

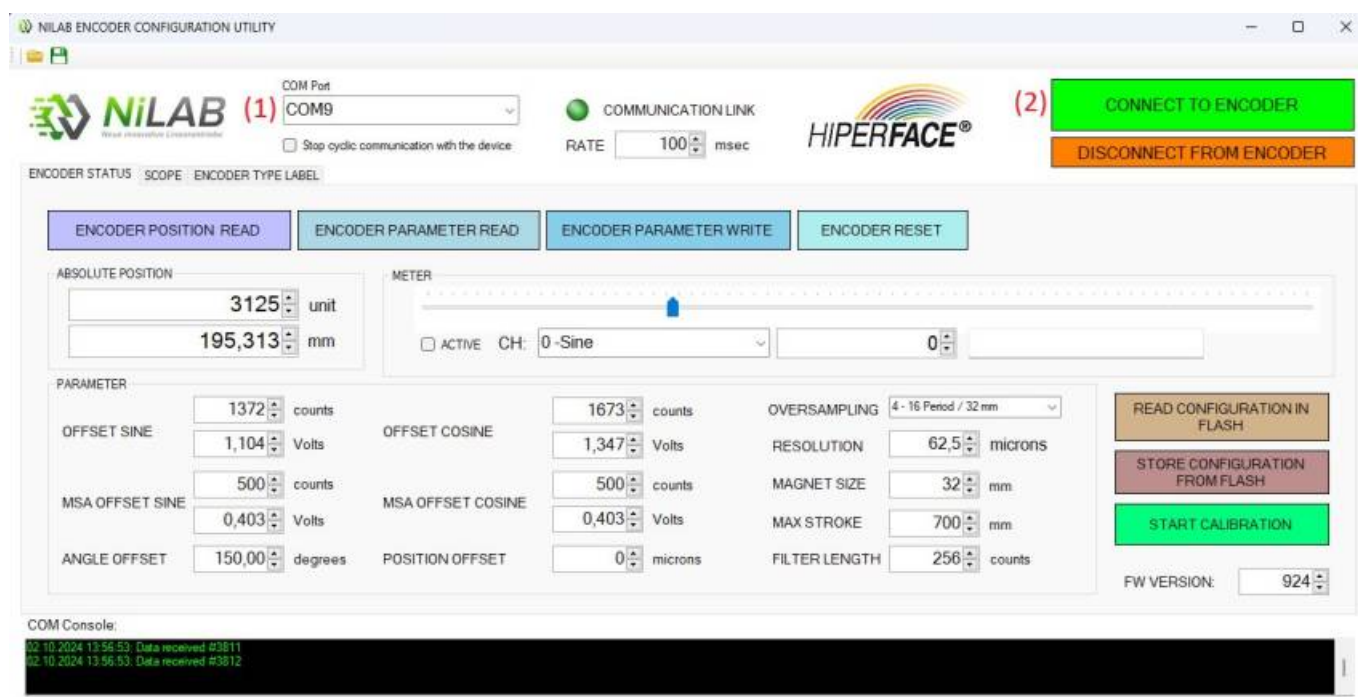
Encoder Calibration

Using Encoder Configurator

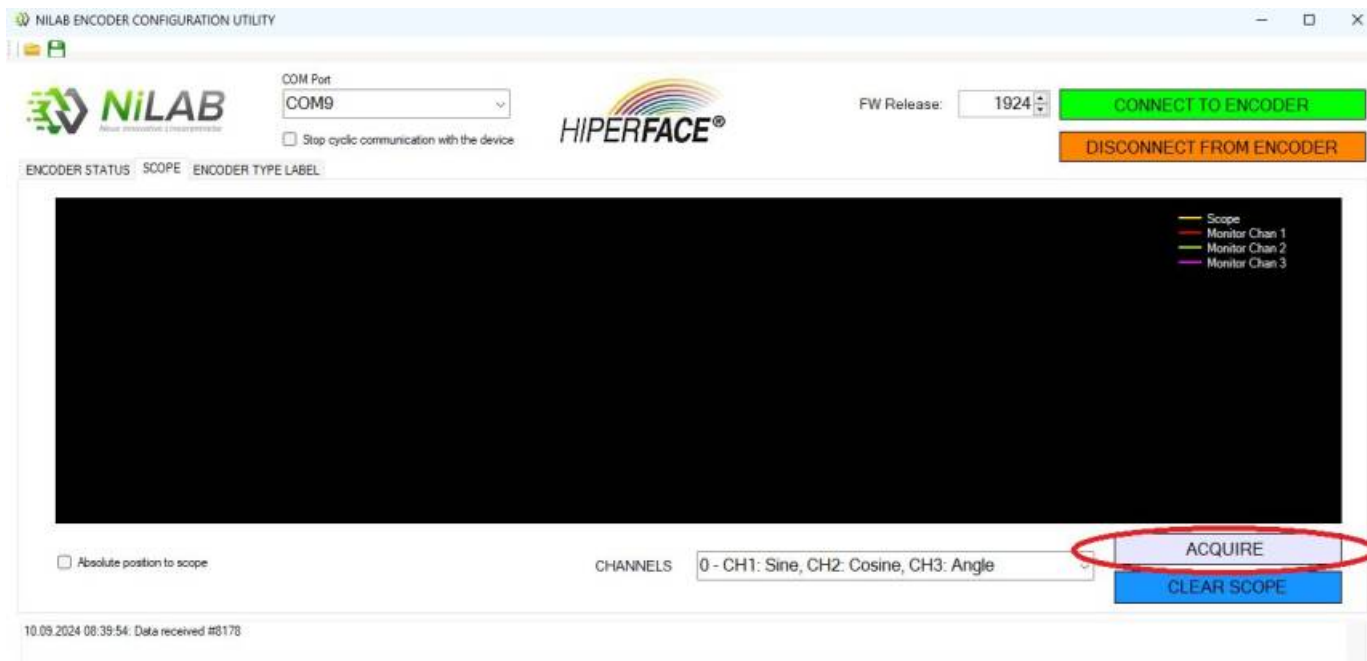
Before start to use, after the encoder mounting on the machine, two operation are needed. First, dump the input signal of microprocessor to see if the signal is correct without saturation, Second, please calibrate the offset for proper operation.

Dumping of the input signal

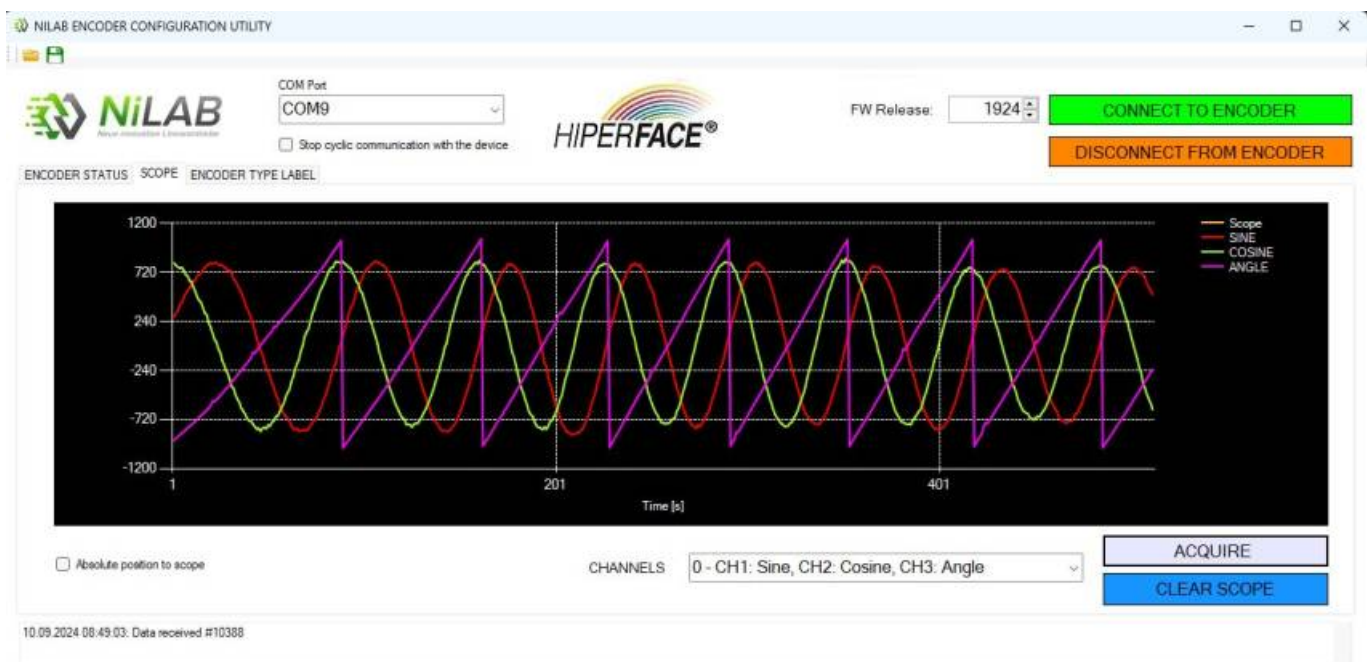
Using NiLAB Encoder Configuration utility, select the right COM port where the programming cable is connected (1), then press CONNECT TO ENCODER button (2) to establish a connection. All the encoder parameters will be loaded into interface and the current absolute position will be displayed.



Then, go to SCOPE window folder and click on the ACQUIRE button. On the encoder leds, the yellow led blink to confirm that the encoder is in acquisition mode.



Move the carriage of the motor by hand in one direction for the entire stroke and the signals will be displayed as below.



The SIN/COS Signal must be without distortion and saturation. If the SIN/COS has saturation point, please move the reference magnet a little bit far away from the encoder to eliminate the clamping on the signal.

For example here below an acquisition where the SIN/COS signal are not OK and saturate.



Calibrate the signal

After the dumping of the signal the SIN/COS offset must be cancel using the calibration procedure. Please go to ENCODER STUS folder and press START CALIBRATION button. The green led on the encoder start to blink to confirm the calibration procedure is active. Then move the carriage of the motor in one direction for the entire stroke to calibrate the encoder.

The screenshot shows the 'ENCODER STATUS' view of the NiLAB Encoder Configuration Utility. At the top, the COM Port is set to COM9 and the communication rate is 100 msec. The Hiperface logo is visible. On the right, there are buttons for 'CONNECT TO ENCODER' (green) and 'DISCONNECT FROM ENCODER' (orange). Below these are four buttons: 'ENCODER POSITION READ', 'ENCODER PARAMETER READ', 'ENCODER PARAMETER WRITE', and 'ENCODER RESET'. The 'ENCODER PARAMETER READ' button is active. The 'ABSOLUTE POSITION' section shows '3122 unit' and '195,125 mm'. The 'METER' section has a slider and a dropdown menu set to '0 -Sine'. The 'PARAMETER' section contains several input fields: OFFSET SINE (1372 counts), OFFSET COSINE (1673 counts), OVERSAMPLING (4 - 16 Period / 32 mm), RESOLUTION (62,5 microns), MAGNET SIZE (32 mm), MAX STROKE (700 mm), FILTER LENGTH (256 counts), MSA OFFSET SINE (500 counts), MSA OFFSET COSINE (500 counts), ANGLE OFFSET (150,00 degrees), and POSITION OFFSET (0 microns). On the right side, there are buttons for 'READ CONFIGURATION IN FLASH', 'STORE CONFIGURATION FROM FLASH', and 'START CALIBRATION' (highlighted with a red circle). At the bottom, the 'FW VERSION' is 924. The 'COM Console' shows data received at 13:47:52.

After the calibration using Scope, the calibrated input SIN/COS 1Vpp signal generated by the magnet reference before multiplication will be like this:

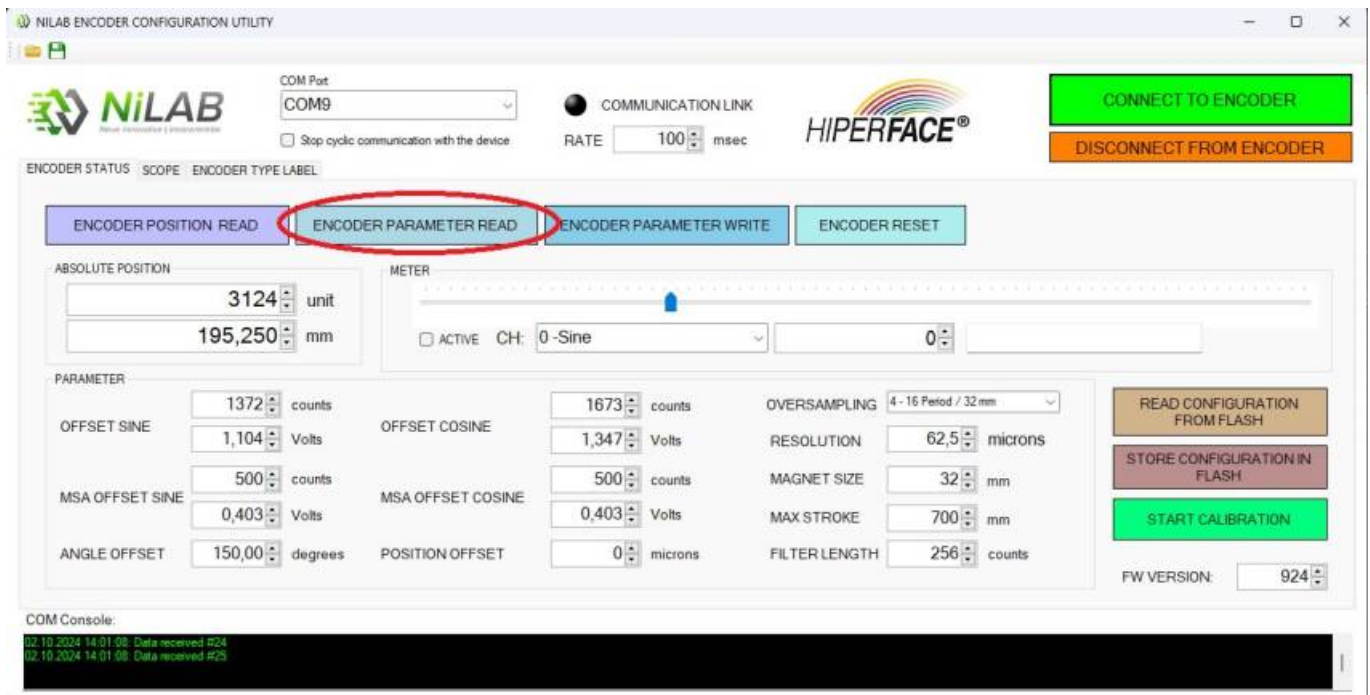


Selecting the second channels selection, the multiplied SIN/COS 1Vpp encoder output signal will be like this:

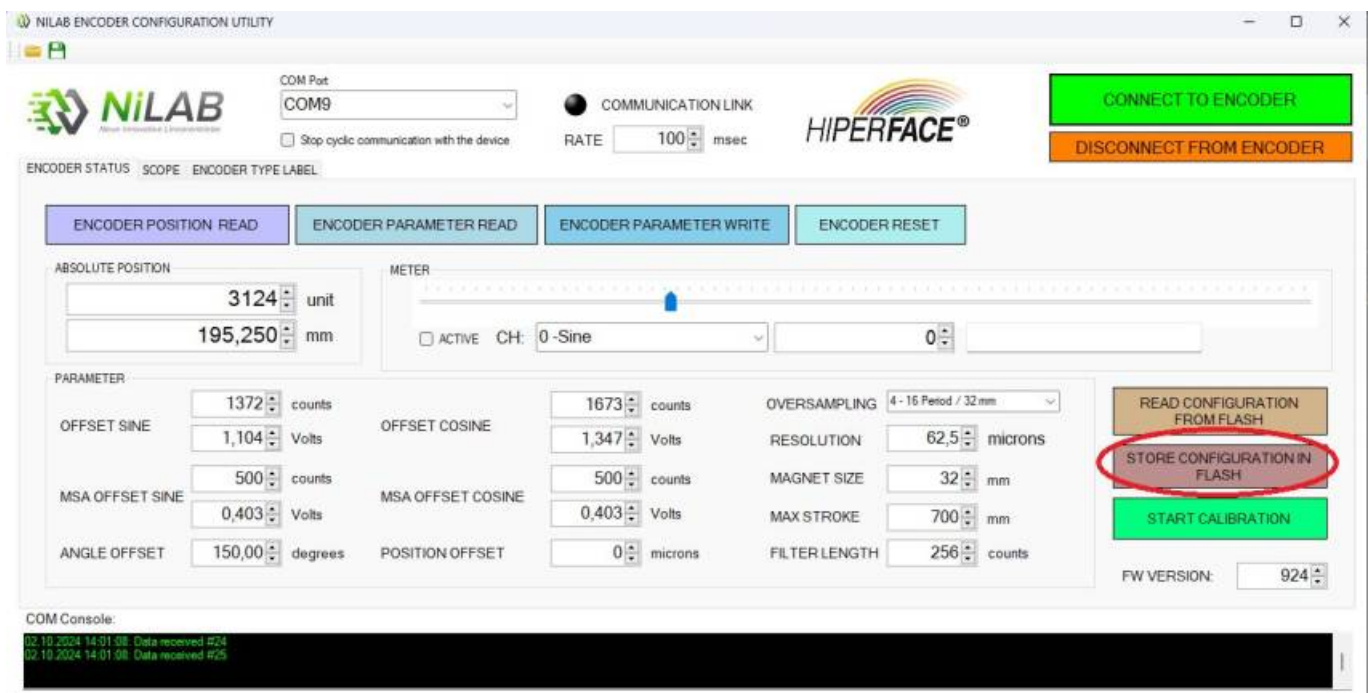
Please take into account that when you acquired the second channel option you need to move slowly in respect to the first channel option.



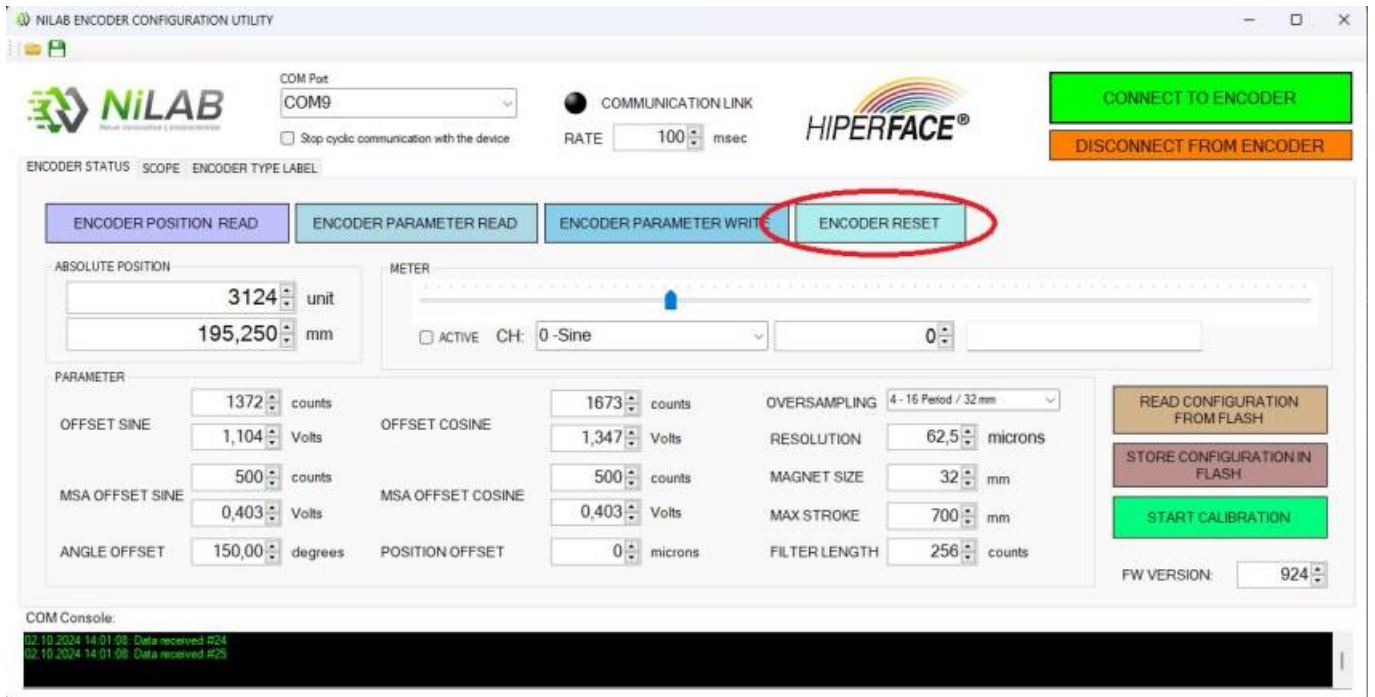
After the calibration, read the new encoder data press the ENCODER PARAMETER Button.



Then, please store the calibration data inside the Flash memory of the encoder press the STORE CONFIGURATION TO FLASH button.



After this step, please reset the encoder pressing ENCODER RESET button.



After Reset you need to connect again to encoder pressing CONNECT TO ENCODER button.

From:
<https://dokuwiki.nilab.at/> - NiLAB GmbH
Knowledgebase

Permanent link:
https://dokuwiki.nilab.at/doku.php?id=reverso_encoder:calibration

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