2/18/2018

Model 200 Wi-Fi Four Probe

HIGH TEMPERATURE AIR FLOW MONITOR OPERATING MANUAL

Rev 1D

Table of Contents

Table of Figures

1   Introduction

The Wind-Probe Model 200 Wi-Fi High Temperature Air Flow Monitor system can be a single, two probe and four probe instrument. It measures air flow from 0 to 500 ft/min. and temperature from 20 – 400 ºF. The system contains all the components shown below.
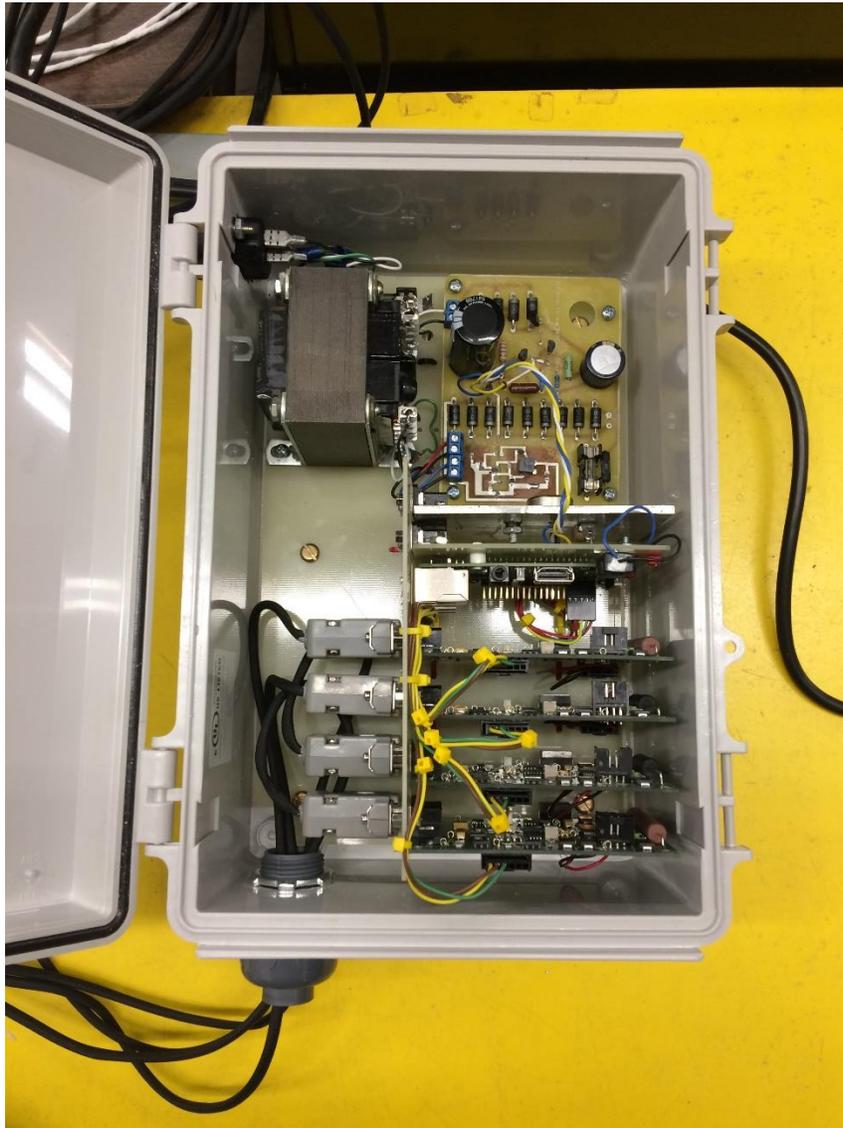
Figure 1 System components

1.1   Control box
The control box contains the control electronics for each probe and an additional microcomputer for communicating with the control boards and implementing the Wi-Fi electronics.

1.2   Probe
The probe contains the air flow and temperature sensors and comes with a 16 foot cable that connects inside to the control board electronics. The top of probe is shown in Figure 2. The probe is protected by an aluminum sleeve that slides over the top of the probe. A black dot on the probe should be positioned towards the incoming air flow. The probe uses a mounting bracket to adjust its distance from the honeycomb block in the oven, see figure 22 on page 13.
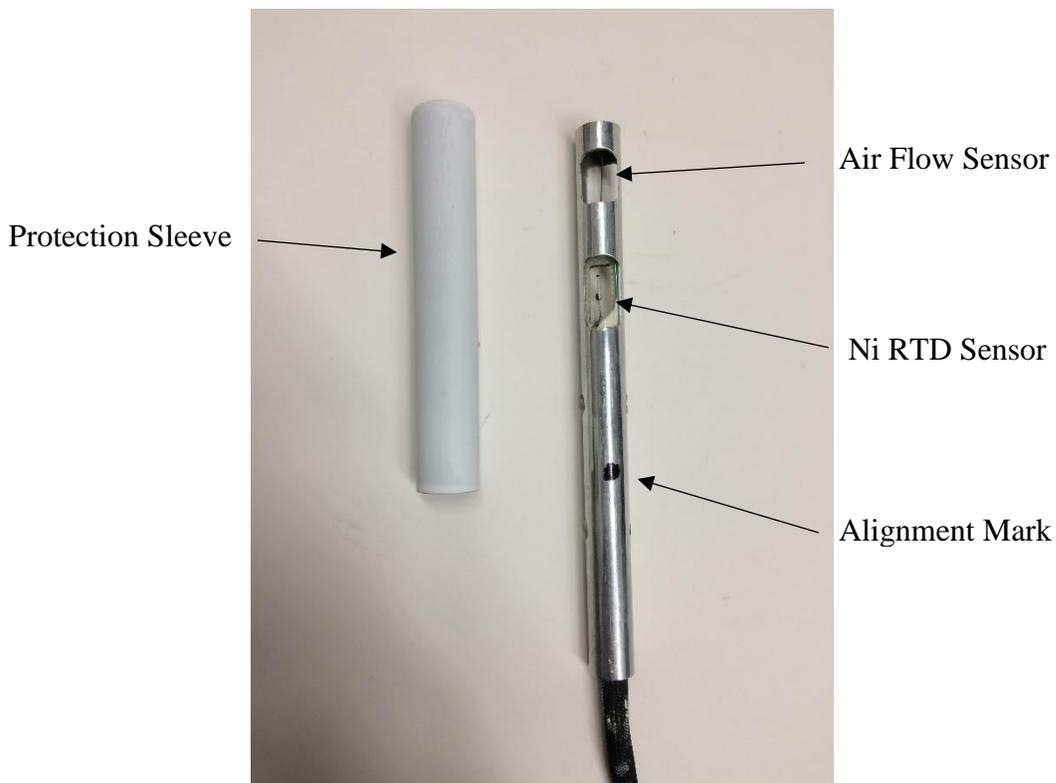
Figure 2 Probe Sensor Elements

1.3 Wi-Fi Electronics

Inside the box exists a microcomputer that communicates with the probe control electronics and generates the Wi-Fi signals for wireless communications.

1.4 Software and Configuration files on the Thumb Drive

The software on the thumb drive contains the Wind-Probe application software and a configuration file, see Figure 3 and Figure 4 below. Configuration files are files generated by Plot menu selections and window positions chosen by the operator. Names are given to them when saved.

Figure 3 Thumb Drive Files

Figure 4 Configuration Files

2   Model 200 Quick Start Guide

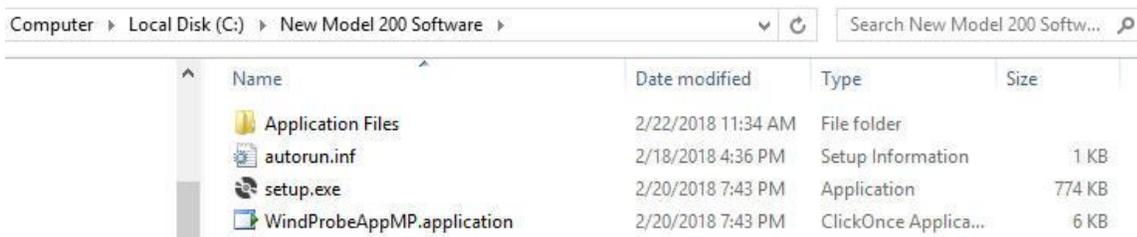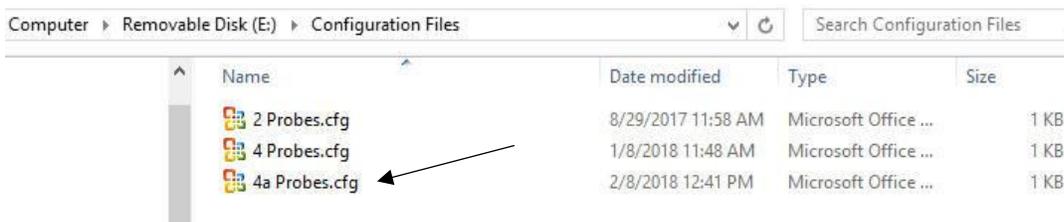This section provides the quick start guide for setting up your probe and capturing data.

2.1   Connect the hardware

- Connect the DB9 connector on the end of each probe cable to the mating connector on the control electronics box. Note, it is critical that the probe be connected to its own control board.
- Plug the power cord into a 120VAC wall outlet.
- Position the probes in locations where you want to measure airflow.
- Caution! The probe's cover tube should always be over the probe when the instrument is **off!** This protects the air flow sensor from acquiring unwanted resin material from the atmosphere.

2.2   Setting Up the Router

The Wind Probe instrument requires a specific router for establishing communications between the instrument and a remote PC (personal computer). Plug in the router supplied by Wind Probe LLC which has been pre-programmed. Place it at approximately 20-40 feet from the Model 200 Wi-Fi instrument. Place the PC being used to monitor the instrument anywhere between 3 – 500 feet from the router.

2.3   Software installation

To install the software, insert the thumb drive into the computer. Copy and paste the two directories and three files into a model 200 software folder on your hard drive as shown Figure 5 below. Double click setup.exe to install the Wind Probe Monitor software.
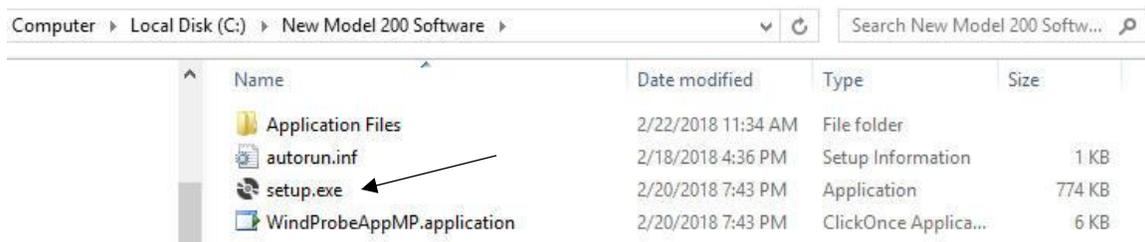

Figure 5 Wind Probe Monitor Software

2.4   Run the software

After the Model 200 and the router are powered up, connect the PC to the WindProbe1 WIFI network. In some cases, it may ask for a key. If so enter windprobe.

Double click the WindProbeAppMP application program from the Start menu.

You must wait for the computer to establish communications with the model 200 Wi-Fi instrument. This can take anywhere from 5 seconds to 2 minutes. You know communications has been established when the message box says **connected to probe at IP address**: 192.168.0.x, see Figure 6.
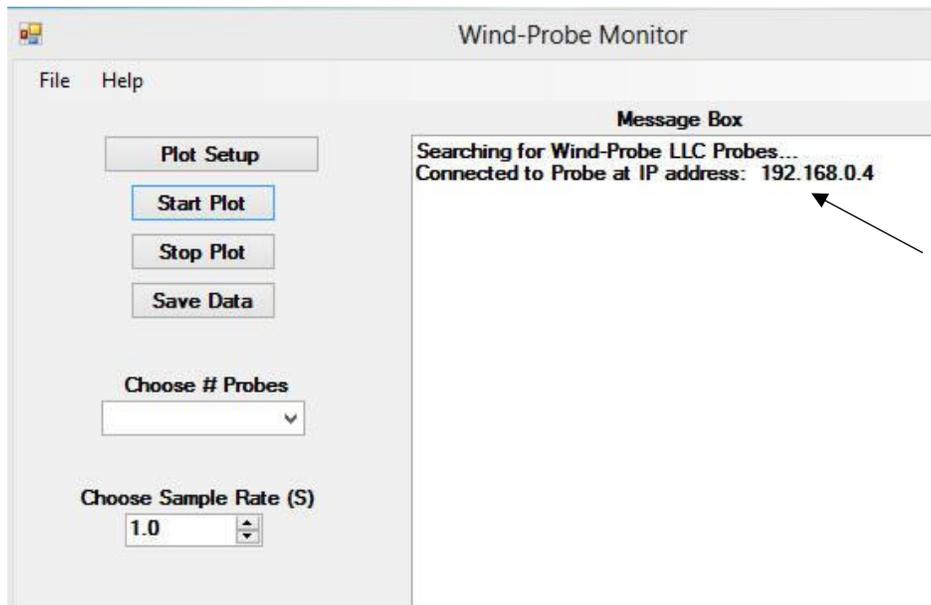
Figure 6 Connection to Probe

If a configuration file exists, click **File** -> **Load Config.** Go to folder containing, for example, 4a Probes.cfg for a four probe system. Double click on this file and you will notice a number pop up in the **Choose # Probe**s window and the Sample Rate will be set. Figure 7 below shows a typical configuration file: 4a Probes.cfg.
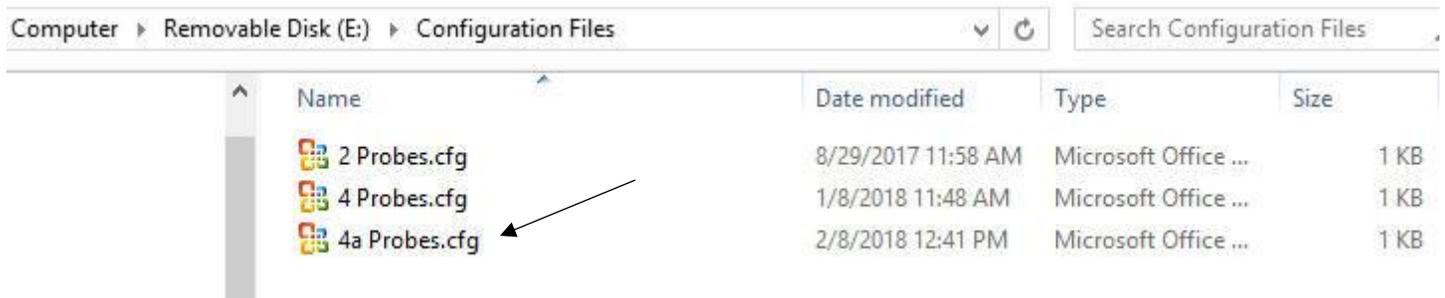

Figure 7 Select Configuration File

If not using a configuration file you can setup the plot configuration by clicking the Plot Setup button. The following dialog box will appear:
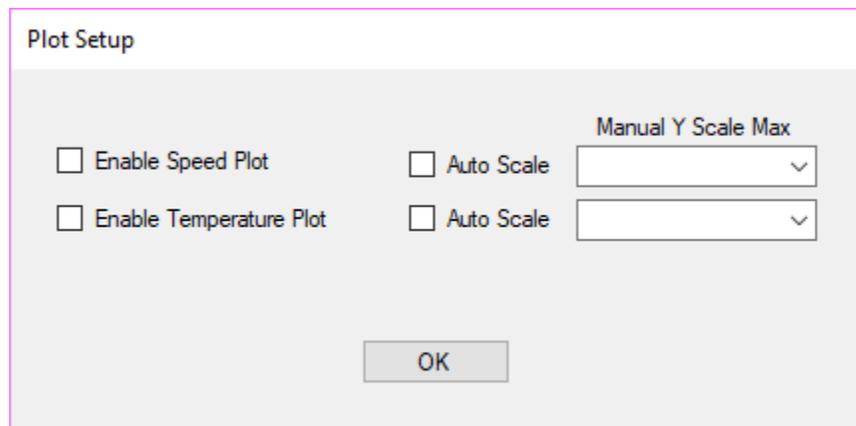

Figure 8 Plot Setup

6

Enable the Speed and/or Temperature plots and select either Auto Scale or set a Manual Maximum scale value for the speed and temperature plots.
Click OK when complete. The plot windows will appear after the Start Plot button is pressed.

2.5   Quick Start Summary

2.5.1   Plug in router located between 10-500 feet away from instrument.

2.5.2   Turn on Model 200 power by plugging it in to 115 VAC power outlet.

2.5.3   Turn on PC located 3-500 feet from router.

2.5.4   Connect PC WIFI network "WindProbe1". Password is "windprobe".

2.5.5   Start the WindProbeAppMP on the PC.

2.5.6   Wait for Wind Probe Monitor to connect to Probes.

2.5.7   Load configuration file or make manual setting selections.

2.5.8   Click Start button, observe data being taken.

3   Start Capturing Data

To **start the program running** click the Start Plot button. You should see something like what is seen in Figure 9 below.
The data acquisition will start using the selected sample rate. The sampled data will be displayed in the Message Box and plot. The selected configuration plot shows the air speed and temperature lined up as seen below. The Probe select window can be used to turn on and off the display of particular probes to view just the ones of interest.
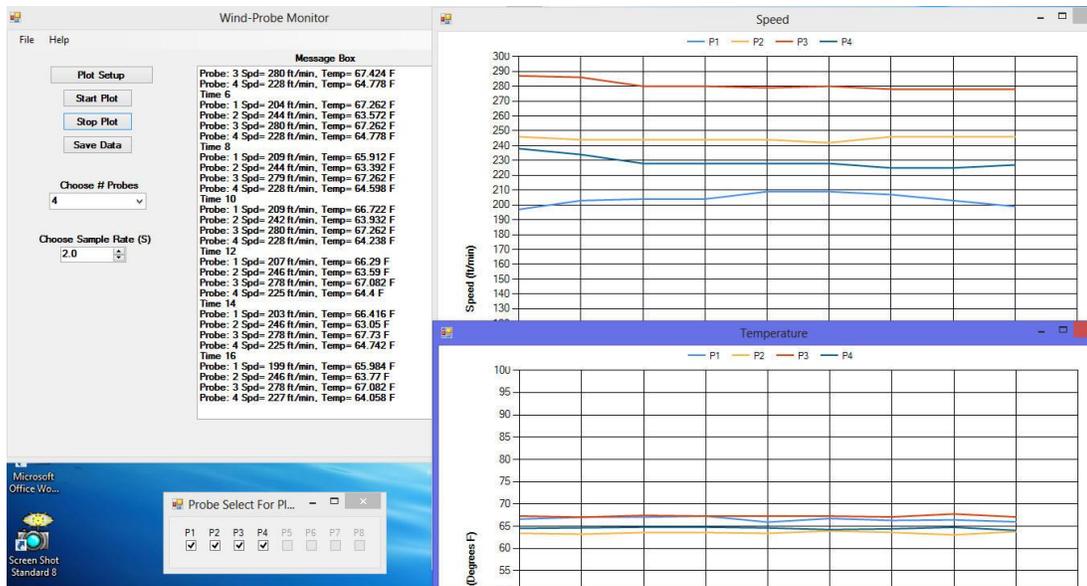

Figure 9 Start Program Running

To **stop the program** click the stop plot button and you should see something like what is below in Figure 10.
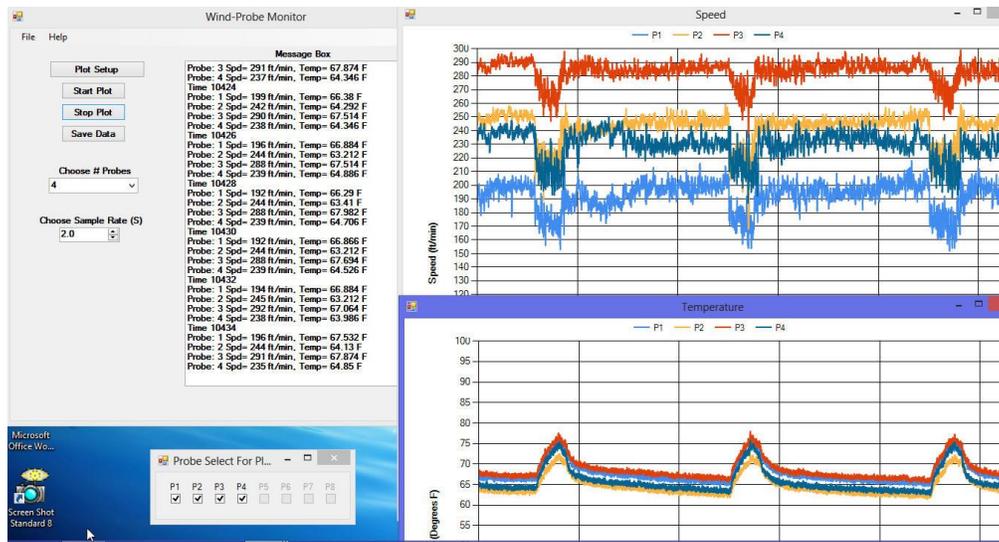
7

Figure 10 Stop Program

3.1   Saving Configuration Files

The configuration file is defined by the operator's choice of Plot/probe parameters and location of all Plot windows opened. When satisfied with the display setup simply choose file save as and define your configuration file name.

3.2   Saving Data

Here we will describe how to save data for recovery using different formats. To save the data to a file click the **Save Data** button and the dialog box shown below appears. Browse to the folder where you want to save the data and enter a filename and click Save, see Figure 11. Here it is called Model 200 Data.
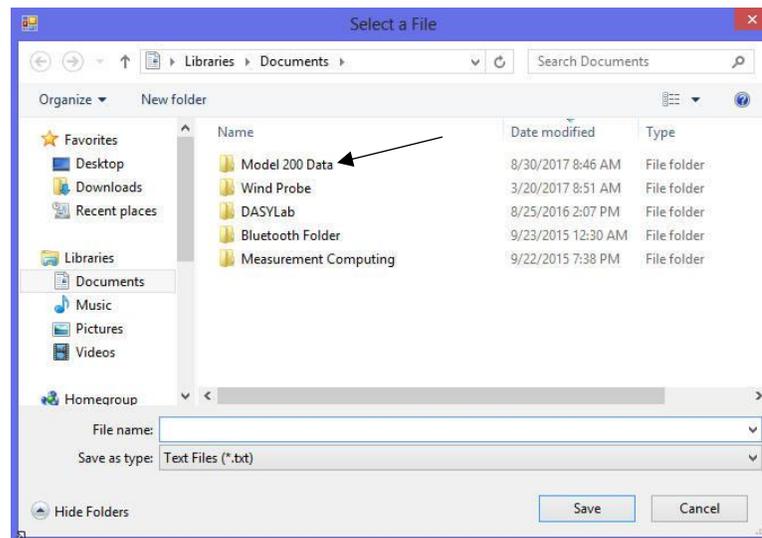
Figure 11 Folder to Save Data

8

In this manual Microsoft Office Excel 2003 was loaded on the computer. However, all versions of Excel will support these commands being used.
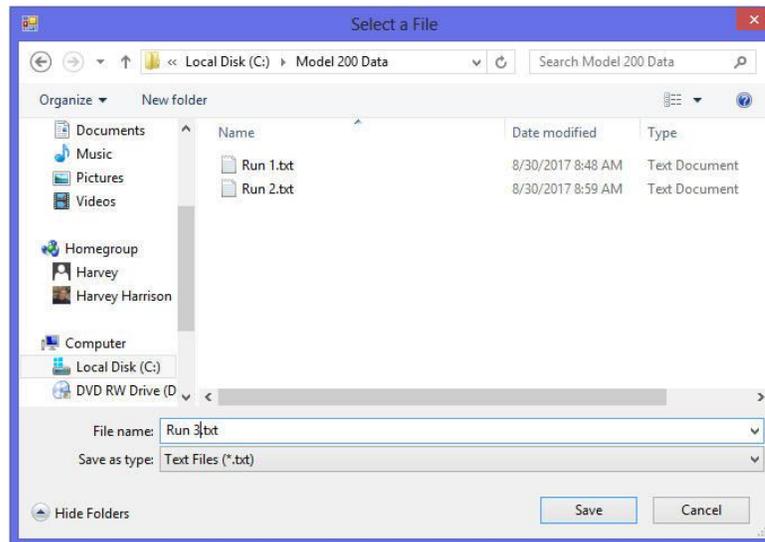
Figure 12 Opening the Saved File in Excel

Note, the file type needs to be changed to **All Files (*.*),** see below Figure 13.
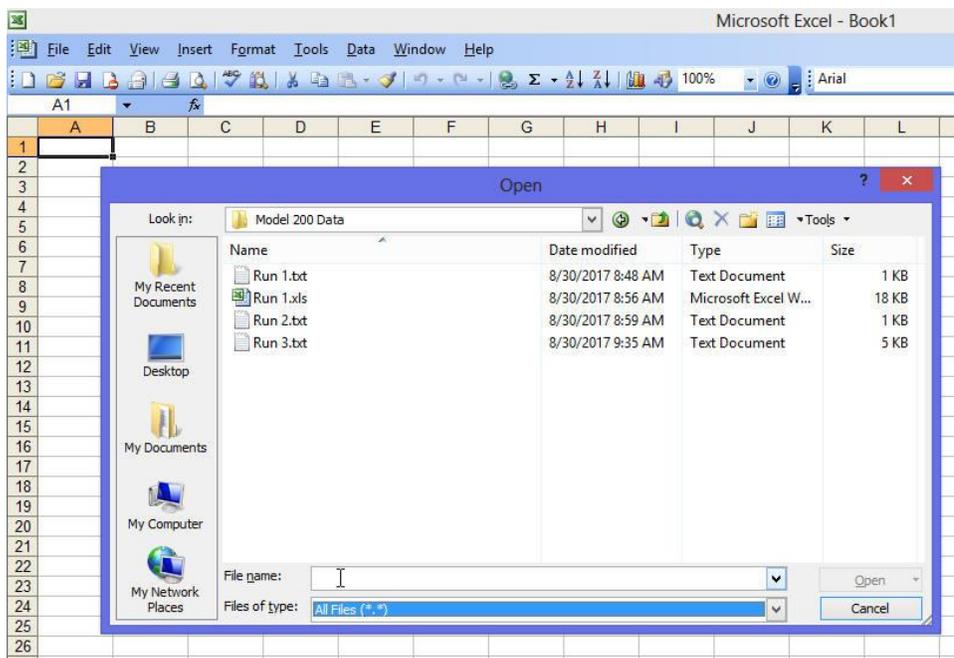
Figure 13 Changing Excel File Type to All Files

Now open the saved file, delete the repeated time columns, insert a row at the top and label each column as shown below, see Figure 14 & Figure 15.

Figure 14 Correctly Formatted Excel File

Figure 15 Plot Icon On Tool Bar

Select the data field you want to plot. Then plot the data by clicking the scatter (x,y) -> Straight line plot buttons, see Figure 16 and Figure 17.
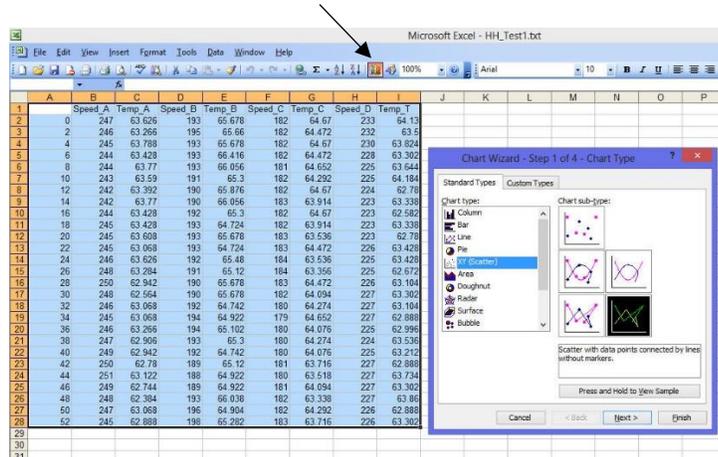

Figure 16 Using Excel Plotting Tools Gives the Above Plot Choices
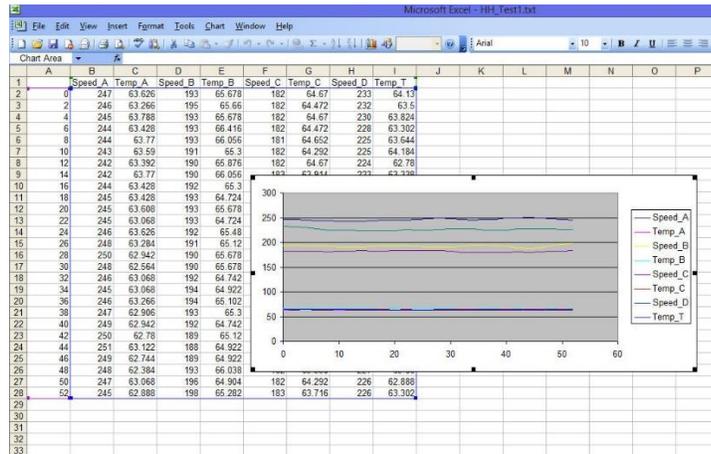
Figure 17 Next Excel Plot Picture

By double clicking the grey area you can choose Area and None to remove the grey area. See Figure 18.

Figure 18 Grey Background Removed

11

By using the plot options choice you can add titles, vertical and horizontal titles and set the scales to meet the specific requirements. See below Figure 19.

Figure 19 Added Titles and Horizontal & Vertical Scales

Finally, save as a (*.xls) file, see Figure 20 below.
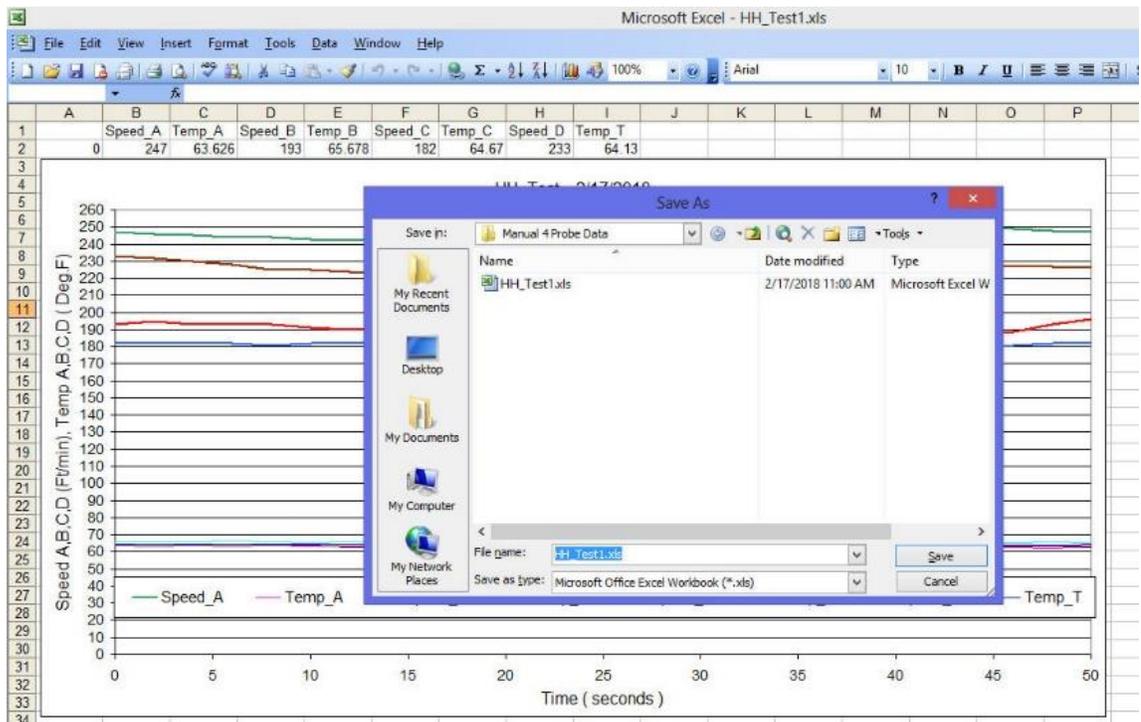
*Figure 20 Save Plot as an Excel *(.xls) File*

3.4 Router & PC Positions Relative to Model 200 Wi-Fi Instrument
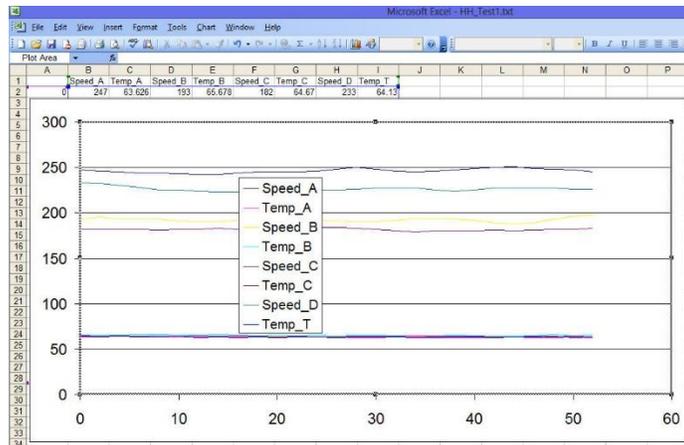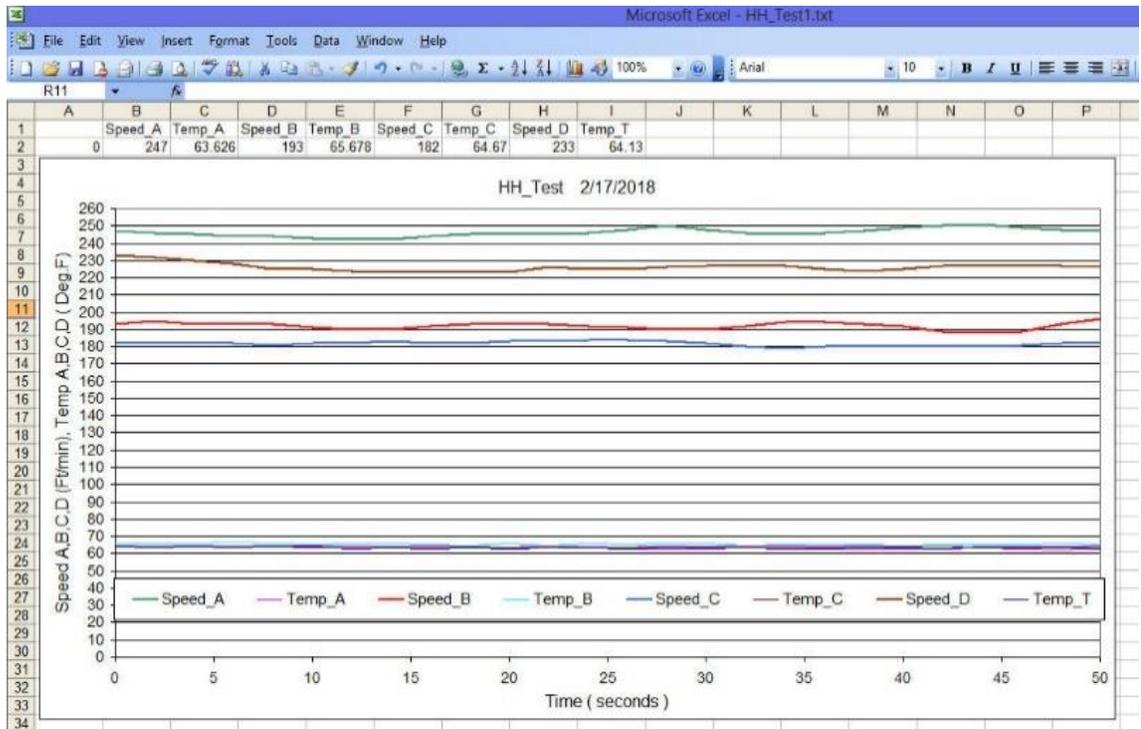
The Router can be 10 -500 feet from the Model 200 instrument. The PC computer can be 10-500 feet from the Router.

Figure 21 Router and PC Locations

3.5 Hardware Accessories

3.5.1 Probe mounting bracket

The Probe mounting bracket permits adjusting the probes distance from the honeycomb.

Figure 22 below illustrates how this is accomplished.

Figure 22 Probe Mounting Bracket

3.5.2 Air flow direction disks

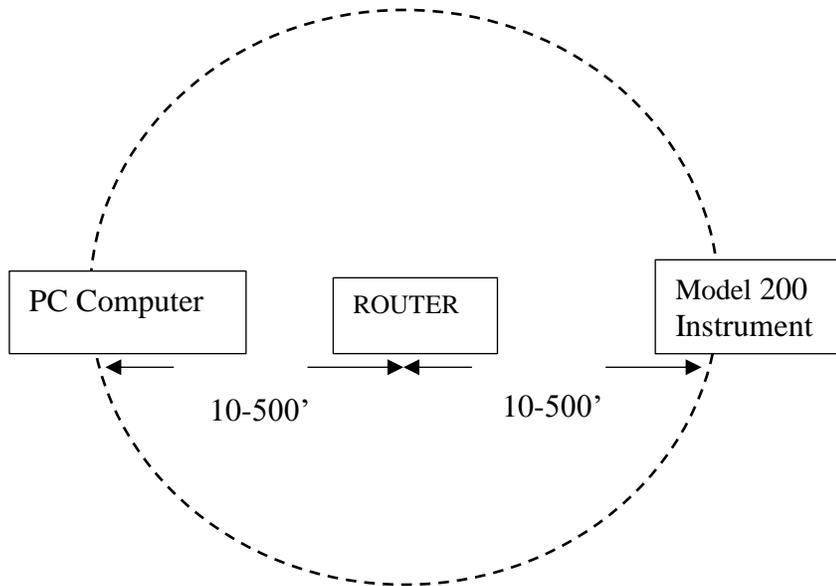The air flow direction disks help insure that the probe only measures the component of air on the axis of air flow. If turbulence was present at the edge of a block, the disk removes this turbulence, see Figure 23.

Figure 23 Air Flow Direction Disk

3.5.3 Feeding Cables Through Electrical Conduits

To mount the control box on or near oven wall feed the probes and their respective cables through the electrical conduits as shown in Figure 24

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Figure 24 Probes and Their Cables Shown Fed Through Electrical Conduits

3.5.4 Wind Probe LLC Warranty

Wind Probe LLC warrants its Model 200 Four probe instrument from any defects or changes in performance for the first one year of use. Wind Probe LLC will be happy to repair or re calibrate the instrument at no charge to the customer. Additionally, Wind Probe LLC is happy to work with all customers to best utilize this new and revolutionary instrument. The goal of this warranty is to provide all the necessary support which will result in the maximum customer satisfaction.