Wind Transmitter
>>First Class Advanced X<<

FAQ / Frequently Asked Questions

4.3352.00.400 / 401

4.3352.10.400 / 401

- Classified according to IEC 61400-12-1 EDITION 2.0 (2017-03)

Dok. No. 021881/03/21

THE WORLD OF WEATHER DATA

FAQ regarding FirstClass Advanced X Anemometers

Important note:

By reason of this document all devices “FirstClass Advanced X anemometer” will be shipped out with parameter FO initially set to FO4 with immediate effect.

1. **Question:** According to the user manual the output values of telegrams 1 / 2 and 4 / 5 / 6 seem to be interchanged:

   Telegram 1 / 2 pos. 5 is the instantaneous value of wind velocity (current calibration table); in telegrams 4 / 5 / 6 this is pos. 11

   Telegram 1 / 2 pos. 10 / 11 is the instantaneous value of wind velocity (standard characteristic curve); in telegrams 4 / 5 / 6 this is pos. 5

   Is this correct?

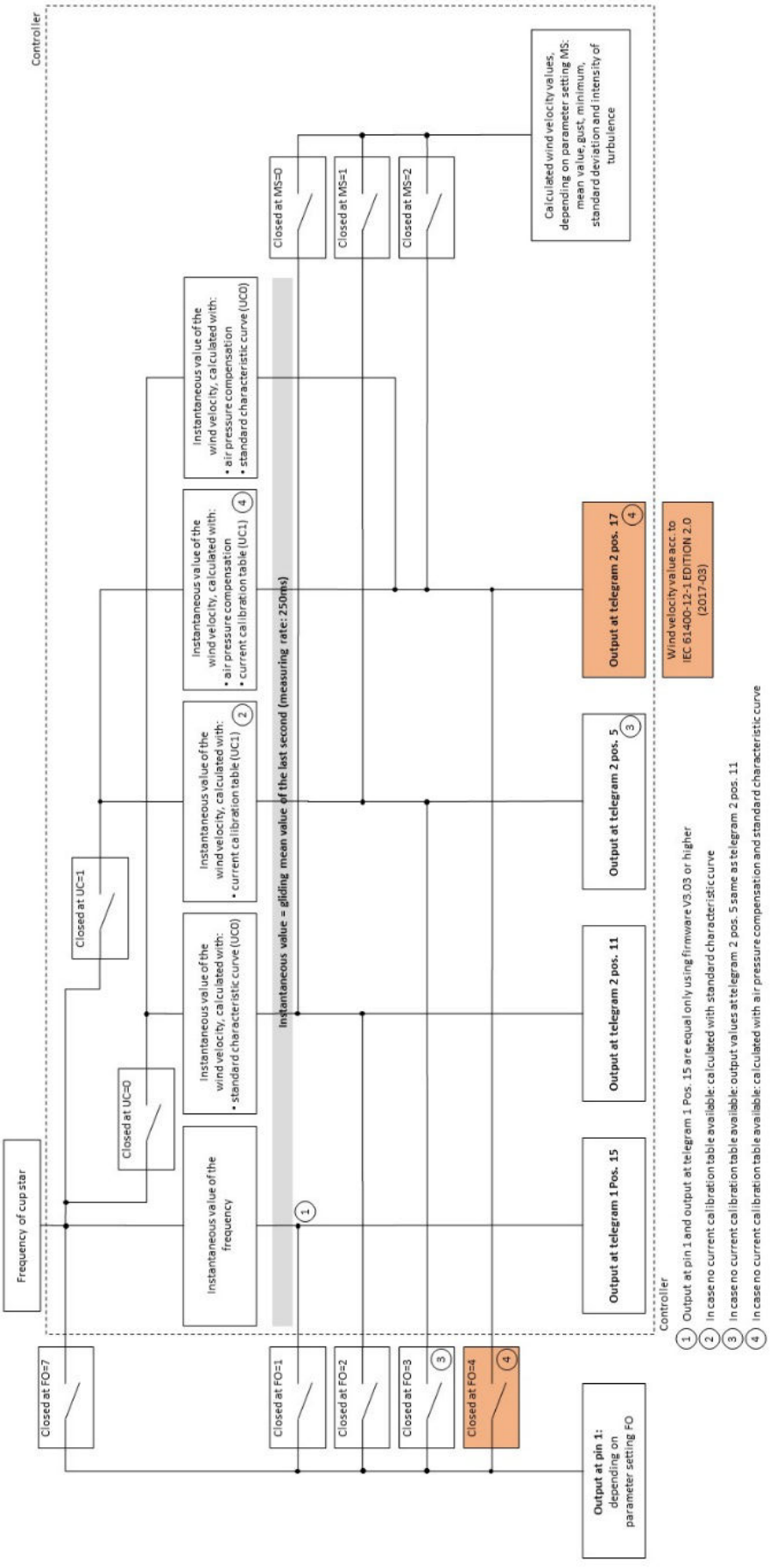
   Answer: The description in the manual is correct. There is no permutation.

2. **Question:** When I take the frequency and try to re-calculate the wind velocity using the standard characteristic curve, I do not get same values that are given in telegrams 1 / 2 pos. 10 / 11 resp. telegrams 4 / 5 / 6 pos. 5. What is the reason?

   Answer: Up to Firmware version 3.07 the calculated value is truncated after the first decimal place. The value is rounded in newer software versions. Despite this, the accuracy of the device is fulfilled according to the specification.

3. **Question:** It is not quite clear to me what exactly is influenced by parameters FO, MS and UC. Could you please explain and clarify?

   Answer: Please have a look to the picture 1 below. It is similar to that one shown in the user manual but added by some details. Therefore, it should become clearer.



Picture 1: Connections between parameters FO, MS and UC

4. **Question:** The frequency value I can read out from telegram 1 pos. 15 seems to be truncated. Is there anything wrong with it? What about the accuracy? What about the firmware version?

   Answer: Telegram 1 pos. 15 is showing frequency values with a solution of 0,1 Hz. Since a frequency in our case must be an integer (counted pulses) the first decimal place will always be 0. There is no loss in accuracy. The behavior is the same without regard to the firmware version. Comparing frequency values at telegram 1 pos. 15 and pin 1 (FO=1) please be aware that these values are only equal when firmware V3.03 or higher is installed on the device!

5. **Question:** What about the air pressure when the device is been calibrated by the Deutsche Windguard?

   Answer: Assuming the air pressure during the calibration process is varying between 1000hPa and 1030 hPa the wind speed deviation is less than 0,01 m/s and hence lower than the measuring solution of the FirstClass Advanced X anemometers. For more detailed information see document Calibration_at_Ambient_Conditions on our webpage:

   https://www.thiesclima.com/db/dnl/Calibration_at_Ambient_Conditions_VT190387_01.pdf

   That means: In case the air pressure range of 1000 … 1030 hPa is met during the calibration process there is no need of extra considering the air pressure when processing the calibration at Deutsche Windguard or any other calibration laboratory.

6. **Question:** What about the conditions and parameters that have been used for generating the classification report?

   Answer: The certification procedure included air pressure, see Summary report AK151023-1.3 on our webpage:

   https://www.thiesclima.com/db/dnl/Summary_thies_FC_AdvancedX_0113001_0113005_Version_3.pdf

   Additionally Deutsche Windguard has confirmed the parameters that have been used when doing the classification tests; you will find this document here:

   https://www.thiesclima.com/db/dnl/Clarification_Classification_Thies_FC_Advanced_X_r2.pdf

7. **Question:** I am using the frequency given by telegram 1 pos. 15. Is the classification applicable in this case? What about the measuring uncertainty?

   Answer: When using telegram 1 pos. 15 then the air pressure can be taken into account by recalculating the data using the measured air pressure.

8. **Question:** I am using the frequency given by telegram 1 pos. 15. Is the calibration (done by collecting data at frequency output and parameter setting FO7) applicable in this case?

   Answer: In this case the calibration is applicable. Because telegram 1 pos. 15 is a raw value, in order to get correct wind velocity values you must use the slope and offset given by the calibration certificate.

9. **Question:** If I want to operate the device according to the classification, what do I have to do then?

   Answer: In general there are two different ways to operate the sensor:
   I. Using it with standard characteristic curve
   II. Using it with current calibration table

Case I: Using standard characteristic curve

The optimum way would be as specified below:

Ia. First you must specify whether you want to use the frequency output (pin 1) or serial output to get your data

Ib. Calibration must be done without regard to the air pressure. For calibration you must tell what kind of output you want to use in operation:

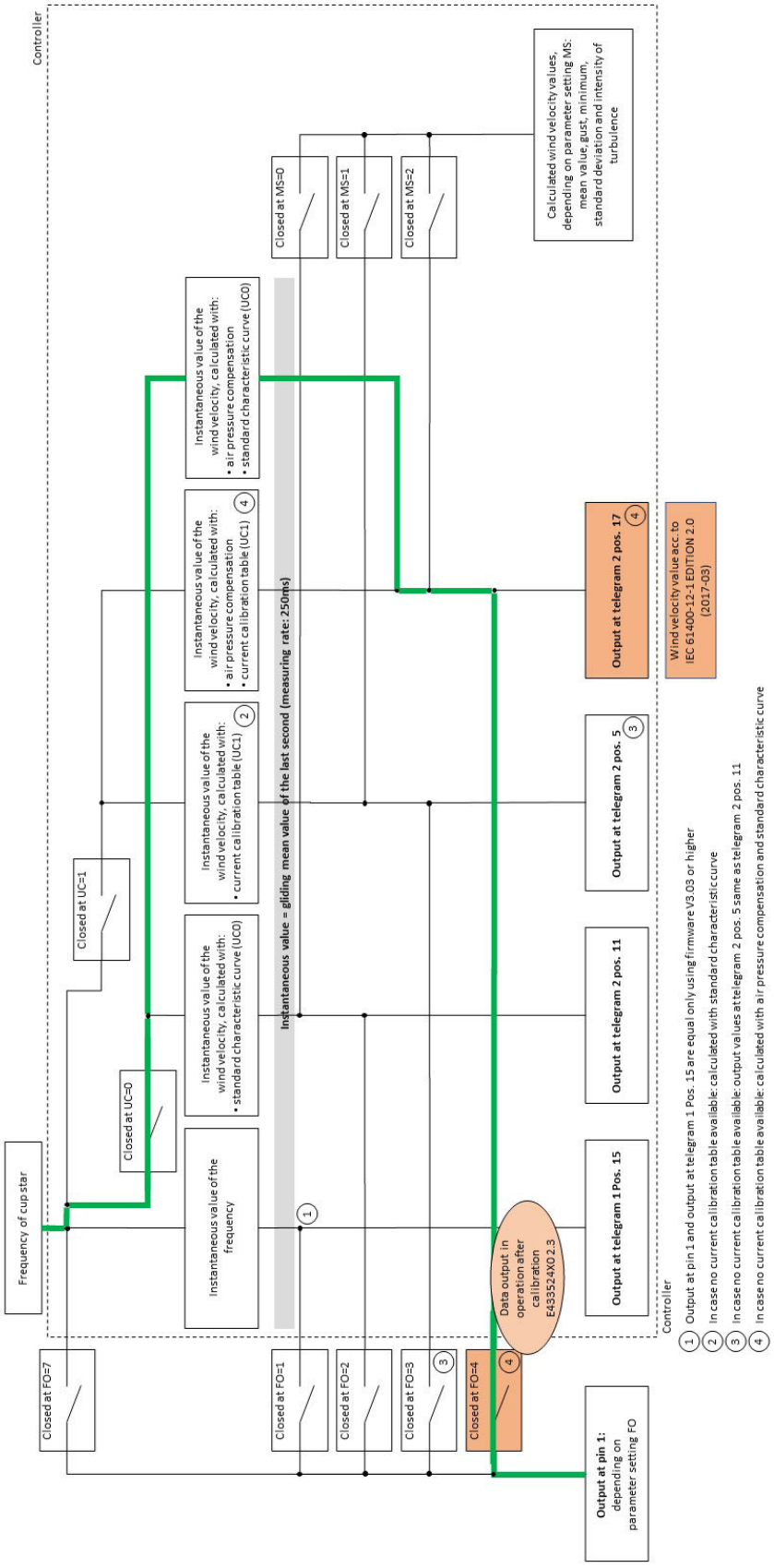
frequency output (pin 1) → calibration data: wind velocity corrected by standard characteristic curve at pin 1; FO2

serial output → calibration data: wind velocity corrected by standard characteristic curve at telegram 2 pos. 11

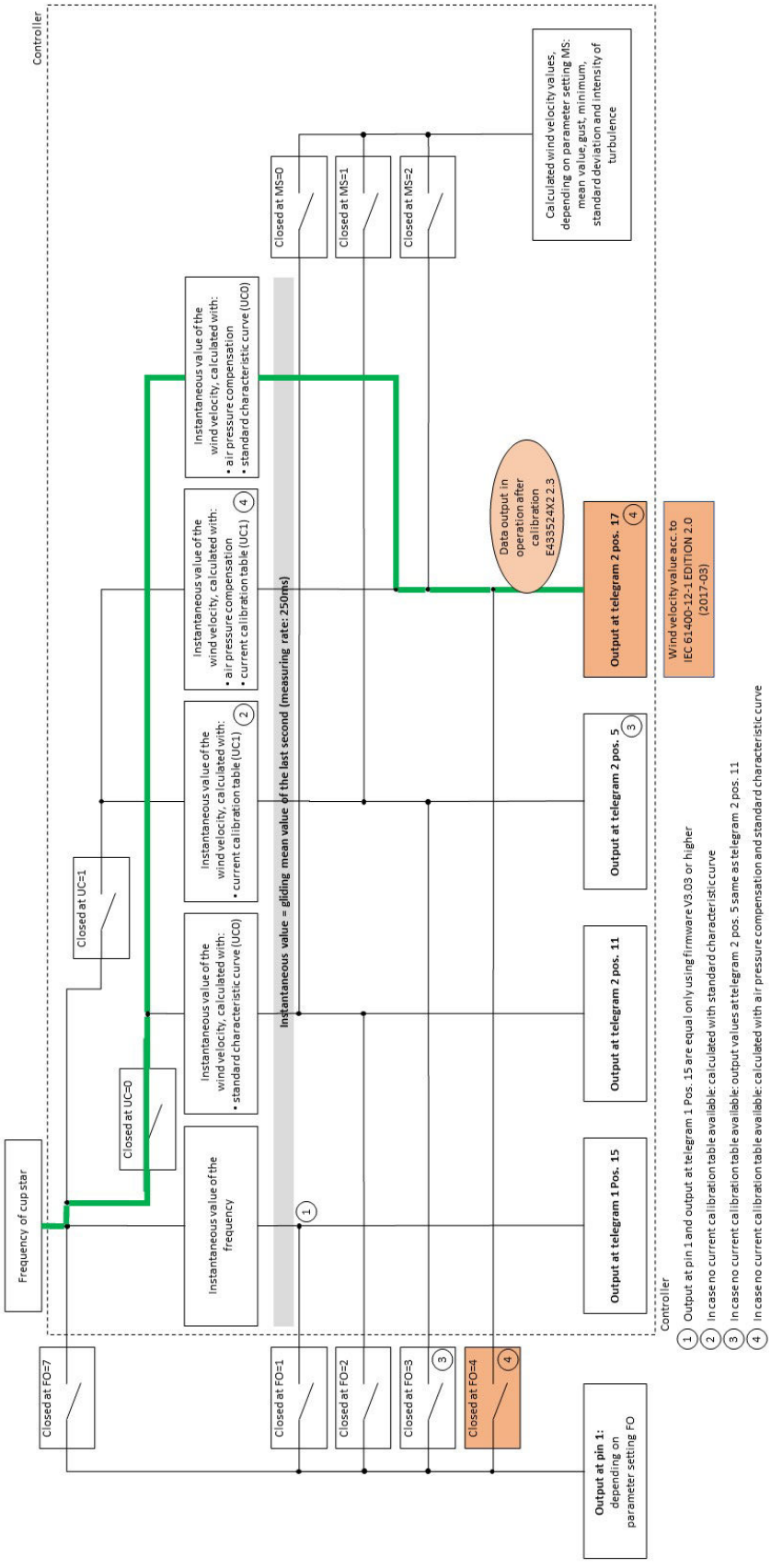
Ic. Let the linear regression analysis (slope / offset) on the calibration certificate be done for the calibration data

Note:

Steps Ib. and Ic. will be done automatically if you order the calibration according to Thies art. no. E433524X0 2.3 (for frequency output (pin 1); see picture 2) resp. E433524X2 2.3 (for serial output; see picture 3).



Picture 2: Data output after calibration E433524X0 2.3 in order to have frequency output at pin 1 according to the classification with standard characteristic curve



Picture 3: Data output after calibration E433524X2 2.3 in order to have serial output according to the classification with standard characteristic curve

For using frequency output (pin 1) next steps are as following:

Id. For operation, set FO4, UC0

Ie. Collect data from frequency output. With this setting, you will get wind velocity corrected by standard characteristic curve and air pressure (so classification and calibration are applicable). This is without regard to the firmware version

These are the next steps for using serial output:

If. For operation set UC0, MS2

Ig. For type *.400 (RS485) collect data v(hPa corr.) from telegram 2 / 4 / 5 / 6 pos. 17 (so classification and calibration are applicable). This is without regard to the firmware version

Ih. For type *.401 (MODBUS) collect data v(hPa corr.) from register 30013 / 35013 / 36005 / 36105 / 36205 (so classification and calibration are applicable). This is without regard to the firmware version

Case II: Using current calibration table

The procedure will be as following:

IIa. First you must specify whether you want to use the frequency output (pin 1) or serial output to get your data

IIb. Calibration must be done without regard to the air pressure. For calibration you must tell what kind of output you want to use in operation:

frequency output (pin 1) → calibration data: wind velocity corrected by standard characteristic curve at pin 1; FO2

serial output → calibration data: wind velocity corrected by standard characteristic curve at telegram 2 pos. 11

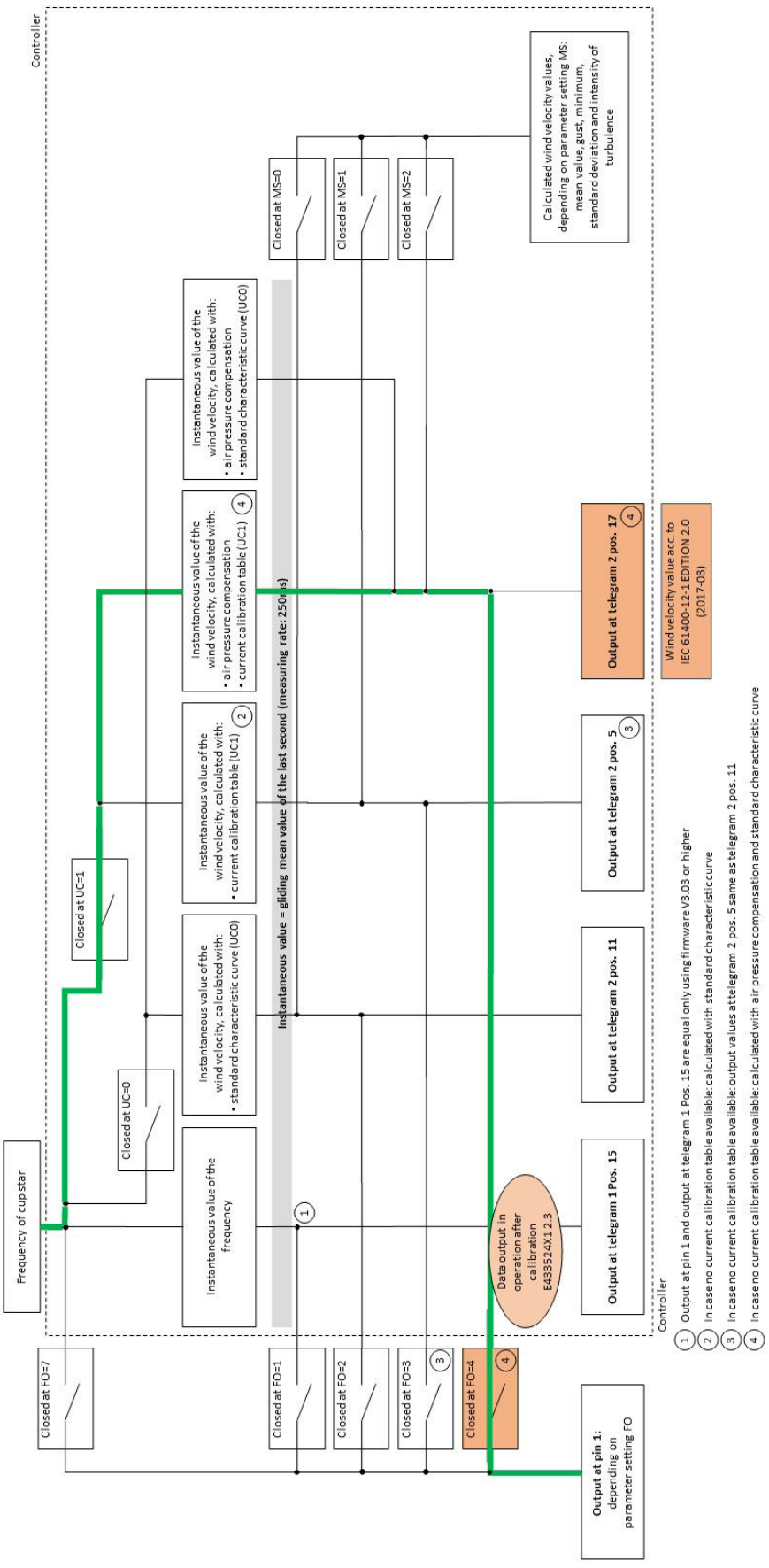
IIc. Let the linear regression analysis (slope / offset) on the calibration certificate be done for the calibration data

IId. Let write the first calibration results into the current calibration table of the device. The first calibration is then an adjustment

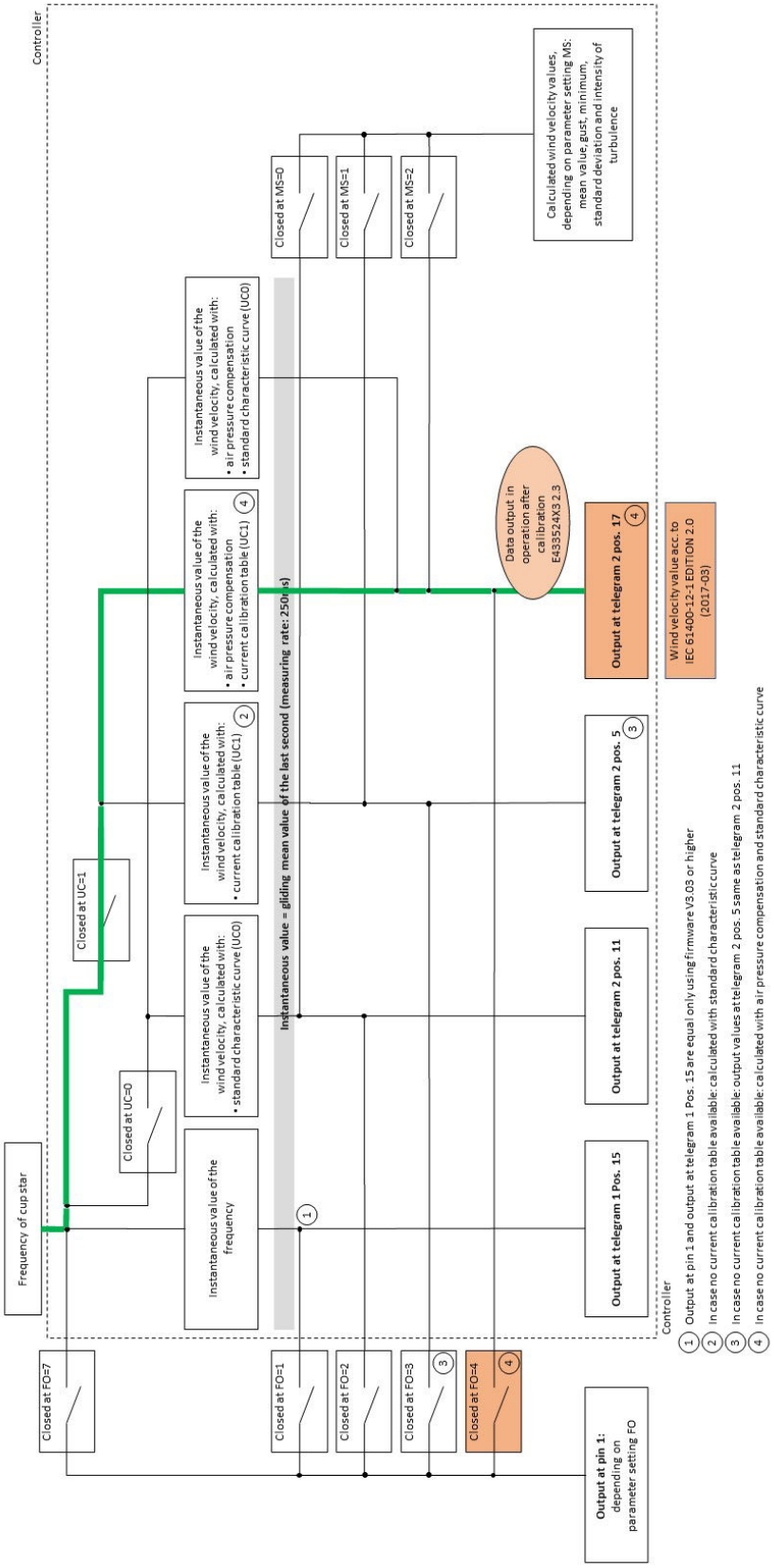
IIe. Storing the current calibration table on the device and using this data subsequently for calculating the wind speed values means changing the device in a certain way. Therefore, from the purely formal point of view a re-calibration would need to be done. However, the re-calibration in this case would show a deviation of (nearly) 0.

Note:

Steps IIb. to IIe. will be done automatically if you order the calibration according to Thies art. no. E433524X1 2.3 (for frequency output (pin 1); see picture 4) resp. E433524X3 2.3 (for serial output; see picture 5).



Picture 4: Data output after calibration E433524X1 2.3 in order to have frequency output at pin 1 according to the classification with current calibration table



Picture 5: Data output after calibration E433524X3 2.3 in order to have serial output according to the classification with current calibration table

For using frequency output (pin 1) next steps are as following:

IIf. For operation, set FO4, UC1

IIg. Collect data from frequency output. With this setting, you will get wind velocity corrected by current calibration table and air pressure (so classification and calibration are applicable). This is without regard to the firmware version

These are the next steps for using serial output:

IIh. For operation set UC1, MS2

IIi. For type *.400 (RS485) collect data v(hPa corr.) from telegram 2 / 4 / 5 / 6 pos. 17 (so classification and calibration are applicable). This is without regard to the firmware version

IIj. For type *.401 (MODBUS) collect data v(hPa corr.) from register 30013 / 35013 / 36005 / 36105 / 36205 (so classification and calibration are applicable). This is without regard to the firmware version

Please contact us for your system requirements.
We advise you gladly.

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