Center of Gravity Scale User Guide

Overview

The digital Center of Gravity scale can be used to easily compute the Center of Gravity of objects. It consists of four digital load cells with USB output at the four corners of a platform. The platform has a 1 inch square grid etched onto the surface to make it easy to locate the object in a X-Y coordinate system. A USB hub provides a single output from the scale through a USBA connector.

LoadVUE Pro CG software provides an easy-to-use tool that lets you display, log, and plot the weights experienced by each load cell as well as the location of the Center of Gravity of the object.

Included

- Four load cells with USB Interfaces, Calibrated together in Compression
- One Four-port USB hub with power supply
- One MiniB to USBA output cable
- LoadVUE Pro CG software on a USB drive
- If purchased as a pre-built Center of Gravity Scale
    - Platform with etched one inch grid on surface
    - Adjustable feet to level the scale

Minimum Requirements for LoadVUE Pro CG Software

- Windows 8/10/11 PC or Tablet
- 8 GB of RAM
- 256 GB of Disk Space
- USB 2.0 or USB 3.0 Ports with USBA Connectors (ideally with a USB A connector. Else you'll have to buy a hub or adapter with USB C adapter if needed)

(Disable Bluetooth or Other Virtual COM port Devices from your PC Prior to Installation and Use)

Software Installation

Insert the USB Drive into your PC's USB Port. Browse to the folder and find the Setup File. Right Click and Run the Setup file as Administrator. The drivers needed to recognize the devices will also be installed automatically and an icon will be installed on your desktop. Connect the scale or your load cell + USB interfaces to your PC. The four load cells should show up as virtual COM ports on your Windows 8/10/11 PC or Tablet.

Scale Installation

Gently place the scale on an even, flat surface such as a table. Use a level (with a bubble indicator) to make sure the scale is level. Repeat along two orthogonal axes to make sure the scale is level on all four feet. Adjust the feet if necessary. Connect the USBA connector of the output cable to your PC. Now you are ready to start LoadVUE CG software.

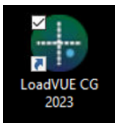
If you are buying just the sensor and interface kit, then build your CG scale with a rigid frame under which you attach the load cells. Use leveling feet so you can level the scale properly.

Startup and Sensor Selection

Make sure that the CG Scale is connected to the PC/Tablet.

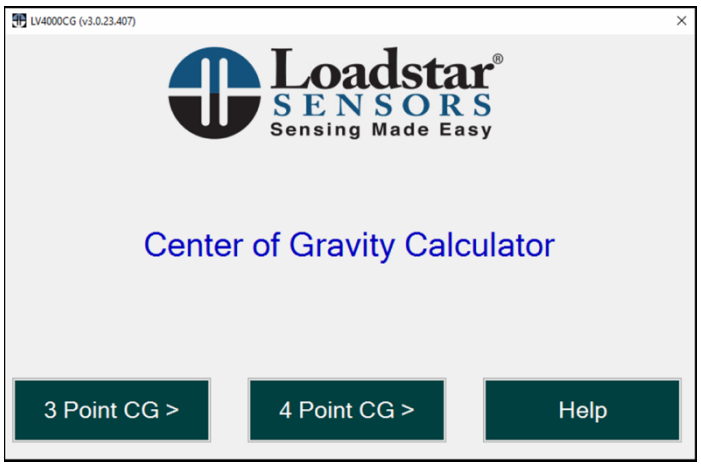
Step 1: Start CG Program

Click on the LoadVUE CG shortcut icon on your desktop to start the program.



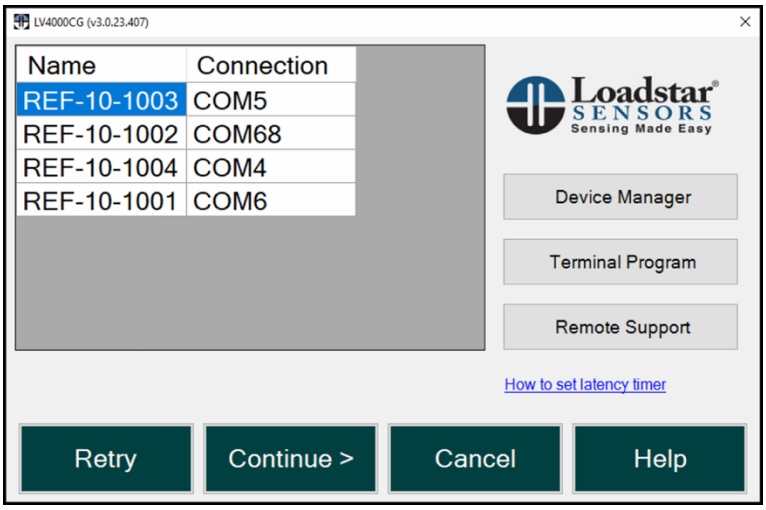
Step 2: Select 4 Point CG Option

Select the 4 Point CG - select 4 Point CG if you are using 4 sensors to calculate CG



Step 3: Select Sensors

The four sensors present on the CG scale should be displayed on this window.



Select Continue to Center of Gravity Calculator Setup screen.

Step 4: Setup CG Scale

Orient the scale as shown in the diagram with the USB Output cable coming out from the middle of the upper edge (between the Sensor #3 and Sensor #4). Enter the width and height of the Center of Gravity Scale or as shown in the figure, W and H (outside), and the location of the sensors within the confines of the scale, the w and h (inside) dimensions. For the 24” x 24” CG Scale that we sell fully built, enter the following values:

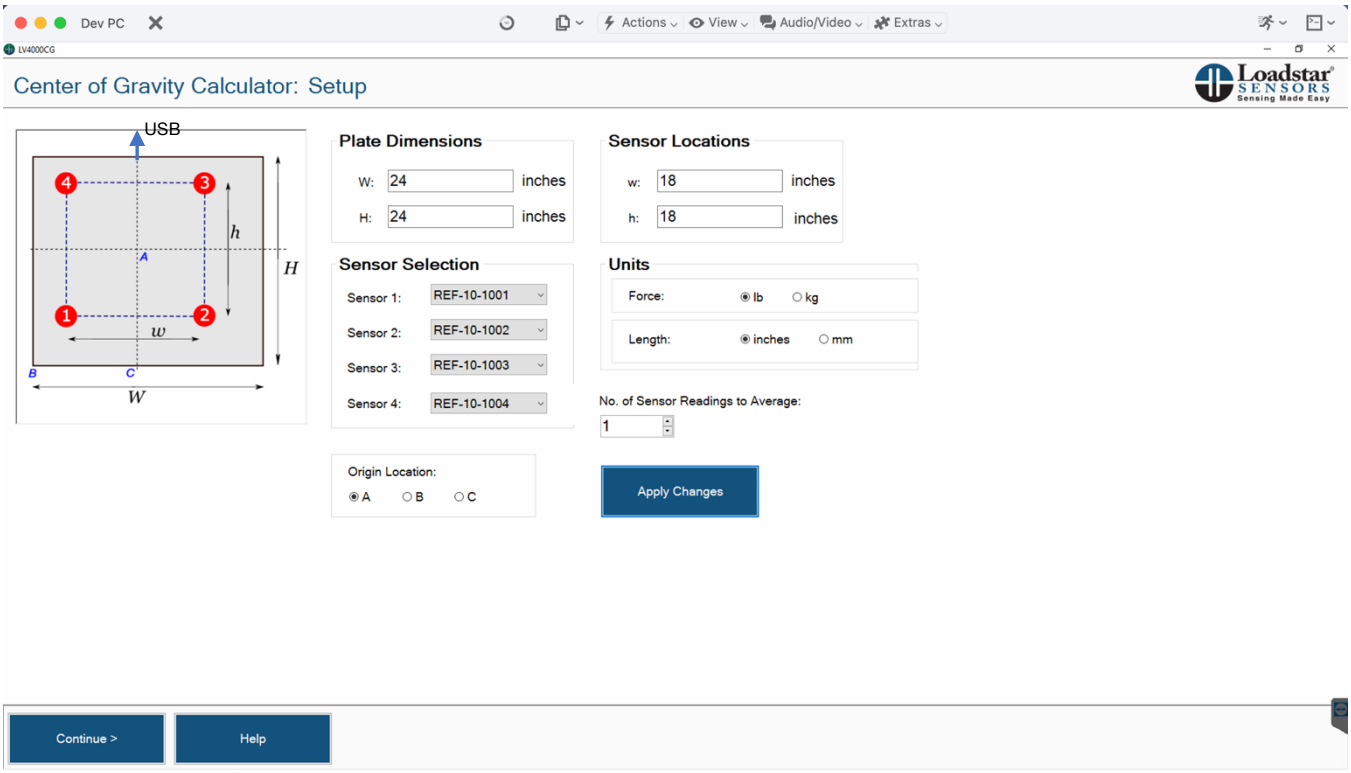


Plate Dimensions: W = 24 in. and H = 24 in.
Sensor Locations: w = 18 in. and h = 18 in.

Sensor Selections: Select the appropriate sensor for each corner (if not already displayed). The sensors detected by the program will be shown as options within the dropdown box.

Units: Select the appropriate units for measuring the force (lb. or kg.) and length (in. or mm.)

Select Number of Sensor Readings to Average from the drop-down list. The larger the number of points averaged, the greater the latency of the readings but lower the noise. Try out different values and then settle on one that works for you.

Select Origin Location – A/B/C: This is to select the coordinate system (the location of the center of the origin on the 2D plane as shown in the diagram). In some of the recent scales, the Center of Gravity scale comes with an edge around the scale. You can use those edges to align the object appropriately so you can then compute the center of gravity in that coordinate system.

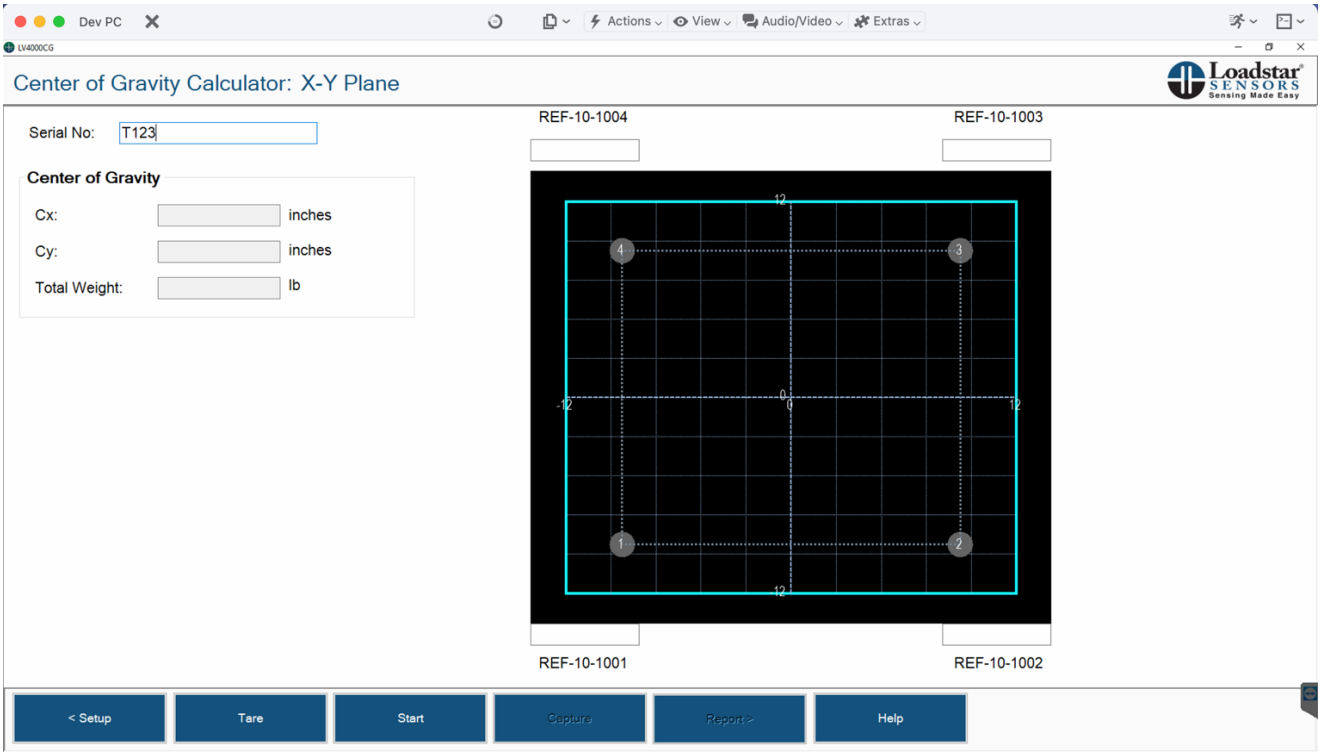
Click on Apply Changes. Check and make sure you are entering the correct values for the width and height between the load cell centers. The LoadVUE CG will use these values for computing the coordinates of the Center of gravity accordingly.

Click on Continue.

LoadVUE CG Operation

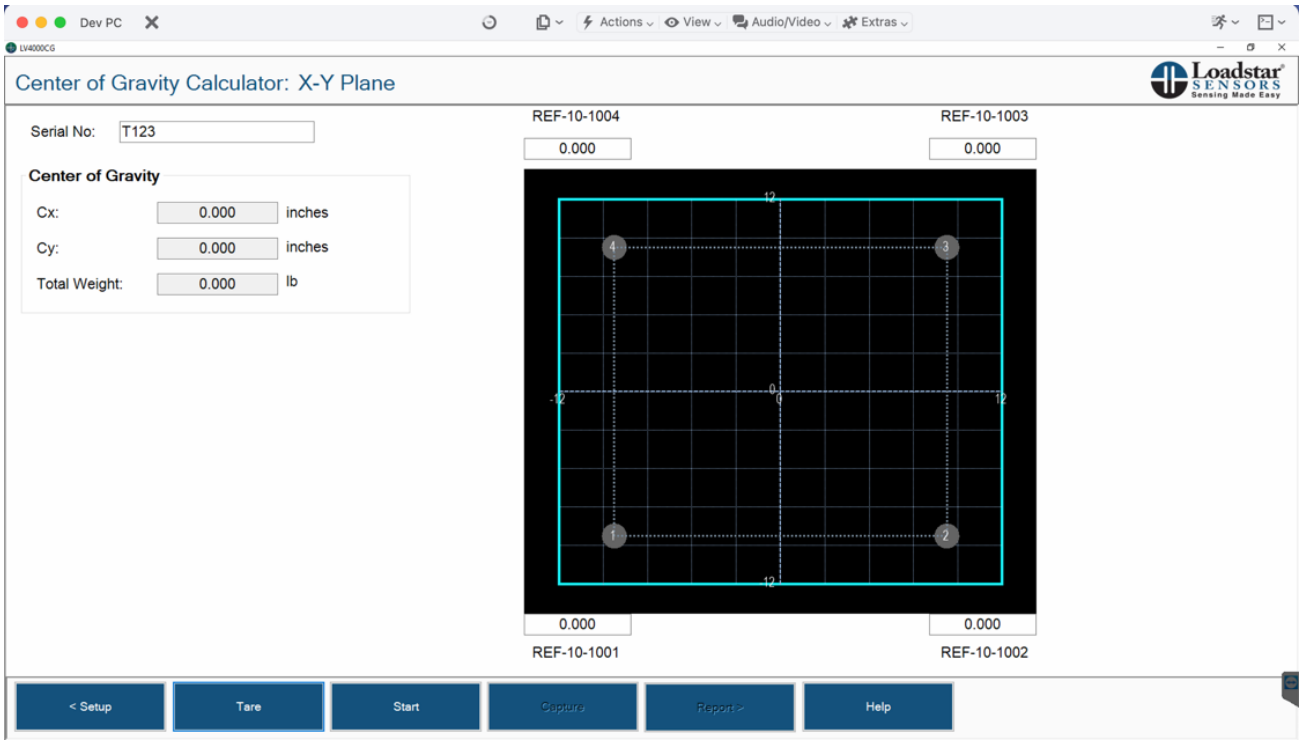
Step 5: Setup Session ID

Enter a Serial No. for the session. This is the identifier for this test. So, if you are going to be performing a test for say dozens of items, then you can put the ID for each object as the Serial No. for that test. Make sure to change this for the next item before you “capture” a reading.



Step 6: Tare (Zero-out) the CG Scale

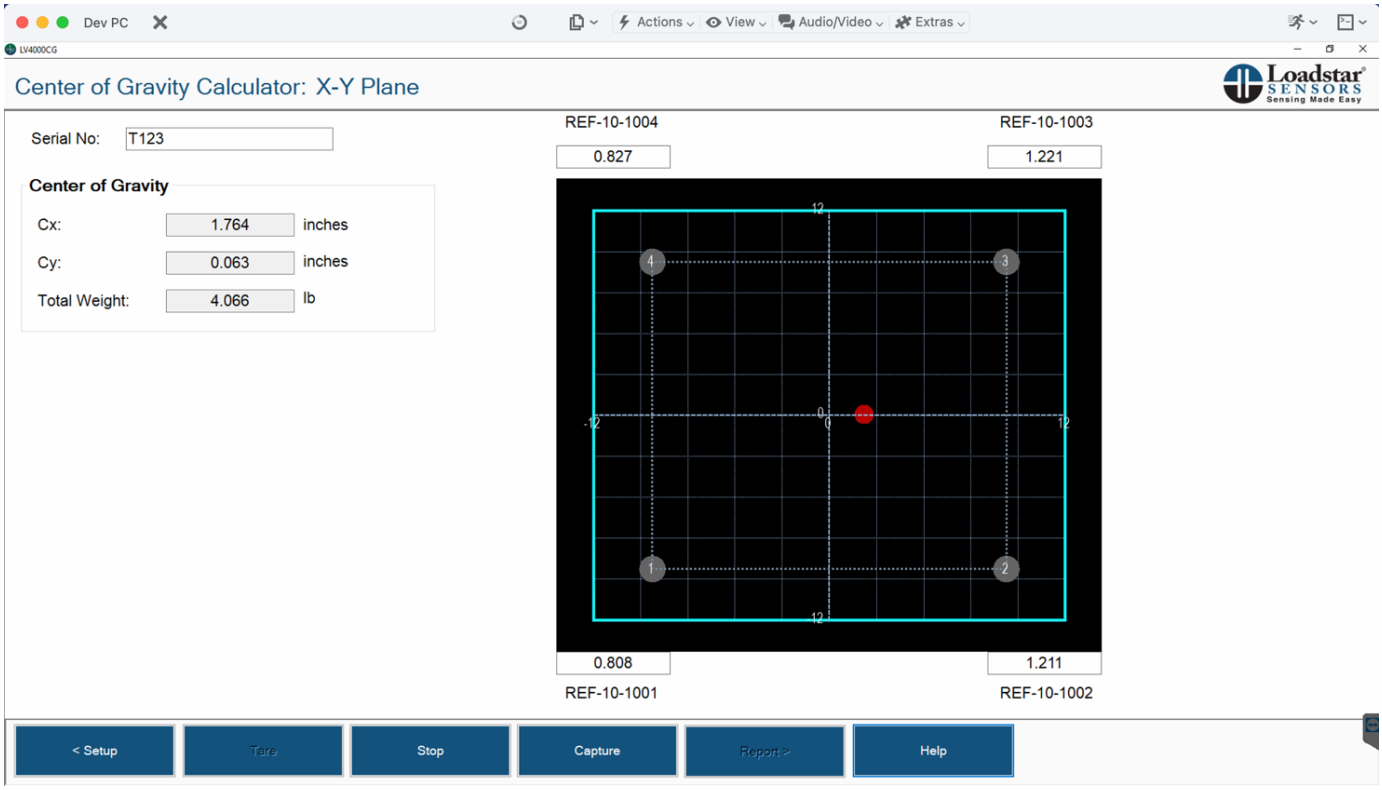
Select Tare - With nothing on the scale, TARE (zero out) the sensors. If you have a 'carrier' for your object then, place the carrier without the object and Tare out the initial value to zero out the weight before you place the object whose Center of Gravity you want to measure.



Step 6: Start Measuring CG

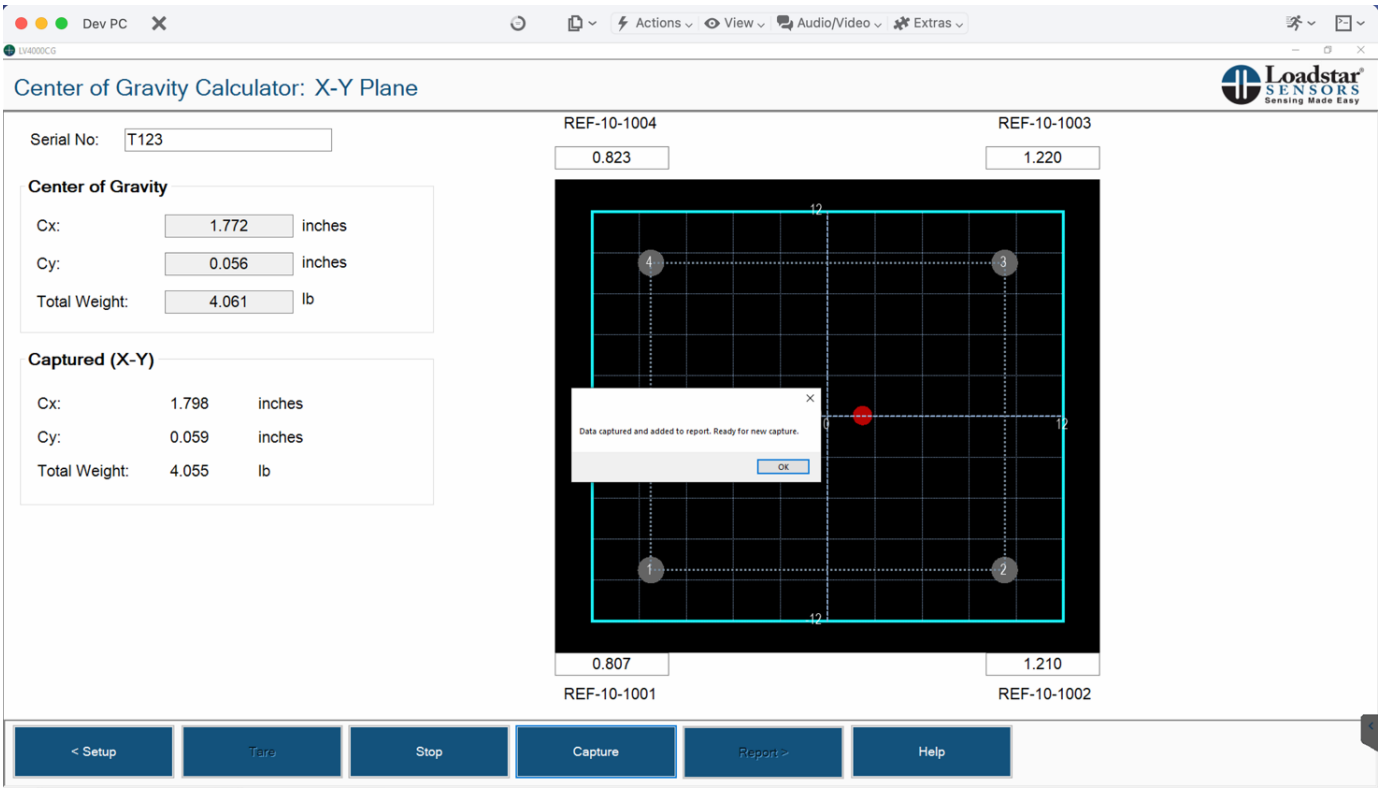
Click on Start.

The individual weights or loads will be shown at the four corners of the display. The Total weight is displayed in the Total Weight box. The Cx shows the X-axis position and Cy shows the Y-axis position on the Center of Gravity scale. The Center of Gravity is also shown as a red point or a dot and is plotted on the XY plot.



Step 6: Capture Data

Click on Capture.



The Cx and Cy values and the total weight will be captured and displayed, and a dialog box will appear to confirm the data capture.

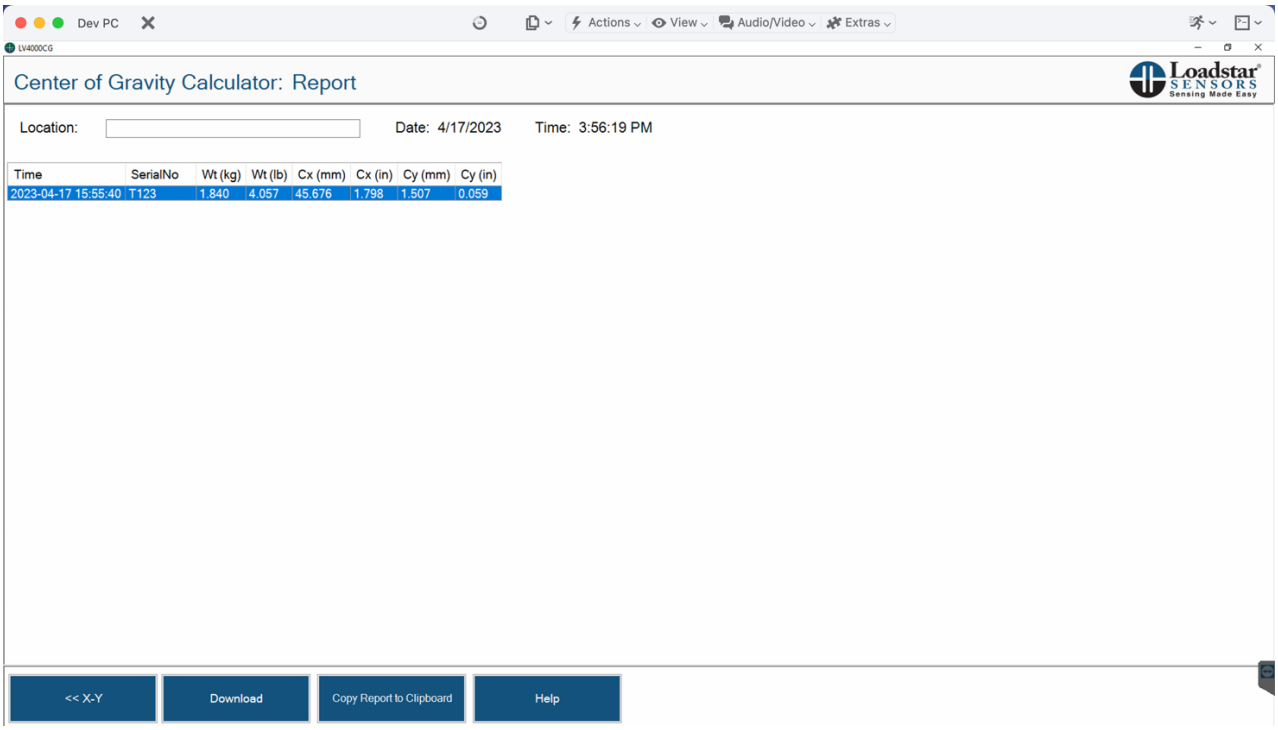
Click OK.

If you want to capture another set, you can click Capture again.

Click Stop.

Step 7: Copy or Download Report

Click Report to go to the Report screen where you can either download the data to a file or copy the data to a clipboard.

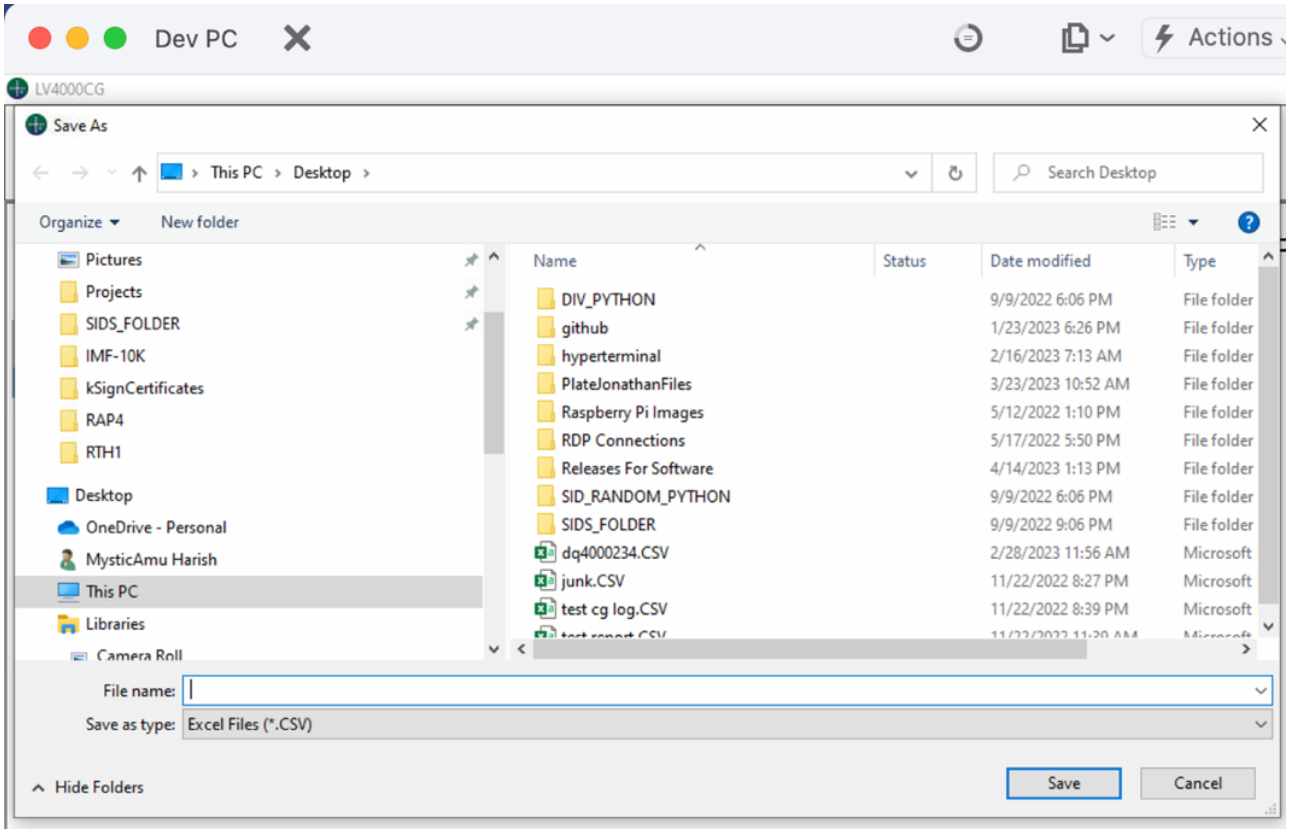


Download

Data from all four load cells and the CG information with time stamp can be logged to an Excel compatible log file.

Click on Download to switch to the log window.

Select the location and provide a name for the log file.



The log file is a comma separate file which shows the Time stamp, Serial No. for the test, the Total Weight and the X and Y coordinates of the Center of Gravity in both lb/inches and Kg/mm.

Copy Report to Clipboard

Data from the report table can be copied into the computer's clipboard so that you can paste it in to other Windows programs such as Word, Excel or PowerPoint.