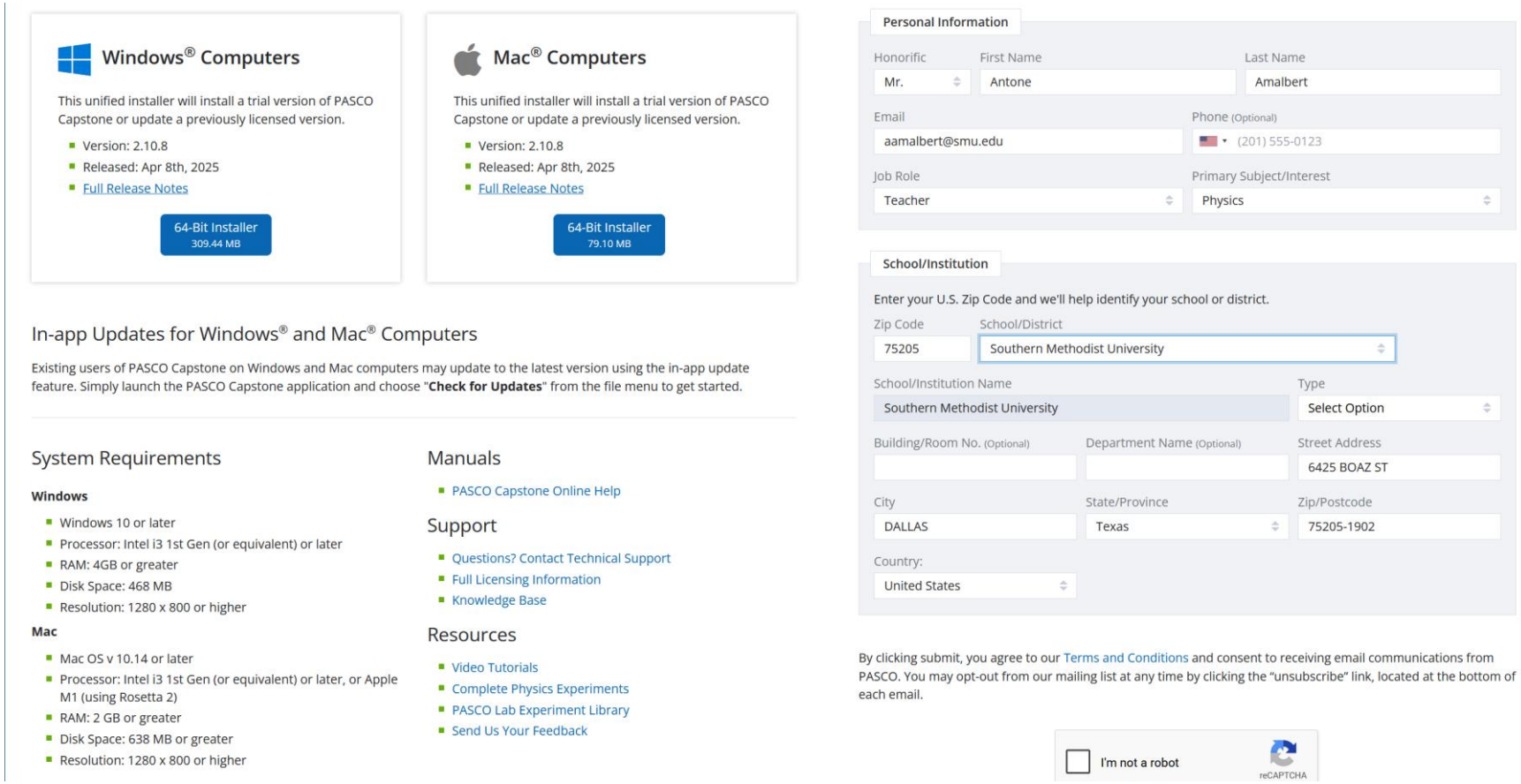
Intro to Capstone



Windows® Computers

This unified installer will install a trial version of PASCO Capstone or update a previously licensed version.

- Version: 2.10.8
- Released: Apr 8th, 2025
- Full Release Notes

64-Bit Installer
309.44 MB

Mac® Computers

This unified installer will install a trial version of PASCO Capstone or update a previously licensed version.

- Version: 2.10.8
- Released: Apr 8th, 2025
- Full Release Notes

64-Bit Installer
79.10 MB

In-app Updates for Windows® and Mac® Computers

Existing users of PASCO Capstone on Windows and Mac computers may update to the latest version using the in-app update feature. Simply launch the PASCO Capstone application and choose "**Check for Updates**" from the file menu to get started.

System Requirements

Windows

- Windows 10 or later
- Processor: Intel i3 1st Gen (or equivalent) or later
- RAM: 4GB or greater
- Disk Space: 468 MB
- Resolution: 1280 x 800 or higher

Mac

- Mac OS v 10.14 or later
- Processor: Intel i3 1st Gen (or equivalent) or later, or Apple M1 (using Rosetta 2)
- RAM: 2 GB or greater
- Disk Space: 638 MB or greater
- Resolution: 1280 x 800 or higher

Manuals

- PASCO Capstone Online Help

Support

- Questions? Contact Technical Support
- Full Licensing Information
- Knowledge Base

Resources

- Video Tutorials
- Complete Physics Experiments
- PASCO Lab Experiment Library
- Send Us Your Feedback

Personal Information

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Job Role: Teacher
Primary Subject/Interest: Physics

School/Institution

Enter your U.S. Zip Code and we'll help identify your school or district.

Zip Code: 75205
School/District: Southern Methodist University
School/Institution Name: Southern Methodist University
Type: Select Option
Building/Room No. (Optional):
Department Name (Optional):
Street Address: 6425 BOAZ ST
City: DALLAS
State/Province: Texas
Zip/Postcode: 75205-1902
Country: United States

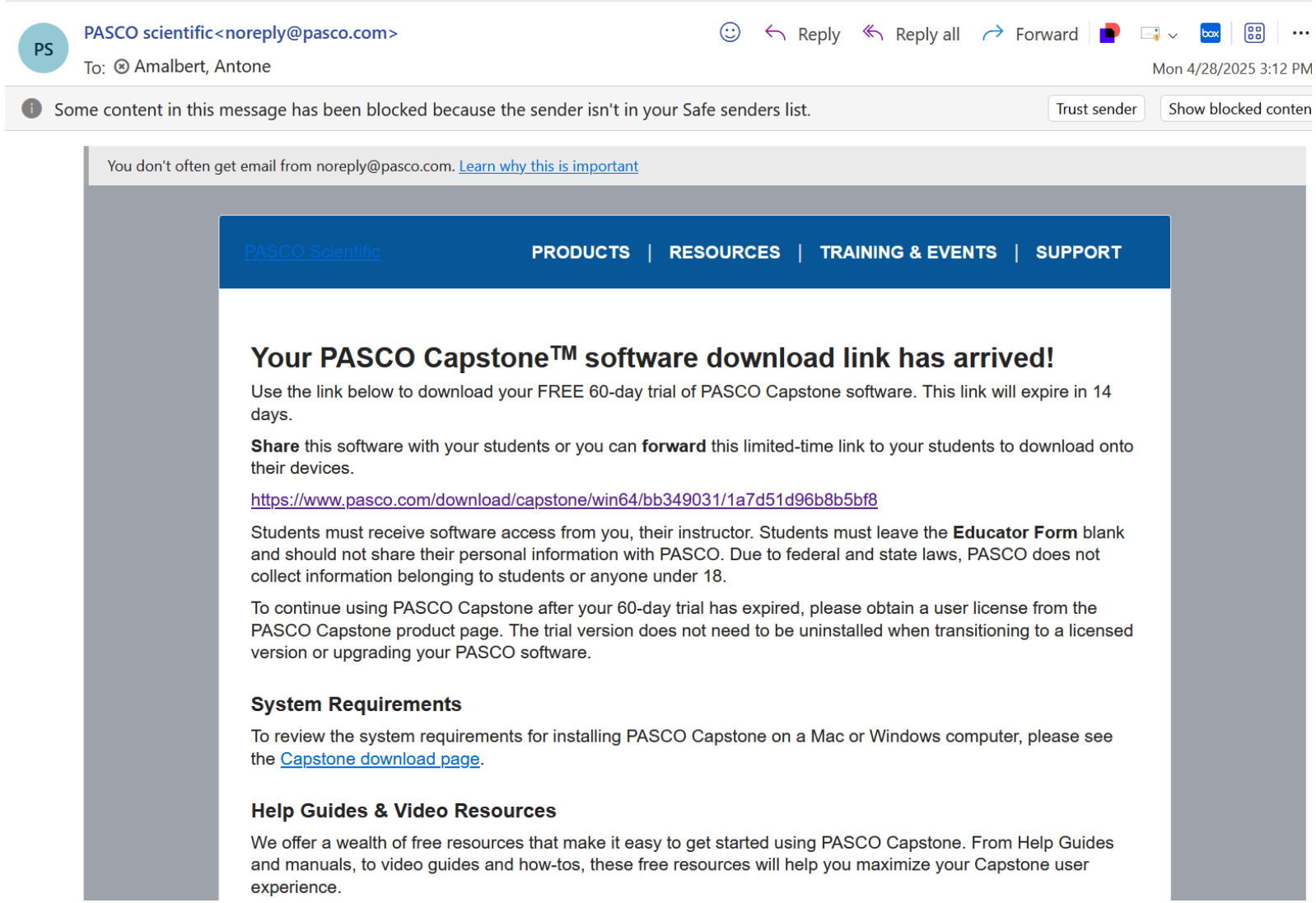
By clicking submit, you agree to our Terms and Conditions and consent to receiving email communications from PASCO. You may opt-out from our mailing list at any time by clicking the "unsubscribe" link, located at the bottom of each email.

I'm not a robot
reCAPTCHA

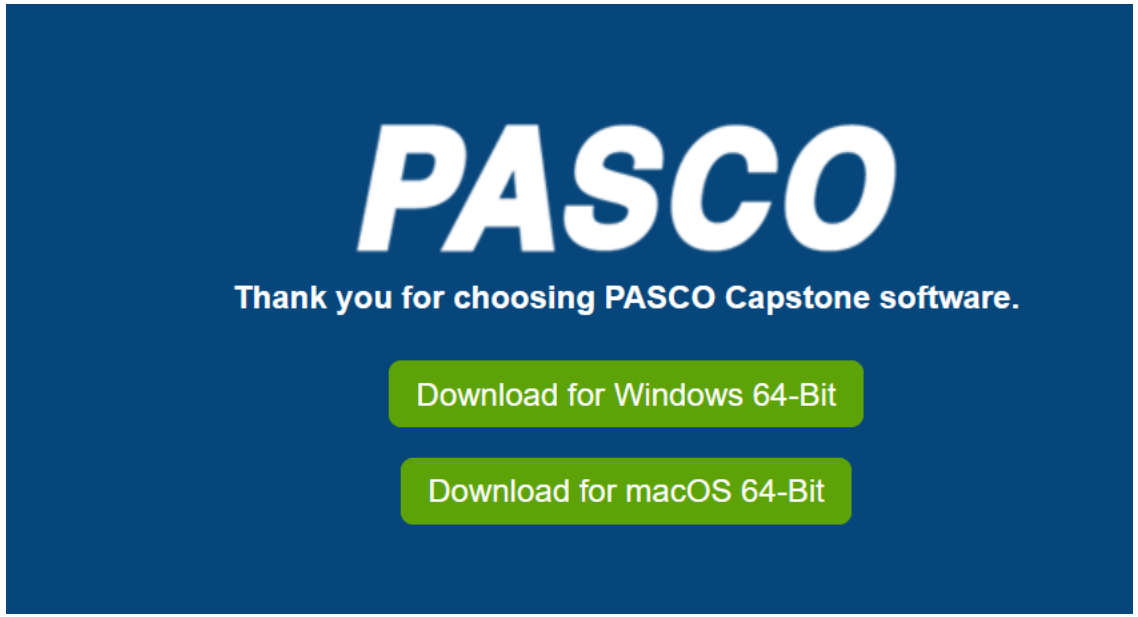
Step 1: Download Capstone

- Go to this link: https://www.pasco.com/products/software/capstone#downloads-panel
- Download version for your device
- Enter personal & school information

Your Capstone Software Download

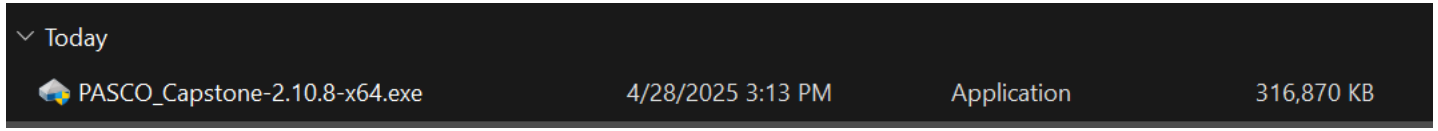


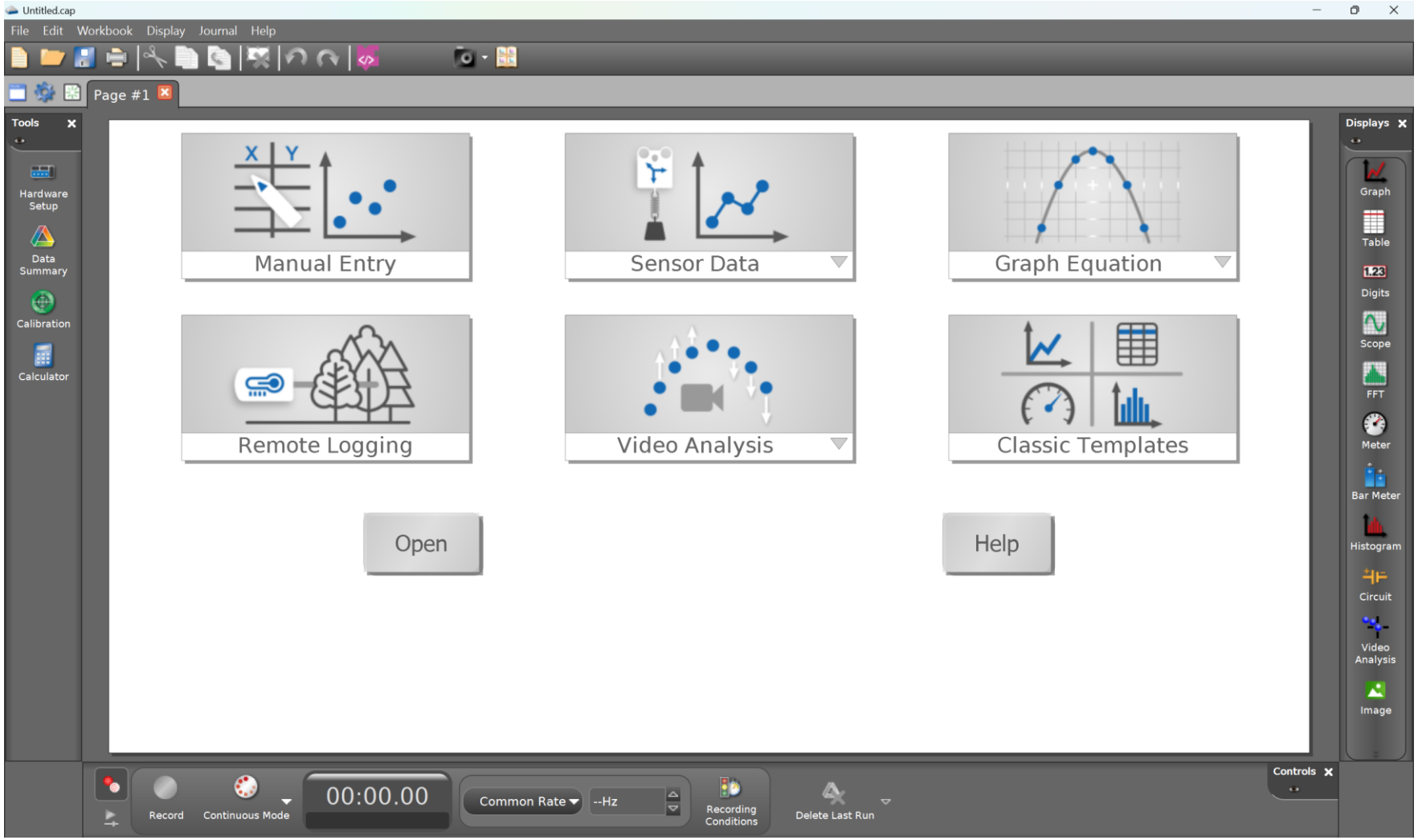
- Download link should be sent to email
- Click on first link in the email



Once you click on link, a simple blue page with two links will appear. Again, click on the one that corresponds to your device.

The executable installation file will download to your desired location and can be ran to fully install Capstone.

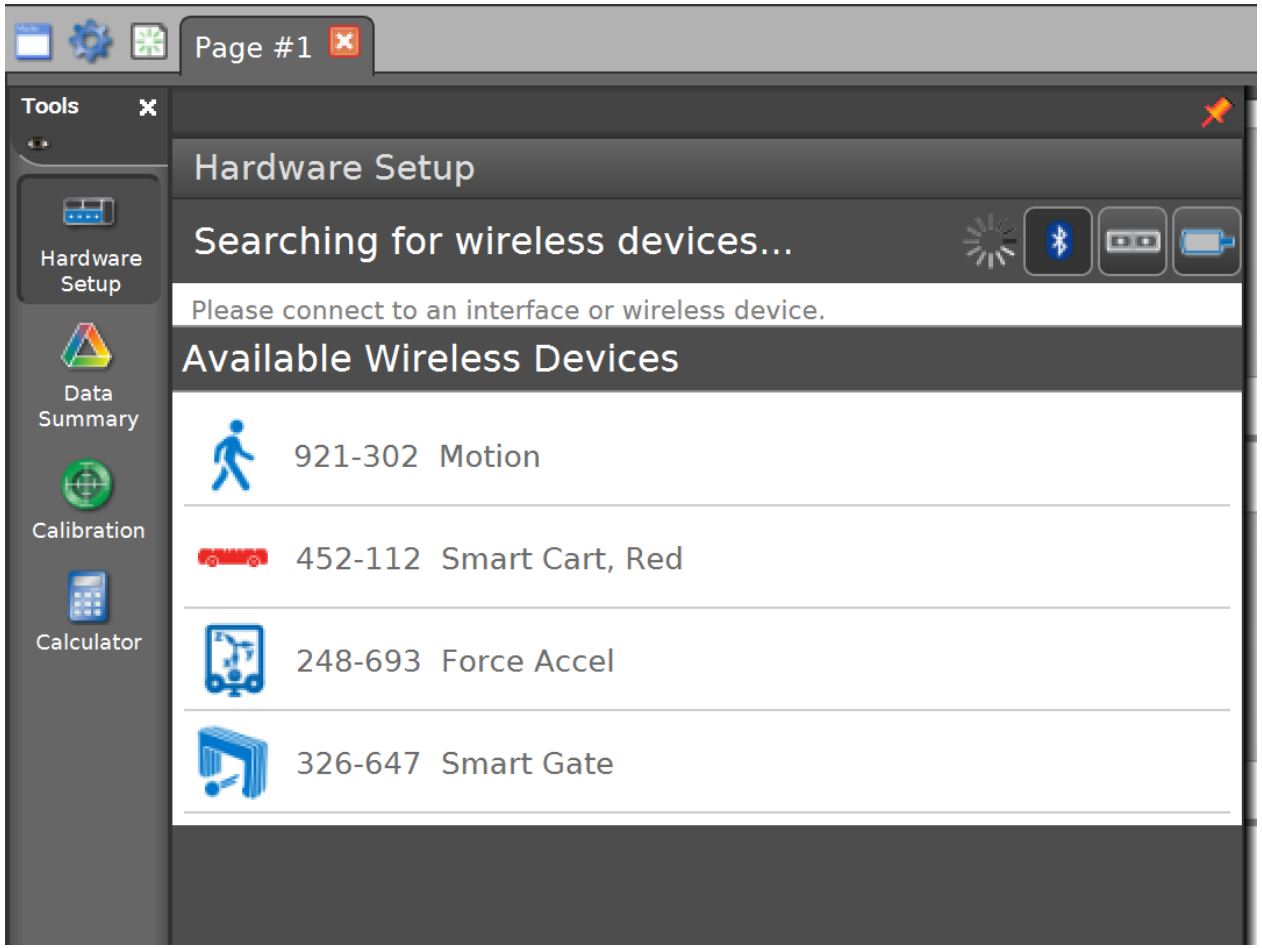




Step 2: Running Capstone

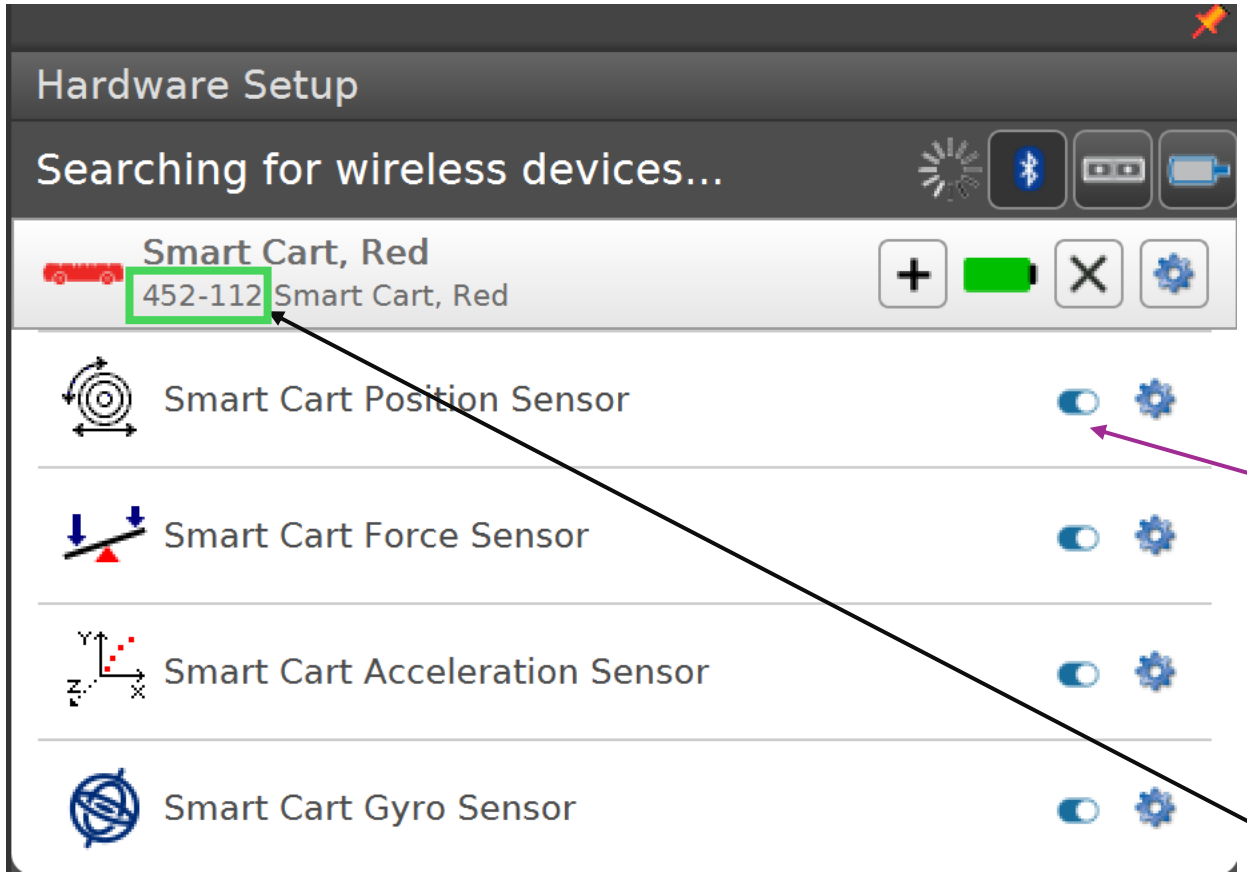
- After capstone is installed, you should be able to open the application to the home screen from taskbar, desktop shortcut, or installed folder
- You will need to put in the product key:

1dmc2-tf1mh-merk0-oqgdp-p0s0o-pce1h



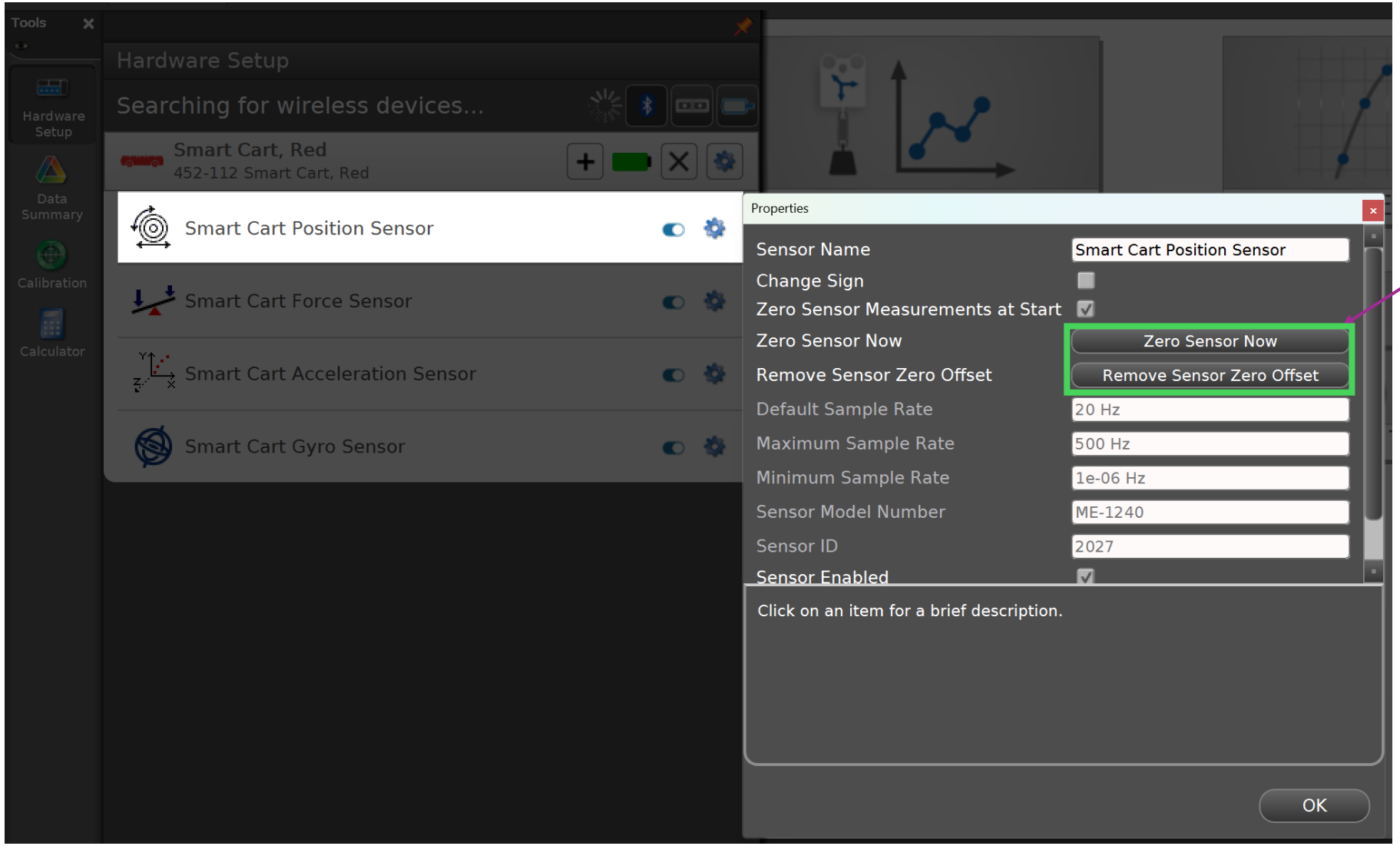
Step 3: Connecting Devices

- Make sure laptop can use Bluetooth and has it turned on
- The lab uses 4 type of sensors: motion detection, position, velocity and acceleration of the SMART Cart, force and acceleration, and speed/velocity through the SMART Gate

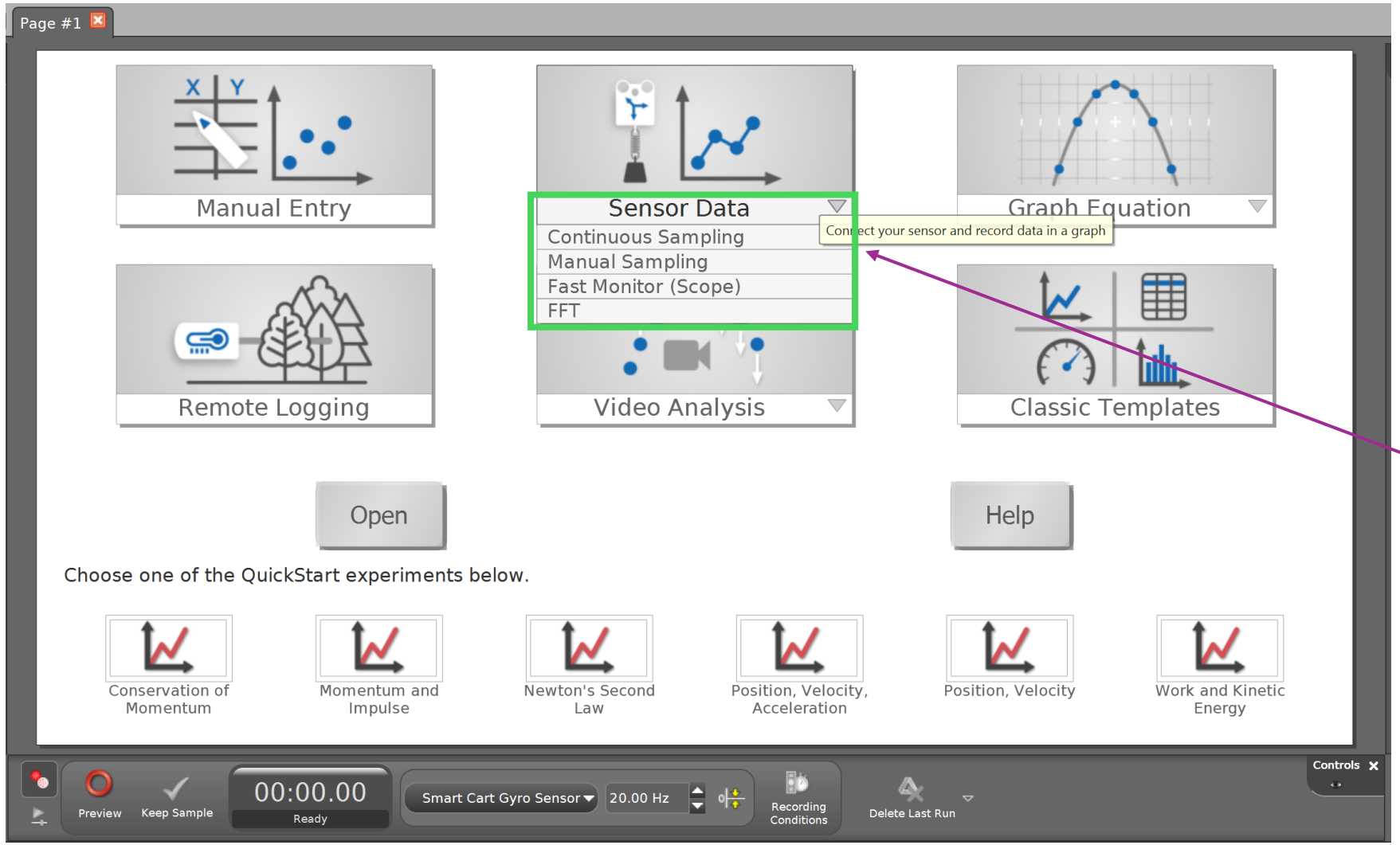


Make sure device you are using is showing up with the correct ID

Make sure the correct sensor needed for lab is turned on

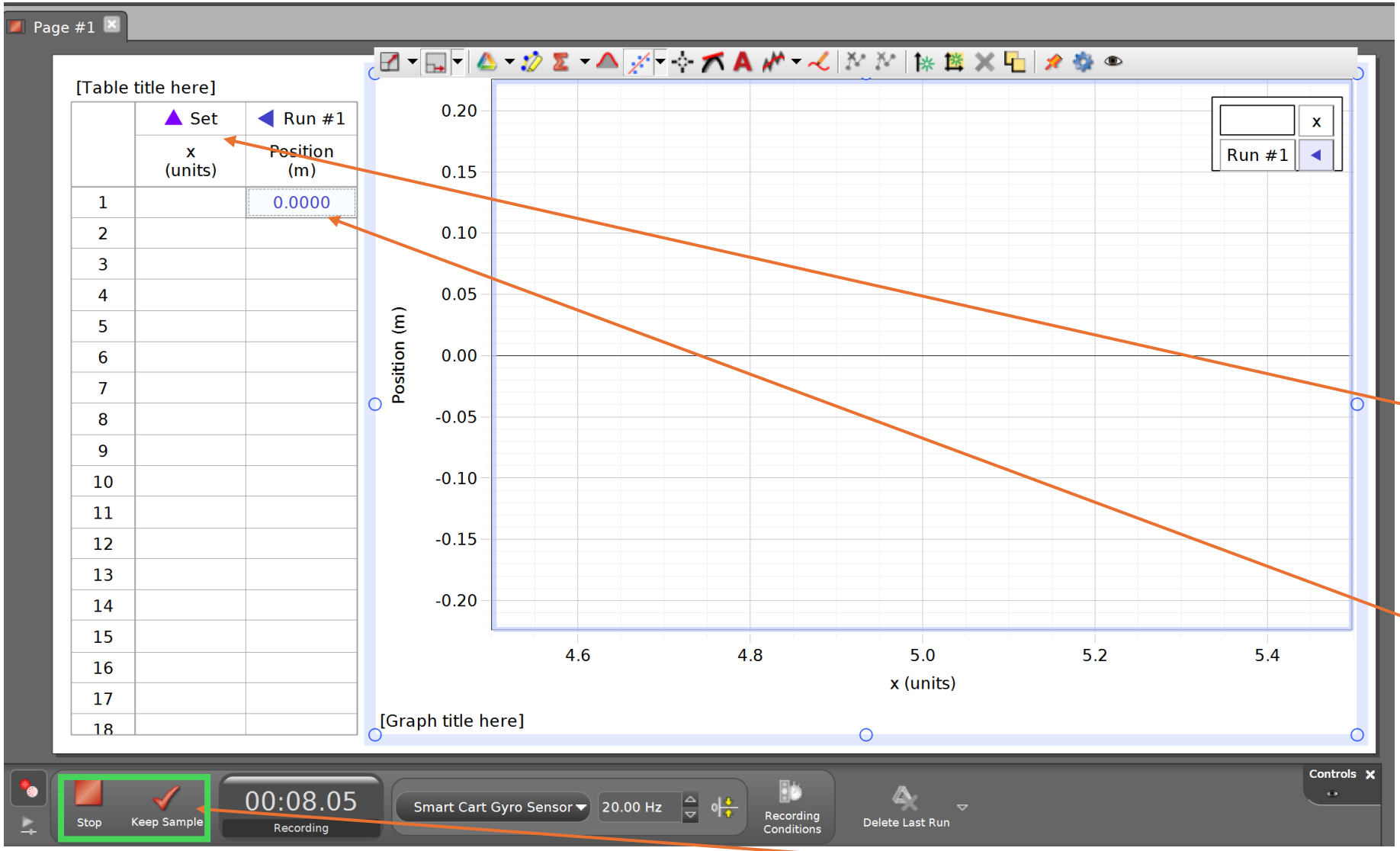


- Once sensor is turned on, make sure that it is appropriately zeroed so there is no systematic error in measurements.
- If needed, you change sign as well from positive to negative depending on device orientation



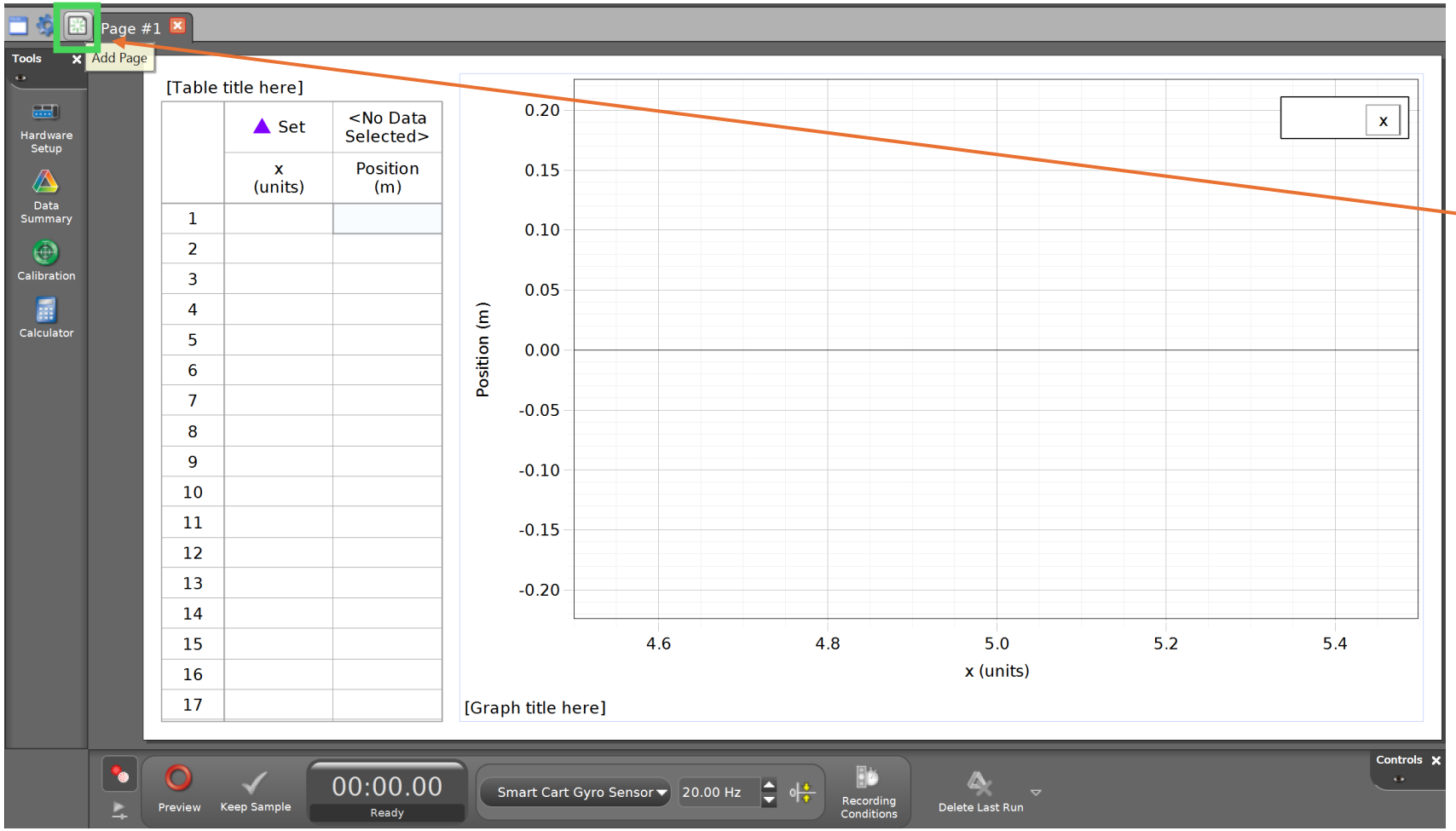
Step 4. Collecting Data in Capstone

- To collect data using a Capstone Device, click the drop-down menu under ‘Sensor Data’
- Continuous Sampling is good for taking measurements over time
- Manual Sampling is useful for taking measurements at specific steps (angles, heights, etc.)

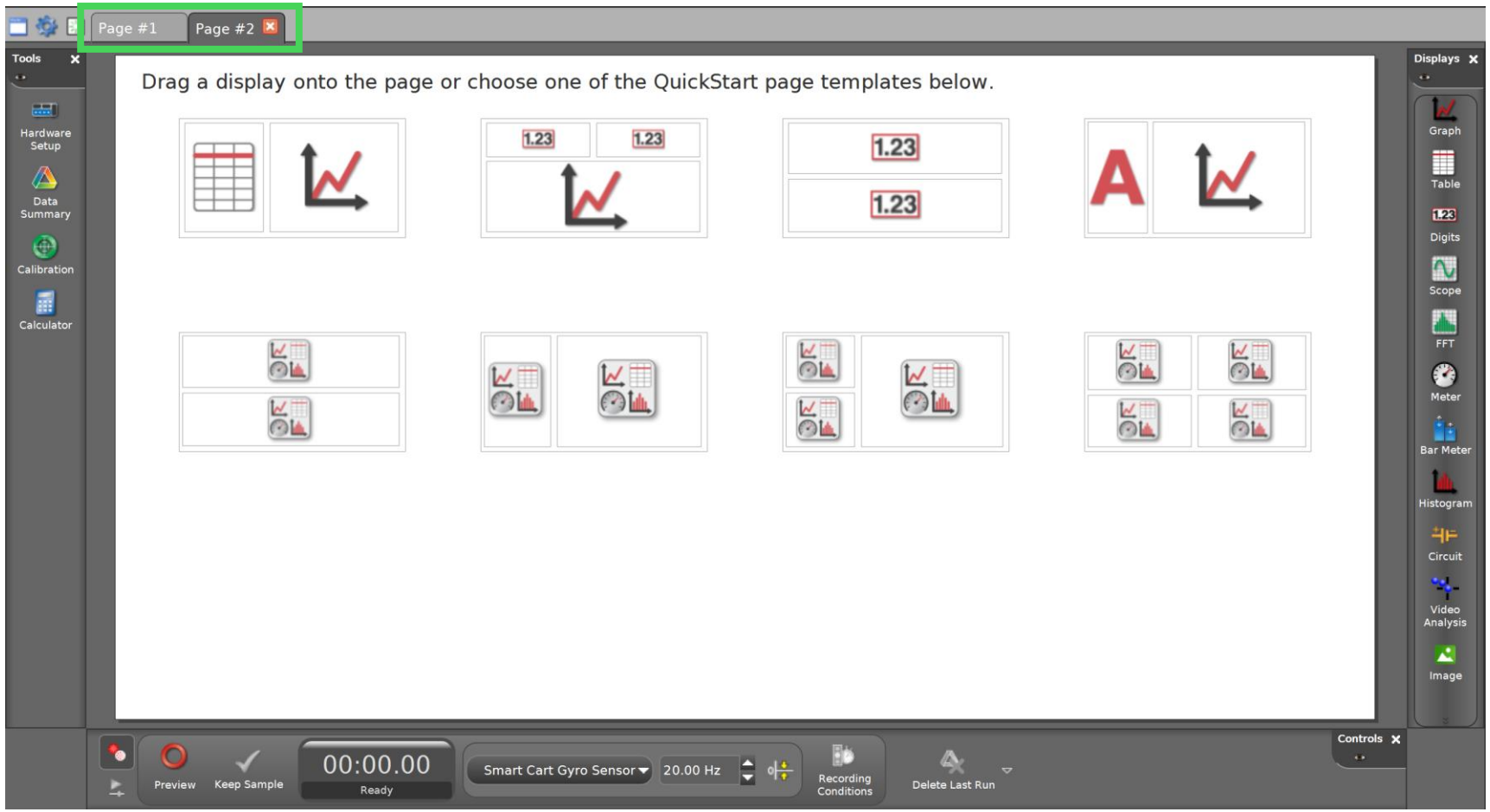


Example 1: Manual Sampling

- Clicking on manual sampling displays a table and a graph.
- First column is a generic parameter that can be changed to entered user-data and set at specific angles, heights, etc.
- Second column shows data from the sensor.
- To record data manually, click ‘Keep Sample’ to get current reading from sensor as you go to the next step in the lab

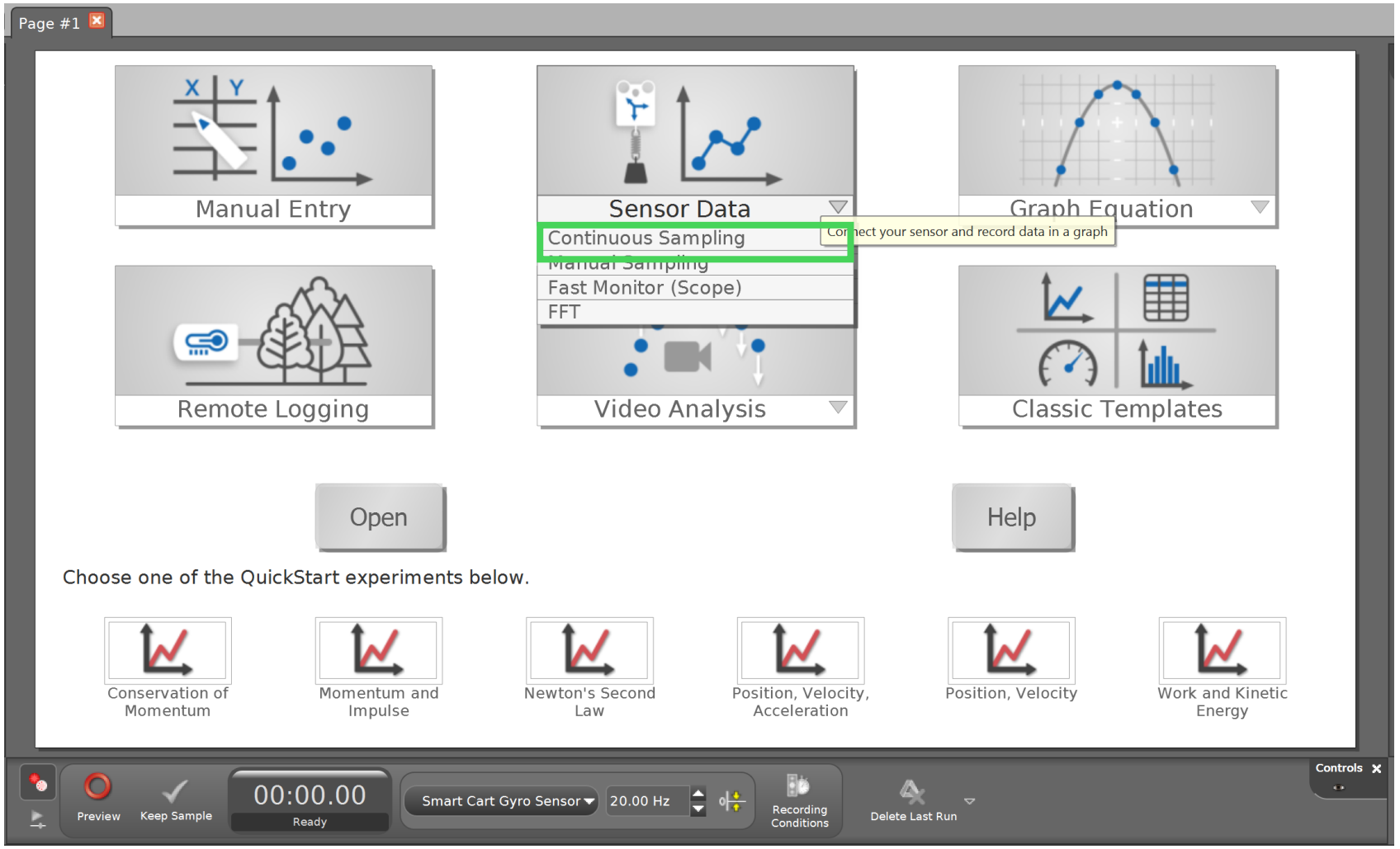


To return to the homepage, click on the '**Add Page**' button above the display area



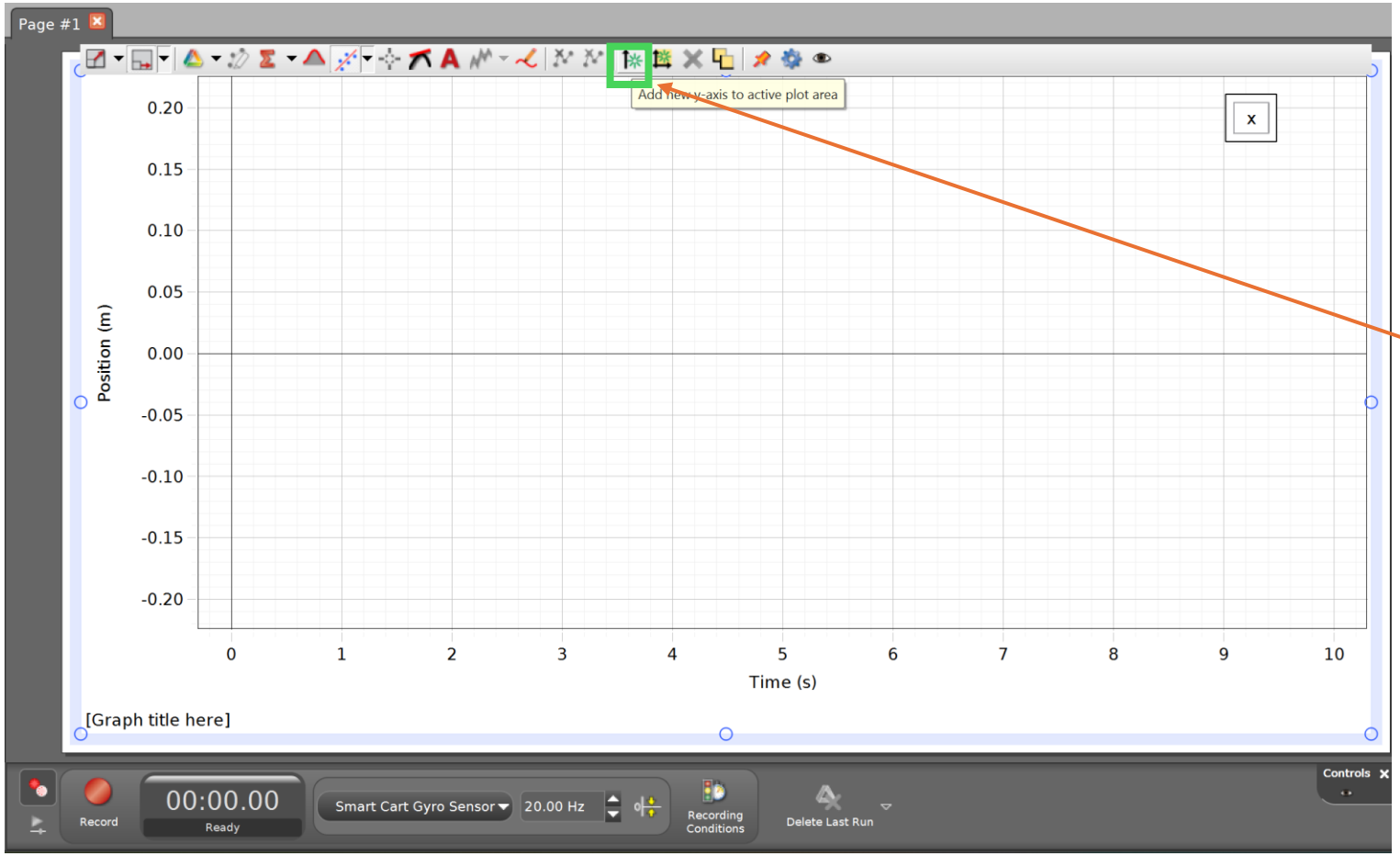
A secondary page will be displayed, giving options for different types of displays.

To return to the homepage, close Page #1 so that Page #2 turns into the homepage menu

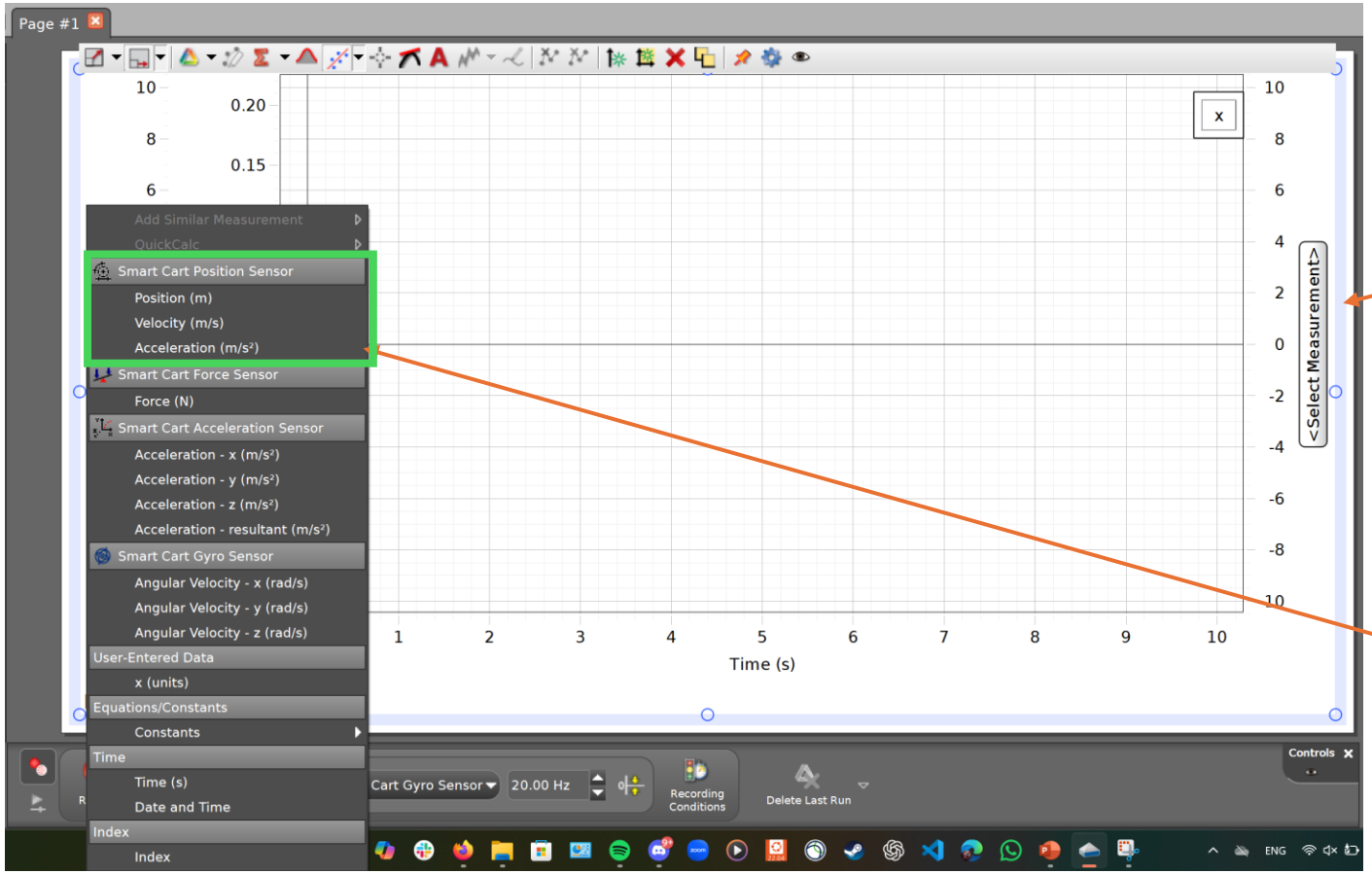


Example 2: Continuous Sampling

Click on continuous sampling to measure data at a set rate while recording.

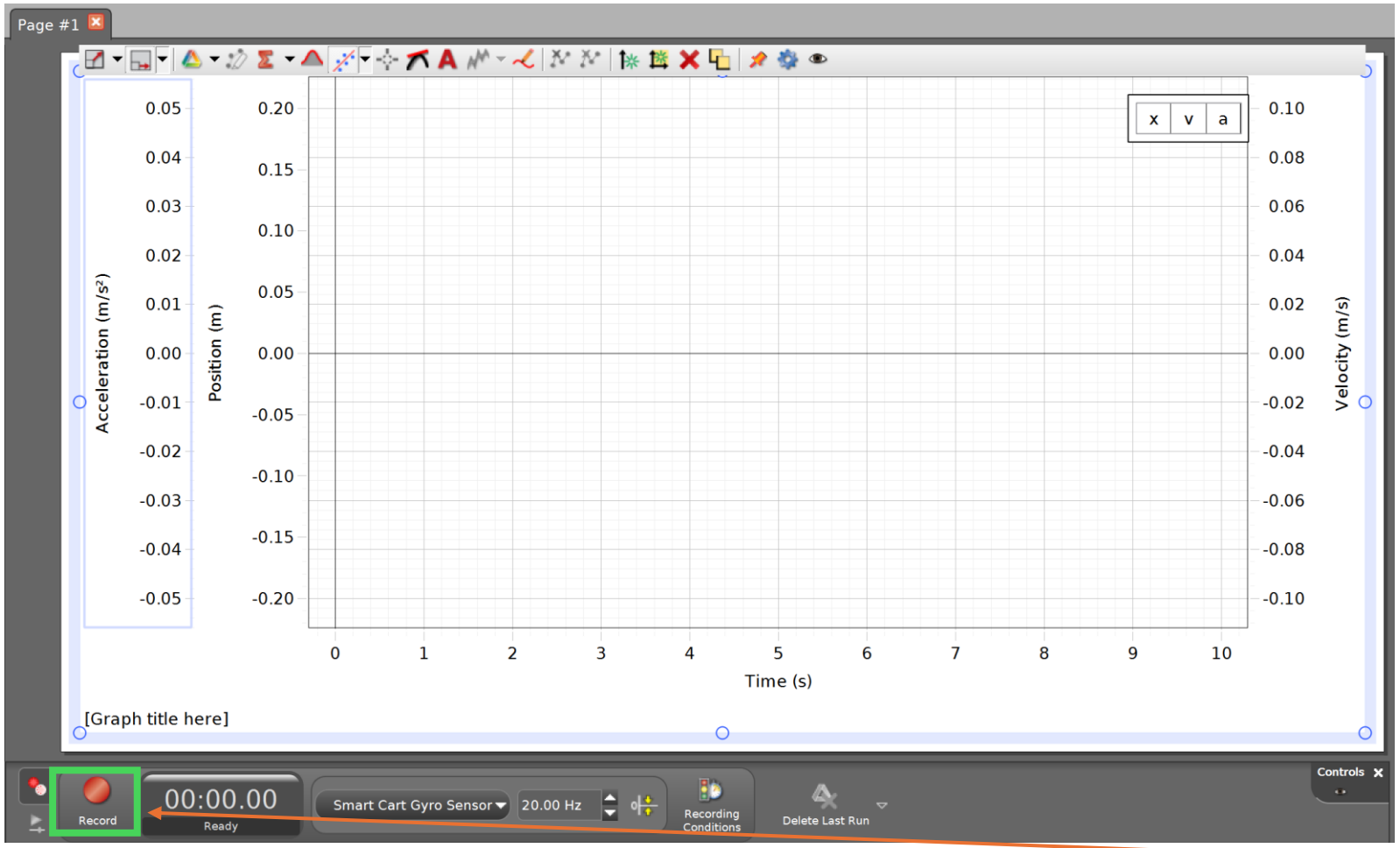


A graph automatically set to measure position vs time is created. To create multiple y-axes to measure multiple properties over time, click the button showing an up-arrow next to a wheel



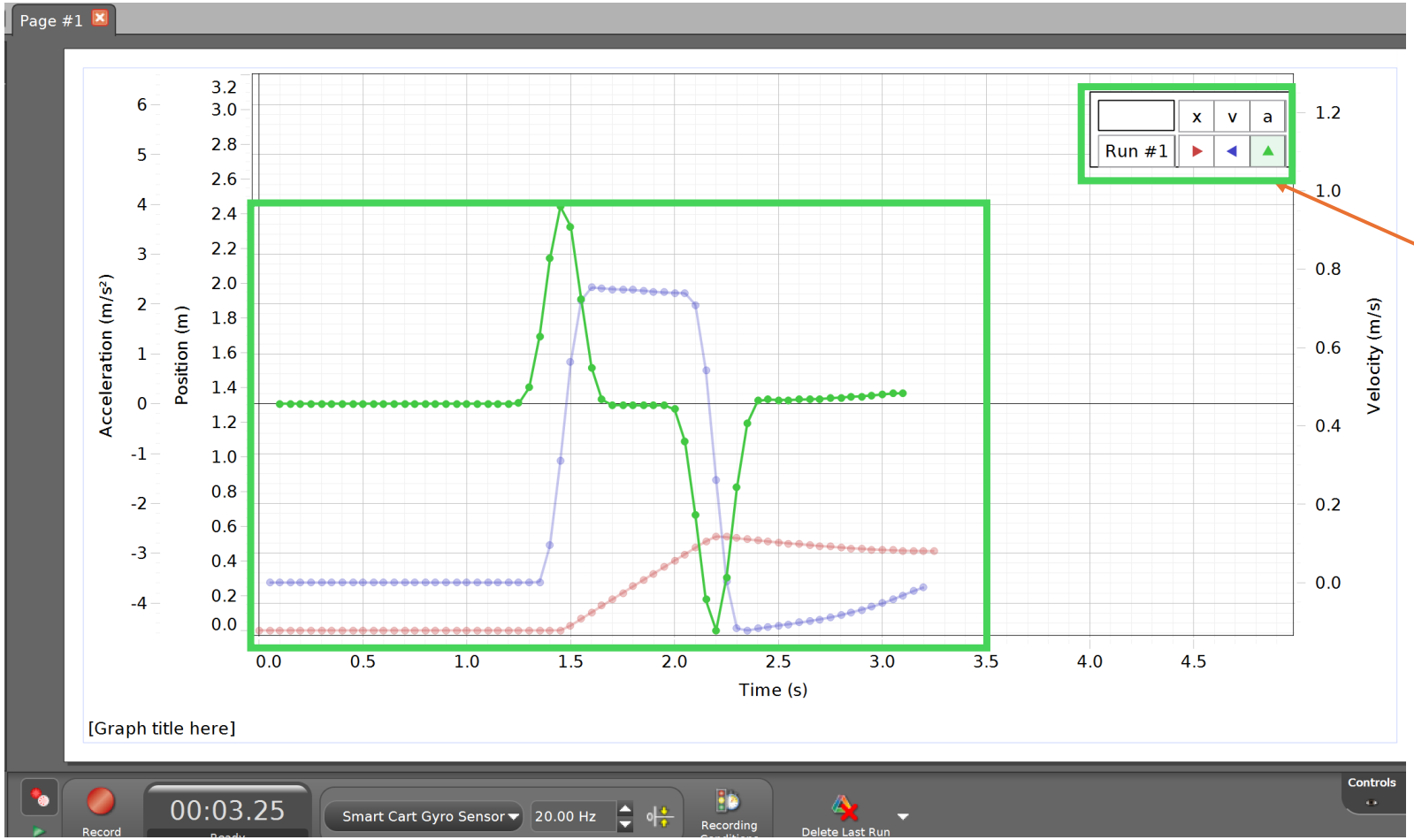
Once the new axis is added, it can be clicked on to choose what data we want to measure. Let's make the plot show 3 axes and make each of them measure one of the following using the **Smart Cart Position Sensor**:

- Position
- Velocity
- Acceleration



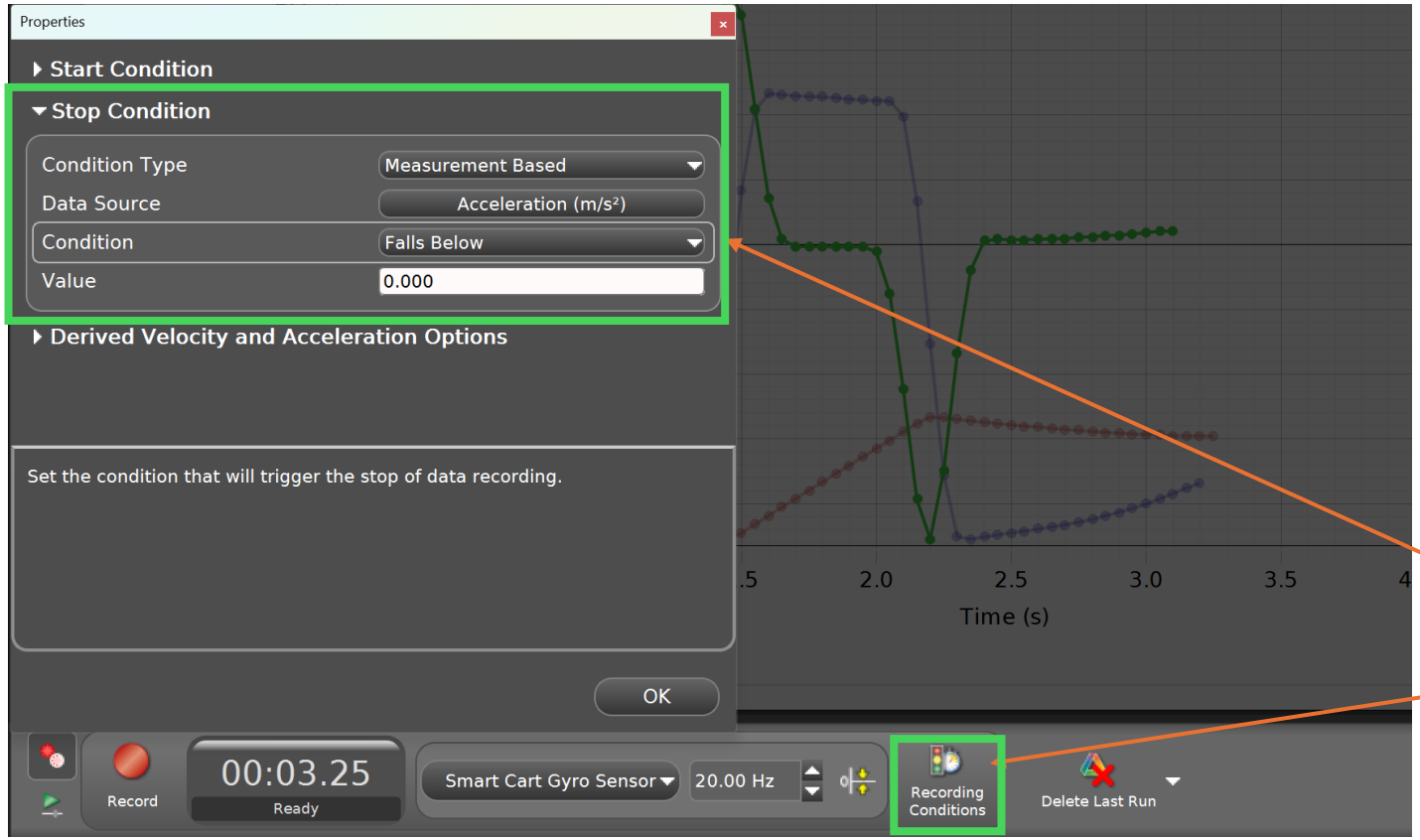
Place the cart on the track. You can press the black button to propel it from one end of the track to the other, accelerating it for a moment until it stops moving.

When you are ready to measure using your Smart Cart, you can press the Record button.

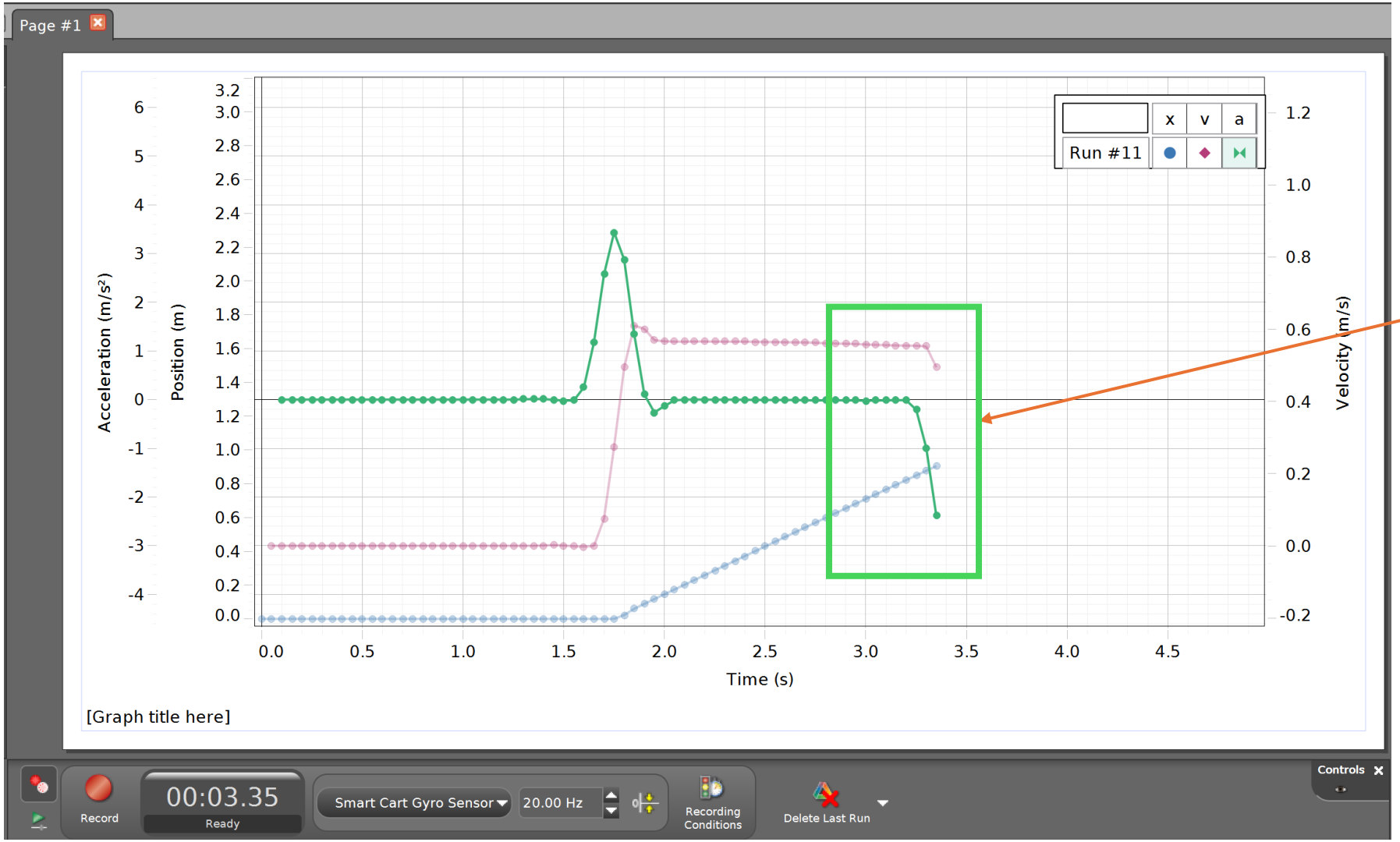


After recording the movement of your Smart Cart, stop it once recording once it reaches the end of the track. You should see 3 different data appear according to the 3 measurements. They are color coded in the legend in the above right.

If the cart reaches the end of the track, it may hit the other end and move backwards. That will also be reflected in the data.

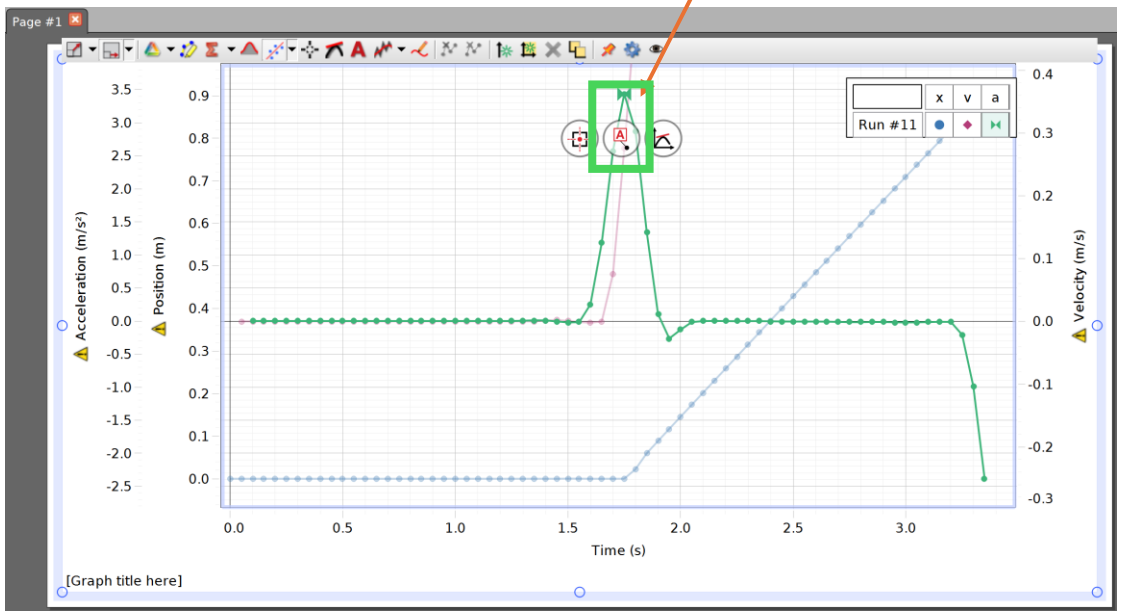


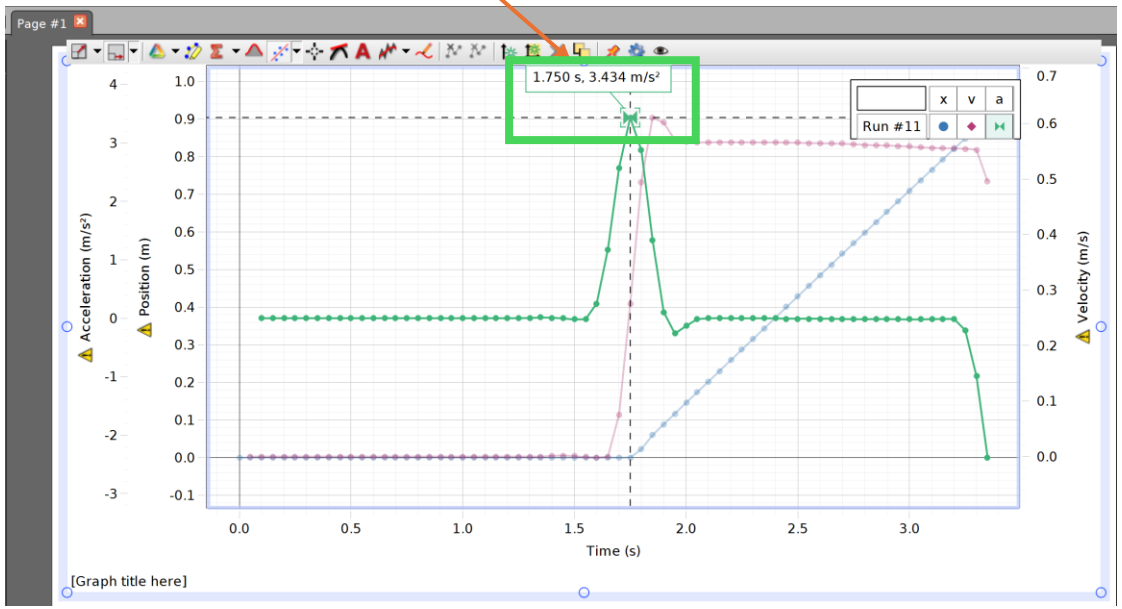
To have capstone stop recording automatically when the cart reaches the other end of the track, we can set Recording conditions. When the cart reaches the other end, it should experience 0 (m/s) velocity and some negative acceleration (because it is causing the cart to move opposite its initial movement), so we can set it to stop recording when Acceleration falls below 0 (m/s^2).



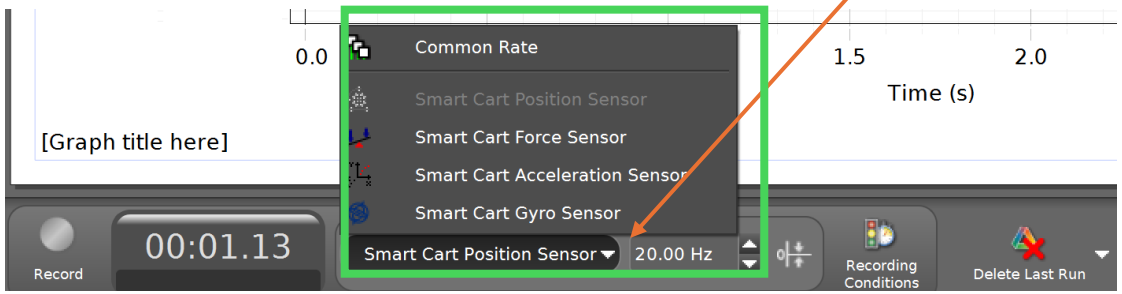
Now the cart automatically stops recording once it hits the other end of the track.

To view the specific coordinates of a point of interest, click on the data point and then click on the middle circle that shows an ‘A’ in a square box.

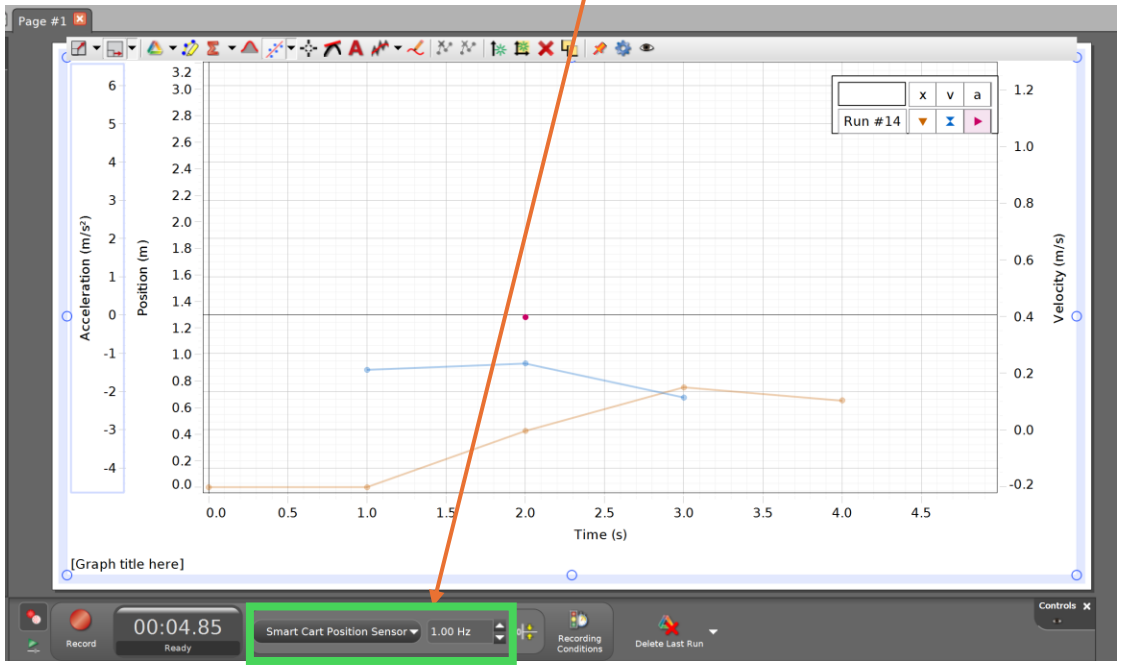


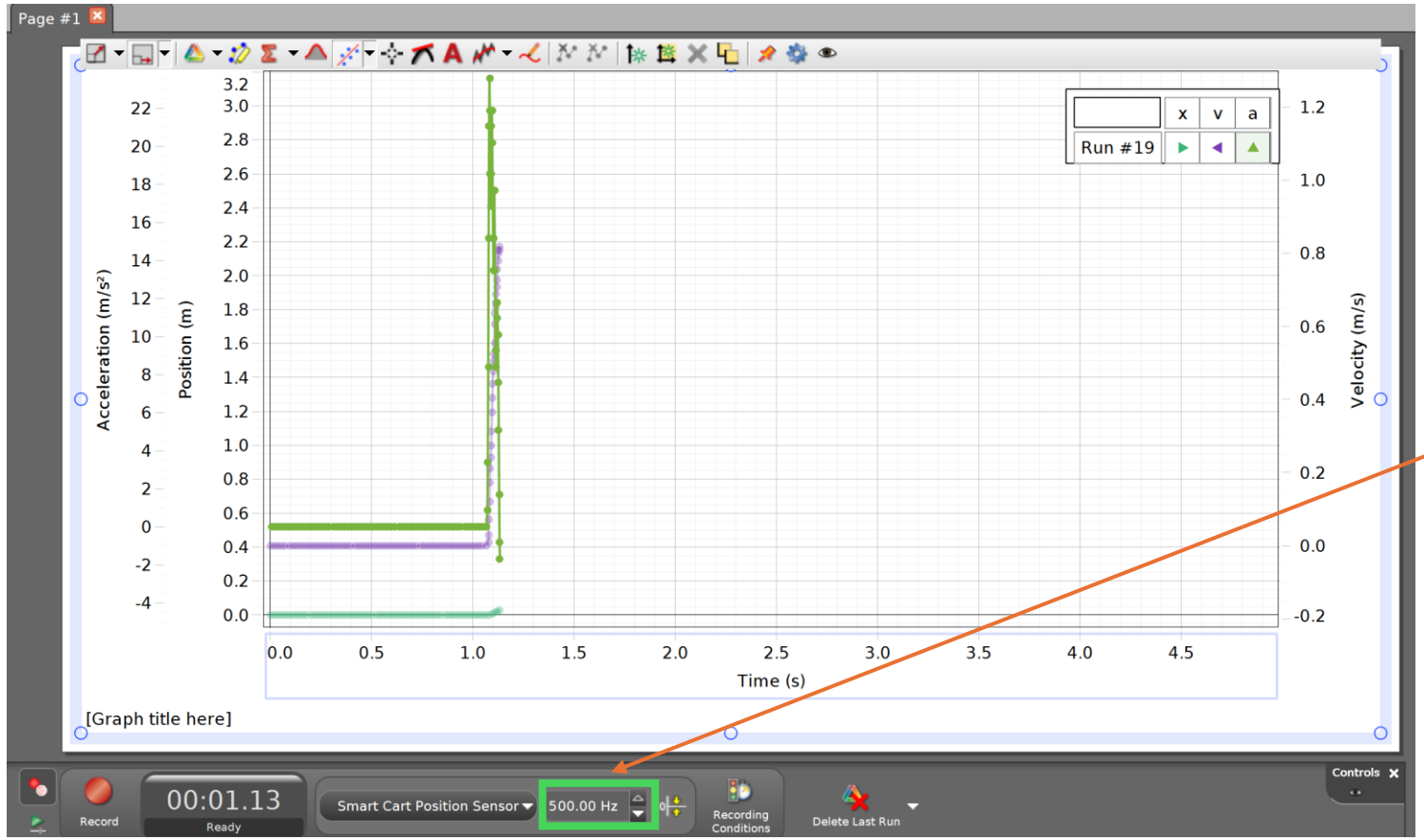


In continuous sampling, you can change the sampling rate of the measuring. This changes how many times per second data is captured and recorded. By default, data is sampled 20 times per second (20.00 Hz). Make sure the correct sensor is selected and then change the sampling rate to 1.0 Hz to capture data only once per second.



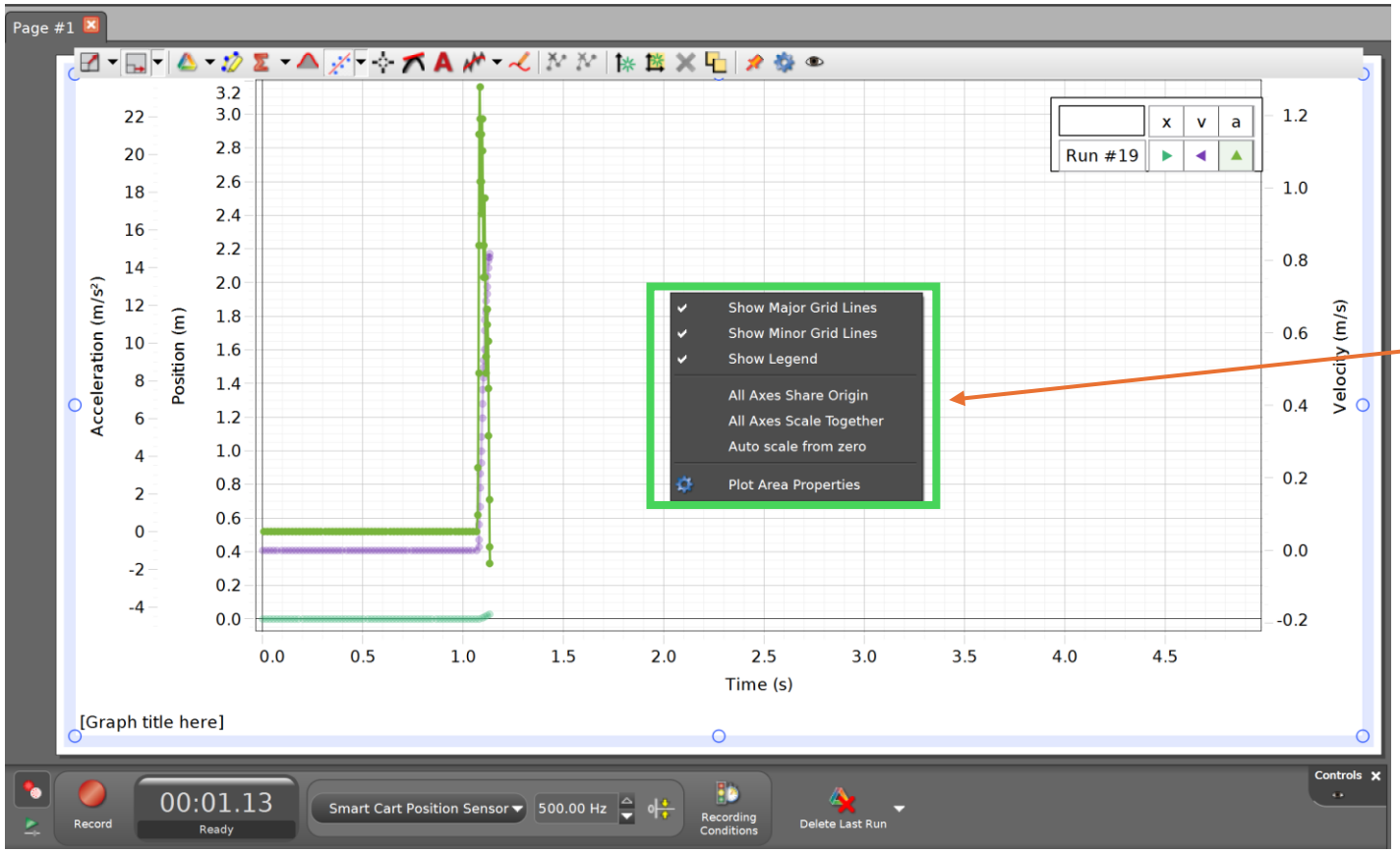
Record the same movement of the cart. This will lead to a graph like this, which is difficult to understand from the graph alone.



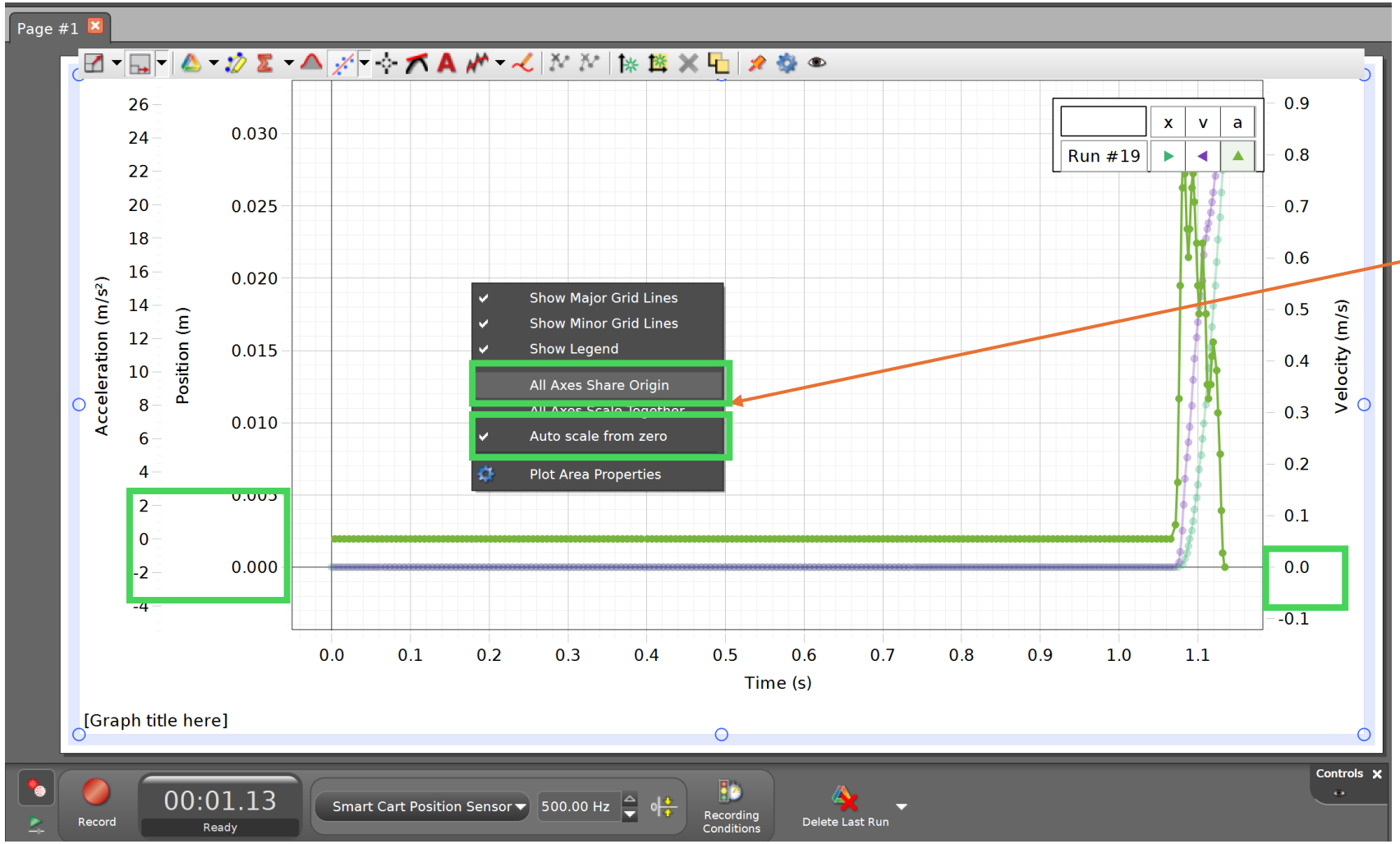


Try changing the sampling rate to measure 500 times per second (500 Hz).

This will initially show many points of data that end abruptly as soon as recording starts.

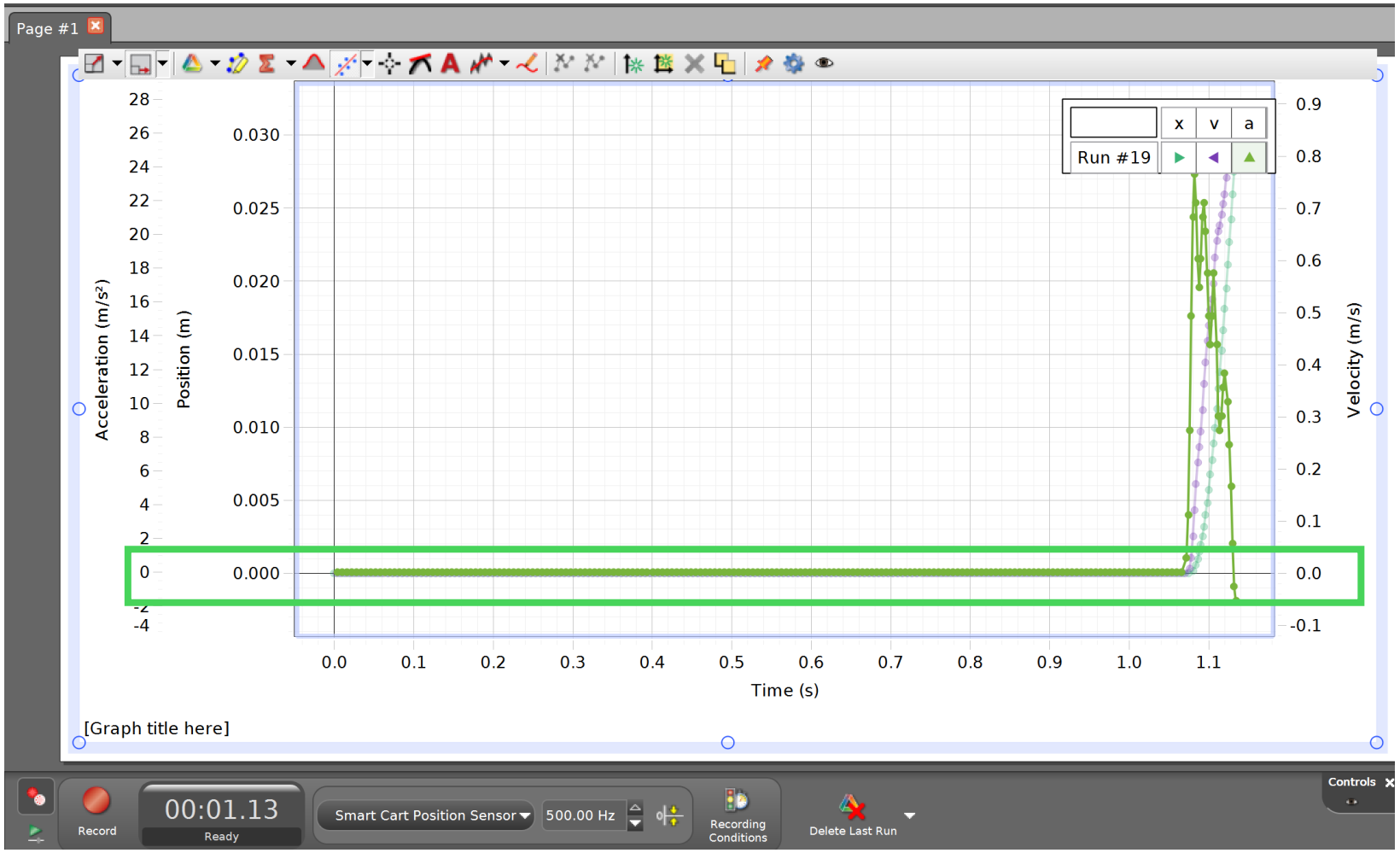


To see this data better, and in other scenarios when it is useful to zoom back in to see the all the data in a reasonable window, right click somewhere in the graph to see the options for scaling it.

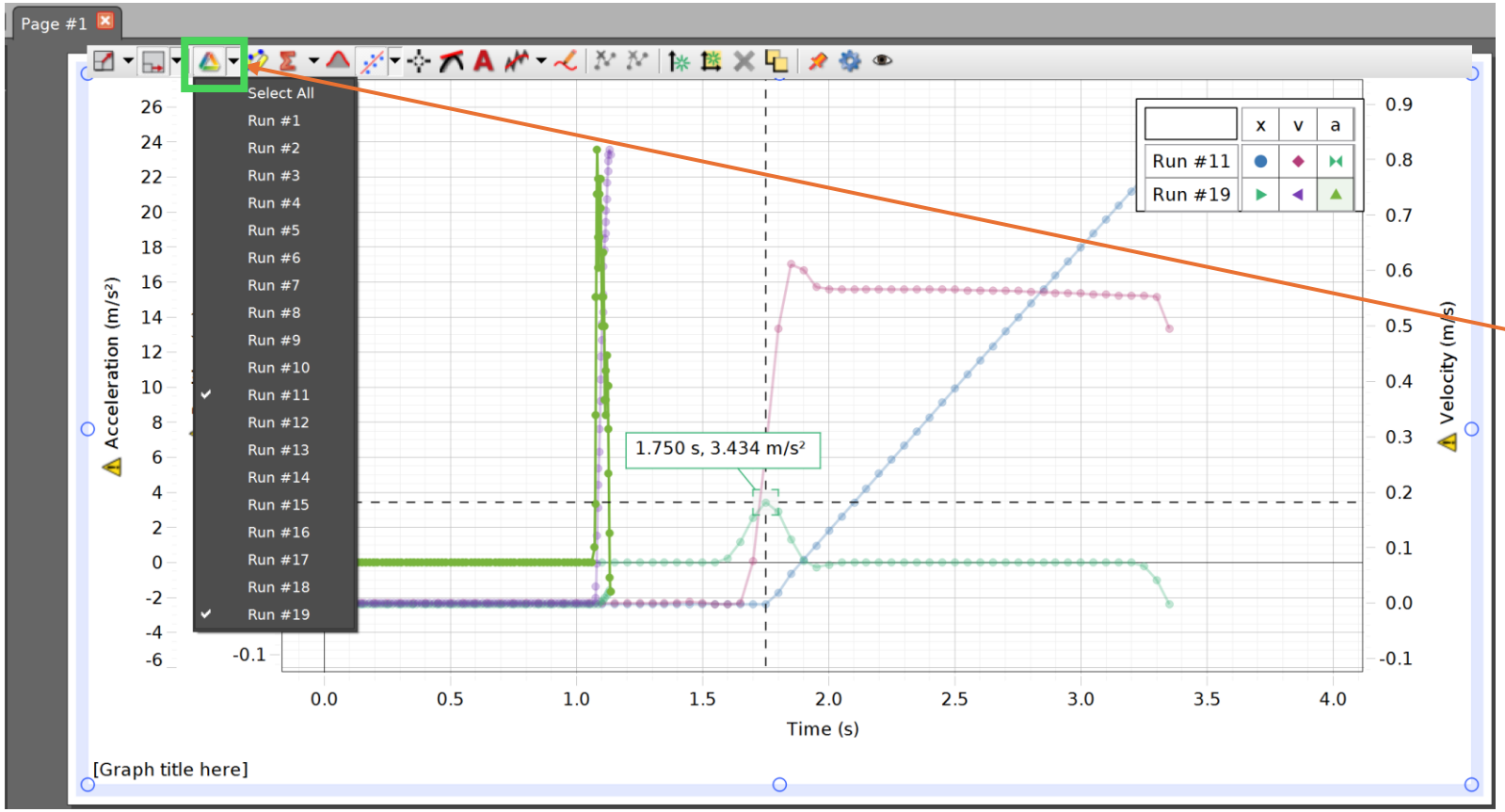


Click ‘Auto scale from zero’ so that all the data scales normally and can all fit on the same window.

Then to make all axes have the same origin, click ‘All Axes share origin’.



Now the plot has been scaled reasonably, and all axes have the same origin.



To go back and look at previous ‘Runs’ of data, click the multicolored triangle in the top left, and select which one you would like to be displayed.