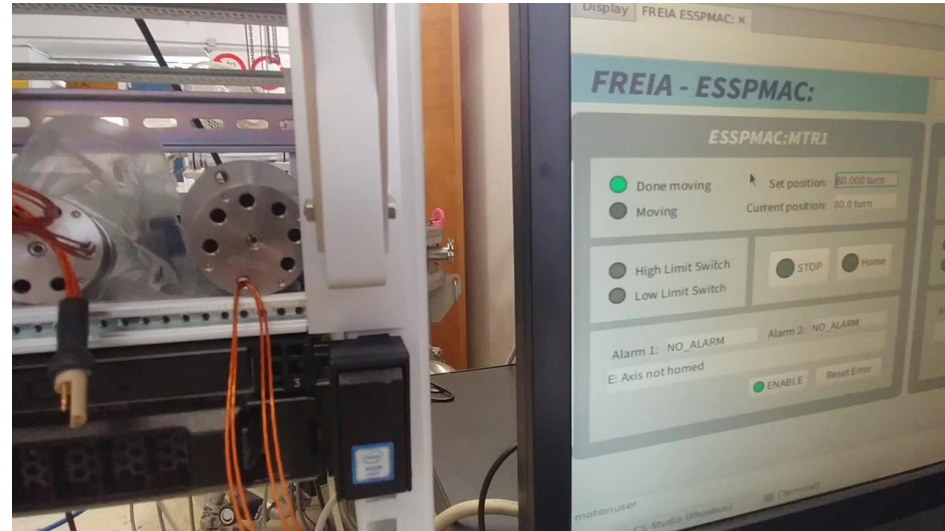
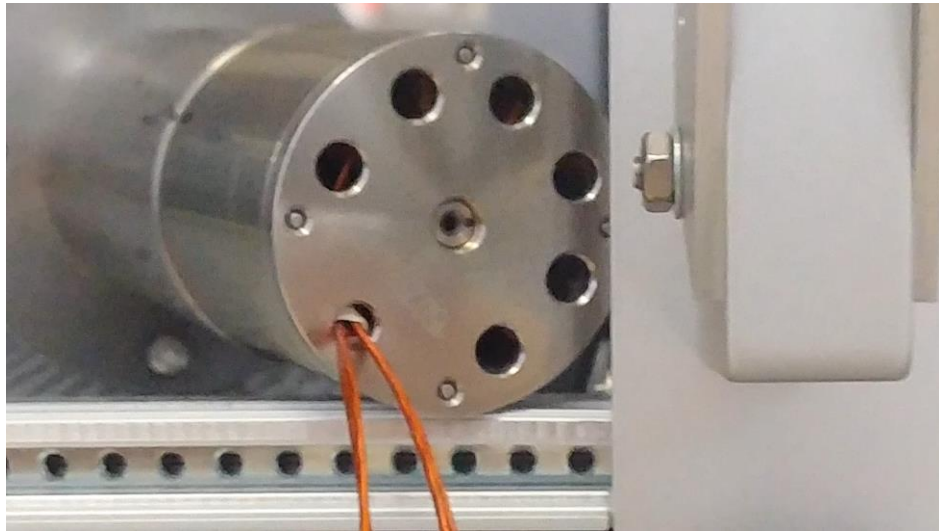


Debugging motor control

N. Gandolfo – 09/09/2021

First steps, already in trouble

- With prototype (old) motor connected to the old driver, we observe erratic behaviour with initial parameters saved on the configuration file (1.2 A notably).



First steps, already in trouble

- Comparison between 2 motors
- At 0.6 A, no problem at all except strange vibration sometimes.
- At 1.2 A, results are here →
(old motor = prototype motor)
(new motor = production motor)

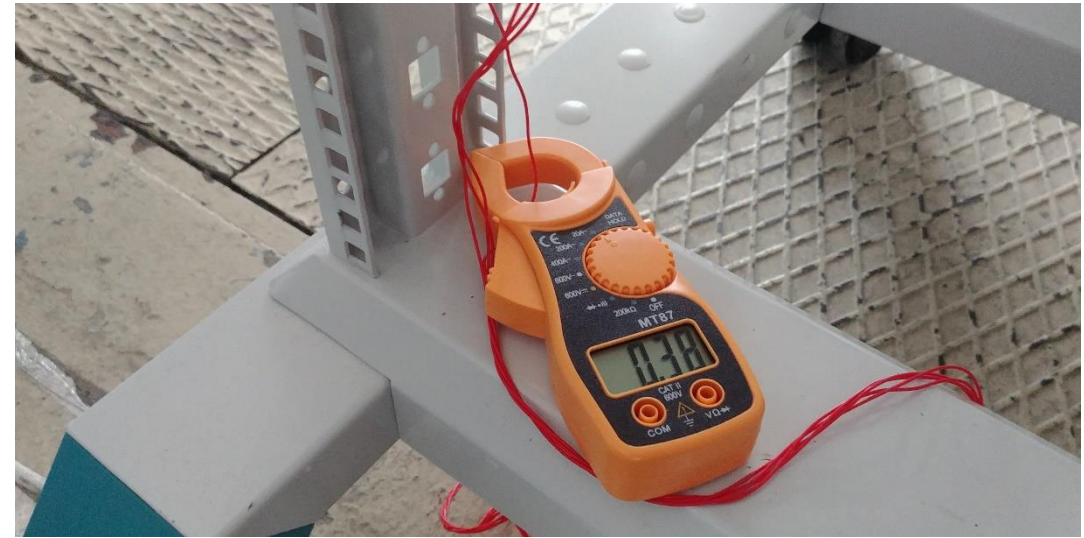
	New motor	New motor	Old motor	Old motor
Position (turns)	Vibrations ?	Turns achieved (roughly)	Vibrations ?	Turns achieved (roughly)
Position 10	No	10	Yes	6.5
Position 20	Yes	<10	Yes	7.5
Position 30	Yes	10	Yes	7
Position 40	Yes	<10	Yes	7
Position 50	Yes	10	Yes	7
Position 60	Yes	10	Yes	7.5
Position 70	Yes	<10	Yes	6.5
Position 80	Yes	<10	Yes	6
Position 90	Yes	<10	Yes	6.5
Position 100	Yes	<10	Yes	7.5
Position 90	No	10	Yes	6.5
Position 80	No	<10	No	10
Position 70	No	<10	No	10
Position 60	No	<10	No	10
Position 50	Yes	<10	Yes	6.5
Position 40	Yes	<10	Yes	6
Position 30	Yes	10	Yes	5
Position 20	Yes	10	Yes	5
Position 10	Yes	10	Yes	6
Position 0	Yes	10	Yes	6

Current measurement

- For 0.6 A configuration



0.61 A Measured on Phytron driver output



0.38 A Measured on old driver output
(Beckoff EL7037, used at Uppsala)

0.2 A Measured on new driver output (Beckoff EL7041) *no picture*

Torque measurement

- Same setup used for CM01 investigation



Torque (N.m)	Current at 0.6 A	Current at 0.6 A
	Positive motion	Negative motion
New driver	1	1.2
Old driver	2.1	2.4
Phytron	4.3	4.5

Next steps

- Try to configure properly the new driver in order to improve current and torque. (already obtained 0.4 A by rising current regulation coefficients)
- Test at low temperature