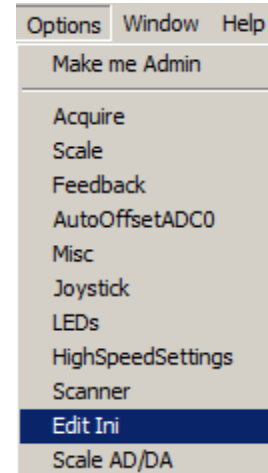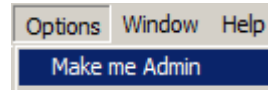# Required settings for Software Version 21.B

Starting from software version 21B, the scaling for the z-channels require a correct setting of piezo constants and High/Voltage Amplifier gains.

## *1    Changes in ini-file (HVA gains)*

- Make yourself a high-level administrator by selecting and entering the password "anfatec"

- Open the used ini-file from the software:

- Search for the string "TestMic" in the ini file:

```
waveiengtnoeiay
[TestMic]
TestChannelComb
TestVolt0=0.5
TestVolt1=0.5
ADChannel=4
FormPosLeft=10
FormPosTop=10
DAScale0=9.8156
Gain0=7.0
```

- Add entries for the DA-channels 0 (this channel equals "Topo", the entry is: "Gain0"), 2 and 3 (these channels equal x and y, the gain entries are "Gain2" and "Gain3") as follows:

    *Gain0=15*
    *Gain2=15*
    *Gain3=15*
    *GainzFast=15          // this is for the fast Z-channel in high-speed systems*

These gains are the amplifications of the high-voltage amplifiers. I your case, these numbers should be 15.

## 2    Changes in the scanner file (piezo gains)

- Open the used scanner file from the software in Notepad with three steps:
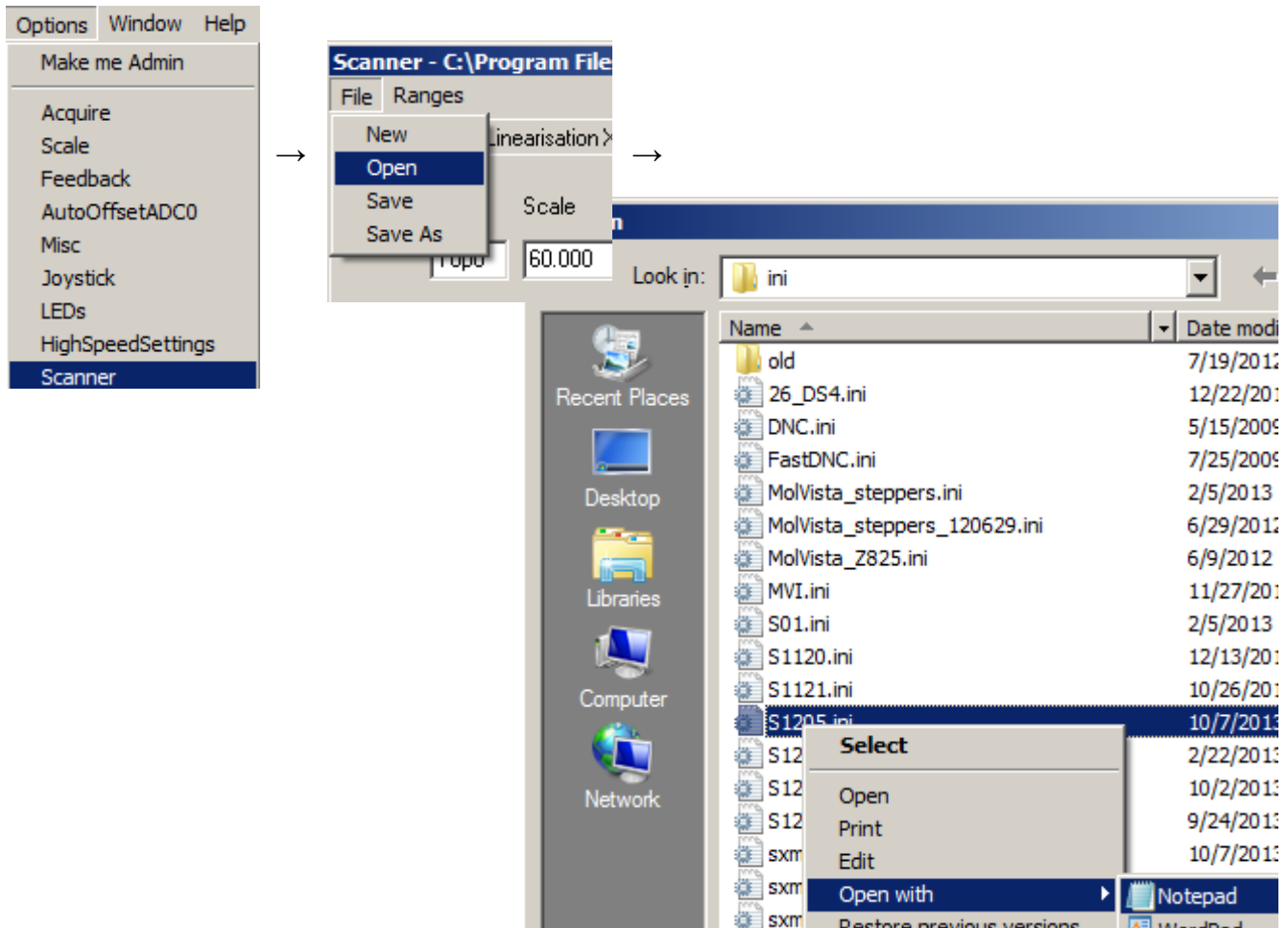


Add the following lines:

*XGain=0.39*
*YGain=0.39*
*ZGain=60*
*ZFastGain=30*

The numbers behind these entries are the piezo constants in units like "nm/V" for z-directions and "µm/V" for x- and y-direction. The volts are the volts of the HV amplifier.

Calculation example: A piezo stack with 150 V maximum voltage supply and 9 µm maximum movement range has a piezo gain of 9 µm / 150 V = 60 nm/V.

## 3    Check the settings

For the two possible z-channels, the piezo gain and HVA gain are displayed in the Z-tab of the scanner window:
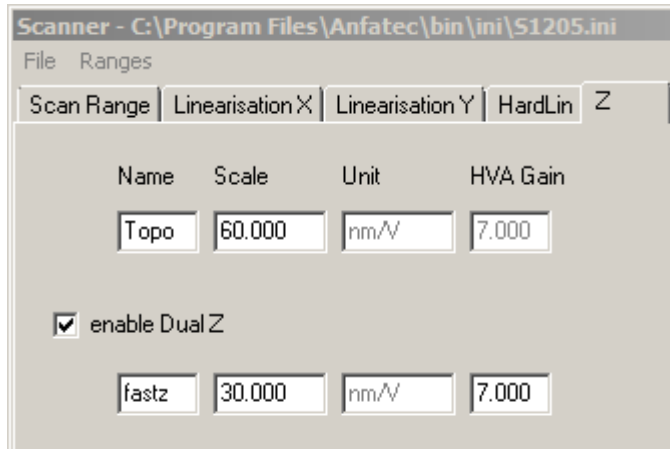


For the X-Y-direction, the gains are used to display the scan range calibration coefficients in units of "nm/V" as typically provided by the piezo supplier:

Goto to the tab "Scan Range" I the scanner window.



Enter the correct maximum voltage that the HV amplifier output can supply I the field below "Max. Range [V]". For a -150 V to 150 V amplifier, this voltage is 300 V. For the 0 V to 150 V amplifier, this voltage is 150V.
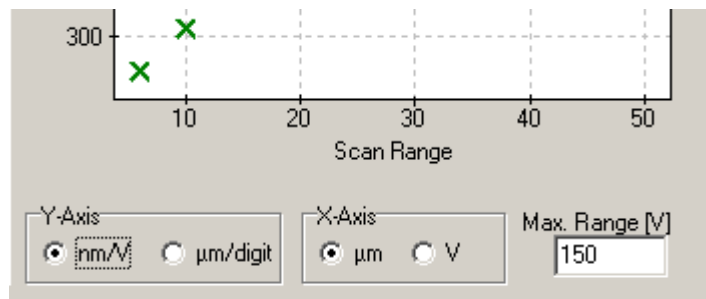


Chose the tick "nm/V" instead of "µm/digit", and the entries I the scan range table are recalculated in nm/V and displayed in this unit.

The vertical axis should be approximately the value that was entered as "XGain" in the scanner file.