



CT Battery Tester User Manual

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Overview

The Canada Tech Battery Tester has been specifically designed to test the voltage of battery packs built for use with Canada Tech gauges. This Tester supports all battery packs with either a 4-pin Lemo (Lemo FAG.0B.304.CLA), a 5-pin Lemo (Lemo FAG.0B.305.CLA), or 4-pin military connectors (Amphenol PT01A-8-4P).

Lithium Battery Safety and Handling Guidelines

Always follow the manufacturer's directions for the proper use, handling, and storage. Documentation and Material Safety Data Sheet (MSDS) for lithium cells manufactured for Canada Tech are available from

<http://www.electrochempower.com/Support/SafetyHandling>.

Discarding Instructions

Please dispose of cells in accordance with local, state and federal hazardous waste regulations.

In particular, pay special attention to the MSDS disposal instructions and respect all procedures stated for the handling of hot cells and damaged cells. The most recent MSDS can be found at: <http://www.electrochempower.com/Support/SafetyHandling/15-SAF-0043.pdf>.

Battery Tester Usage

Instructions

- 1 Power up the Tester by sliding the switch to the **ON** position.
- 2 On the Tester, identify the connector that is the correct mate for the battery to be tested and insert the battery into it.
- 3 Observe the display for a voltage read-out:
 - If the Tester shows **OL**, please refer to the **Overload Error** section below, otherwise, continue.
 - If the voltage measured is within +/- 0.2 V of the open circuit voltage (OCV) stated on the battery, then it is ready for use. Otherwise, please refer to **Reasons for Low Battery Voltage** below.

Note: Battery voltage on a fresh 3.67 V battery may measure as high as 3.9 V due to cell chemistry. This is perfectly acceptable and after some use, the voltage will drop to its advertised value.

Reasons for Low Battery Voltage

There are two main reasons for low battery voltage:

- A. **Depleted energy:** Either through use or self-discharge the battery may actually have depleted its charge.
 - If the battery has been used for an extended period it may show a low (or zero) voltage and should be replaced.
 - If the battery has been kept on the shelf for a long time, it may no longer contain its advertised capacity as lithium batteries have a tendency to self-discharge at a rate of 2-3% per year when not in use. This battery may have to be discarded.
- B. **Passivation:** This condition occurs when an insulating layer forms inside the battery due to lack of use. This can sometimes be seen with batteries that have been on the shelf for an extended period of time (months or years). To remove the passivation layer, the simplest solution is to connect the battery to the tool that it is meant to be used with. The current draw from the tool will break down the layer.

For information regarding battery passivation, please refer to this web page:

<http://www.electrochempower.com/Support/TechnicalInformation/Passivation%20Info.pdf>.

Overload Error

The CT Battery Tester is rated for +600 V. There are no batteries rated for this high a voltage that are used with any of Canada Tech's tools, therefore, a voltage overload should never be encountered.

- If the Tester indicates **OL** condition (OL Ω error), then it more than likely is measuring an infinite impedance. This can be seen with the Tester turned **ON** and no battery plugged in.
- If this error is encountered when a battery is plugged in, then it is most likely that the battery has an internal defect/disconnection and is not usable. Discard appropriately.

Battery Discharge Pattern

Lithium batteries do not discharge in a linear fashion with their voltage dropping progressively as their charge is used. Instead, batteries maintain their rated voltage for the majority of their usable life, and then drop dramatically at end-of-life, as shown graphically in Figure 1 below. The capacity shown on this graph is specific to one type of battery. A single battery tends to follow the general trend for its type, but each battery also displays its own individual battery depletion characteristics within the general trend of its type.

150°C discharge

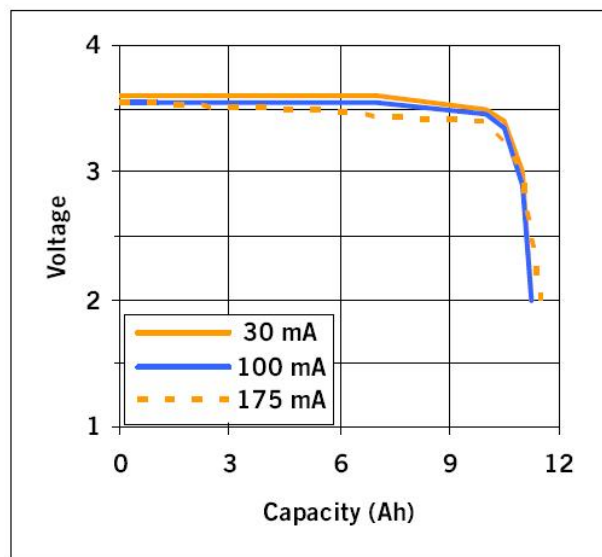


Figure 1

Battery Tester Specifications

Maximum voltage	600 V AC rms or DC between any terminal and earth ground (excludes 10% tolerance)
Display	3-3/4-digits, 4,000 counts, updates 4/sec
Operating temperature	-10°C to 50°C
Storage temperature	-30°C to 60°C indefinitely (to -40°C for 100 hrs)
Temperature coefficient	0.1 x (specified accuracy)/°C (<18°C or >28°C)
Relative humidity	<ul style="list-style-type: none">• 0% to 90% (-10°C to 35°C)• 0% to 70% (35°C to 50°C)
Battery type	9 V, NEDA 1604 or IEC 6F22
Battery life	<ul style="list-style-type: none">• 600 continuous hours with alkaline• 400 continuous hours with carbon-zinc
Shock, vibration	1 meter shock (per MIL-T-28800D for class 3 instruments)
Size (H x W x L)	1.35 x 2.75 x 5.55 (inches) 3.46 x 7.05 x 14.23 (cm)
Weight	10 oz / 286 g
EMI Regulations	Complies with: <ul style="list-style-type: none">• FCC Part 15, Class B• VDE 0871B
Safety	Designed to meet these standards: <ul style="list-style-type: none">• Protection Class II requirement of UL1244• ANSI/ISA-S82.01 - 1988,• CSA C22.2 No 231• VDE 0411• IEC 1010-1 over-voltage category III (CAT III), 600 V