DEUTSCHE WINDGUARD

Calibration details for Thies First Class Advanced X anemometers

When calibrating a Thies First Class Advanced X anemometer at Deutsche WindGuard Wind Tunnel Services GmbH the following data will be sampled and given in the calibration certificate (see explanations on next page).

For type .400 (RS485):
- frequency output (Pin 1 as configured. Default setting of FO=7 recommended)
- v(cal. table): Telegram 2 Pos. 5, "Momentary value of the wind speed, calculated with the current calibration table"
- v(standard): Telegram 2 Pos. 11, "Momentary value of the wind speed, calculated with the standard curve"
- v(hPa corr.): Telegram 2 Pos. 17, "Momentary value of the wind speed, corrected depending on the air pressure (wind speed calculated with the current calibration table)"

For type .401 (MODBUS):
- frequency output (Pin 1 as configured. Default setting of FO=7 recommended)
- v(cal. table): Register 30001 "Wind speed"
- v(standard): Register 30005 "Wind speed uncorrected"
- v(hPa corr.): Register 30013 "Wind speed corrected depending on the air pressure"

Sensor adjustment:

It is possible to adjust the sensor by uploading a user calibration table (UCT) after the calibration. After adjusting the sensor, a recalibration is necessary (resulting in two calibrations per sensor).

Yes, adjust sensor and recalibrate.   No, no adjustment wanted.

Linear regression analysis:

The linear regression analysis (slope/offset) will currently only be performed for one kind of output. Please choose the output data for which this should be done:

frequency output   v(standard)

v(cal. table)   v(hPa corr.)

Additional remarks: ………

………

Please use the information of this completed form for all future calibrations of the above mentioned type. This agreement is valid until revoked.

Date: ………………… Company/Sign: ………………………………………………………..……………………

Please return the completed form to c.herold@windguard.de.

Frequently asked questions

Why do you record all of the above-mentioned sensor values when I only need one?

Since the sensor allows for a wide variety of configurations, we try to record all meaningful sensor values so that the calibration can be used even if the final configuration is unknown during the calibration itself.

Why do I have to choose a value for the linear regression analysis?

Currently it is only possible to show the linear regression analysis (e.g. slope and offset values) for one sensor output. These values are usually to convert for example a sensor value in Hz to m/s. **We therefore recommend to choose the frequency output for this**, if you are unsure or do not need an analysis for the other values.

What are all the different wind speed values that are recorded?

The names given above are the names used in the operation manual. For details please refer to the operation manual. Regardless of this, here is a quick overview:

frequency output	The frequency output measured with a frequency counter on Pin 1 of the sensor.
v(cal. table)	The wind speed with adjusted calibration table. This value is equal to v(standard) if no adjustment was done.
v(standard)	The wind speed without adjustment. This value is always the uncorrected wind speed.
v(hPa corr.)	The wind speed with air pressure correction and adjusted calibration table if available.

The MODBUS registers correspond to the above mentioned THIES-Interpreter names.

What is an adjustment and why do you recommend a second calibration?

According to "BIPM JCGM 200:2008 International vocabulary of metrology — Basic and general concepts and associated terms (VIM)" an adjustment is "a set of operations carried out on a measuring system so that it provides prescribed indications corresponding to given values of a quantity to be measured". Simplified this means **the adjustment of the sensor puts the output data more in line with the reference measurement system**.
An adjustment will always change the calibration result. Therefore, **we recommend a second calibration after the adjustment to have a valid calibration certificate** which represents the state of the sensor when leaving our calibration lab.