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Servicing Single Cells

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Requirements: The user is familiar with the operation of the Cadex C7200 or C7400 Battery Analyzer: selecting, editing Basic and Extended C-Codes, selecting programs. *This document applies to NiCd and NiMH batteries only.*

C-Code Settings

Program the basic C-Code (i.e. Chemistry, Voltage, mAh) to match the battery. Change the Extended C-Code to:
Charge: 0.10C
Discharge: 0.10C
Trickle Charge: 2%
Recondition: 10%
Cap. Offset: 0%
Temp. Sensor: 0°C - 50°C
End of Discharge: 1.00V/Cell
End of Recondition: 0.40V/Cell
Negative Slope: 16mV/Cell
Charge Method: DC Charge

Note: Service time will be very long at 0.10C (one discharge cycle takes about 10 hours to complete at this rate). The Charge and Discharge rate can be set to higher rates but you will have to experiment with those values. If the battery starts giving fault codes or starts to get hot at higher charge or discharge rates, reduce it. Normally, we do not recommend going above a charge and discharge rate of 0.30C for single cells.

Joining Cells into Packs

It is an accepted routine that cell voltages are within 10% of each other before cells are packaged together. This reduces the likelihood of cell reversal. When cells are newly packaged, run the battery pack on the Extended Prime (ExtPrime) program. The ExtPrime program applies up to 5 charge/discharge cycles until battery capacity difference on the last two cycles is less than 5%. In some cases, two prime cycles may be necessary if the final capacity after the first Prime program is still less than 80% or there is a Cell Mismatch (Fail 112) error. Battery capacity should be at least 80% to ensure adequate run-time. For critical applications, we recommend that battery capacity be over 90%.

Used Cells

Use the Auto program to service cells that are in use for more than a month.

Messages & Fault Codes

The following lists common messages that may be encountered when servicing this particular battery. Please refer to the Analyzer Users Manual for more details or for other error codes.

Battery not detected	Measure the battery voltage with a voltmeter and ensure that it is at least 0.40V/cell. If it is lower, use the Boost program.
FAIL 112 (CELL MISMATCH)	Cells may not have been formed. Re-service the battery using the Prime program.
FAIL 121 (SHORT/REV)	See 'Battery Not Detected'
FAIL 122 (BATTERY SHORTED)	See 'Battery Not Detected'
Fail 128 (SOFT BATTERY)	Charge rate is too high. Service the battery again with the Charge rate at 0.10C.
Fail 135 (RESISTANCE THRESHOLD EXCEEDED)	Turn off the Automatic Ohmtest.
Fail 144 (CHARGE TIMEOUT)	Ensure that C-Code Negative Slope is set at 16mV/cell. Reduce the Charge rate to 0.10C and experiment with higher rates. Service the battery again.
Fail 160 (BAD FUSE OR DRIVER)	Charge rate is too high. Service the battery again with the Charge rate at 0.10C.
Fail 164 (CHARGE CURRENT NOT MET)	Charge rate is too high. Service the battery again with the Charge rate at 0.10C.

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