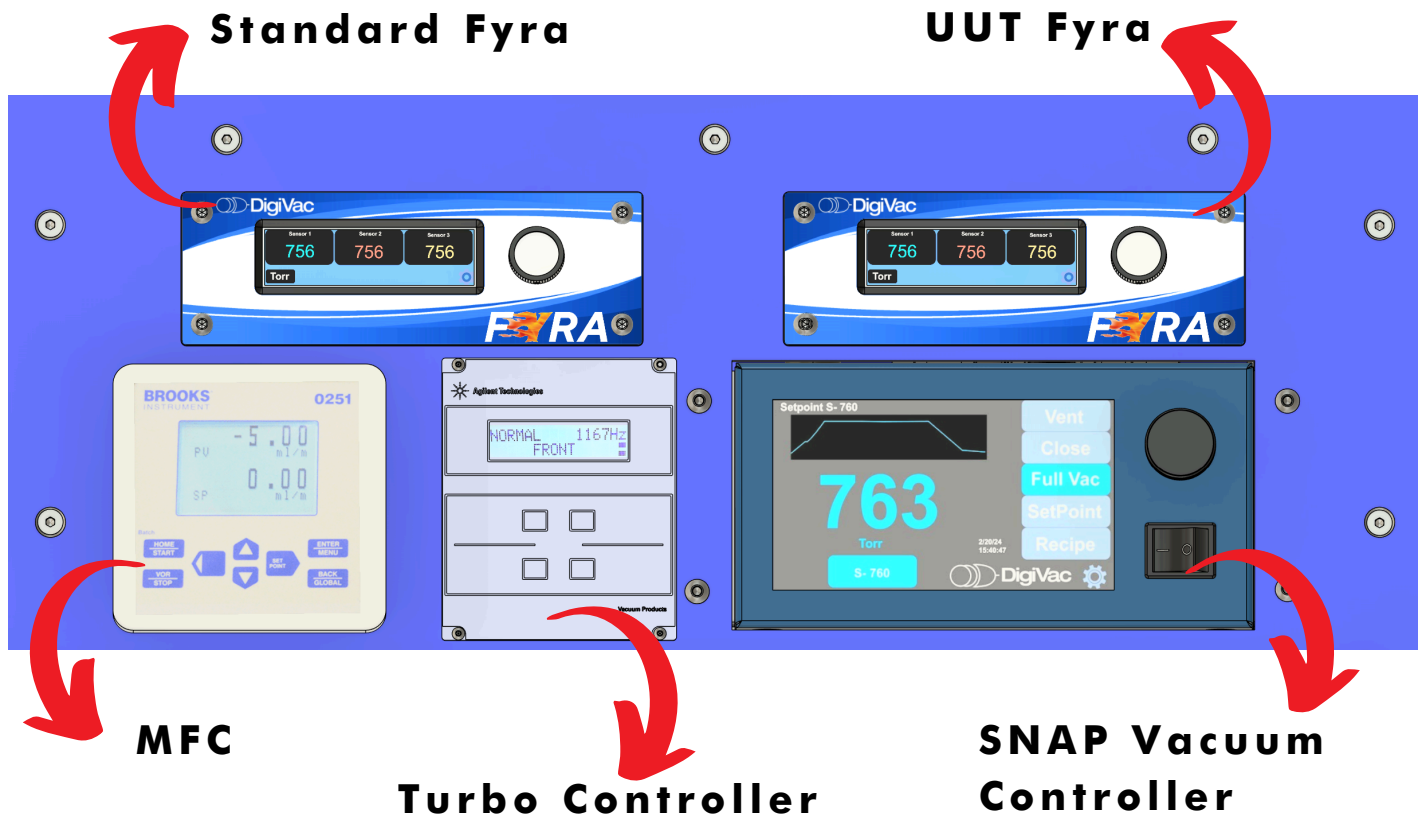


### Control Panel Walkthrough



#### OVERVIEW

The Automated High Vacuum Calibration System consists of several key components that allows the mobile system to be fully automated with the integration of the SNAP vacuum controller and display up to 6 vacuum gauges used for calibration and validation via 2 Fyra Vacuum Controllers.

#### Standard Fyra

The Standard Fyra on the **Left** side of the System displays the 3 MKS vacuum gauges: 2, 100, and 1000 Torr. They will be used to validate the “UUT” Fyra’s gauges during calibration and testing.

#### UUT Fyra

The UUT (Unit Under Test) Fyra on the **Right** side of the System displays the 3 vacuum gauges: 2, 100, and 1000 Torr. The gauges will be tested and calibrated against the “Standard” Fyra’s gauges

#### SNAP Vacuum Controller

The SNAP Vacuum Controller is the integrated automated vacuum control instrument that will be running the system via its valving connections and recipe control interface. This will allow the system to adjust setpoints and time duration of the testing procedure to automate the calibration and validation process

#### Turbo Controller

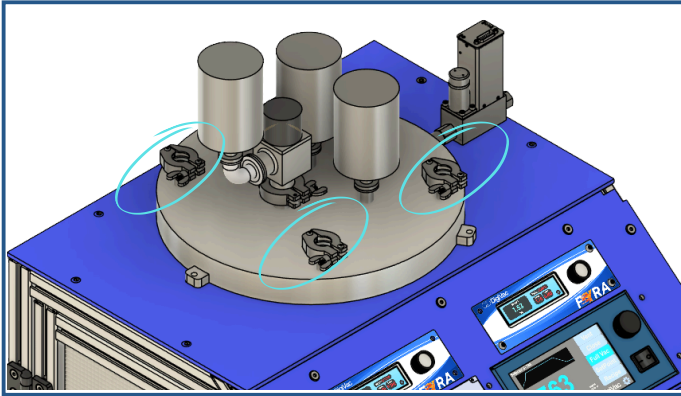
The Turbo Pump Controller is used in this configuration to power on and off the turbo pump in the system.

#### MFC

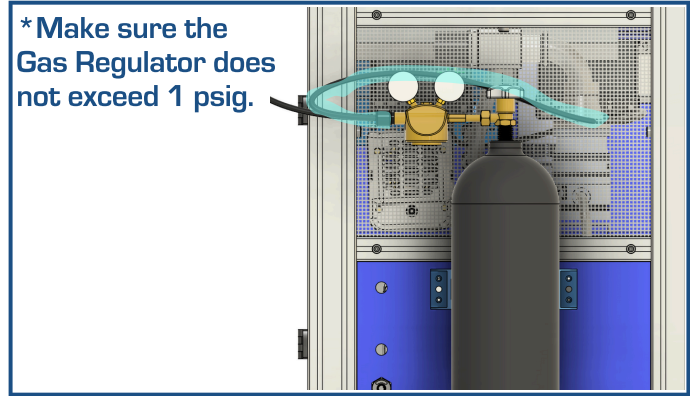
The MFC (Mass Flow Controller) is used in this configuration to control at pressures **less than** the cross over point of 150mT

# Quick Start

Automated High Vacuum Calibration System

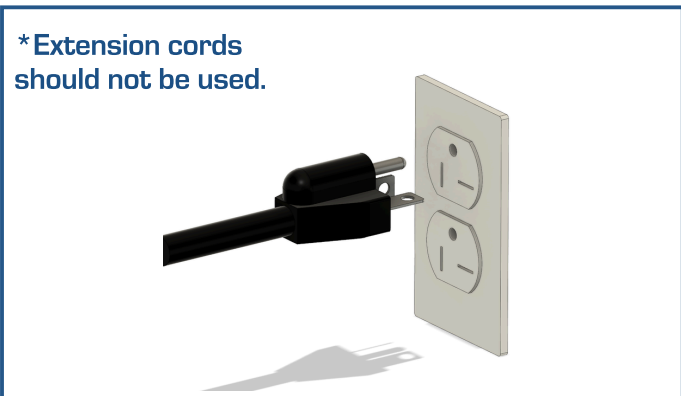


Connect the testing gauges to your manifold via the allocated flanges. \*Note: Smooth connections are better for flow.



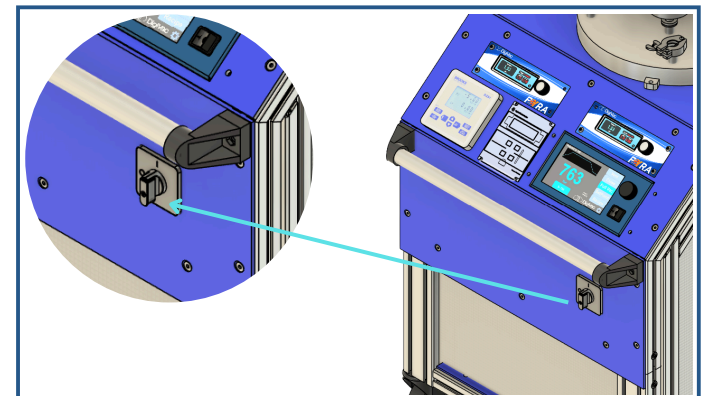
\* Make sure the Gas Regulator does not exceed 1 psig.

Connect the Gas regulator on the nitrogen or other inert gas tank to the KF16 venting port on the back of the cart via silicon hose. Or leave open to air.

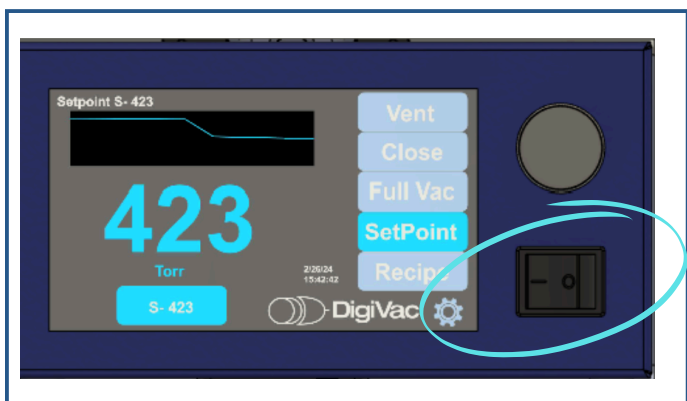


\* Extension cords should not be used.

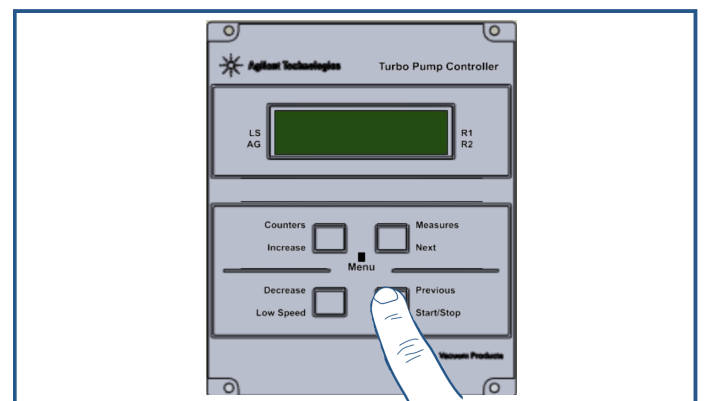
Plug cart into a 15 amp 120V receptacle outlet. \* Note: Only the cart can be plugged into the outlet, no other devices.



Turn on the power to the cart via the switch on the front.

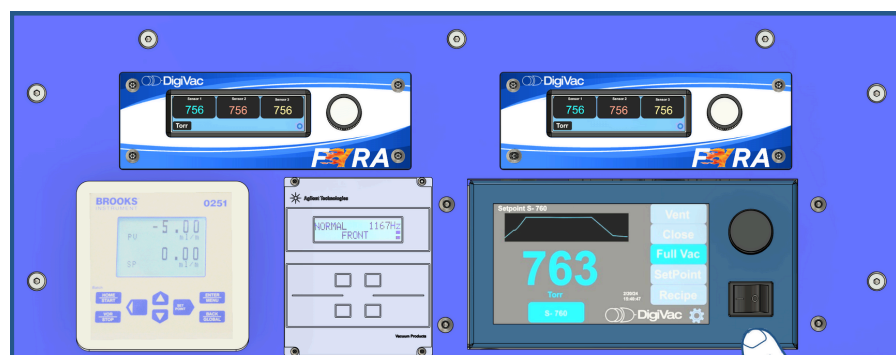


Verify that the SNAP is also switched on.



Press "Start" on the Turbo Controller and wait 5 minutes for it to spin up.

The cart is now ready to control vacuum via the SNAP screen and Calibrate and Validate with the Fyras.

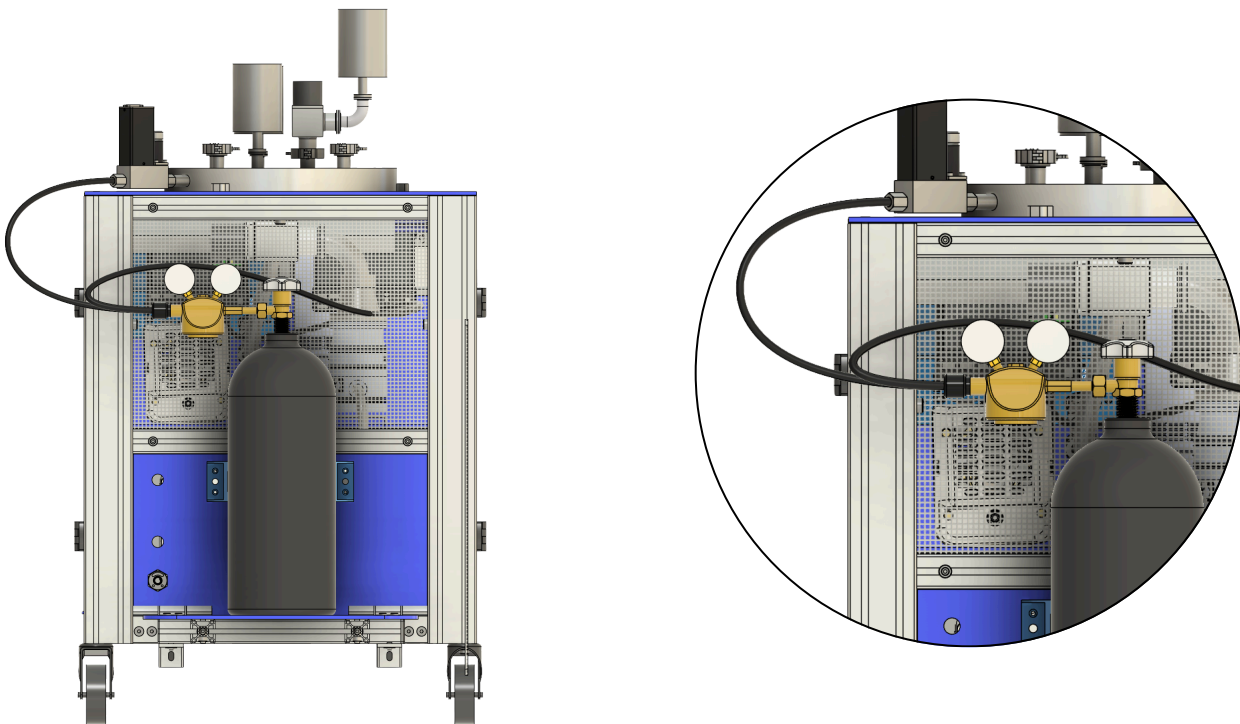


## Automated High Vacuum Calibration System

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### How to Install the Nitrogen/Inert Gas Tank:

1. On the back of the cart where the system connects, take the tape off the shelf that is folded up.
2. Place the tank (customer supplied, 40 ft<sup>3</sup> recommended) on the rubber pad that is attached to the shelf.
3. Use the strap of the bracket around the tank and tighten it to secure the tank in place.
4. Attach the Regulator to the top of the tank. Make sure that the Regulator is set at no more than **1 psig**.
5. Connect the regulator via hose to the KF16 fitting on the cart.



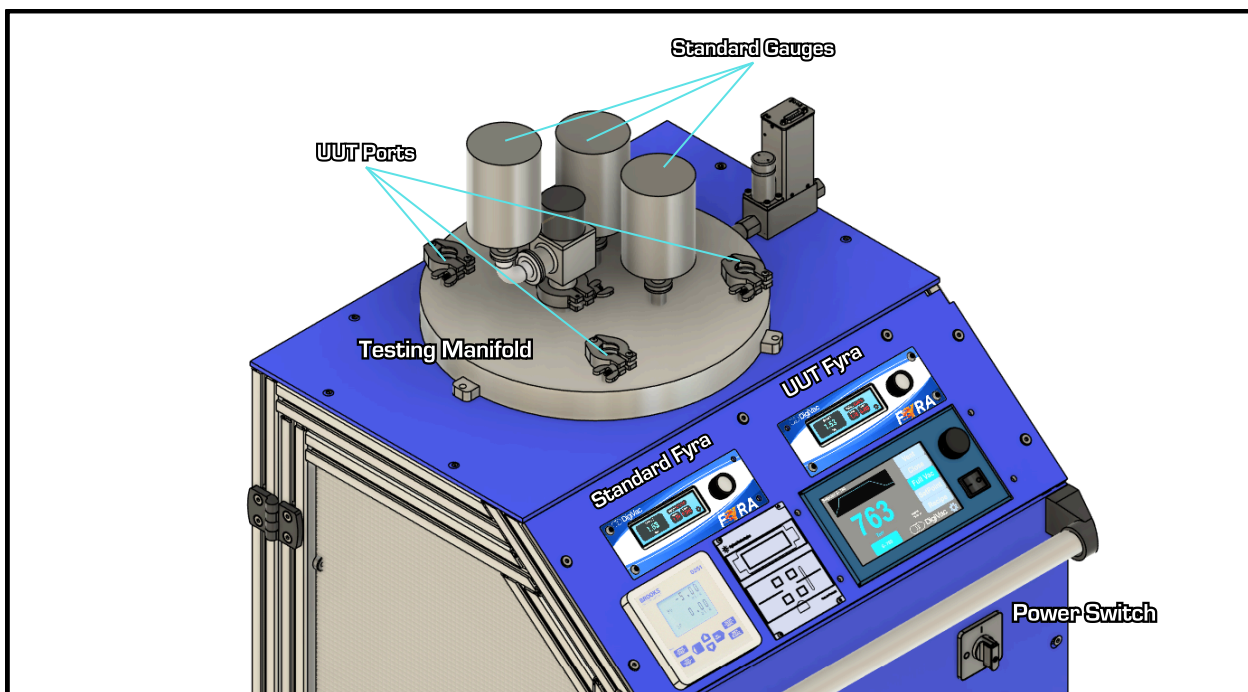
## Automated High Vacuum Calibration System

### How to Install Testing Devices:

There are 6 ports on top of the calibration manifold, 3 are occupied by the standard gauges that will be used to validate/calibrate the UUT sensors the other 3 are open to be used for the UUT sensors.

### If cart is powered off:

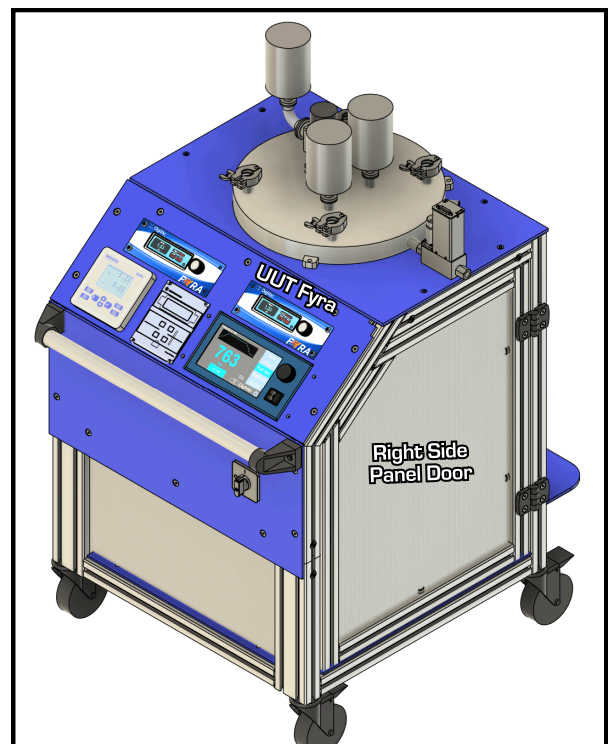
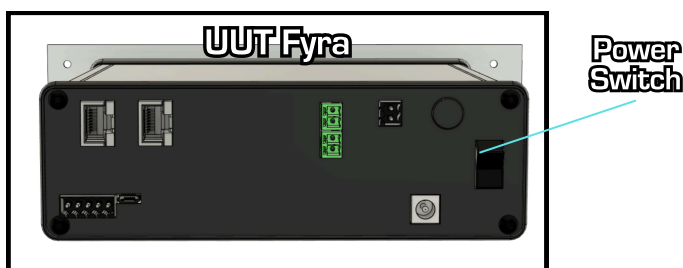
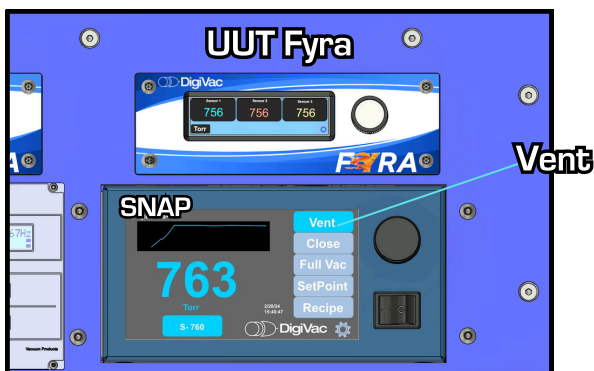
1. Select the sensor you would like to Test: 2T, 100T, 1000T CMs
2. Connect the gauge to any of the available 3 ports using 1/2" tube to KF16 adapter and KF16 Clamp.
3. Plug in the matching labeled sensor wire to the gauge your are testing, the corresponding wires will be labeled: 2T, 100T, and 1000T
4. Once the sensors are connected and installed, power on the system via system power switch.
5. The Control Panel on the System will turn on (this includes the 2 Fyra units, SNAP, Turbo and MFC Controllers), you are now ready for testing and calibration.



## Automated High Vacuum Calibration System

If cart is powered on and testing an additional batch:

- Vent System to atmosphere using SNAP's "Vent" button
- Once the system reaches atmosphere open the right side panel door to access the power switch on the UUT Fyra, you will need to power this unit off.
- Once the UUT Fyra screen goes black, install the next sensor you would be testing.
- Select the sensor you would like to Test: 2T, 100T, 1000T CMs
- Connect the gauge to any of the available 3 ports using 1/2" tube to KF16 adapter and KF16 Clamp.
- Plug in the matching labeled sensor wire to the gauge you are testing, the corresponding wires will be labeled: 2T, 100T, and 1000T
- Once the sensors are connected and installed, power on the UUT Fyra again via power switch.
- The UUT Fyra will power on and start displaying the vacuum measurement, the remaining Controls in the system's control panel will already be on, you are now ready for testing and calibration.



## Automated High Vacuum Calibration System

### QUICK START:

1. Install manometers by fully tightening the ½" tube connections.
2. Connect the Gas Regulator to a Nitrogen or other inert gas tank. Nitrogen is recommended. Backfill gas is supplied to the SNAP controller as well as the MFC. **\*Note: Make sure that the regulator does not exceed 1 PSIG.**
3. Plug cart into a 15 amp 120V receptacle outlet. **\*Note: Only the cart can be plugged into the outlet, no other devices. Extension cords cannot be used either.**
4. Turn the switch on the front to the power on the cart
5. Verify that the SNAP is also switched on.
6. Press "Start/Stop" on the Turbo Controller to power on the Turbo and wait 5 minutes for the turbo to spin up.
7. The cart ships with all device switches in the "ON" position. If instruments do not operate when the MAIN power switch is energized, ensure that the local device switches are ON.

### STORAGE GUIDE:

1. Press "Start/Stop" on the Turbo controller to turn it off and wait 5 minutes.
2. Vent cart using SNAP controller.
3. Disconnect Cart once atmosphere is reached.
4. Turn off power switch
5. Close inert gas tank.
6. Unplug the cart from the wall outlet and store.

