

AccuTrac™

Multi-Point Data Acquisition Software User Guide

DEGREE CONTROLS, INCORPORATED
Milford, New Hampshire 03055 USA



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Document Number 50802MN000-A01 • 07/2018

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1 Introduction

Thank you for purchasing a subscription to our Windows-based AccuTrac™ software package. AccuTrac™ is specifically designed to transform your PC into a powerful airflow test and analysis center. Paired with the °C Port family of data acquisition instruments, our AccuTrac™ software collects up to 144 air velocity, air temperature, surface temperature, humidity and barometric pressure data in real-time. With flexible user preferences, AccuTrac™ displays, logs, graphs, and saves without the need to export to another program.

AccuTrac™ increases airflow measurement visibility, reduces testing time, and can measure complex multi-point scenarios. Users are able to generate planar flow distribution plots in both Cartesian (x-y) and circular areas, or produce line graphs of multiple sensors, simultaneously.

Note: AccuTrac™ is a licensed tool, with annual renewal fee. Licenses and renewals are available for purchase online. The license can be transferred to new PC's at any time and allows the user unlimited downloads of AccuTrac™ to ensure the software is always current.

1.1 Features

- Real-time air velocity, temperature, humidity and pressure data logging
- Real-time compensation for changing humidity and barometric pressure (altitude).
- Save/Export data in universal file formats (.xlsx, .csv, .jpeg)
- Automatically inserts sensor data into spreadsheets (sensor name, type, calibration date and range)
- Customize start and stop times for tests
- Create customized labels for sensors
- Two easy-to-use graphing tools with instant snapshot capabilities for logging velocity and temperature via gradient-style (ideal for studying planar flow) and/or linear-style
- Designed for use with our laboratory-grade USB air velocity, temperature, and humidity sensors, our °C SPAR sensor pole array, and our data acquisition instruments, the °C Port 1200 (12 channels) and the °C Port3600 (36+ channels).

1.2 Minimum System Requirements

Operating System: Windows OS® 7, 8, and 10.

CPU: 1.0 GHz Processor

RAM: 2GB

1.3 Downloading AccuTrac™ from the Degree Controls Website

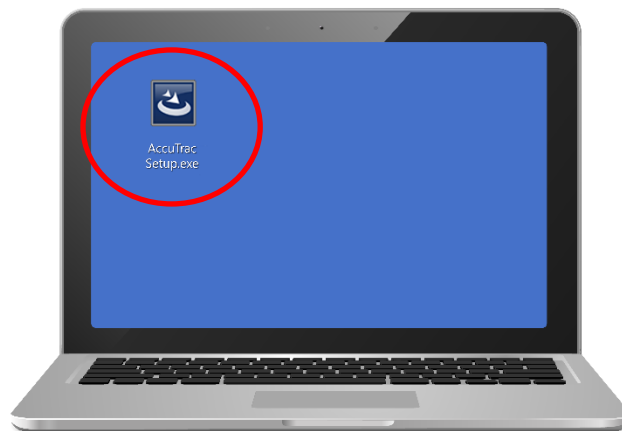
To download the latest version of AccuTrac™, or to purchase/unlock more channels, go to our website:

<http://degreec.com/en/support/download-accutracs.html>

During installation (the following page of this manual), AccuTrac™ will place a shortcut on your start menu, as well as on your desktop. To launch AccuTrac™, use either of these shortcuts.

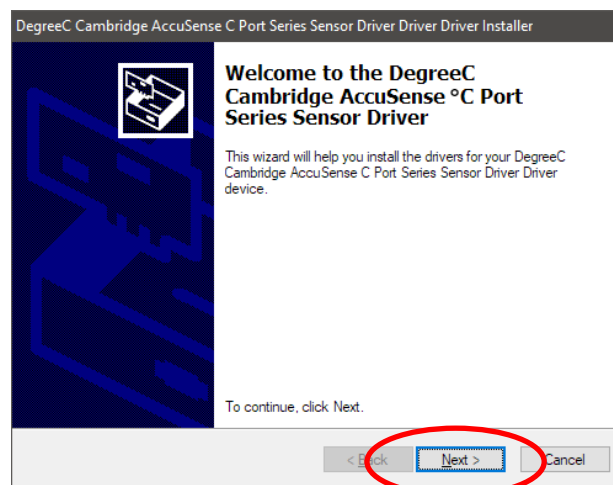
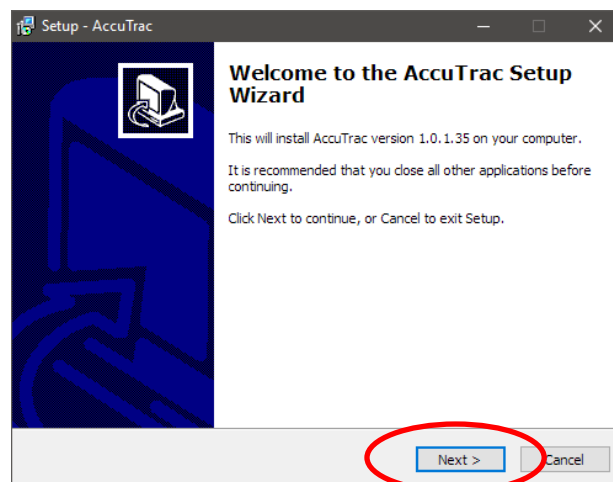
2 Software Installation

Once you have purchased AccuTrac™ from our online store, you will be provided with a link to download the latest installation file. Once saved to your system, double click on the setup file to run the installation wizard.



Click “Next” on the Welcome Screen and follow the on-screen prompts to install AccuTrac™. You will also be prompted to install the °C Port Series Sensor Driver near the end of the installation wizard.

Once the installation wizard completes, AccuTrac™ will start up automatically if the checkbox is ticked.



3 Licensing

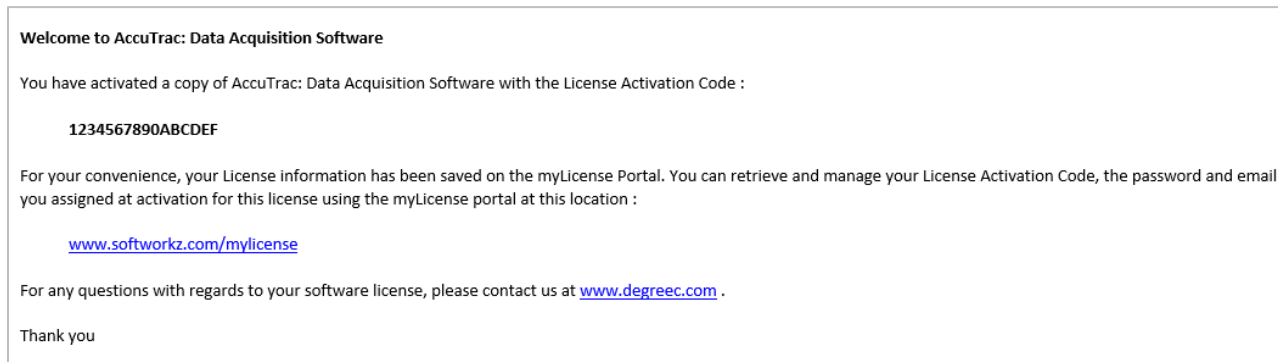
AccuTrac™ software is a subscription-based tool, with initial purchase price based on channel (sensor) quantity support, and an annual renewal fee. Users can upgrade from lower channel count subscriptions, to higher channel count at any time by contacting degreeC. AccuTrac™ subscriptions for 1-4 channel support have no renewal fees.

Note: AccuTrac™ may be activated up to three (3) times within 30 days, using the same license key. This allows a user to move the license onto a new PC. After three (3) activations within 30 days, the license key will need to be reset by contacting degreeC.

Clicking on the information button (i) will display the current AccuTrac™ version and licensing information. Degree Controls recommends visiting our website regularly in order to ensure the latest version is installed on your PC. Installing a later version of AccuTrac will not impact or change your license.



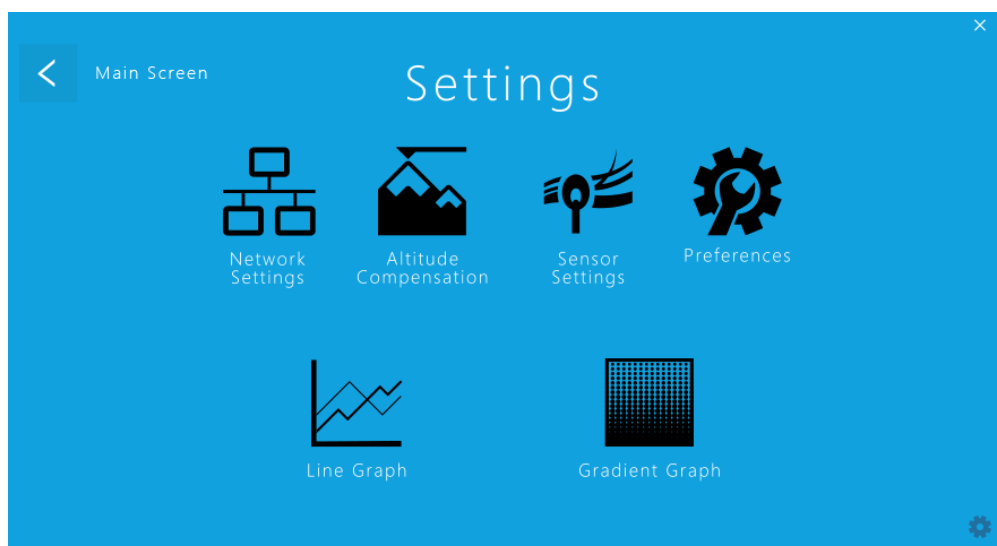
Upon launching AccuTrac™ for the first time, the user must enter the Activation Code that they have received from the email acknowledgment (**see image below**) of the license purchase. Upon entering the Activation Code, users are encouraged to enter their email and password on the “myportal” website in order to perform maintenance on their licenses.



4 Settings

4.1 Overview

The Settings screen (accessed by clicking on the settings button (⚙️)) allows the user to edit Network Settings, Altitude Compensation (Barometric Pressure), individual Sensor Settings, as well as various Preferences such as how information is displayed, which units are to be used, how Auto Saving will function, and the Polling Interval. Additionally, there are two different graphing functions available: Linear and Gradient.

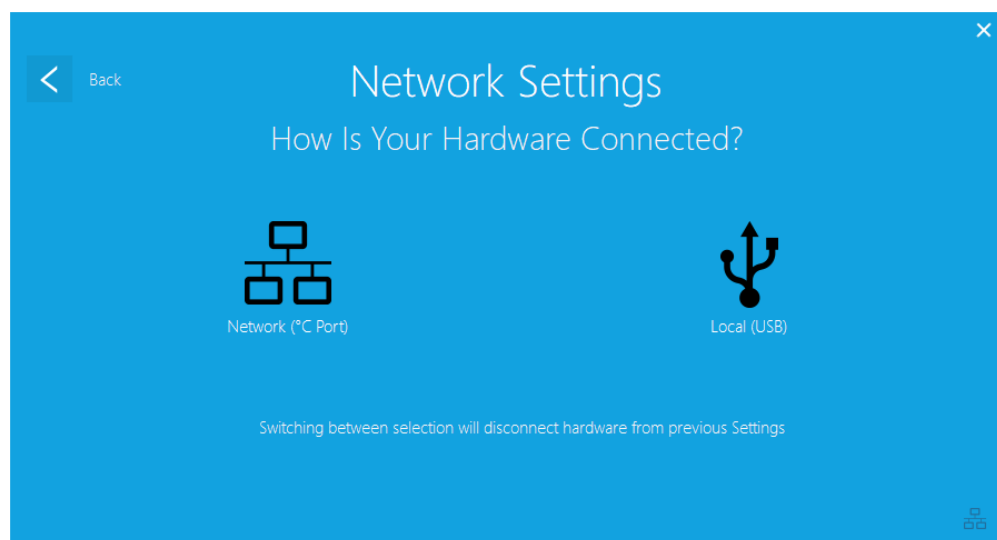


4.2 Network Settings

The Network Settings screen allows a user to select which sensors will be used during a test. The first screen that the user is presented with will ask how their hardware is connected.

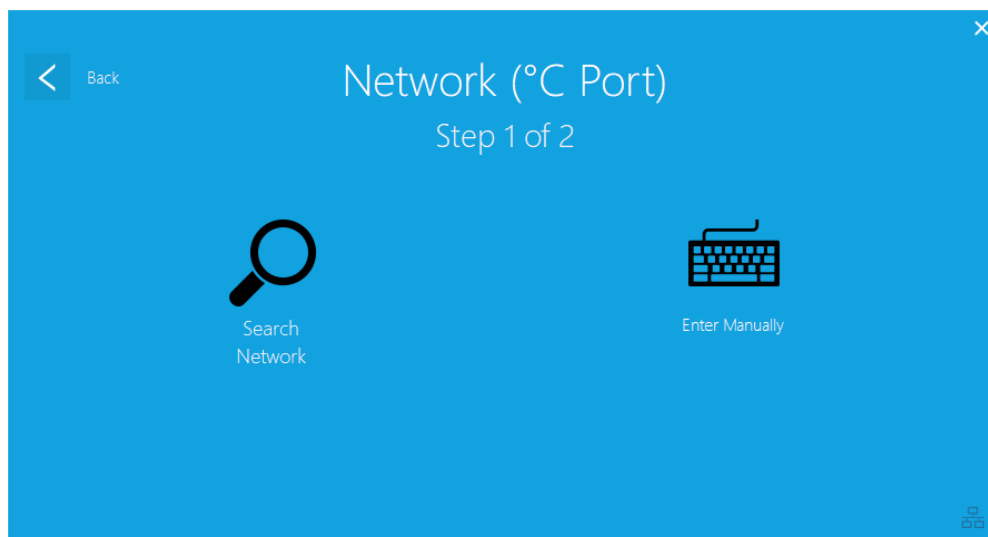
Network (°C Port) – used if connecting sensors directly to a °C Port instrument

Local (USB) - used if connecting sensors directly to the PC that is running AccuTrac™



4.2.1 Network (°C Port)

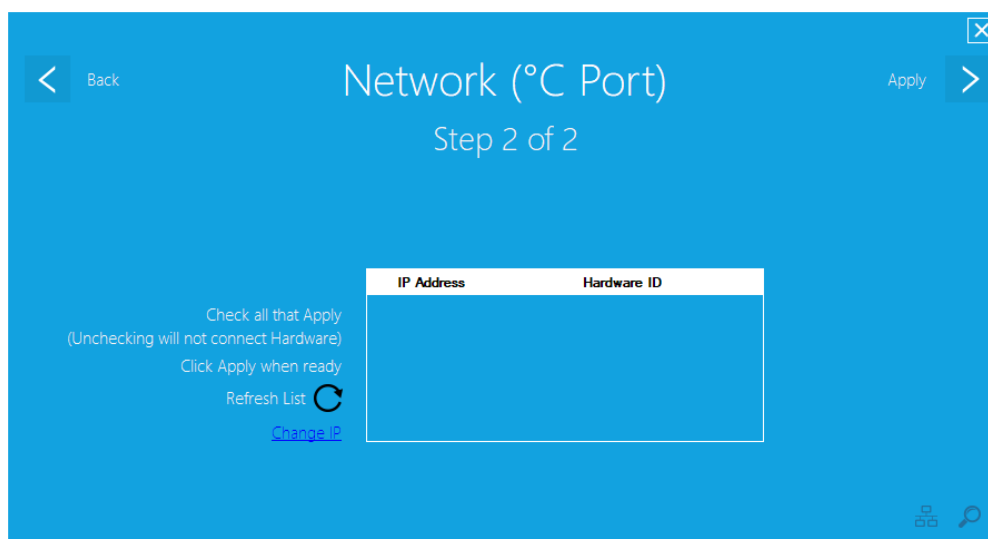
To configure communication with the sensors, you must first either search for any °C Ports connected to the network, or manually enter the IP Addresses of the °C Ports.



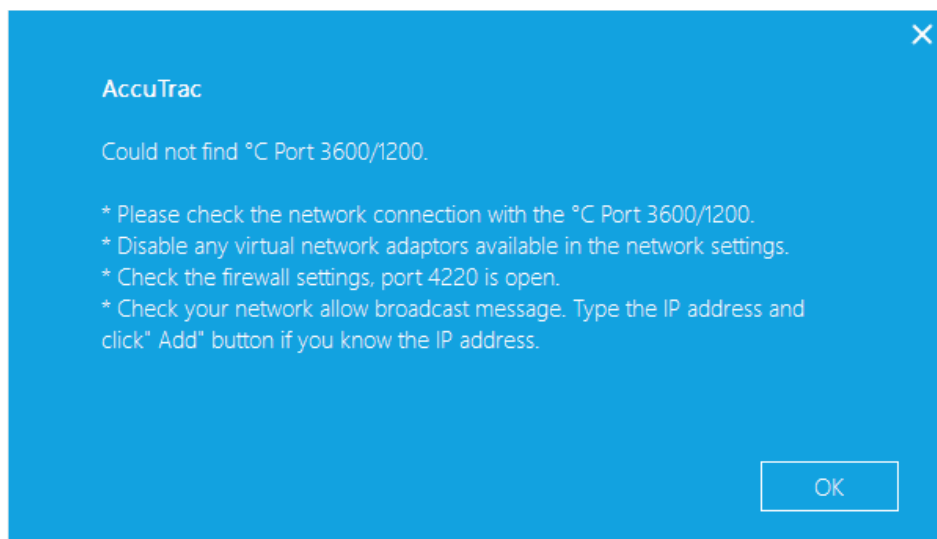
4.2.1.1 Search Network

The Search Network screen will allow a user to find and select any °C Ports currently connected to the network.

- Ticking the checkbox next to each °C Port that is found will indicate to AccuTrac™ that its sensors should be used for measurement.
- Clicking on “Refresh List” in the bottom left will re-search the network for connected °C Ports.
- Clicking on the “Apply” button in the top right will save a record of any °C Ports that were ticked.



Note: If no °C Ports are found, an error dialog window will appear:



Troubleshooting:

1. Verify that the being used is switch is DHCP capable.

Verify the switch on the °C Port is set to the "dynamic" position. If it is not, set to dynamic and power cycle the °C Port.

Note: If the network is DHCP capable, the device that the °C Port is connected to does not have to have DHCP capability.

2. If the °C Port is connected to a masked subnet?

You must be able to ping the °C Port from your PC. If you cannot, the IP and the subnet on the °C Port should be modified so that it is visible from the PC.

4.2.1.2 Enter Manually

Users can also optionally enter the IP Addresses of their °C Ports manually (for example, if the °C Ports have statically assigned IP Addresses).

- Clicking on “Clear List” in the bottom left will clear the list of entered (and ticked) IP Addresses.
- Clicking on the “Apply” button in the top right will save a record of any °C Ports that were ticked.

Back

Network (°C Port) Enter

Step 2 of 2

Enter IP Address

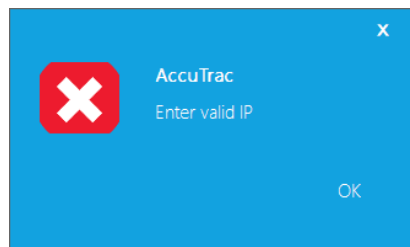
+

Check all that Apply
(Unchecking will not connect Hardware)
Click Apply when ready
Clear List
[Change IP](#)

IP Address	Hardware ID
------------	-------------

Apply

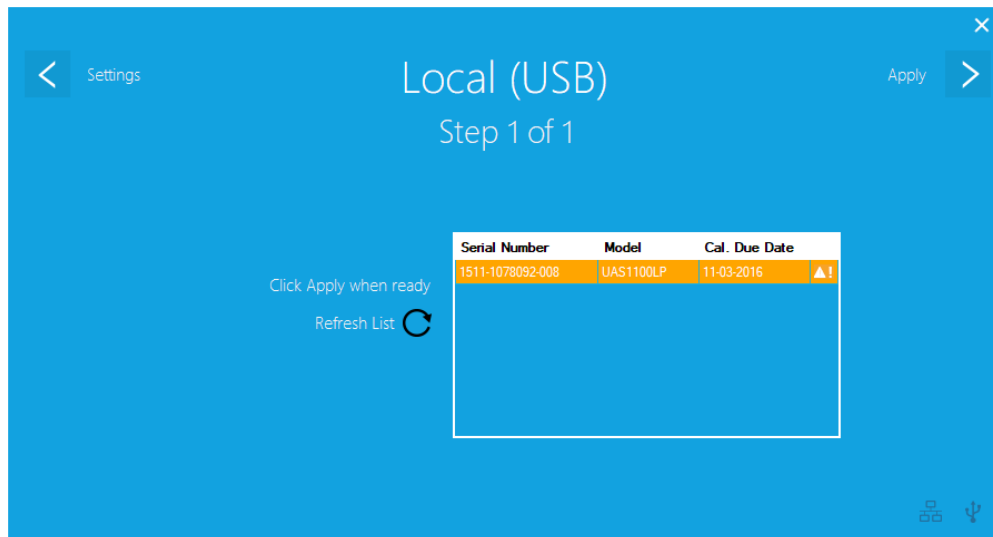
Note: If a °C Port’s IP Address is entered incorrectly, an error dialog window will appear:



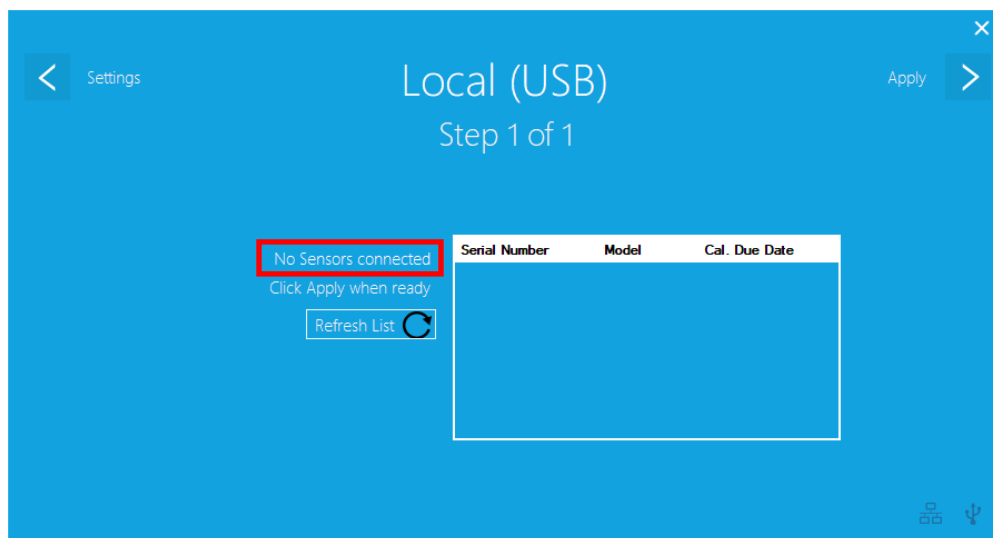
4.2.2 Local (USB)

The Local (USB) screen will display a listing of all USB-based connected sensors that are detected.

- Ticking the checkbox next to each sensor that is found will indicate to AccuTrac™ that its sensors should be used for measurement.
- Clicking on “Refresh List” in the bottom left will re-search the network for connected °C Ports.
- Clicking on the “Apply” button in the top right will save a record of any sensors that were ticked.



Note: If no sensors are connected, “No Sensors Connected” will appear to the left of the information box:



4.3 Altitude Compensation

Within the Altitude Compensation settings screen, users can edit various options relating to how sensor readings are compensated for environmental conditions.

Note: The UAS Sensor's accuracy can be directly affected by the density of the air around it. Barometric Pressure and Relative Humidity (RH) affect the air's density. Therefore, to obtain the most accurate readings, compensation must be used to account for the difference in densities between when the sensor was calibrated, and when the measurement is taken during a test by the user.

Enable Environmental Compensation – Enables (or disables) compensation

Note: If the user decides to not use Environmental Compensation (or consequently disables the option), an error dialog window will appear requiring acknowledgment to continue. Failure to enter any data will consequently result in inaccurate sensor readings.

4.3.1 Barometric Pressure

Barometric Pressure compensation settings allow the use of the °C Ports' barometric pressure sensor (options are grayed out if no °C Ports are currently connected).

Use Barometric Sensor Data – Utilize the °C Ports' built-in barometric sensor

Manual Entry – Enter Barometric Pressure data manually (**ensure the correct units are selected**)

Altitude Enter Manually – Enter Altitude manually

Note: The average barometric pressure for the specified altitude will be used in compensation for air density

4.3.2 Humidity

Humidity compensation can also be selected to use either the °C Ports' built-in humidity sensor (if a °C Port is connected), or an available UHS sensor.

Show Humidity Data – Displays any Humidity data (if available) during the test

Relative Humidity (°C Port Sensor) – Utilize the °C Port's built-in humidity sensor

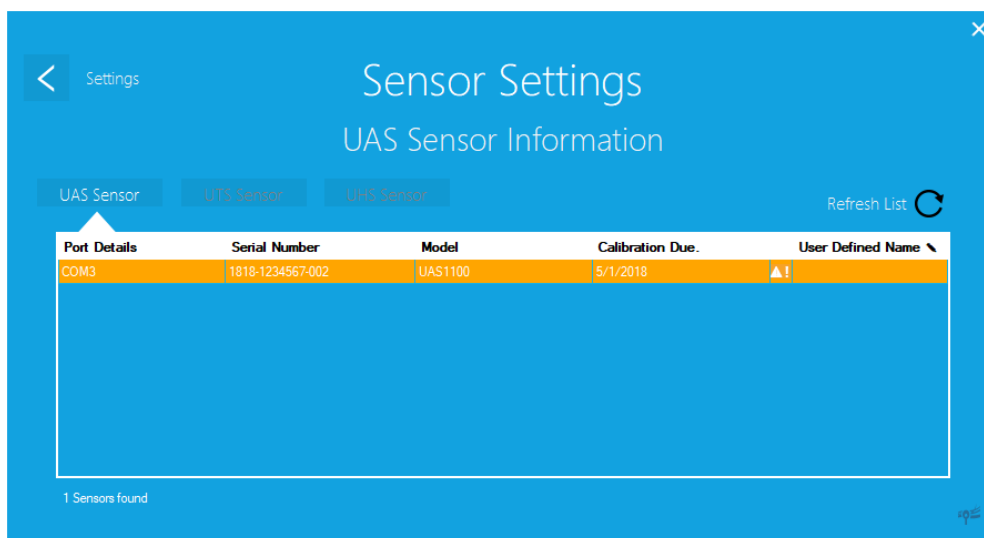
Manual Entry – Enter in data manually

UHS1000 – Utilize a UHS1000 sensor (if available); Option is grayed out if no UHS1000 sensor is detected (along with a message to the right of the option)

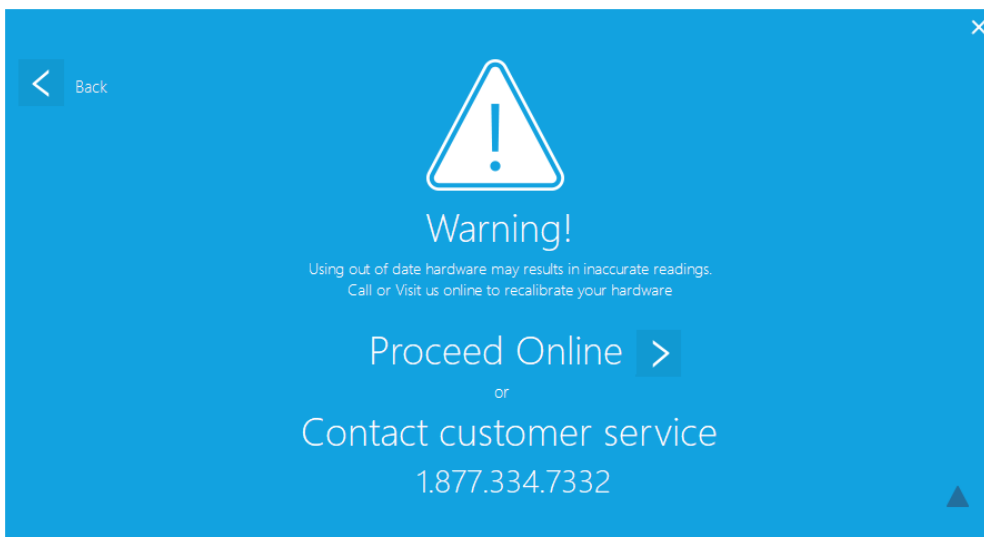
Note: If multiple UHS Sensors are present, only the RH reading from the first one that was detected will be used.

4.4 Sensor Settings

Within Sensor Settings, port details, serial number, model, and calibration date of each sensor can be found. Users may also assign a “User Defined Name” to each sensor which is displayed during a test. UAS, UTS, and UHS sensors are separated via categories (tabs at top). Additionally, out of calibration sensors will be highlighted.

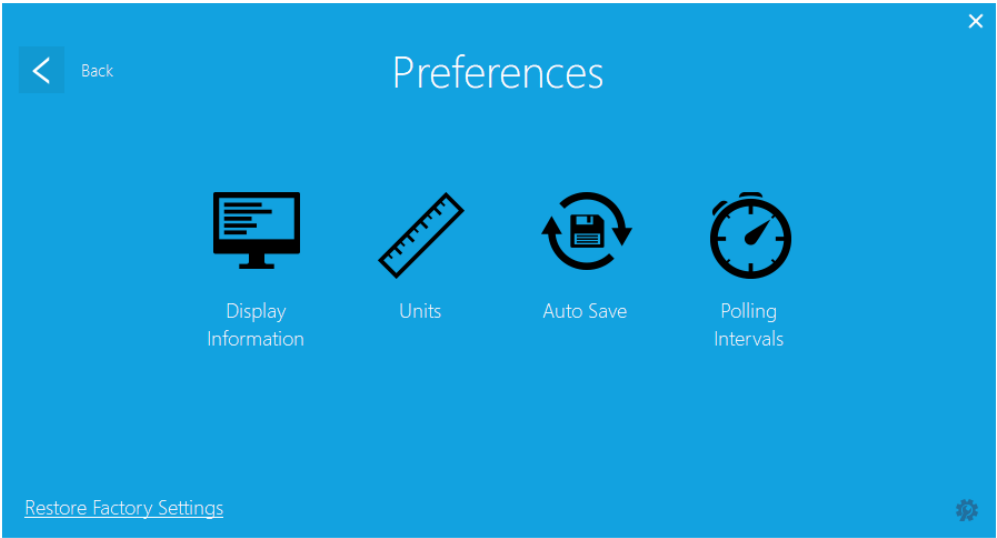


Note: If any sensors are out of calibration, a warning will be displayed once the user leaves the Sensor Settings page. The warning will contain contact information for recalibrating the sensors:



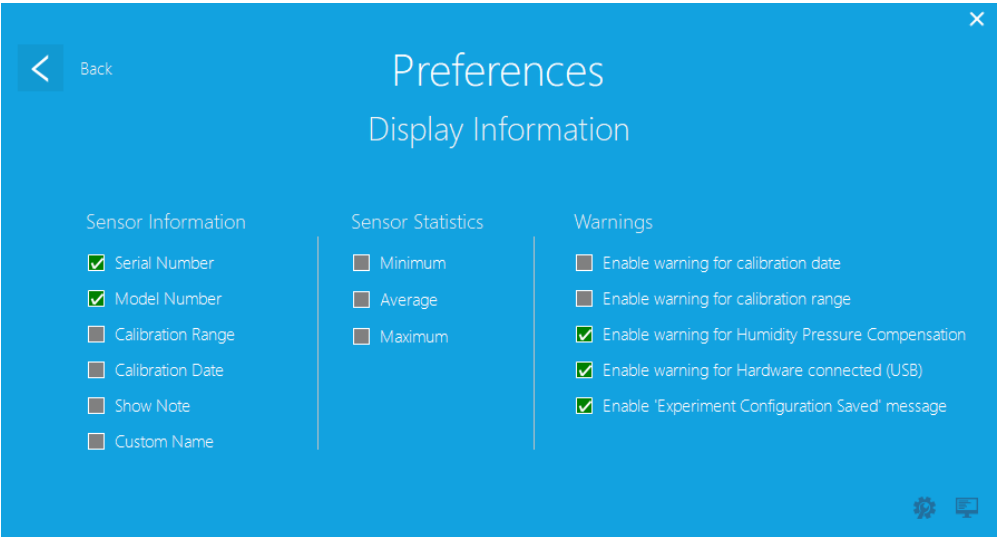
4.5 Preferences

The Preference page allows the customization of how sensor information is displayed, which unit type to display, configuration of auto-saving, and adjusting of the polling interval.



4.5.1 Display Information

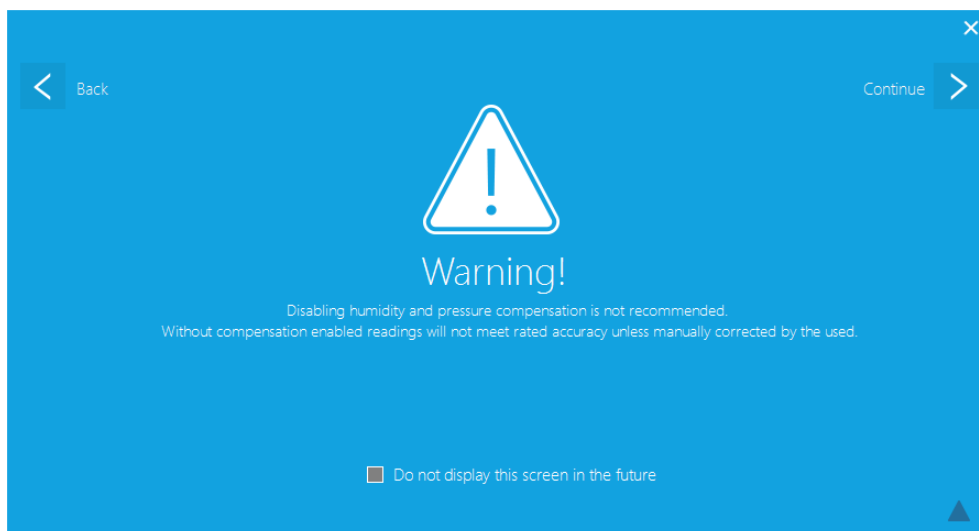
The Display Information screen allows the user to enable or disable whether certain information about the sensors is displayed and recorded during testing. Please see the following page for further detail regarding “Warnings”.



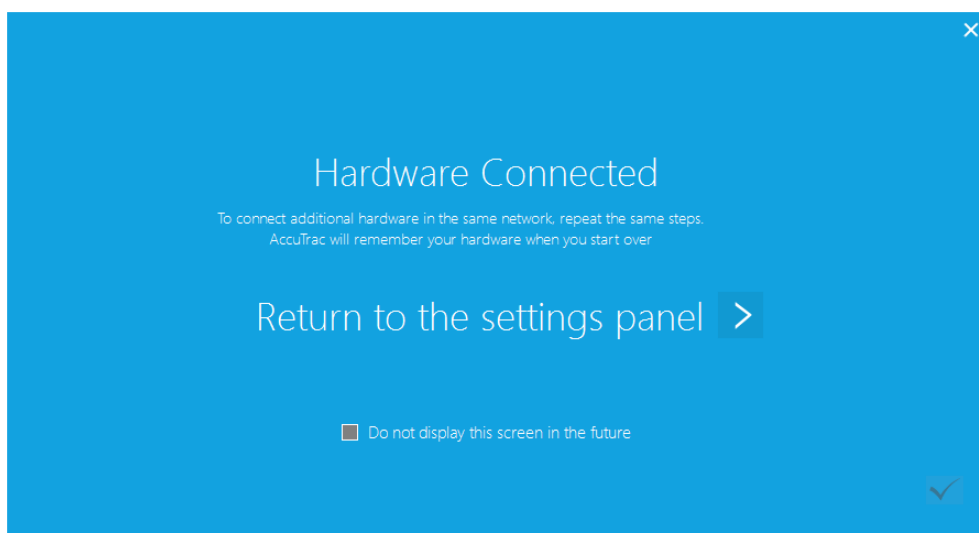
Enable warning for calibration date/range – displays the reading in yellow when sensors are past their calibration date, or when readings are outside of the sensor’s calibrated range(s).

Serial No	1622-1089721-003
Model	UAS1100LP-S
Port	COM3
Time Start 03:52 PM	Temp - °C
03:52:06 PM	27.8
03:52:07 PM	27.5
03:52:08 PM	27.7
03:52:09 PM	27.7

Enable warning for Humidity Pressure Compensation – displays a warning message when the “Enable Environmental Compensation” option in “Altitude Compensation” settings is unchecked.



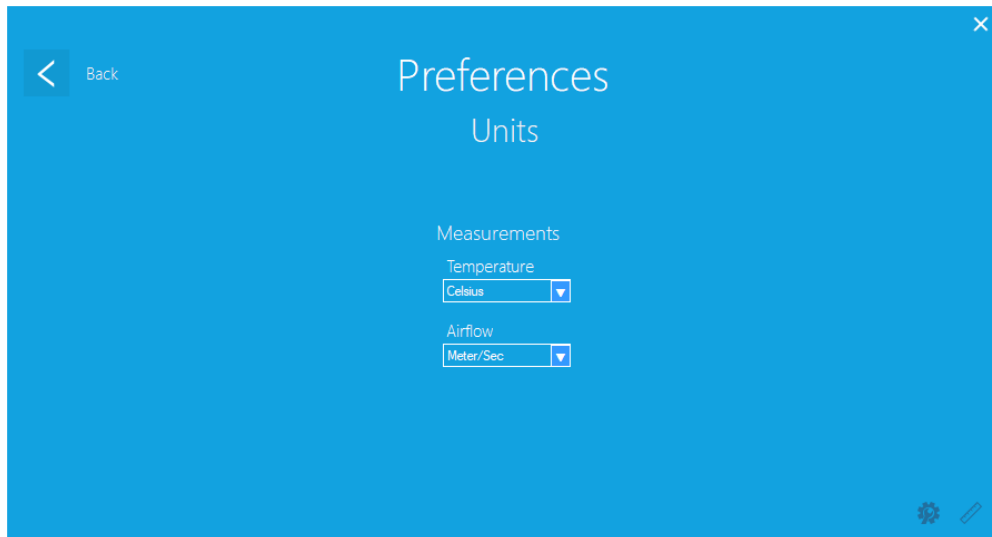
Enable warning for Hardware connected (USB) – displays a warning message after hardware is connected to AccuTrac™ via “Network Settings”.



Enable “Experiment Configuration Saved” message – displays a message after settings are saved for a new experiment within Line Graph or Gradient Graph settings (see end of sections 4.6 and 4.7).

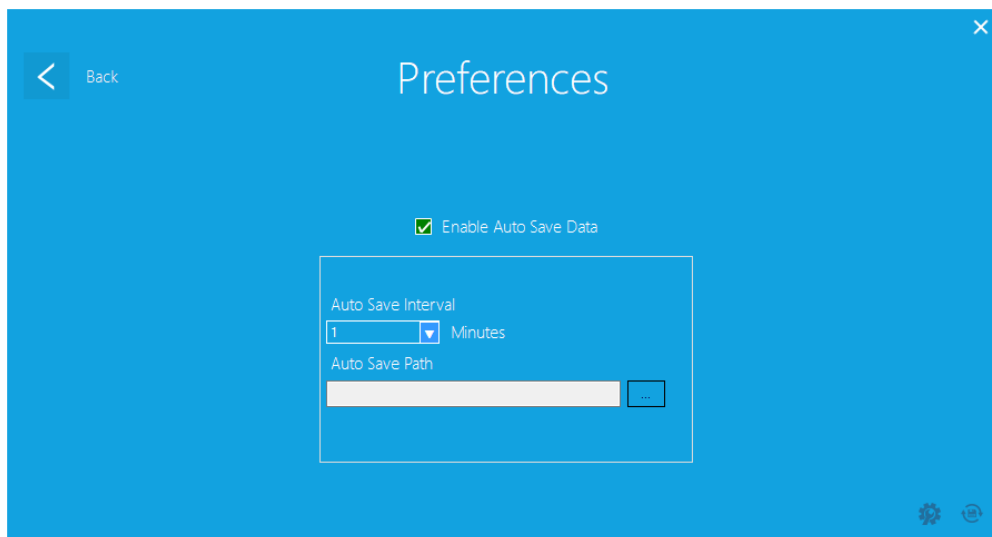
4.5.2 Units

Allows the selection of units to be used by the sensors, while running tests. Temperature options include Celsius and Fahrenheit, and airflow options include Meters Per Second and Feet Per Minute.



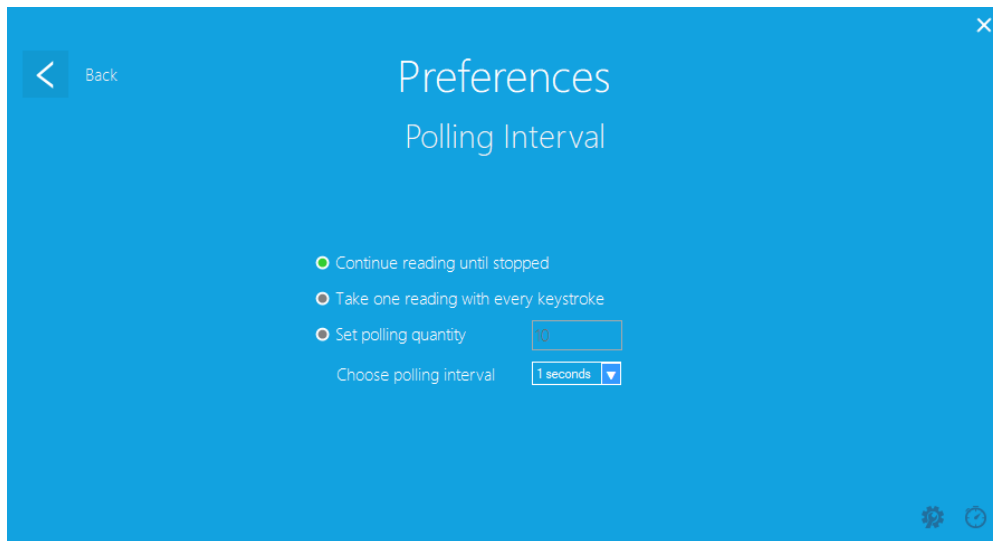
4.5.3 Auto Save

Allows the enabling and disabling of the Auto Save feature. Intervals can be specified in minutes, as well as a path to save testing data to.



4.5.4 Polling Intervals

Allows the user to customize various polling preferences.



Continue Reading until stopped – continues the test until the stop button is clicked

Take one reading with every keystroke – polls and takes the readings of all connected sensors once any key is pressed; the user is then able to keep pressing any key until all necessary readings are taken, or until the stop/save buttons are clicked.

Set polling quantity –

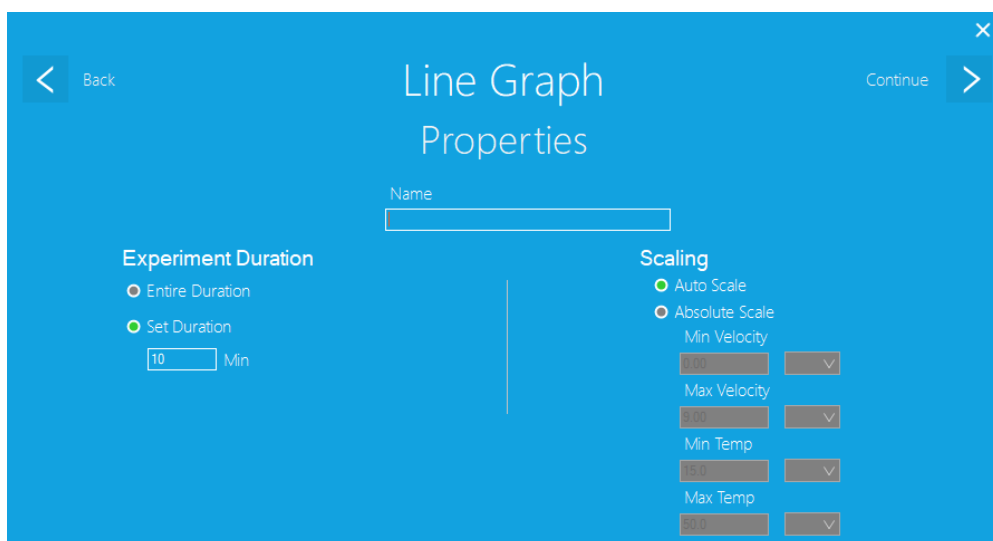
Choose polling interval – set the time between readings taken, in minutes or seconds

4.6 Line Graph

The Line Graph option enables AccuTrac™ to display plugged in sensor values via line graphs. Each sensor is displayed as its own line and in a unique color, and all lines update with every reading taken.



The first screen features a select/edit option for previously created experiments. If no experiment exists, a new one will need to be created by clicking on “New Experiment” in the top righthand corner.



Within the Properties screen, users must set a name for the experiment, and may set up duration of experiments and various scaling options. Once options are adjusted, click on “Continue” in the top righthand corner.

4.6.1 Experiment Duration

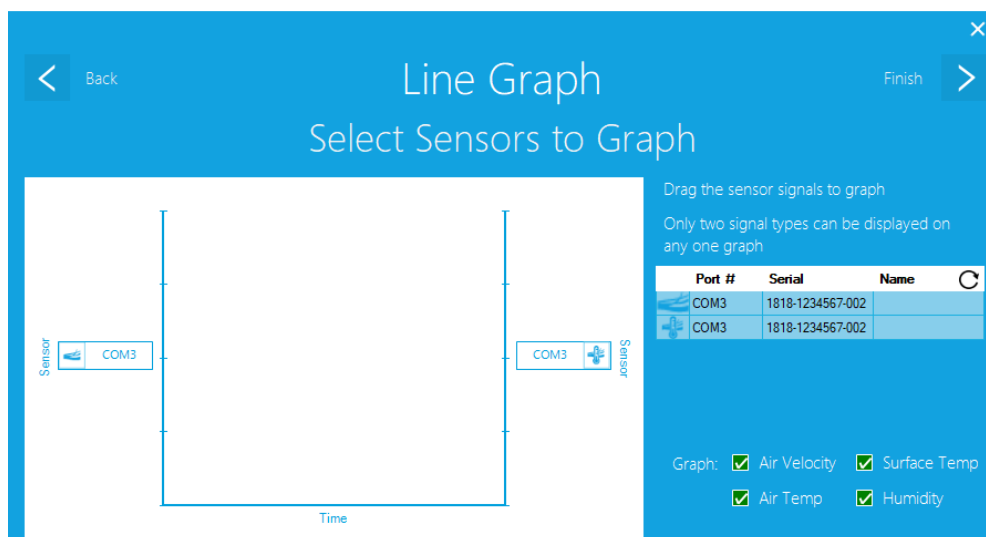
Entire Duration – display all readings taken in the experiment

Set Duration – display only the last “X Min” of the experiment (10 minutes is the minimum allowed)

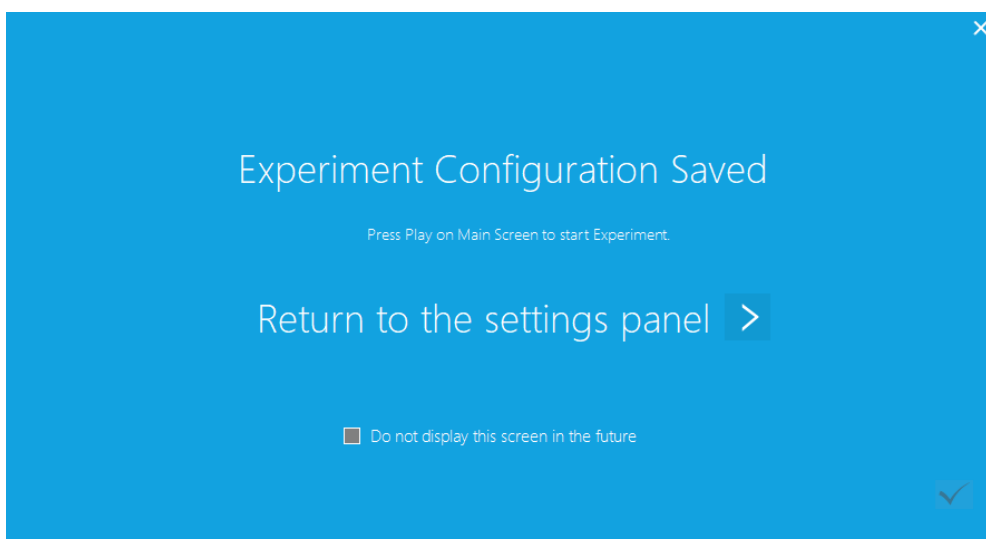
4.6.2 Scaling

Auto Scale – scales the X-axis automatically as the experiment is running.

Absolute Scale – allows setting of various absolute limits for the minimum and maximum, in terms of velocity and temperature specifically.

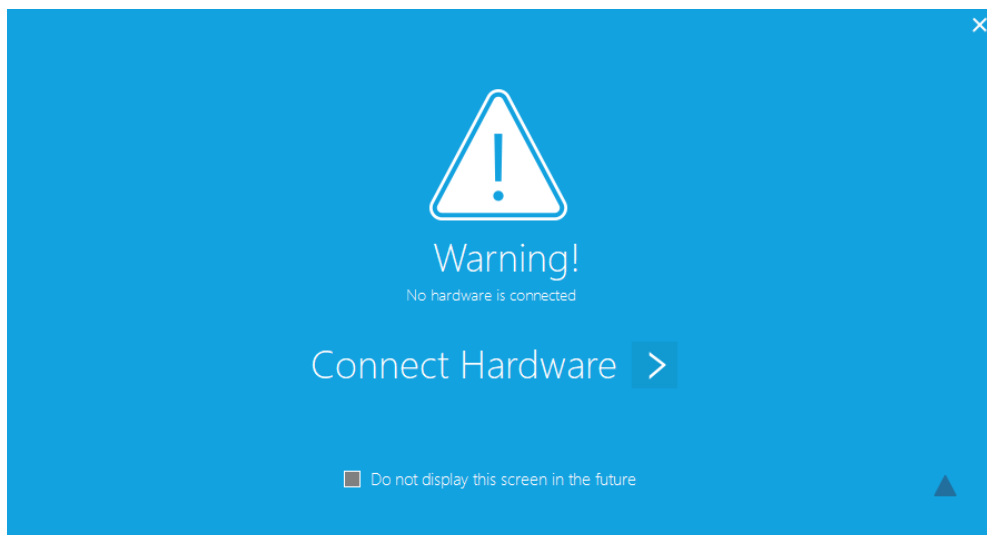


On the following screen, the list of plugged in sensors will be displayed on the right. Choose which sensors you would like to use during an experiment. Additionally, which sensor information displays can be enabled or disabled on the bottom righthand side of the screen. Once selections have been made, click “Finish” in the top righthand corner.



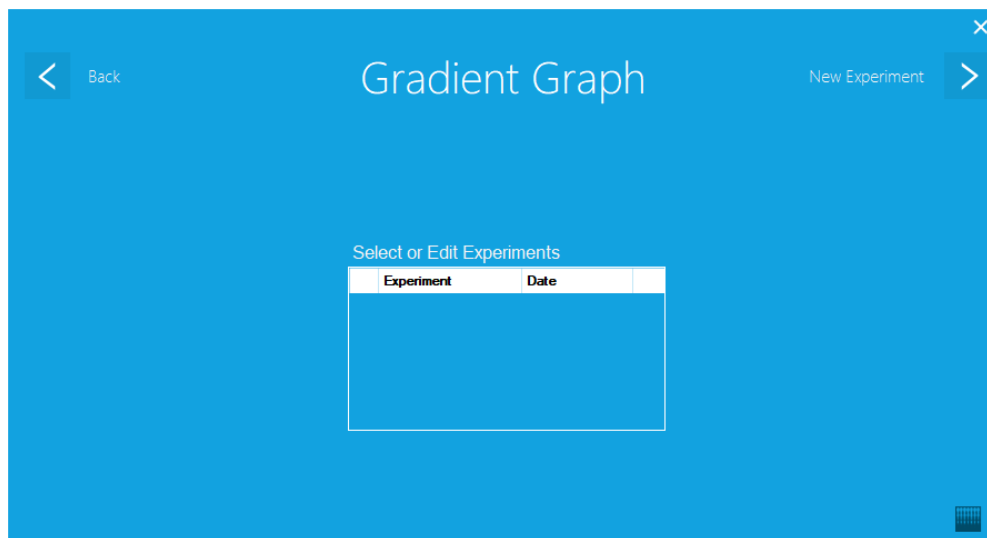
The final screen will display an “Experiment Configuration Saved” screen to acknowledge all settings that were changed in the previous Properties screen.

Note: If no sensors were connected prior to going through the Line Graph setup, a warning message will appear. The option to not display this error is available via tick box at the bottom of the message:



4.7 Gradient Graph

The Gradient Graph option enables AccuTrac™ to display plugged in sensor values via a “Heat Map” style mapping of air flow over a given area. The shape of the area being tested can be altered, via either a round or rectangular shape, as well as where each individual sensor is mapped to in space.



The first screen features a select/edit option for previously created experiments. If no experiment exists, a new one will need to be created by clicking on “New Experiment” in the top righthand corner.

Within the Properties screen, users must set a name for the experiment, and may set up the shape of the area being tested (round or rectangular), spokes and positions for sensors (if round is chosen), rows and columns for sensors (if rectangular is chosen), scaling options, and the optional enabling a rolling average. Once options are adjusted, click on “Continue” in the top righthand corner.

4.7.1 Round Shape

Allows setting of the diameter of the area being tested, as well as the number of spokes (radial lines of sensors) and the number of sensor positions per spoke.

4.7.2 Rectangular Shape

Allows setting of the overall size of the rectangular area being tested, as well as the number of rows and columns of sensors.

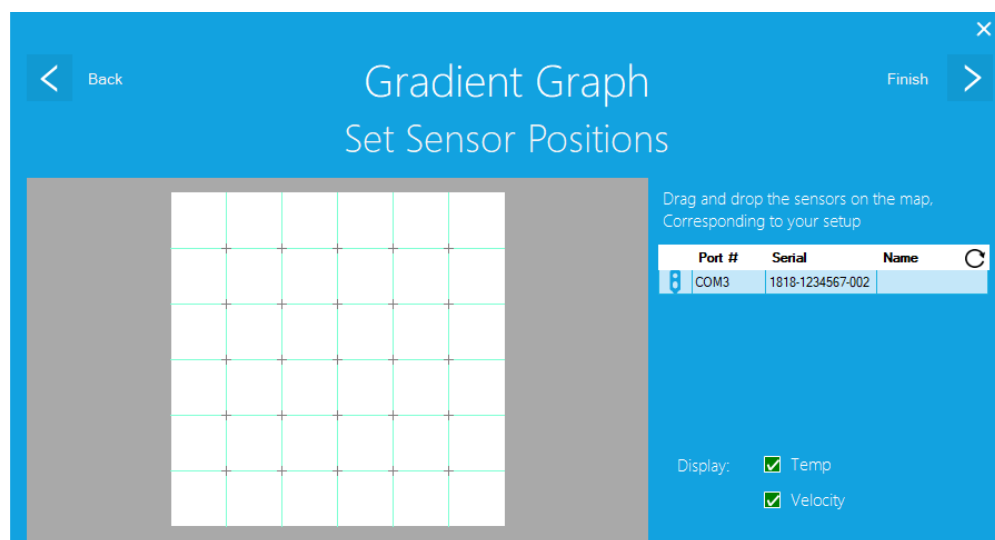
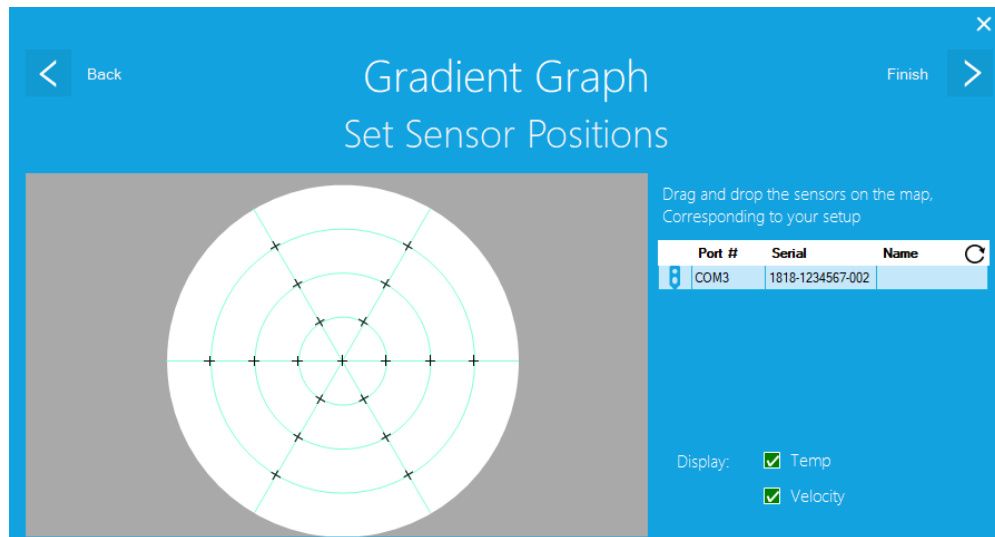
4.7.3 Scaling

Auto Scale – scales the X-axis automatically as the experiment is running.

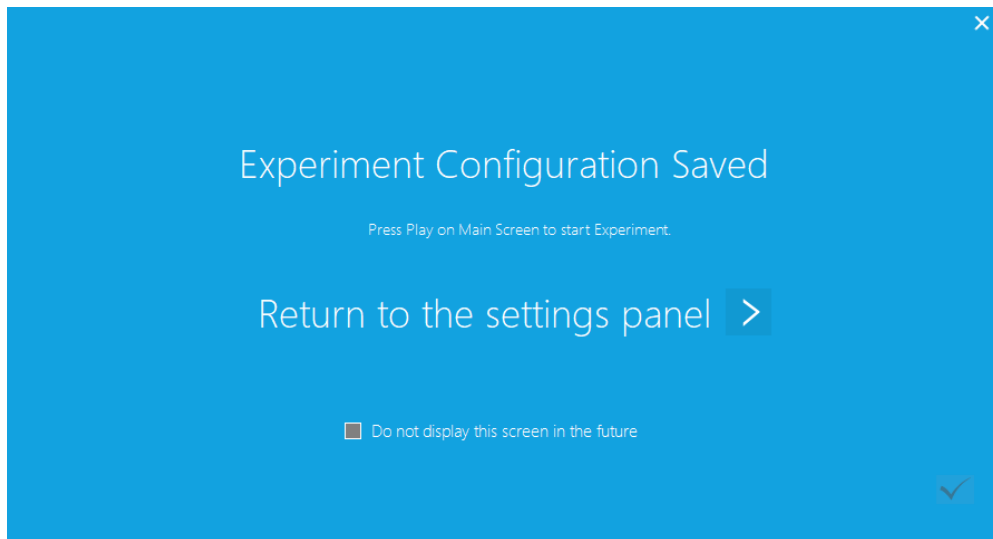
Absolute Scale – allows setting of various absolute limits for the minimum and maximum, in terms of velocity and temperature specifically.

4.7.4 Enable Rolling Average

Takes the rolling average of the last 10 readings.

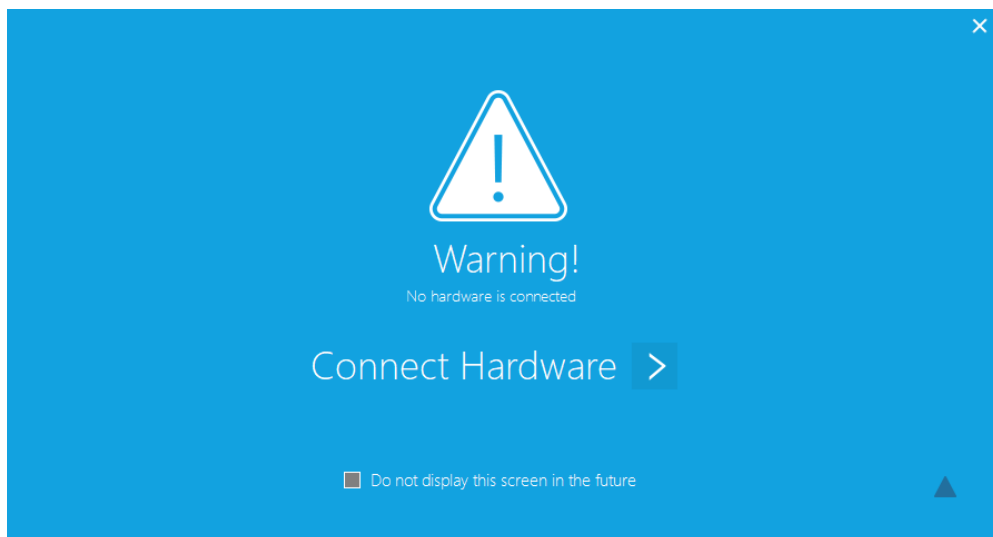


On the following screen (depending on if Round or Rectangle were chosen), the list of plugged in sensors will be displayed on the right. Choose which sensors you would like to use during an experiment. Additionally, which sensor information displays can be enabled or disabled on the bottom righthand side of the screen. Once selections have been made, click "Finish" in the top righthand corner.

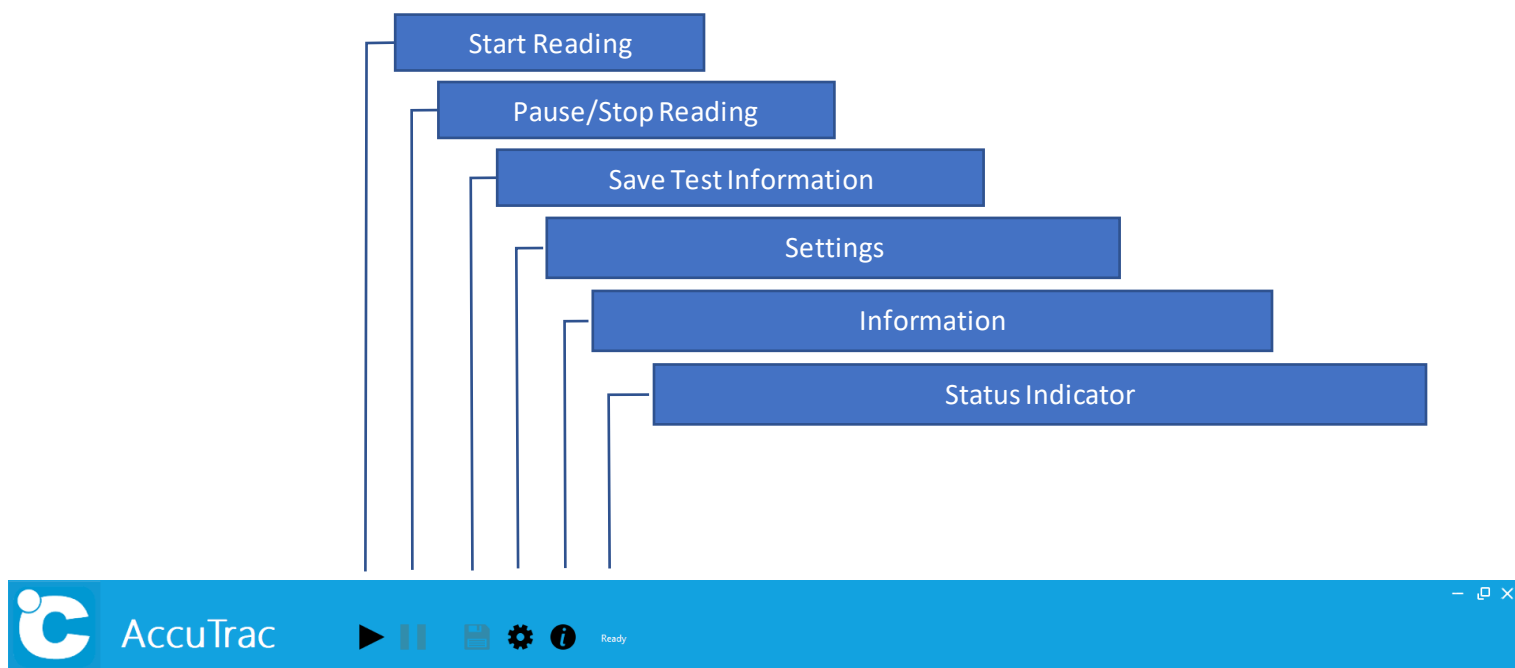


The final screen will display an “Experiment Configuration Saved” screen to acknowledge all settings that were changed in the previous Properties screen.

Note: If no sensors were connected prior to going through the Line Graph setup, a warning message will appear. The option to not display this error is available via tick box at the bottom of the message:



5 Tool Bar



Start Reading: Starts the gathering of data and displays the results in the application window.

Pause/Stop Reading: Pauses or Stops the data collection for display in the application window.

Save Test Information: The sensor readings will be automatically saved to the location chosen in **Settings > Preferences > Auto Save**, when the data collection has been stopped. The Save button allows the user to store the sensor data in a specific location, once the sensor data collection comes to a complete stop.

Settings: Opens the Settings screen which houses Network Settings, Altitude Compensation, Sensor Settings, as well as miscellaneous Preferences (Display Information, Units, Auto Save, and Polling Interval).

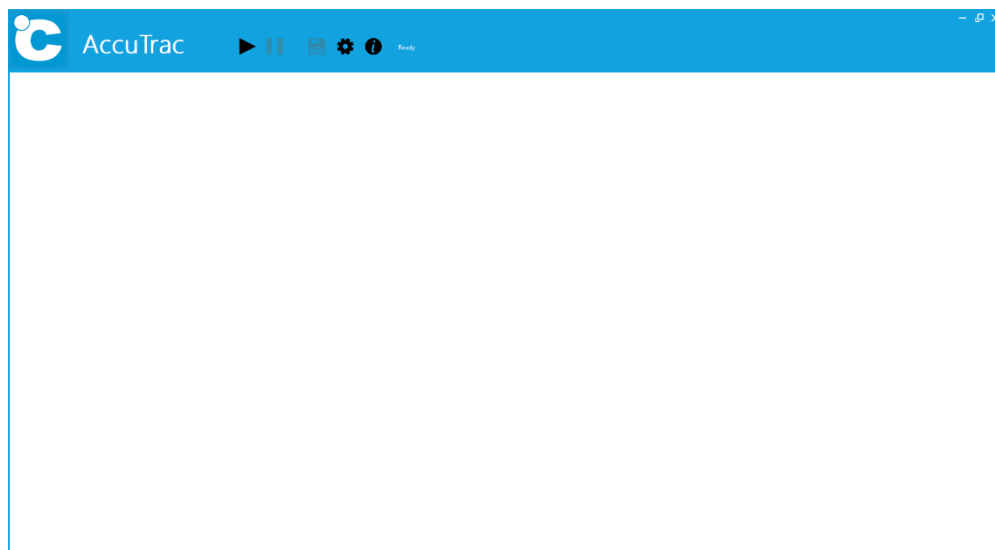
Information: Displays software information.

Status Indicator: Indicates the current status (Ready, Paused, Stopped, etc.) of the software.

6 Running Tests

6.1 Starting, Pausing, Stopping

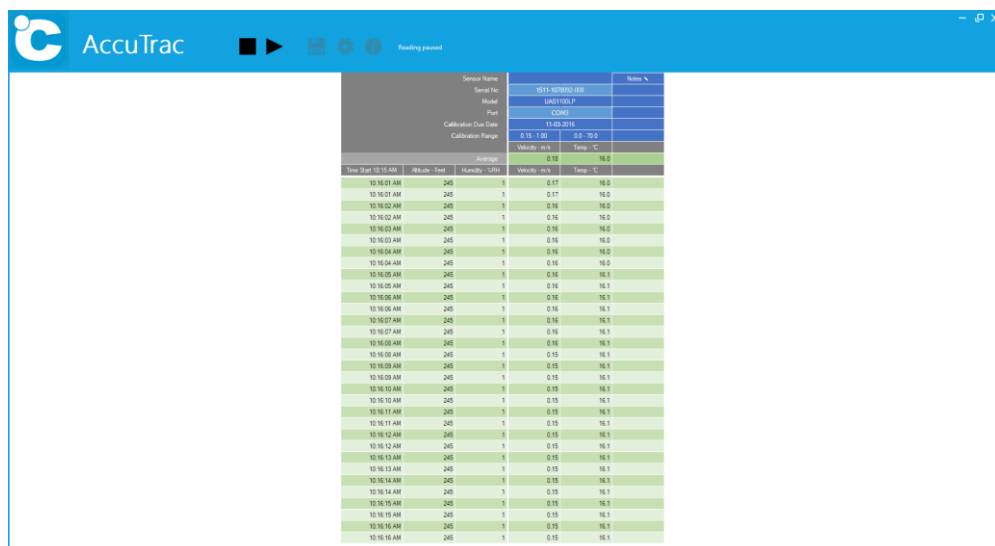
Once all preferences have been adjusted within the various Settings windows, you will once again be presented with a blank (white) screen. A test can be started by clicking on the play button (▶), located in the tool bar.




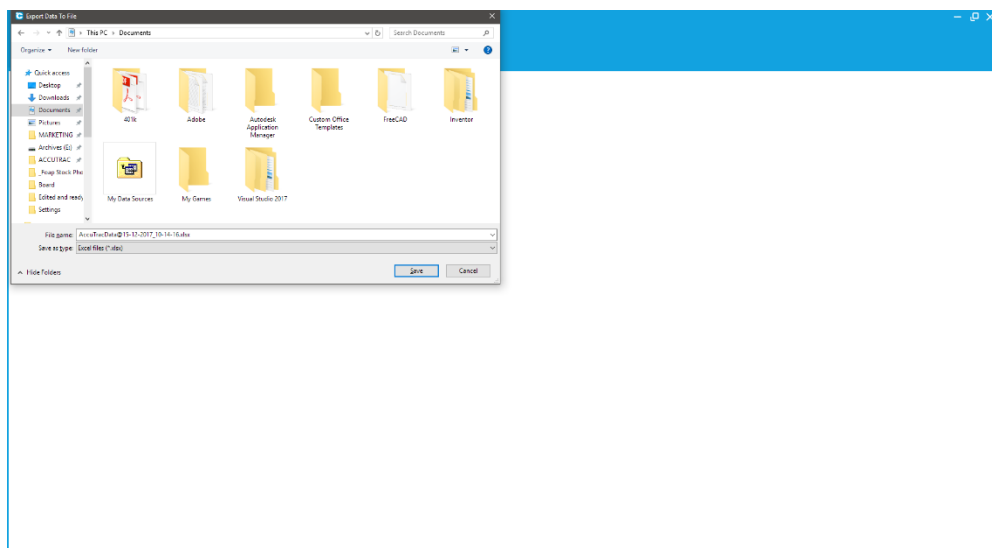
Once all sensors are detected, AccuTrac will begin to display data (Velocity, Temperature, and if set up/available, Barometric Pressure, Altitude, and Humidity). All the sensor information you have chosen to display, such as Sensor Name, Serial Number, etc., will be displayed at the top of the screen (in blue).

Note: If you have graphing enabled, the line and/or gradient graphs will also immediately open.


To pause or stop the test, click on the pause button (⏸) or stop button (■), respectively.



If the test is paused or stopped, you can save acquired data by clicking on the save button (). A dialog will prompt you to name the test data and to choose a location to save to manually.



7 Software Information

Clicking on the information button () will display current AccuTrac™ version information, Degree Controls website link, subscription information (activation code, number of licensed channels, and license expiration date), as well as a link to change the current license.



8 Degree Controls Warranty

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