

Mark-10 Force Gauge Training Manual

Setting up the machine

Contact Tom or Cole to gain access to the Mark-10 Force Gauge and attachments.

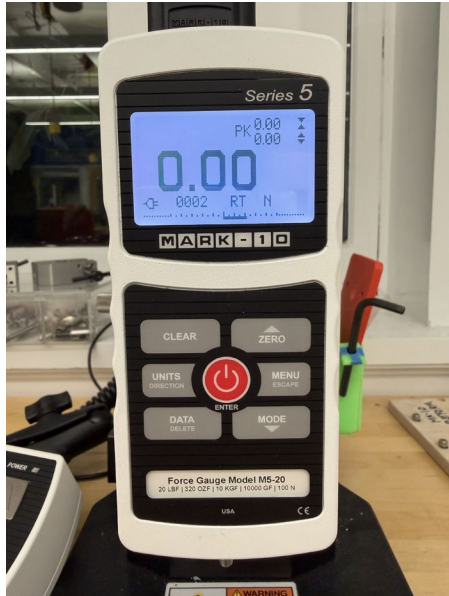
Mount the gauge using the screws (these can be found in the attachments box or on the side of the machine). Plug in the RS-232 cable into the top of the gauge. Power on the machine using the switch on the back. The gauge and control panel should start up.



You can use the buttons on the right of the control panel to manually move the gauge up and down. The speed can be changed using the menu. The center button or Emergency stop will stop the gauge from moving. Through the settings menu, you can change the minimum and maximum displacements, which will change the limits of movement. These can also be set manually using the screws on the side of the test stand.



The force gauge will display the tension or compression exerted on the attachment. You can change the settings on the gauge to change the units and the display mode (real time, peak tension, or peak compression). Alternatively, the Mark-10 software can be used to zero out the gauge and edit its settings from the computer.



Adding Attachments

The Design Studio has several attachments to allow various types of objects and materials to be tested. For example, hooks and clamps can be attached to hold objects with and without holes. Place the attachments onto the machine using the thumb screws. If you need a more specialized mount for your material, the Design Studio staff is able to assist you in making a custom mount. An example of attaching flat disks to perform a uniform compression test over a flat silicone sheet is shown below.

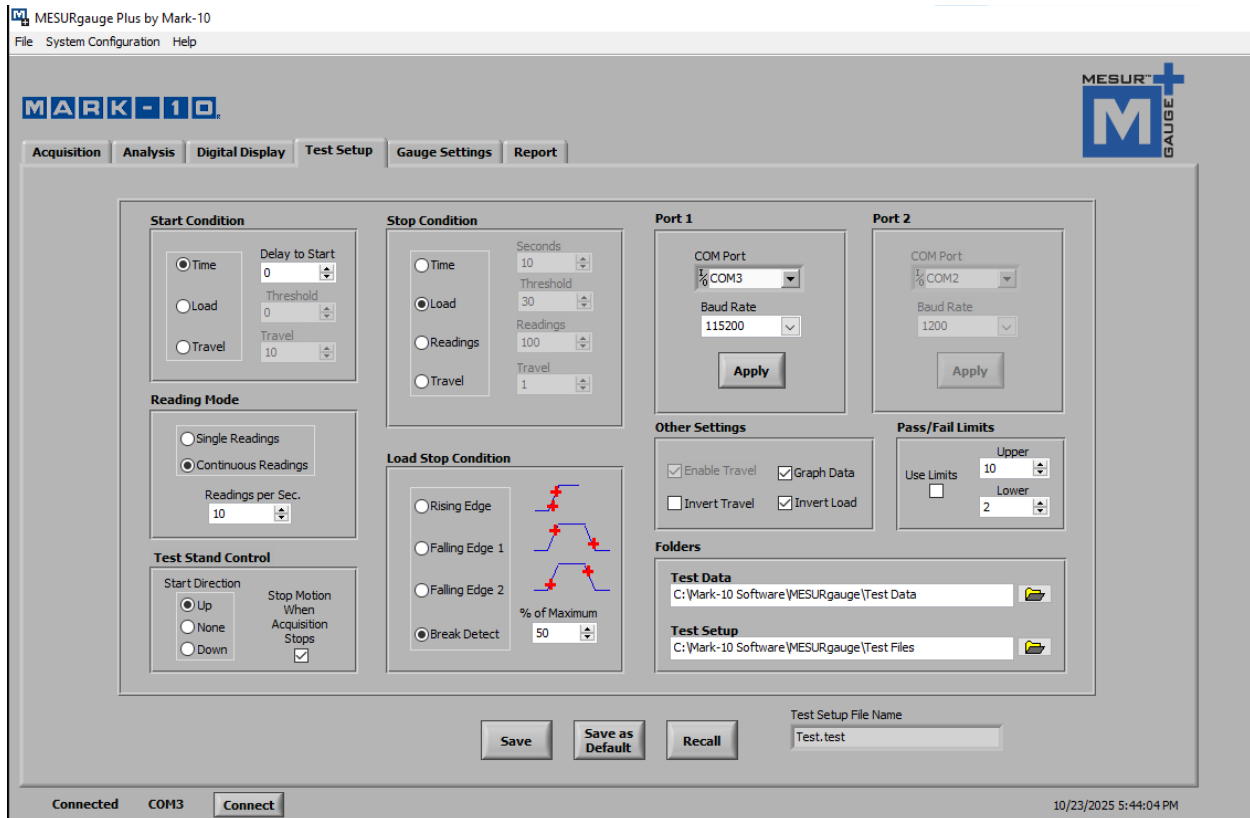


There is also a plexiglass frame that can be placed in front of the Mark-10. If there is a risk of your material shattering, use the frame (and wear safety glasses) to avoid any injuries.

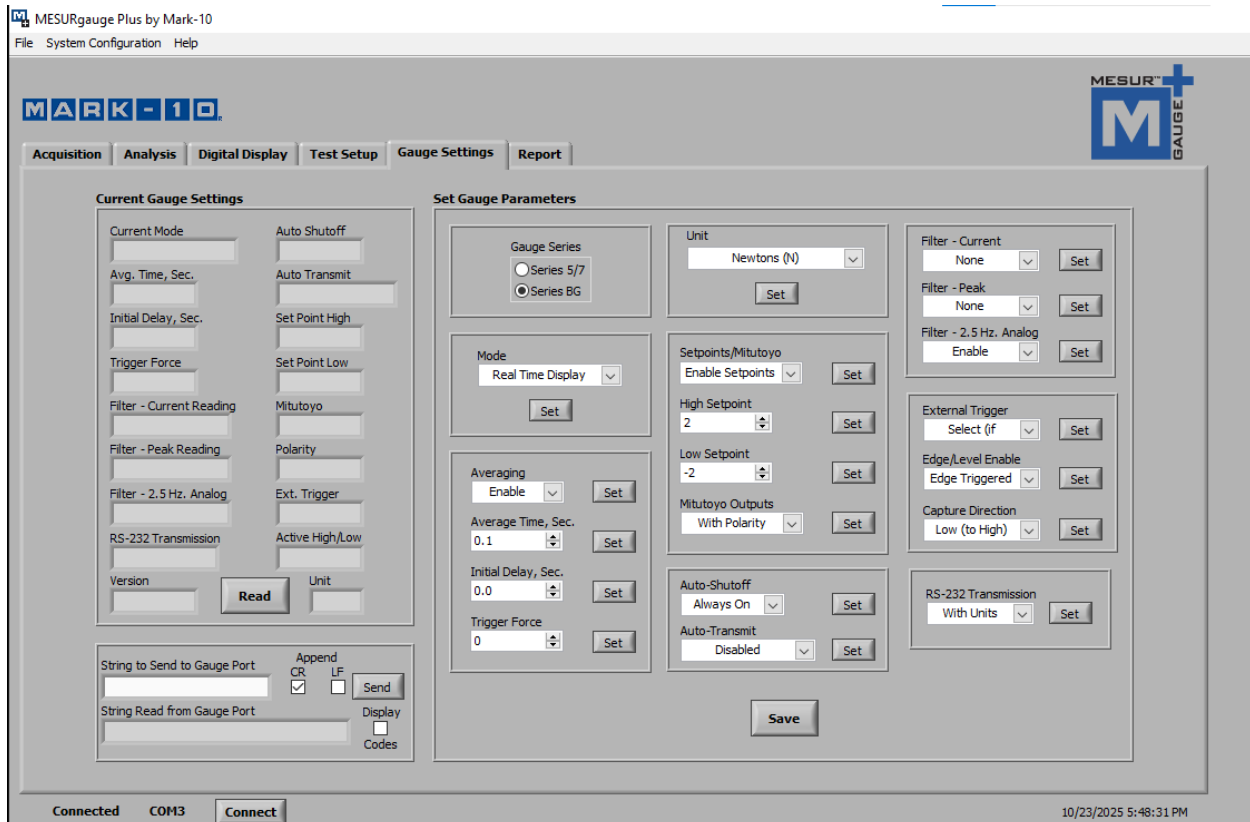
Operation

Open the Mark-10 software (MESUR gauge Plus) and go to the Test Setup tab to configure the test. You can edit the start condition, stop condition, and other parameters to suit your application.

For tensile tests, the stop condition is usually a load threshold, and the start direction of the force gauge should be up. Below is a sample tensile test setup:

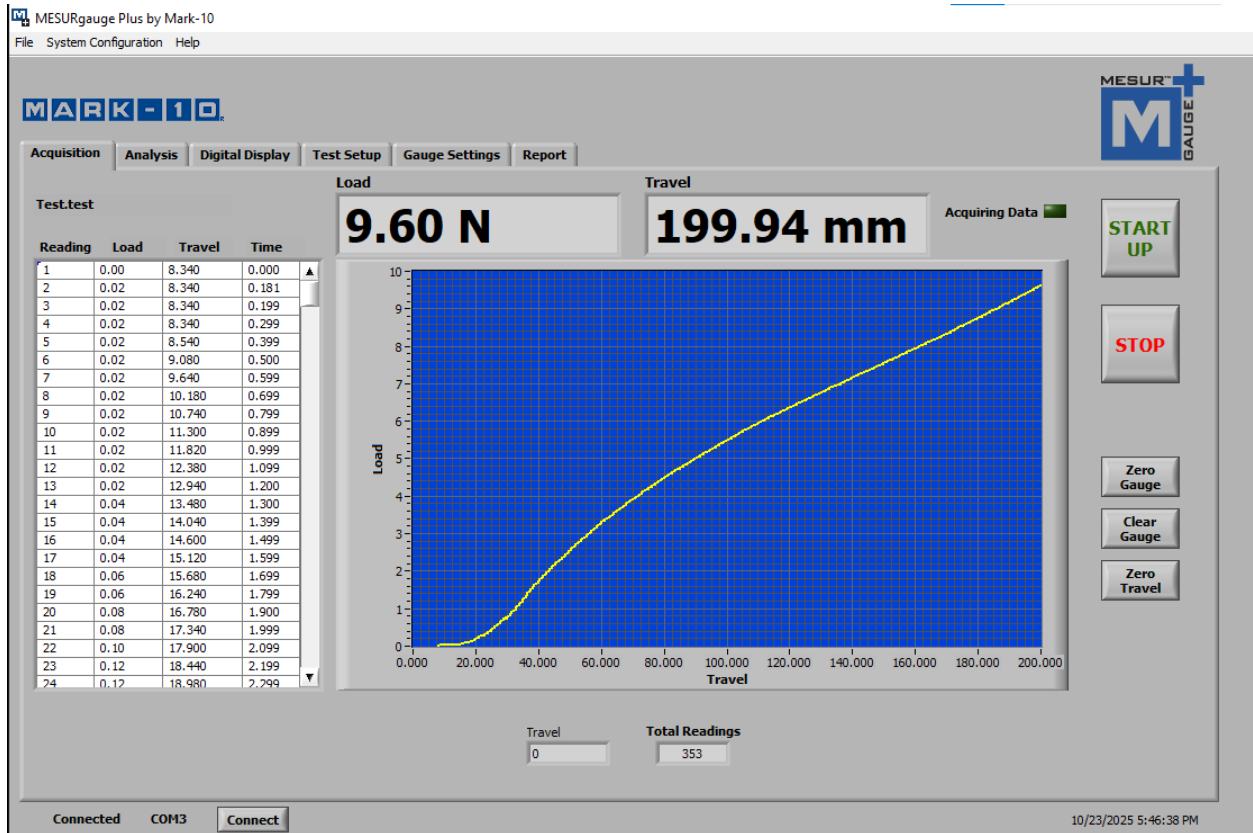


For compression tests, the start direction is usually down, and the stop condition is usually a specified time or travel distance. If needed, you can also change the settings of the force gauge in Gauge Settings tab. This page is one point where you can change the units of force.



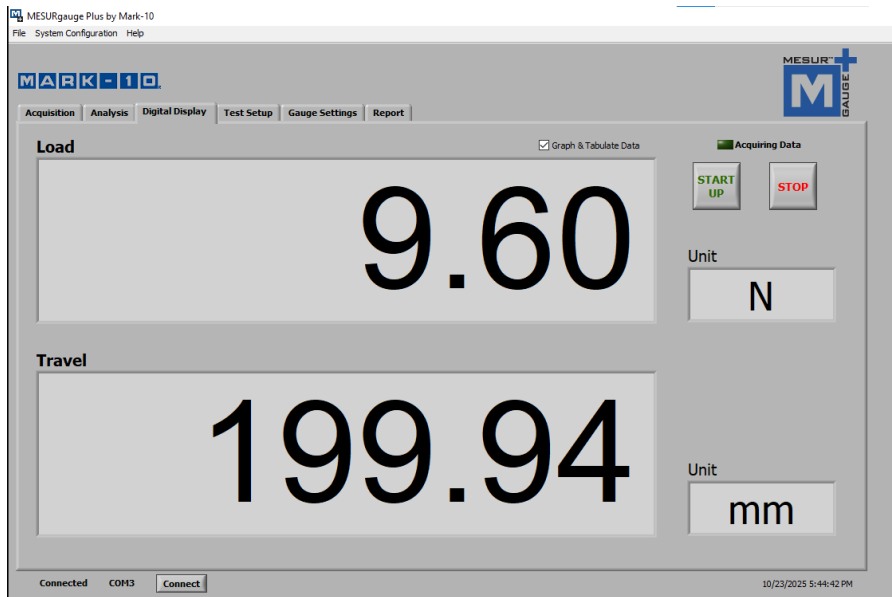
Once your test is configured, you can save the settings for future use. To find previously configured settings, use the Recall button.

When you're ready to start the test, navigate to the Acquisition tab and press the green START button. It'll usually indicate what direction the force gauge will move upon starting. On this page, you can also manually stop the test. Here is a screenshot of the Acquisition page after a tensile test with a balloon using the settings above:

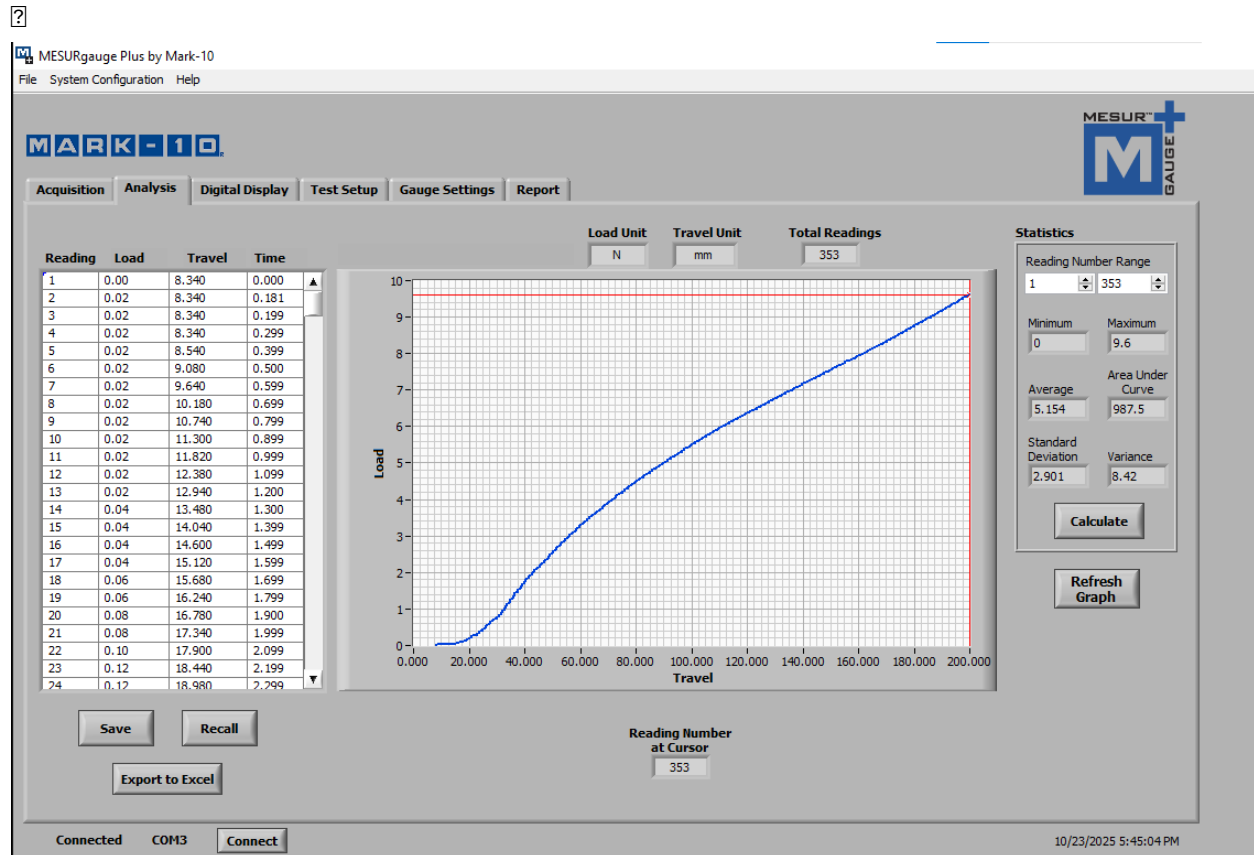


Analysis

The Digital Display tab allows you to view the load and travel values during and after the test.



If you checked off the graph data setting in Test Setup, you can view a graph of your data in the Analysis tab. This page provides basic statistics about the data. Here, you can save and export the tabular data. By right clicking the graph, you can save an image of the graph as well.



Additional Resources:

Software Guide: <https://mark-10.com/downloads/product-downloads/manualMESURgauge.pdf>

Test Stand Guide: <https://mark-10.com/downloads/product-downloads/manualESM303.pdf>

Force Gauge: <https://mark-10.com/products/force-gauges/series-5/>