IFA 300 and ThermalPro quick guide

Installing ThermalPro

-Download the included zip fila and extract the ThermalPro and PowerDAQ installers.

-Will already be installed on some EnFlo computers, if a new install is needed speak to Paul about the required admin access.

-Controlling the IFA 300 without ThermalPro is also possible, see the direct RS232 commands section of the included manual.

Setting up the IFA 300

-Connect a BNC cable to the anemometer channels for each probe required.

-The output will go from the BNC to an A-D converter which can then be read by LabView.

-The RS232 cable will connect to the computer running ThermalPro, note this doesn't need to be the same one running LabView if needed.

-Begin with a shorting probe installed in the probe holder.

Adding a new hot wire probe

-Go to the Calibration-Probe Data page on ThermalPro.

-Save As under the name of the probe being added.

-A/D channel should be 1, IFA channel is whichever the probe is connected to on the anemometer, probe type will likely be single, wire/film likely to be wire, and temp channel can be ignored. Though adjust as needed for different setups. Calibration will be done externally by LabView so can be left as default,

-First swap out the probe with a shorting probe to measure the R_{cable} of the setup being used. Add to this the $R_{wire/lead}$ shown on the probe to get total resistance.

-Reinsert the probe and measure R_{Probe} checking it matches with the shown R_{20}.

-Find the operating resistance either from the desired overheat ratio as $R_{opp} = R_{20} * (1+O.R.)$ or from the desired operating temperature as $R_{opp} = R_{20}(1 + a_{20}(T_{opp} - 20))$. Note a_{20} should be given by the probe box and 20 is the room temperature, for different ambient conditions adjust R_{20} to $R_{measured}$ and 20 to the actual temperature. Also note to convert the a_{20} value from a percentage, if given as such, by dividing by 100 for this equation.

-Save the probe with an initial gain of 1 and offset of 0, then click calibrate to send the probe file to the system.

Determining gain and offset

-Click the Gain & Offset button in the Probe Data page to measure the high and low voltages, alternatively this can be done while the anemometer is in run mode.

-Set the tunnel to the lowest required calibration speed and click acquire for the low flow and measure the output voltage, either from LabView or directly from a multi-meter connected to the output voltage. Take a value slightly below this to be the offset.

-Apply the offset to the probe file and once again save and calibrate.

-Set the tunnel to the highest required calibration speed and click acquire for the high flow and once again measure the output voltage. The highest voltage the IFA 300 can output is 5 so divide this by the output voltage to determine the maximum possible gain.

-Apply the gain to the probe file and once again save and calibrate.

Running the probe

-Go to the Acquisition-Probe table page on ThermalPro.

-Add the probe that has just been created or an existing one,

-Check all the values shown are correct, then click next screen. The anemometer will now be in run mode, close the page to set it back to standby to make any changes.

Connecting to LabView

-Setup the A-D converter as an input channel depending on which COM port it was plugged into.

-Determine the range of velocities required for calibration.

-Calibration can be done manually by setting the tunnel to each speed then measuring the voltage for each in the calibration page. Or can be done by an Autocalibration in a command file.

-Different curves can be fit to the data points measured, select as required or use Kings' law as a default.