollars. The Cadex C7000 Series battery analyzer helps to reduce costs by restoring rather than discarding these batteries.



Two-way radios

Public safety and emergency response teams depend heavily on batteries for radio communications. The Cadex battery analyzer helps refurbish weak batteries and extend service life. With Cadex, you can be assured of dependable operation without concern of unexpected down time.



Mobile computing

Portable equipment is only as reliable as the battery. Users of laptops and portable scanners rely on the Cadex battery analyzer to check, condition and calibrate these batteries. Regular battery maintenance guarantees sufficient runtime and identifies older packs that should be replaced.



Medical devices

Medical manufacturers emphasize the importance of scheduled maintenance. The Cadex analyzer checks and conditions batteries and prompts for replacement when required. Regular battery maintenance is essential to keep medical equipment in good operating condition.

Military

Military organizations take great pride in using the best equipment and batteries are no exception. Periodic battery analysis and conditioning assure that only well performing batteries are deployed in operations.



Courtesy of the Department of Defense

Industrial

One of the special features of the Cadex C7000 Series is its easy adaptation to different battery types. Cadex offers custom Battery Adapters for power tools, industrial respirators, professional video cameras, gas detectors, survey instruments and other portable devices.



Jannatec Radio Technologies showing Johnny Light Radio Cap Lamp

World class battery analyzers designed with the future in mind

Cadex offers three models of C7000 Series battery analyzers, all sharing the same functionality, accessories, battery adapters and intuitive user interface. The analyzers work with most rechargeable chemistries in stand-alone mode or using the optional PC-BatteryShop™ software.

The two-station **Cadex C7200** suits smaller organizations and storefront operations. 40 watts of charge power at 4 amps per station ensures quick service of larger batteries. This economical analyzer offers features similar to the larger C7400.

- Battery voltage range 1.2 to 15V
- Charge/discharge current up to 4A per station
- Maximum charge power 40 watts per station
- Maximum discharge power 35 watts.



40
watts

With four-stations and 80 watts of charge power, the **Cadex C7400** is most economical in terms of cost per station. The extra stations increase throughput and add flexibility in accommodating batteries that require immediate service.

- Battery voltage range 1.2 to 15V
- Charge/discharge current up to 4A per station
- Maximum charge power 55 watts per station
- Maximum discharge power 35 watts.



80
watts

The **Cadex C7400ER** is the most powerful of the C7000 Series battery analyzers. Six amps per station, service of 36 volt batteries and 170 watts of continuous power satisfies most service requirements.

- Battery voltage range 1.2 to 36V (Li-ion)
- Charge/discharge current up to 6A per station
- Maximum charge power 75 watts per station
- Maximum discharge power 75 watts.



170
watts

The Cadex C7000 Series offers feat

Unique battery interface

Custom-built *SnapLock™* adapters allow convenient interface with commercial packs. The adapters contain C-codes that configure the analyzer to the correct setting. Each adapter can be programmed with 10 C-codes to service different battery types.

Specialty adapters are available upon request.



Custom Battery Adapters are most convenient for common batteries

The Cadex *FlexArm™* accommodates batteries when no custom adapter is on hand. The probes on the flexible arms reach small and awkwardly placed contacts. Magnetic guides keep the battery in position. A temperature sensor monitors the battery. The gold-plated contacts are user-replaceable.



The FlexArm™ adjusts to handle a variety of batteries

The Cadex *Smart Cable* services larger batteries that are placed outside the unit.

The temperature sensor attaches to the battery with a magnet. The alligator clips provide easy connection

to batteries with protruding terminals.



The Smart Cable accommodates larger batteries

Automated programs support all battery needs

The 18 service programs are grouped as *Basic, Advanced and Custom*.

Basic Programs

- **Auto** – Exercises batteries and applies *Recondition* (nickel-based batteries) if the user-set target capacity cannot be reached.
- **Charge** – Applies fast charge.
- **Prime** – Prepares batteries for field use by repeated cycling until maximum capacity is reached.
- **QuickSort™** – Sorts lithium-ion batteries into Good, Low and Poor. Service time 30 seconds.

Advanced Programs

- **Self-Discharge** – Determines the rate at which a battery loses its charge.
- **Life Cycle** – Counts number of charge/discharge cycles before battery capacity drops to the selected target level.
- **Discharge Only** – Prepares batteries for storage.
- **Extended Prime** – Applies 16-hour trickle charge prior to *Prime*. Prepares difficult to charge batteries.
- **OhmTest** – Measures internal battery resistance.
- **Run Time** – Discharges at three current levels to simulate 5-5-90, 10-10-80 and other user patterns.
- **Boost** – Reactivates safety circuit on over-discharged batteries.
- **QuickTest™** – Provides battery state-of-health in 3 minutes. Needs battery specific matrix.
- **Q-Learn** – Generates *QuickTest™* matrix by scanning a good battery. Service time 3-5 minutes.
- **Learn** – Improves *QuickTest™* matrix by scanning batteries with different state-of-health status. Service time 3-8 hours per battery.

Custom Programs

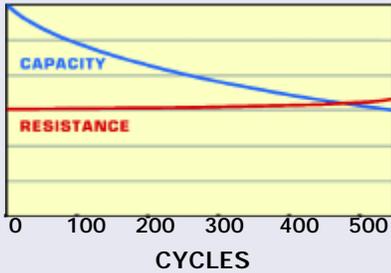
The four separate custom programs allow user-defined sequences of charge, discharge, recondition, wait and repeat.

Features not found on competitive units

Test batteries in 30 seconds

QuickSort™ classifies cell phone batteries as:

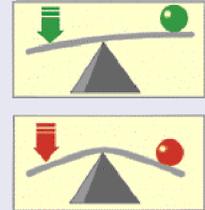
- **Good**, can be returned to customer
- **Low**, suspect pack; needs further testing
- **Poor**, faulty pack; remove from service



Resistance does not provide a reliable indication on capacity fade that occurs with cycling.

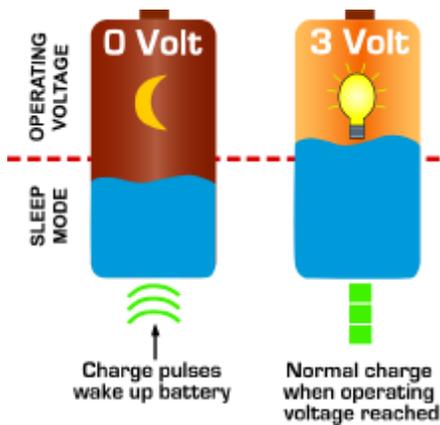
QuickSort™ is based on the electrochemical dynamic response of the battery, a method that is superior to resistance readings.

Like a mechanical arm, a good battery is solid and produces little sag. A weak battery, on the other hand, appears soft and bends to the applied force. QuickSort™ establishes its test results on the battery's resilience.



Reactivating lithium-ion batteries

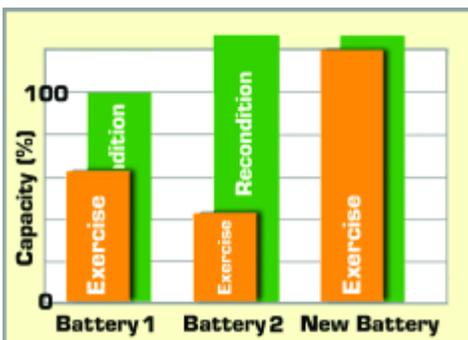
When discharged too low, some lithium-ion batteries appear dead and cannot be recharged. Boost reactivates the pack's safety circuit, often restoring the battery to full service.



Recondition restores nickel-based batteries

Capacity loss on nickel-based batteries is often reversible with a discharge cycle to 1V/cell (Exercise). In many cases, Exercise is not sufficient and Recondition is required.

Recondition is a deep discharge that dissolves the crystalline



formation or memory. The chart shows capacity doubling with Recondition on faded batteries and performance improvement on a new battery.



Streamline battery management with service labels

Attaching a small battery label containing service date, due date and capacity reading simplifies battery management. Only batteries with a valid service date and good capacity readings are used.

Adjustable Target Capacity sets battery pass/fail criteria

Target Capacity allows customized performance criteria. Increasing the threshold above 80% produces tighter tolerances; lower settings provide longer service life with less stringent performance standards.

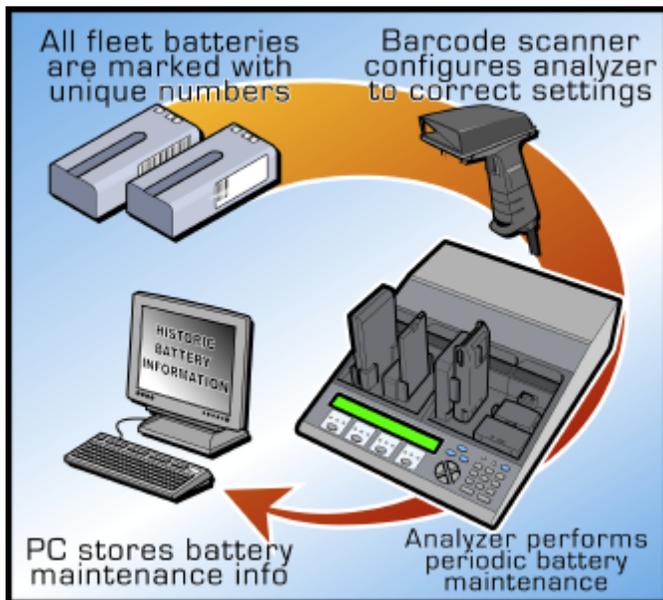
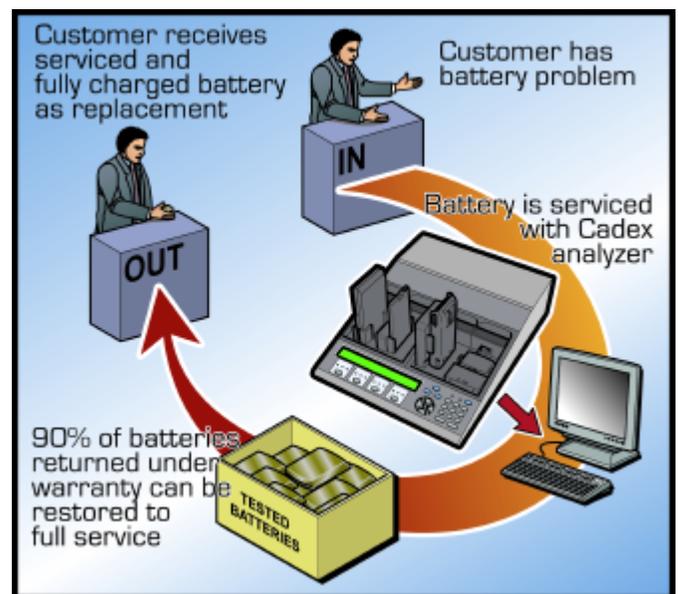
Computerized battery testing with BatteryShop™



BatteryShop™ provides a simple yet powerful PC-interface to control and monitor Cadex C7000 Series battery analyzers. Clicking the mouse on any of the 3000 batteries in the database or swiping the bar code on the battery label configures the analyzer to the correct setting. You can extend the library by adding new models or download the most current list from www.cadex.com. BatteryShop™ performs equally well with one analyzer or a fully extended system with 120 units, serving 480 batteries simultaneously.

Cell phone batteries

The Cadex C7000 system lowers battery replacement cost by restoring rather than discarding returned batteries. Whether the packs are serviced in store or in a service center, BatteryShop™ is able to retain battery history and customer information. Recurring user patterns and unique battery problems can be identified and analyzed.



Battery maintenance

Maintenance of fleet batteries is simplified by marking each battery with a permanent ID number. The label printer generates the labels in bar code format. To service a battery, the user scans the label and inserts the battery into the analyzer. BatteryShop™ configures the analyzer and displays the entire battery history on the monitor.

Battery manufacturers

BatteryShop™ allows battery manufacturers to perform complex battery analysis by setting unique test parameters through the PC. Voltages and currents can be entered in 25mA increments, the charge termination customized and the end-of-discharge fine-tuned. Battery current, voltage and temperature readings are shown in real-time graphics. The test data can be stored for future reference or be sent to laboratories for analysis.



Product specifications

Battery analyzers

| | C7200 | C7400 | C7400ER |
|---------------------------------|--|---|--|
| Independent stations | 2 | 4 | 4 |
| Battery voltage range | 1.2 to 15V | 1.2 to 15V | 1.2 to 36V (28.8V for nickel-based) |
| Charge/discharge current | 100mA to 4A in 25mA increments | 100mA to 4A in 25mA increments | 100mA to 6A in 25mA increments (With 6A capable Battery Adapters) |
| | If current is set above 4A (6A), unit automatically scales down to stay within range. Services up to 24Ah batteries. | | |
| Maximum charge power | 40W per station; 40W total | 55W per station; 80W total | 75W per station; 170W total |
| Maximum discharge power | 35W per station; 70W total | 35W per station; 140W total | 75W per station; 200W total |
| Power management | Batteries on a fully loaded system may go on waiting queue. Will resume when demand moderates. | | |
| Line voltages | 100 to 240VAC, 50-60Hz 1.5A max | 100 to 240VAC, 50-60Hz 1.75A max | 100 to 120 / 200 to 240VAC, 50-60Hz 4A max |
| Chemistries | Lithium-ion, nickel-metal-hydride, nickel-cadmium, lead-acid. | | |
| Charge method | Lithium-ion and lead-acid: constant voltage with current limit. Nickel-based: constant current with Reverse Load Charge adjustable from 5-12%. Customized charge methods possible. Automatic full charge detection, safe termination under all conditions. Temperature controlled. | | |
| Discharge method | Constant discharge current to end-of-discharge voltage threshold. | | |
| Battery Adapters | <i>SnapLock™</i> system; custom and universal types. Contain C-code to configure analyzer to the correct setting. Each adapter has room for 10 C-codes. Re-programmable with menu function. Battery adapters are equipped with a temperature sensor. | | |
| Service programs | 18, grouped into <i>Basic, Advanced and Custom</i> programs. Allows manual and automated service. | | |
| Security | Level 0 Level 1 Level 2 | Off, allows full access, no programming restrictions (default) Low, password protected; allows C-code selection and display options High, password protected; most programming choices locked | |
| Display | 2x40-character LCD, backlit; each station also features RUN, READY, FAIL signal lights. | | |
| Power failure recovery | Retains the test data on power failure and resumes when power is restored. Time on power failure and resumption is recorded. | | |
| Data Ports | RS-232 or USB interfaces to PC (RS-232 recommended). Label printer for direct connection available. | | |
| Throughput | QuickSort™ Full service | 30-40 batteries per hour Fleet of 80 batteries typical | 60-80 batteries per hour Fleet of 160 batteries typical |
| | | Throughput on full service is based on monthly maintenance. Each analyzer services two battery batches every 24h (day and night run), 20 days per month. | |
| Physical | Length Width Height Weight | 12.1"; 307mm 9.4"; 240mm 3.5"; 90mm 7.1 lb; 3.2 kg | 14.4"; 366mm 11.0"; 280mm 3.8"; 97mm 10.05 lb; 4.54 kg |
| | | | 15.4"; 391mm 11.0"; 280mm 4.2"; 107mm 12.1lb; 5.5 kg |
| Environmental | Recommended operating temperature 41°F to 95°F; 5°C to 35°C Recommended storage temperatures -4°F to 159°F; -20C to 70°C | | |
| Firmware | Upgradeable with <i>BatteryShop™</i> over the Internet, flash memory. Lifetime upgrade subscription available. | | |
| Approvals | Tested and approved by ITS and TUV to comply with CSA/UL/CE/PSE standards. RoHS and WEEE compliant. | | |
| Warranty | Cadex warrants the analyzer against defective materials and workmanship for a period of two (2) years from the original purchase date. | | |

BatteryShop™ software

Provides PC-interface to Cadex C7000 Series battery analyzers. Programming by selecting a battery model from database, scanning the battery's bar code label or entering battery parameters through the PC. Current, voltage and temperature are shown in real-time graphics. Stores test data, vendor and customer information. Prints battery labels, bar codes and service reports. Supports English, German, French and Spanish.

| | |
|--------------------------------|--|
| Expandability | <i>BatteryShop™</i> is licensed for 1, 4, 16, 32, 64 and 120 analyzers; field expandable with USB-to-serial converter (by Digi). A fully expanded system services 480 batteries independently. The maximum file size is 2GB. |
| Computer requirements | Dedicated PC with MS Windows 2000 or XP; 4GB hard drive; 700MHz or better CPU; i256MB of RAM main memory; increases with more analyzers. |
| Recommended peripherals | Label printer (DYMO 400), windows compatible printers for reports; bar code scan. |

Why buy Cadex

Batteries have become the lifeline in our society. Cadex has realized the importance of this development and designs products to enhance battery performance and increase longevity.

History

Cadex Electronics was founded in 1980 when Isidor Buchmann recognized that the full potential of nickel-cadmium batteries was not being realized. The proprietary *Recondition* feature, which Buchmann developed, was so effective in restoring these batteries that the Cadex analyzers soon became a household name among two-way radio, cell phone and medical battery users.

World leader

With the introduction of the programmable battery analyzers in the early 1990s, the Cadex battery analyzers gained global acceptance in wireless communications, mobile computing, medical and defense industries. Cadex set new standards and the company became a world leader in advanced battery test equipment. Today, Cadex products are sold in over 100 countries.

Engineering strength

Cadex combines engineering strength with 25 years of manufacturing experience. Committed to continued research and development, Cadex covers all aspects of battery service, including rapid testing using patented technology. Cadex is ISO 9001 certified and all products are made to the highest standards.

Customer satisfaction

When purchasing a Cadex product, you are assured of advanced design, superior quality and competitive pricing. The award-winning products are built with one goal in mind — to make batteries run longer. The name Cadex is synonymous with innovative design, dedication to quality and excellent customer service.

Working with natural beauty



Cadex provides an environment that attracts the industry's most talented. Nestled in the natural surrounding on the banks of the Fraser River, Cadex headquarters offers a work atmosphere that promotes creative thinking. The Cadex building accommodates research, engineering, sales and manufacturing.



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