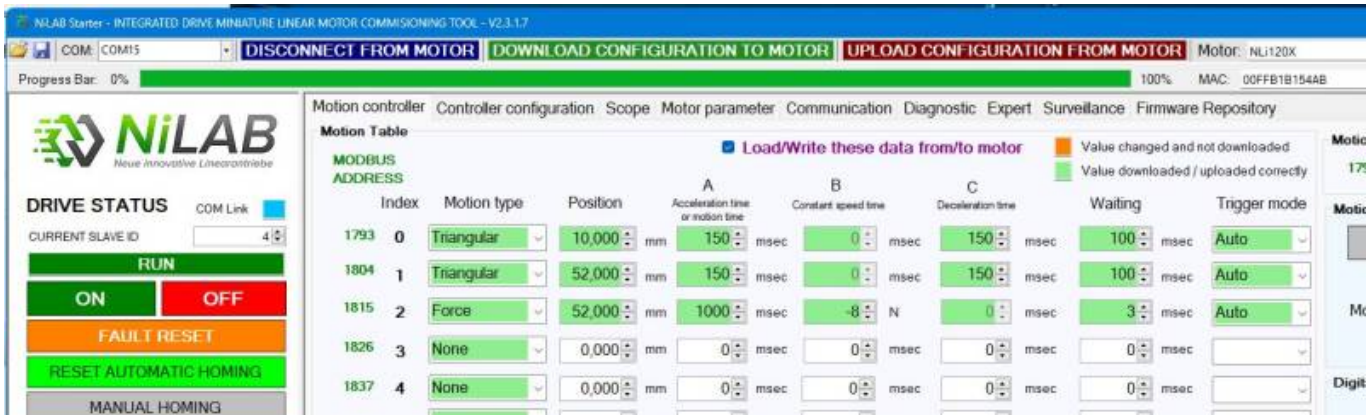
Force control

Force control is possible using integrated drive with some limitation due to the resolution of the current loop. Firmware to be used for a **correct force control is starting from version 5A51.**

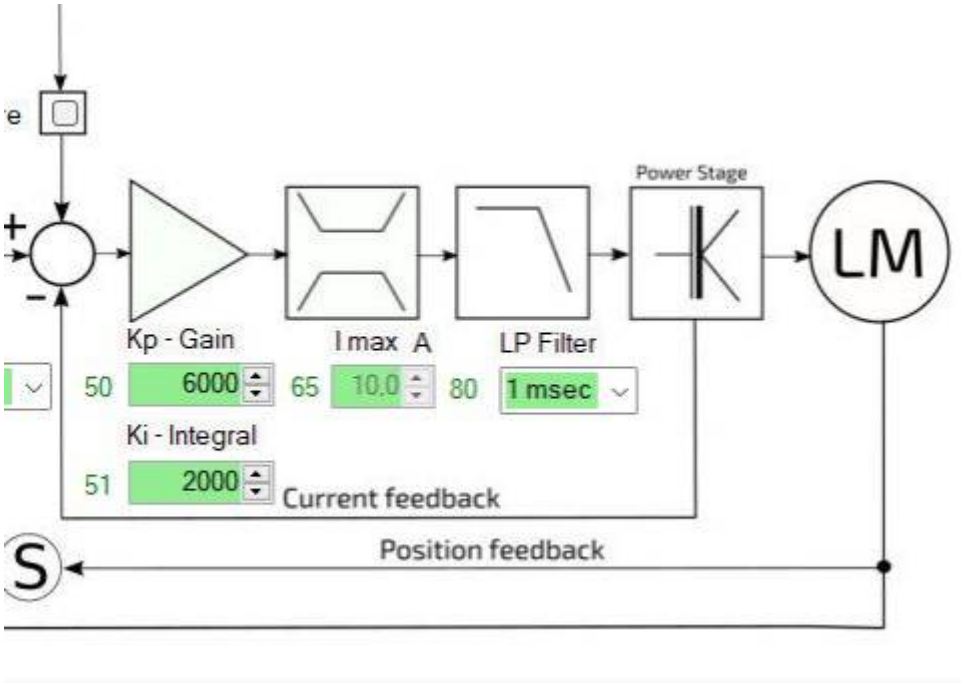
Example of two position application with force control

In order to have one position where a force control take place we need two specify three motion task in the motion controller table, like in the screenshot below.
In this example, position 0 is 10 mn and the position 1 is 52mm where the force control will applied with a force of 8 N with a duration of 1sec.



The sign of the force specified in the table must correspond to the direction of the slider, as in this photo.

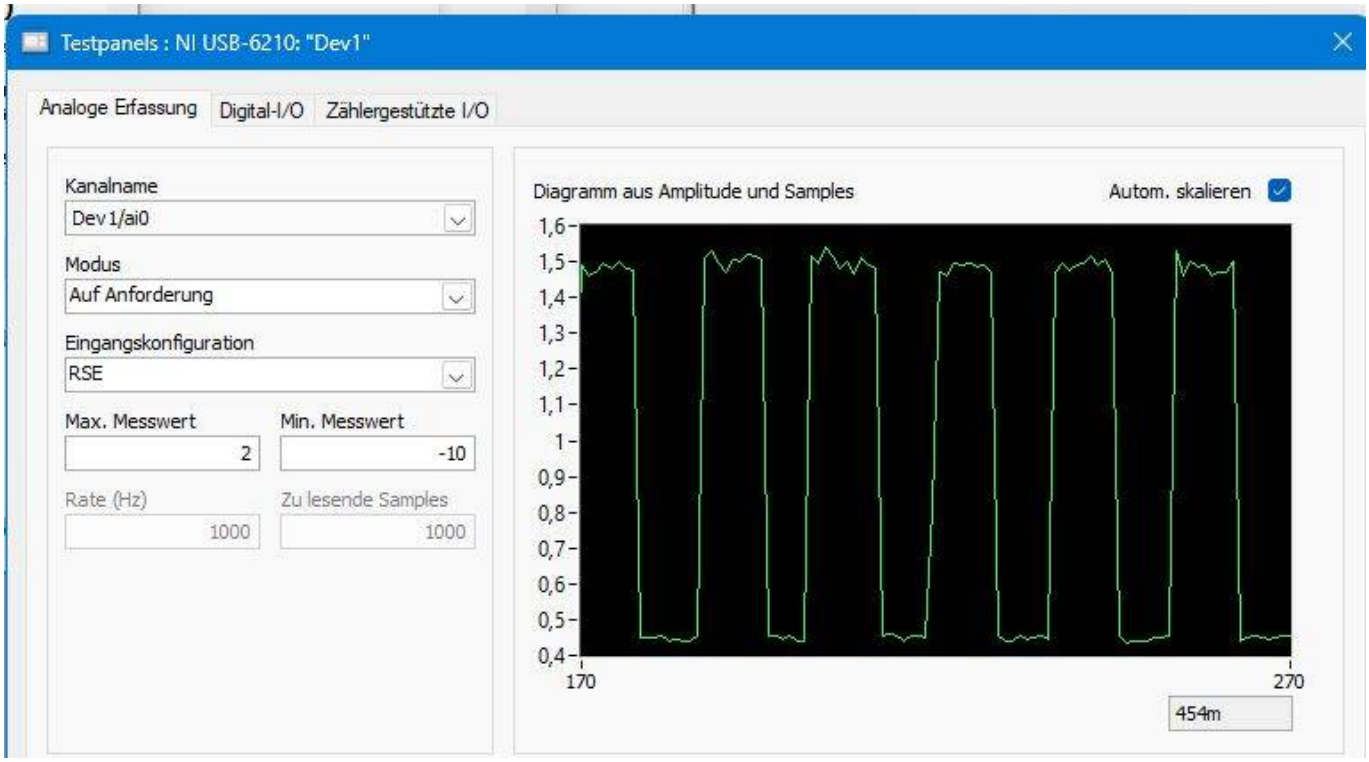
We suggest to reduce to a minimum the wait time in the task force to avoid overshot in the postion when the force control switch to position control.
In order to have a good response, we suggest to increase Ki integral in current loop.



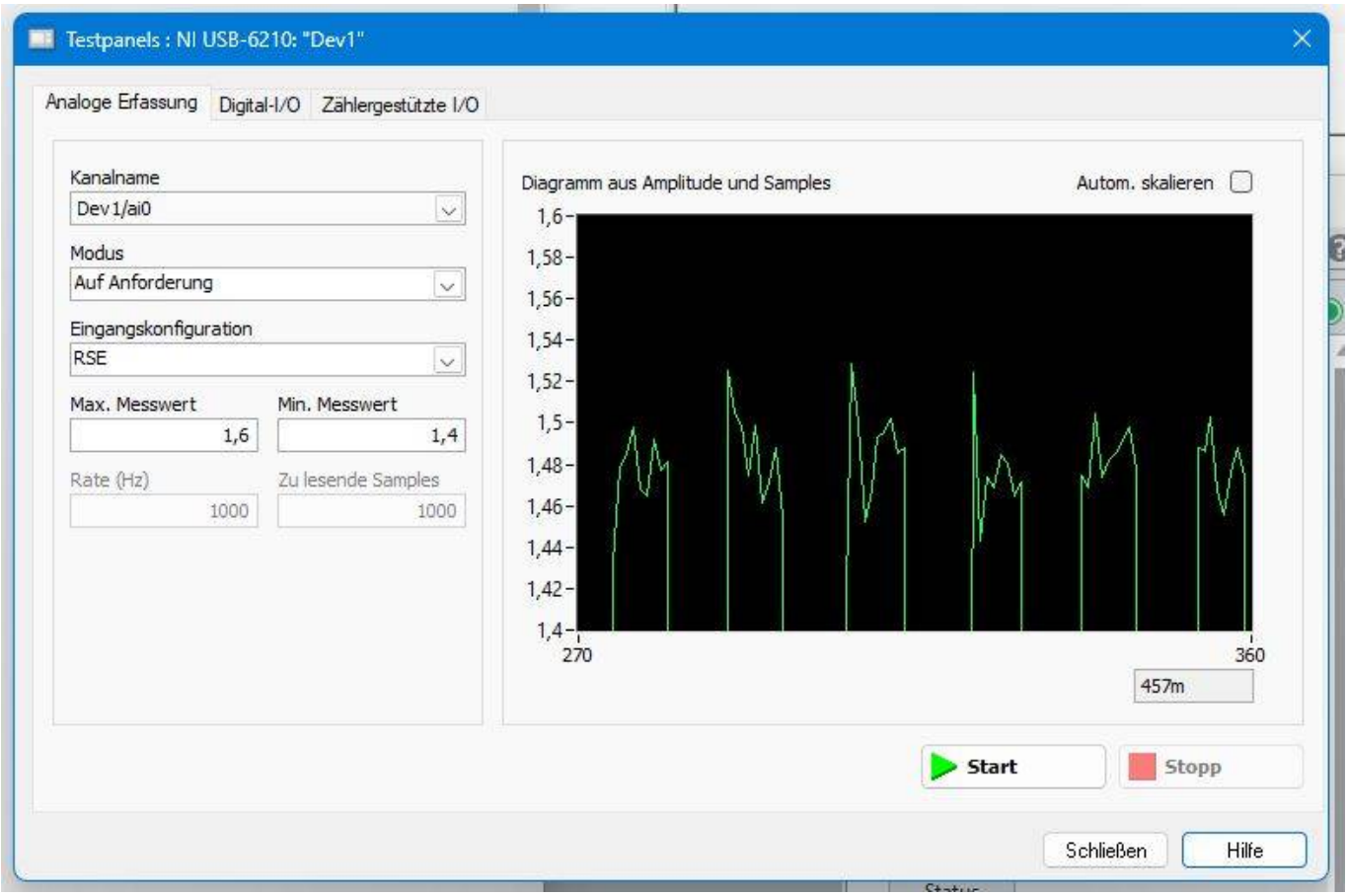
Force control performance

Here below the force measurement variation with the motion table values measured by external load cell.

Load cell: FC2231 (https://www.digikey.at/en/products/detail/te-connectivity-measurement-specialties/FC2231-0000-0010-L/809394)
Acquistition system National Instruments NI USB-6210 (https://www.ni.com/de-at/shop/model/usb-6210.html)



Force repeatability



Force repeatability is 1,486 +/- 0.035 mV. Considering the force coefficient of 1,63 V/N we have a force repeatability of +/- 0,120 N.

Video Demostration

Video