



# Canada Tech

## Battery Tester

### User Manual

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#### **Sales, Marketing, and Support**

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## Overview

The Canada Tech Battery Tester has been created to read the voltage of battery packs designed for use with Canada Tech gauges. Testers are available to supports all battery packs with a 4-pin Lemo (Lemo FAG.0B.304.CLA), and 4-pin, 8 shell military connectors (Amphenol PT01A-8-4P) and 6-pin, 10 shell military connectors (Amphenol PT01A-10-6P).

## Instructions on use:

- 1) Turn on the Battery Tester by holding down the power button for 2 seconds.
- 2) Connect the battery to be tested by inserting into its mating connector on the Tester.
- 3) Observe the battery voltage on the screen. If the voltage measured is within +/- 0.2V of the open circuit voltage (OCV) as shown on the battery, then it is ready for use. If not, please see the following section. If the Tester shows "OL", please see the Overload error section.

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

## Reason for low battery voltage:

There are 2 main reasons for a low battery voltage:

First, the battery may actually be have depleted its charge, either through use or self-discharge. If the battery has been used for an extended period of time it may show a low voltage and needs to be replaced. Also, 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 used.

The second reason is passivation of the battery. This occurs when an insulating layer forms inside the battery from lack of use. This can sometimes be seen with batteries that have been on the shelf for an extended period of time. For information regarding battery passivation, please see <http://excellbattery.com/OilIndustry/Passivation.html>. The simplest solution to remove the passivation layer is to connect the battery to the tool it is to be used with (at its minimum operating temperature). The current that is drawn by the tool will break down the layer.

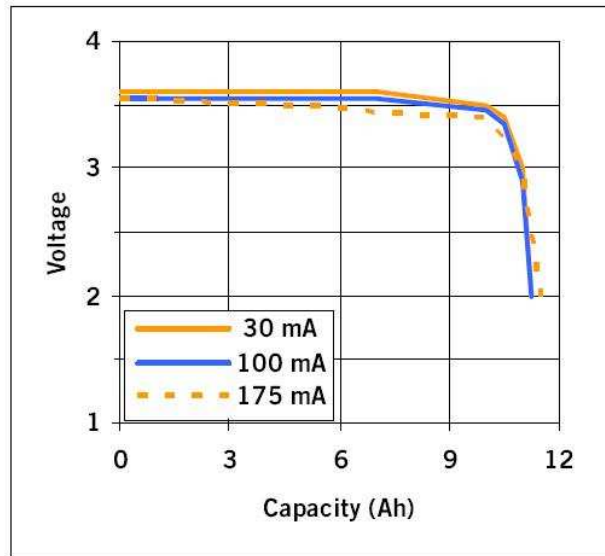
## Overload Error:

If the Battery Tester shows "OL" on its screen then it has encountered an overload error. The tester is rated for +450V, so a voltage overload should never be encountered while using a standard lithium battery designed for use with Canada Tech tools. More than likely the tester will display an OL  $\Omega$  error, indicating it is measuring an infinite impedance (this can be seen with the tester on and no battery connected.) If this error is encountered with a battery connected, the battery most likely has an internal disconnection and is not usable.

## Discharge Characteristics:

Lithium batteries do not discharge in a linear fashion with their voltage dropping as their charge is used. Instead, the batteries will maintain their rated voltage for the majority of their life. This can be seen in the following graph.

150°C discharge



Note: The capacity shown on the graph is specific to one type of battery and each individual battery will have a different capacity over which this trend still follows.

## Safety:

As always, please follow the manufacturer's directions for the proper use, handling, and storage of lithium cells. Documentation and MSDS sheets for lithium cells manufactured for Canada Tech Corp can be found at:

Safety and Handling Guide for Primary Lithium Batteries –

[http://www.electrochemsolutions.com/pdf/Safety\\_and\\_Handling\\_Guide.pdf](http://www.electrochemsolutions.com/pdf/Safety_and_Handling_Guide.pdf)

MSDS Sheets for Lithium Thionyl Chloride Cells and Batteries –

[http://www.electrochemsolutions.com/pdf/Thionyl\\_MSDS.pdf](http://www.electrochemsolutions.com/pdf/Thionyl_MSDS.pdf)

MSDS Sheets for Lithium Sulfuryl Chloride Cells and Batteries –

[http://www.electrochemsolutions.com/pdf/CSC\\_PMX\\_MSDS.pdf](http://www.electrochemsolutions.com/pdf/CSC_PMX_MSDS.pdf)

## Specifications

<b>Maximum Voltage Between any Terminal and Earth Ground (excludes 10% tolerance)</b>	<b>450VDC/VAC RMS</b>
Display	6000 counts, updates 5/sec
Operating Temperature	0°C to 40°C
Storage Temperature	-20°C to 60°C
Temperature Coefficient	0.15 x (specified accuracy)/°C (<18°C or >28°C)
Relative Humidity	0% to 80% (0°C to 31°C) 0% to 50% (31°C to 40°C)
Battery Type	3V button, ANSI-NEDA-54004LC or IEC-CR2032
Size (HxWxL)	2.08 in x 4.47 in x 0.45 in (5.29 cm x 11.36 cm x 1.14 cm)
Weight	2.2z oz (63g)