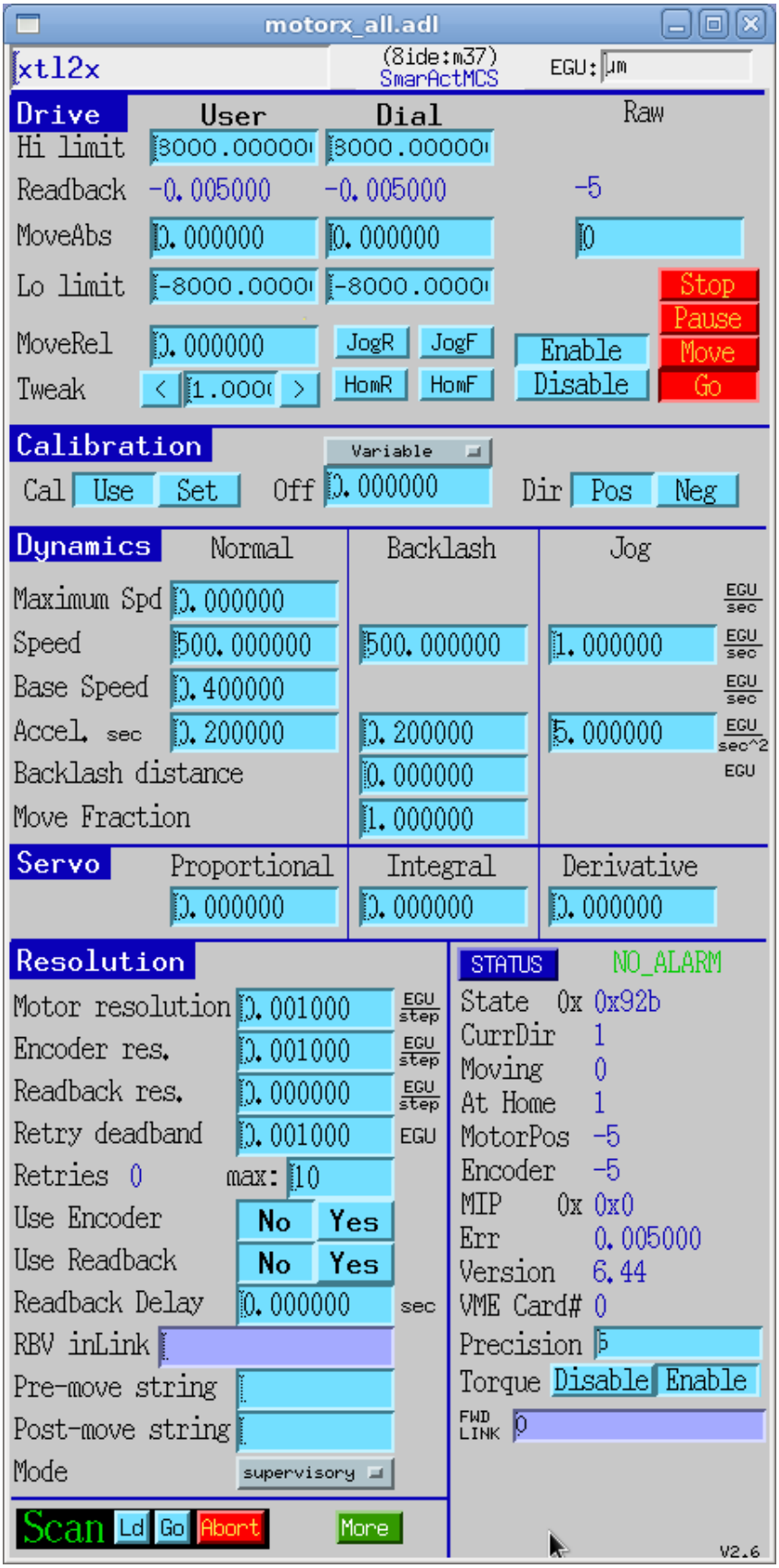
8-ID-E Monochromator 2nd Crystal Commissioning: 2012.01.31 -

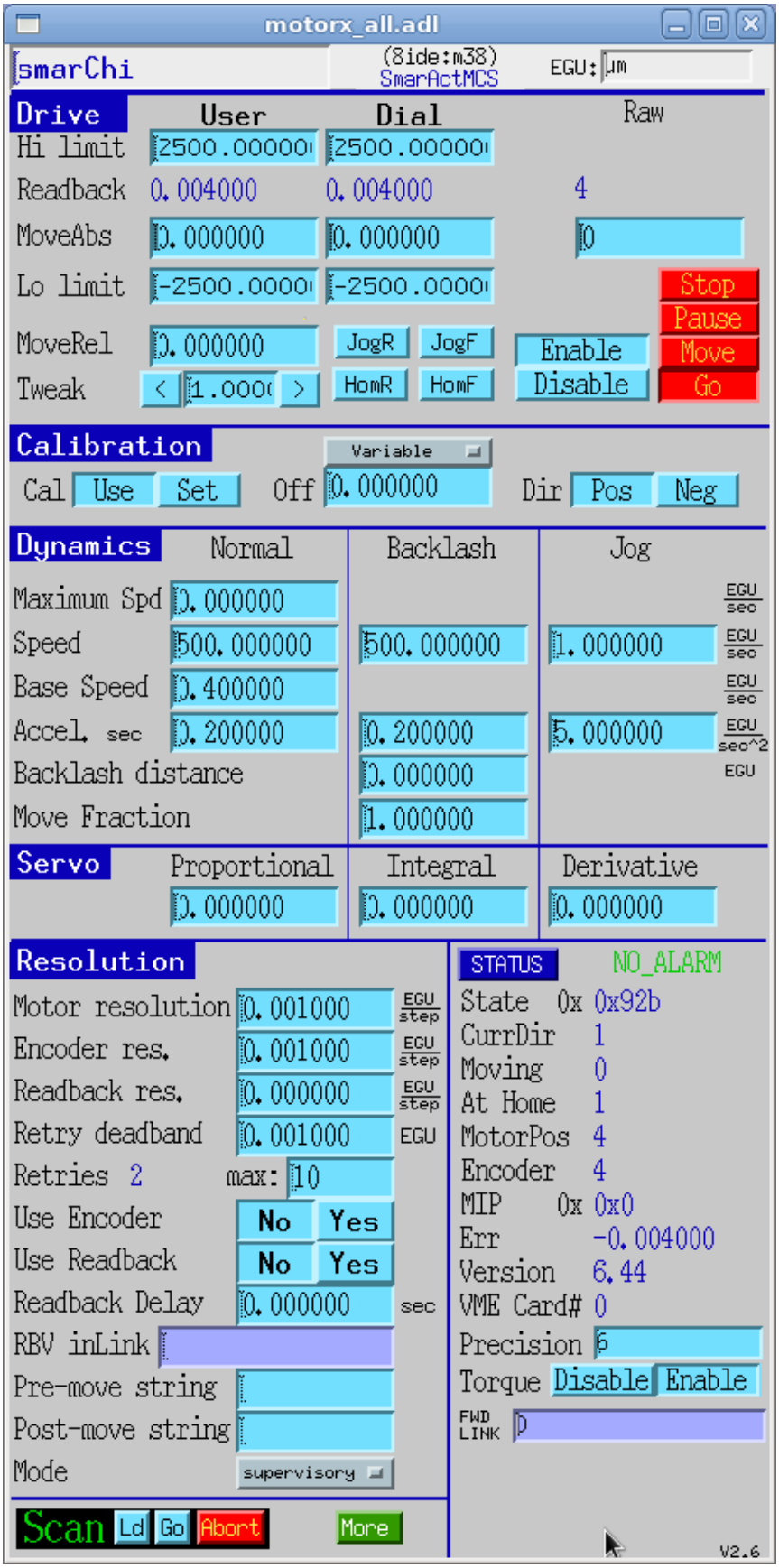
Four new motors for positioning crystal, 1 new smart motor.

xtl2th	8ide:m39	+/- 10 deg	Alio	control incident angle on crystal
xtl2z	8ide:m40	+/- 10 mm	Alio	control crystal height
xtl2x	8ide:m37	+/-8000 um	SmartACT	translate crystal along its surface normal (effectively, in and out of beam)
samrChi	8ide:m38	+/-2500 um	SmartACT	pushes/pulls an angular flexure element
xtl2chi	8ide:sm23	+/-1.0 deg	smart motor	converts smarChi to effective angle

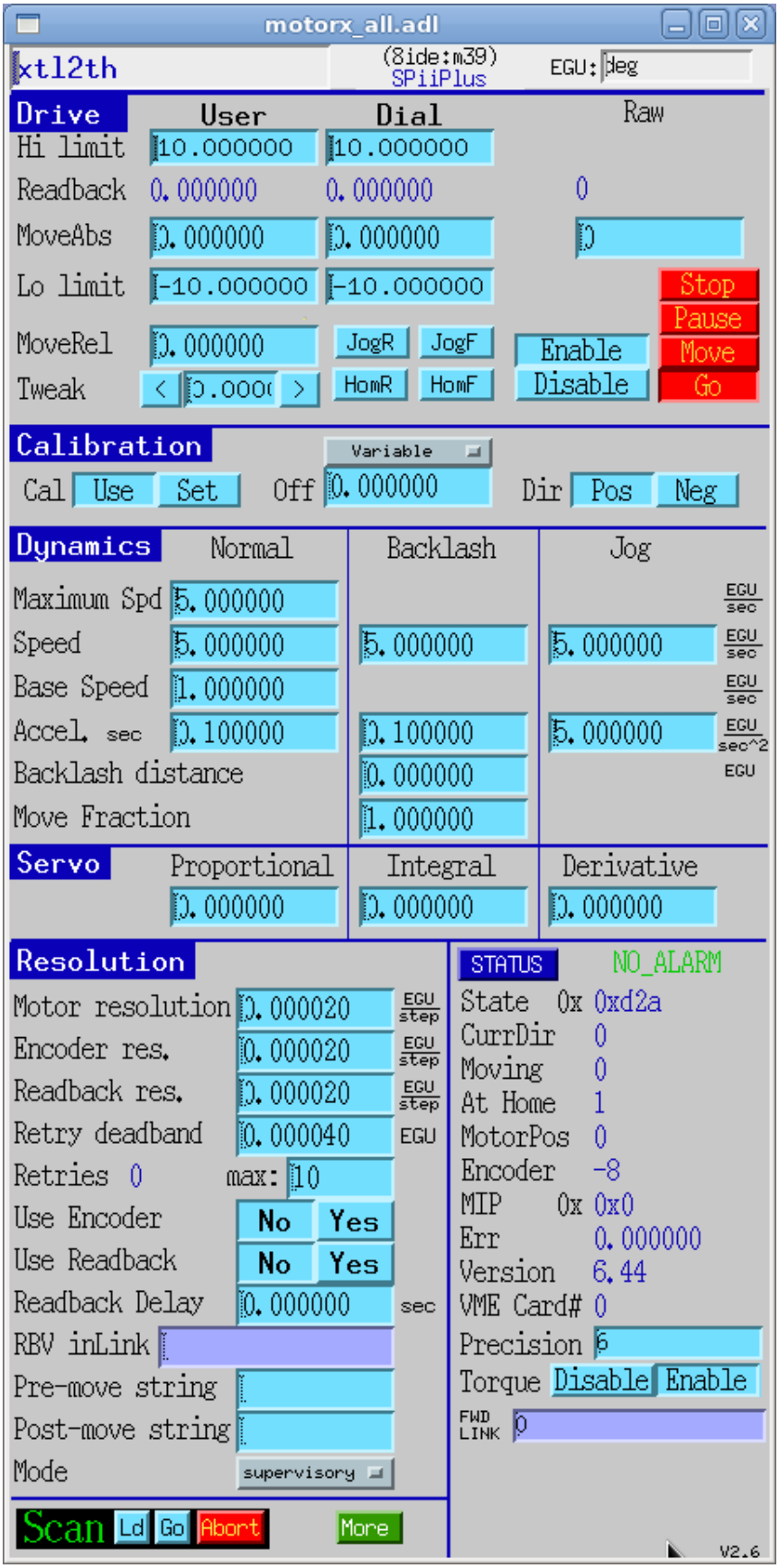
Notes on limits and homing:
All these encoded motors need to be homed after cycling power.
Alio motors, xtal2th and xtal2z, have home switches at the extremes of range, and cannot reach the home position unless the soft limits are temporarily set larger than +/- 10.
SmartACT motors, xtal2x and smarChi, have home position at the center of travel, so they can be homed without changing the soft limits.
SmarChi has travel limited physically limited by the flexure element to +/- 2500 um. The smart motor xtl2chi, has soft limits +/- 1 degree, effectively limiting SmarChi to +/- 1200 um.

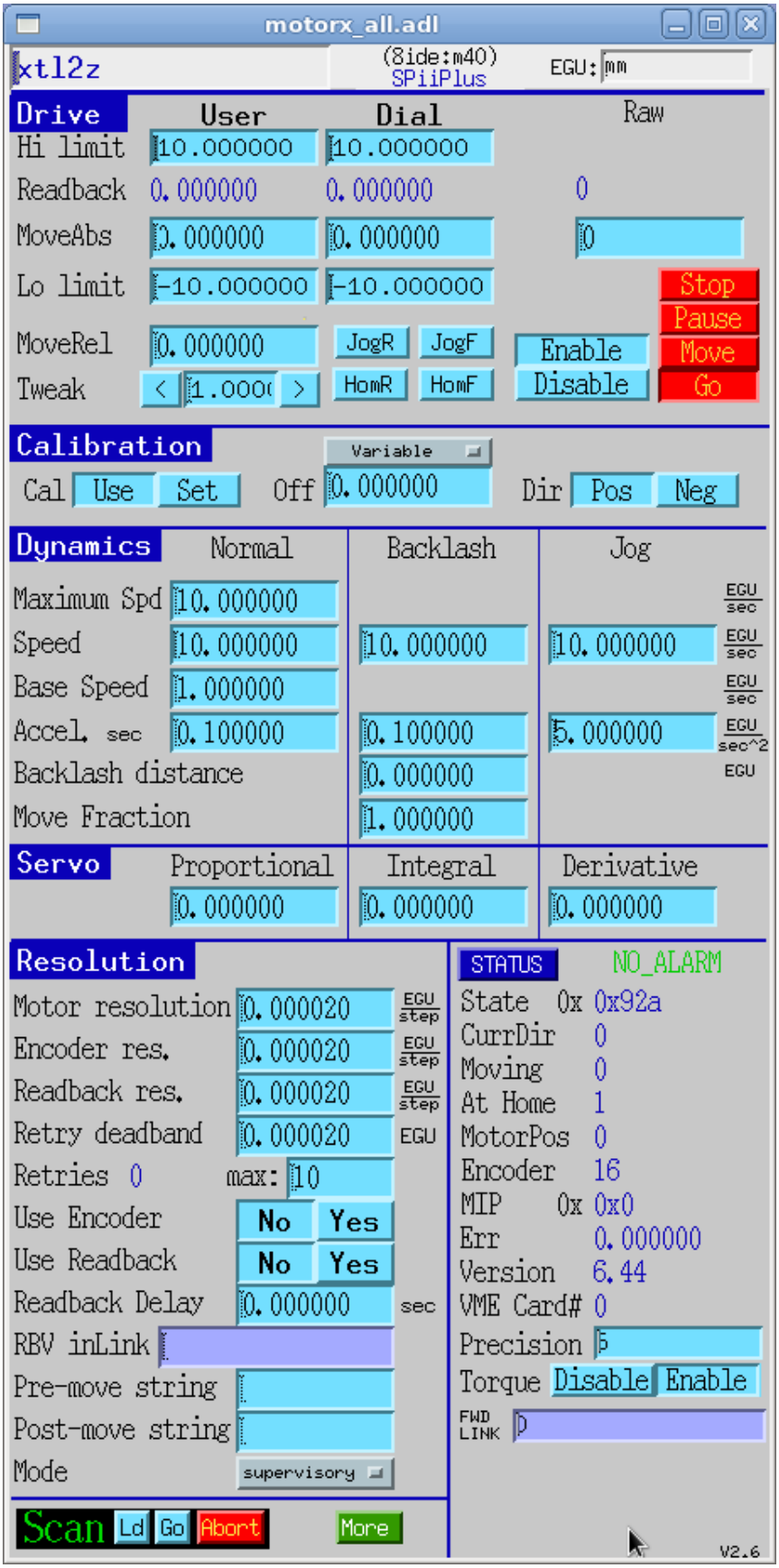
Configuration on 2012.01.31

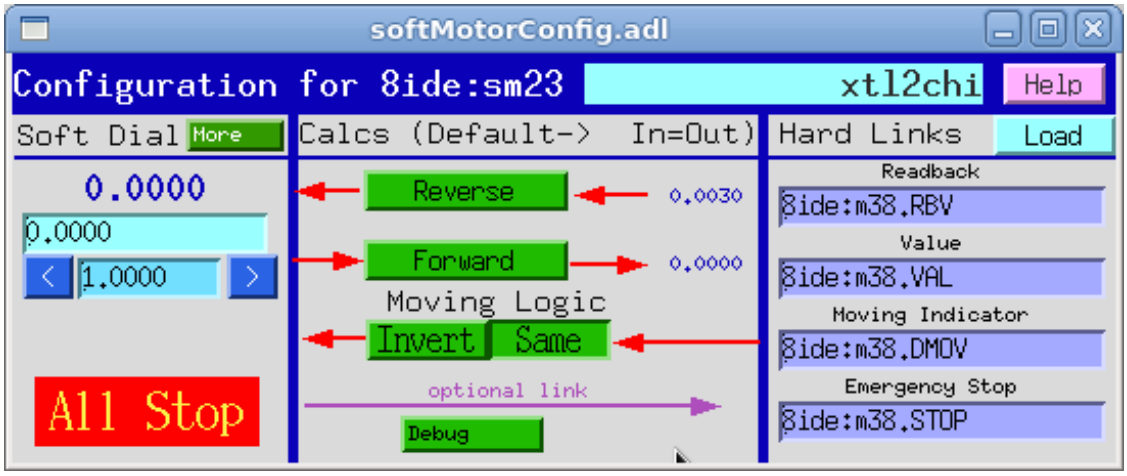

motorx_all.adl
xtl2x
(8ide:m37)
SmarActMCS
EGU: µm
Drive
User
Dial
Raw
Hi limit
3000.000000
3000.000000
Readback
-0.005000
-0.005000
-5
MoveAbs
0.000000
0.000000
0
Lo limit
-8000.000000
-8000.000000
MoveRel
0.000000
JogR
JogF
Tweak
1.000
HomR
HomF
Enable
Disable
Stop
Pause
Move
Go
Calibration
Variable
Cal
Use
Set
Off
0.000000
Dir
Pos
Neg
Dynamics
Normal
Backlash
Jog
Maximum Spd
0.000000
Speed
500.000000
500.000000
1.000000
Base Speed
0.400000
Accel. sec
0.200000
0.200000
5.000000
Backlash distance
0.000000
Move Fraction
1.000000
EGU/sec
EGU/sec^2
EGU
Servo
Proportional
Integral
Derivative
0.000000
0.000000
0.000000
Resolution
Motor resolution
0.001000
Encoder res.
0.001000
Readback res.
0.000000
Retry deadband
0.001000
Retries 0
max: 10
Use Encoder
No
Yes
Use Readback
No
Yes
Readback Delay
0.000000
sec
RBV inLink
Pre-move string
Post-move string
Mode
supervisory
EGU/step
EGU
Scan
Ld
Go
Abort
More
STATUS
NO_ALARM
State 0x 0x92b
CurrDir 1
Moving 0
At Home 1
MotorPos -5
Encoder -5
MIP 0x 0x0
Err 0.005000
Version 6.44
VME Card# 0
Precision 5
Torque
Disable
Enable
FWD LINK
0
V2.6

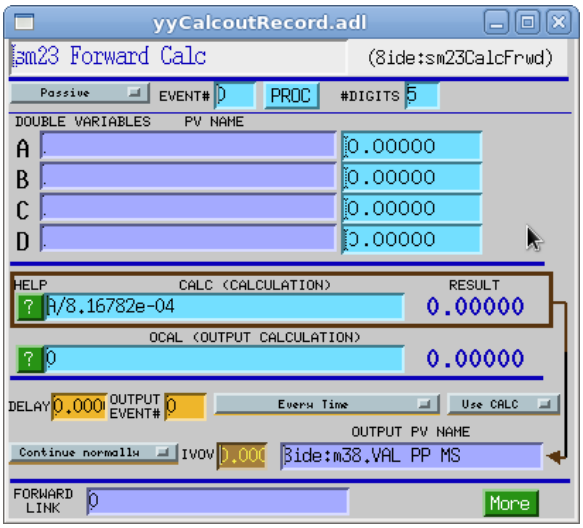


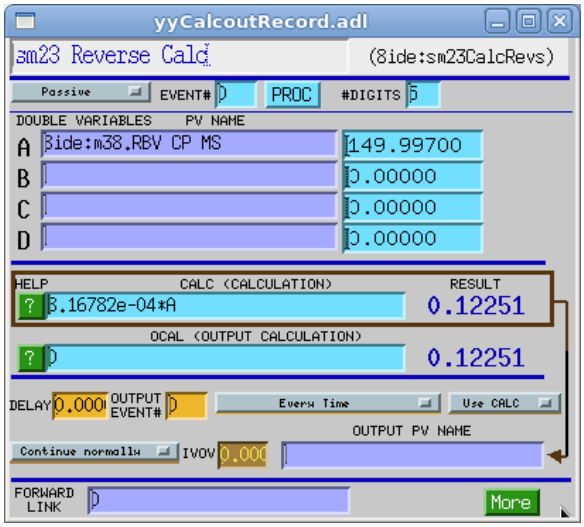
Converted to effective angle by smart motor 8ide:sm23 (see below)

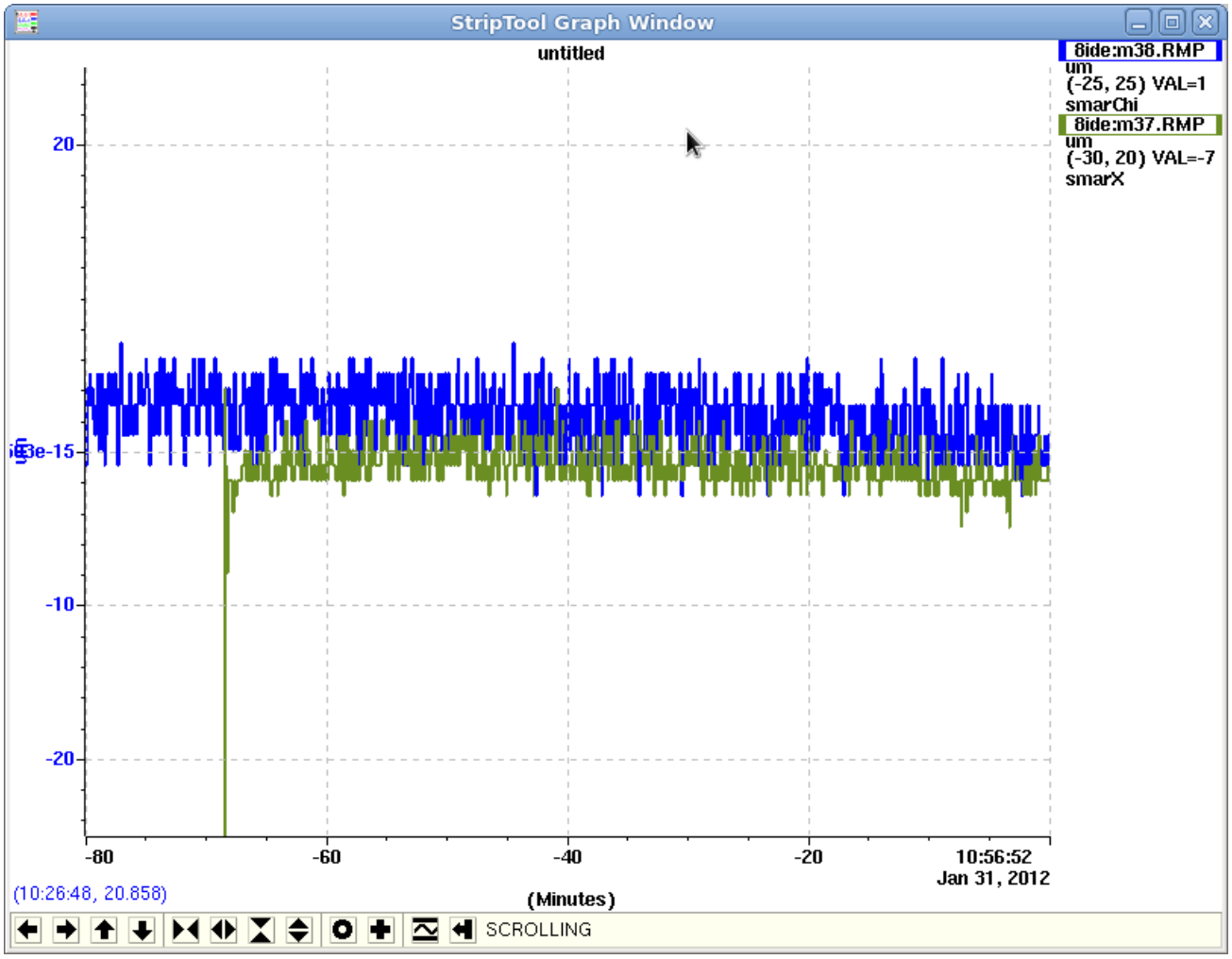

motorx_all.adl
xtl2th
(8ide:m39)
SPiiPlus
EGU: deg
Drive
User
Dial
Raw
Hi limit
10.000000
10.000000
Readback
0.000000
0.000000
0
MoveAbs
0.000000
0.000000
0
Lo limit
-10.000000
-10.000000
Stop
Pause
MoveRel
0.000000
JogR
JogF
Enable
Move
Tweak
<
0.000
>
HomR
HomF
Disable
Go
Calibration
Variable
Cal
Use
Set
Off
0.000000
Dir
Pos
Neg
Dynamics
Normal
Backlash
Jog
Maximum Spd
5.000000
EGU/sec
Speed
5.000000
5.000000
5.000000
EGU/sec
Base Speed
1.000000
EGU/sec
Accel. sec
0.100000
0.100000
5.000000
EGU/sec^2
Backlash distance
0.000000
EGU
Move Fraction
1.000000
Servo
Proportional
Integral
Derivative
0.000000
0.000000
0.000000
Resolution
Motor resolution
0.000020
EGU/step
Encoder res.
0.000020
EGU/step
Readback res.
0.000020
EGU/step
Retry deadband
0.000040
EGU
Retries 0
max: 10
Use Encoder
No
Yes
Use Readback
No
Yes
Readback Delay
0.000000
sec
RBV inLink
Pre-move string
Post-move string
Mode
supervisory
Scan
Ld
Go
Abort
More
STATUS
NO_ALARM
State 0x 0xd2a
CurrDir 0
Moving 0
At Home 1
MotorPos 0
Encoder -8
MIP 0x 0x0
Err 0.000000
Version 6.44
VME Card# 0
Precision 6
Torque
Disable
Enable
FWD LINK
0
V2.6


motorx_all.adl
xtl2z
(8ide:m40)
SPiiPlus
EGU: mm
Drive
User
Dial
Raw
Hi limit
10.000000
10.000000
Readback
0.000000
0.000000
0
MoveAbs
0.000000
0.000000
0
Lo limit
-10.000000
-10.000000
Stop
Pause
MoveRel
0.000000
JogR
JogF
Enable
Move
Tweak
<
1.000
>
HomR
HomF
Disable
Go
Calibration
Variable
Cal
Use
Set
Off
0.000000
Dir
Pos
Neg
Dynamics
Normal
Backlash
Jog
Maximum Spd
10.000000
EGU/sec
Speed
10.000000
10.000000
10.000000
EGU/sec
Base Speed
1.000000
EGU/sec
Accel. sec
0.100000
0.100000
5.000000
EGU/sec^2
Backlash distance
0.000000
EGU
Move Fraction
1.000000
Servo
Proportional
Integral
Derivative
0.000000
0.000000
0.000000
Resolution
Motor resolution
0.000020
EGU/step
Encoder res.
0.000020
EGU/step
Readback res.
0.000020
EGU/step
Retry deadband
0.000020
EGU
Retries 0
max: 10
Use Encoder
No
Yes
Use Readback
No
Yes
Readback Delay
0.000000
sec
RBV inLink
Pre-move string
Post-move string
Mode
supervisory
Scan
Ld
Go
Abort
More
STATUS
NO_ALARM
State 0x 0x92a
CurrDir 0
Moving 0
At Home 1
MotorPos 0
Encoder 16
MIP 0x 0x0
Err 0.000000
Version 6.44
VME Card# 0
Precision 5
Torque
Disable
Enable
FWD LINK
V2.6


softMotorConfig.adl
Configuration for 8ide:sm23
xtl2chi
Help
Soft Dial
More
Calcs (Default-> In=Out)
Hard Links
Load
0.0000
0.0000
1.0000
Reverse
0.0030
Forward
0.0000
Moving Logic
Invert
Same
optional link
Debug
All Stop
Readback
8ide:m38.RBV
Value
8ide:m38.VAL
Moving Indicator
8ide:m38.DMOV
Emergency Stop
8ide:m38.STOP


yyCalcoutRecord.adl
sm23 Forward Calc
(8ide:sm23CalcFrwd)
Passive
EVENT#
PROC
#DIGITS
DOUBLE VARIABLES
PV NAME
A
B
C
D
HELP
CALC (CALCULATION)
RESULT
A/8.16782e-04
0.00000
OCAL (OUTPUT CALCULATION)
0.00000
DELAY
OUTPUT EVENT#
Every Time
Use CALC
OUTPUT PV NAME
Continue normally
IVOV
8ide:m38.VAL PP MS
FORWARD LINK
More

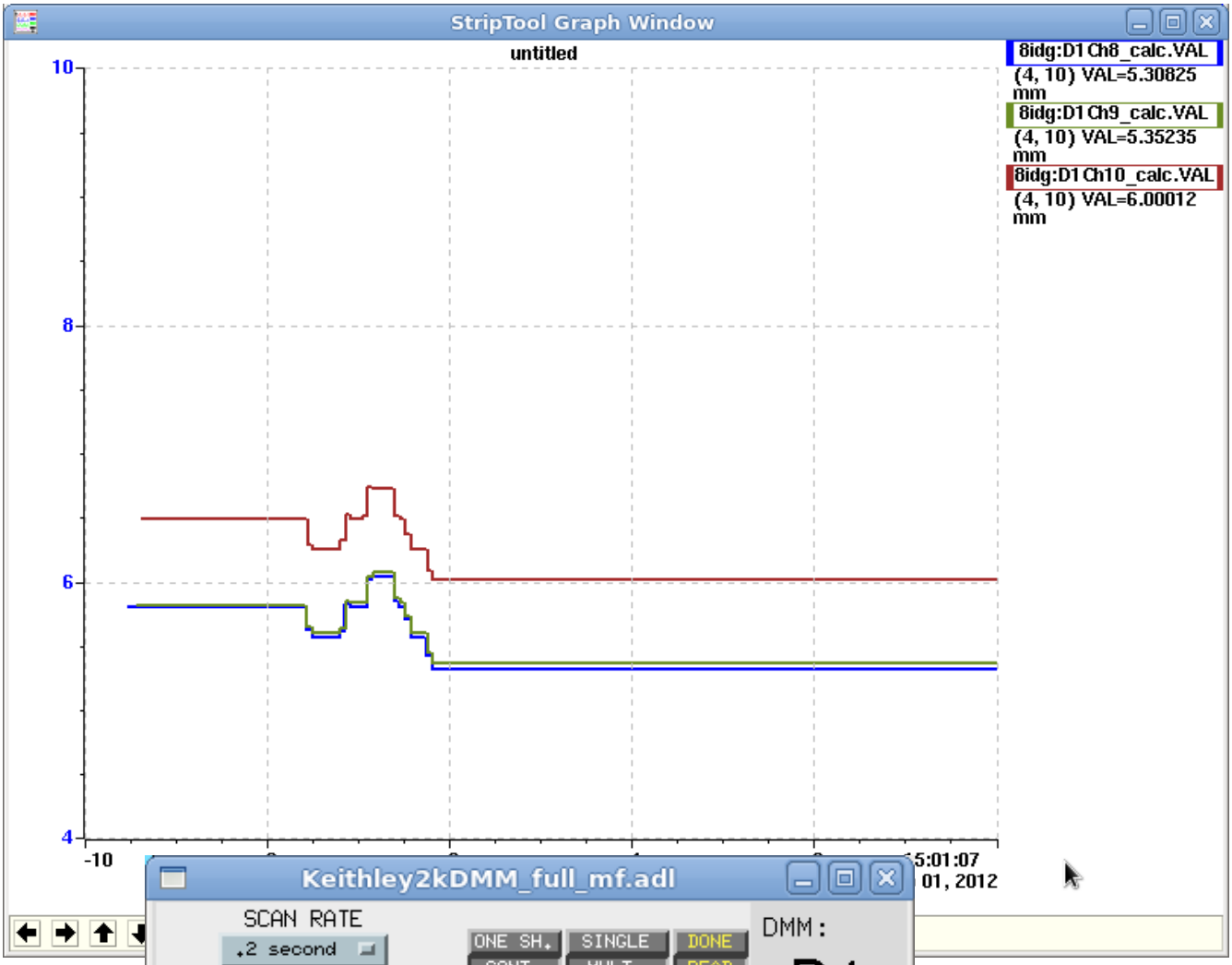

yyCalcoutRecord.adl
sm23 Reverse Calc
(8ide:sm23CalcRevs)
Passive
EVENT#
PROC
#DIGITS
DOUBLE VARIABLES
PV NAME
A
8ide:m38.RBV CP MS
149.99700
B
C
D
HELP
CALC (CALCULATION)
RESULT
8.16782e-04*A
0.12251
OCAL (OUTPUT CALCULATION)
0.12251
DELAY
OUTPUT EVENT#
Every Time
Use CALC
OUTPUT PV NAME
Continue normally
IVOV
FORWARD LINK
More

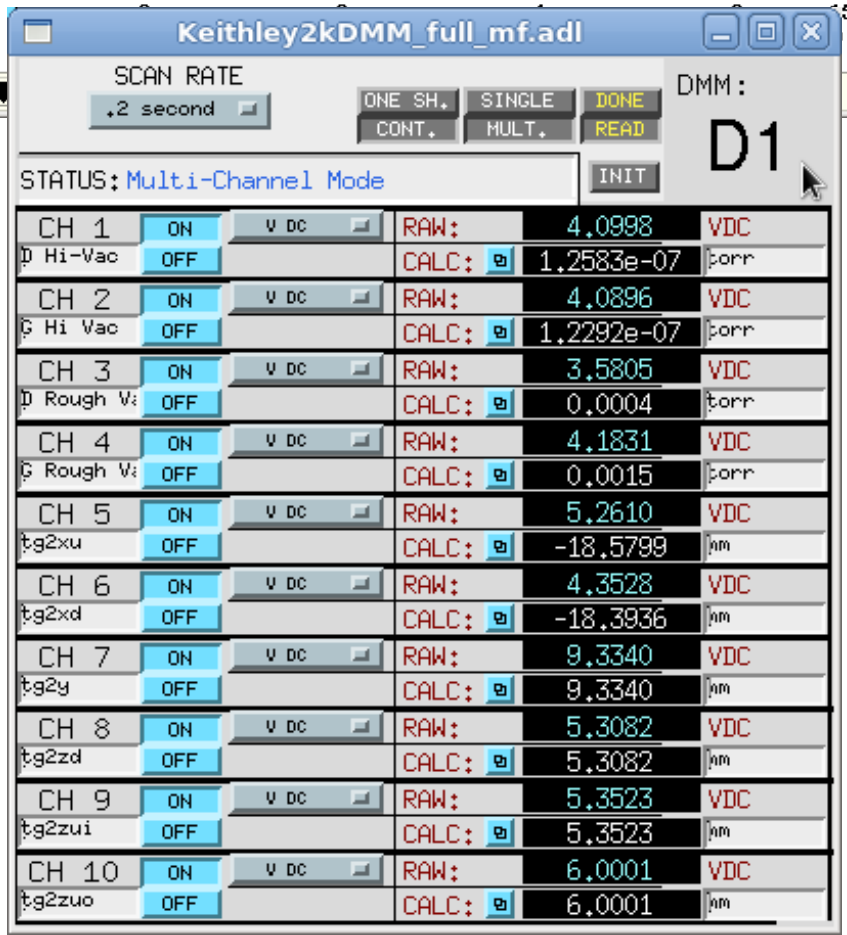


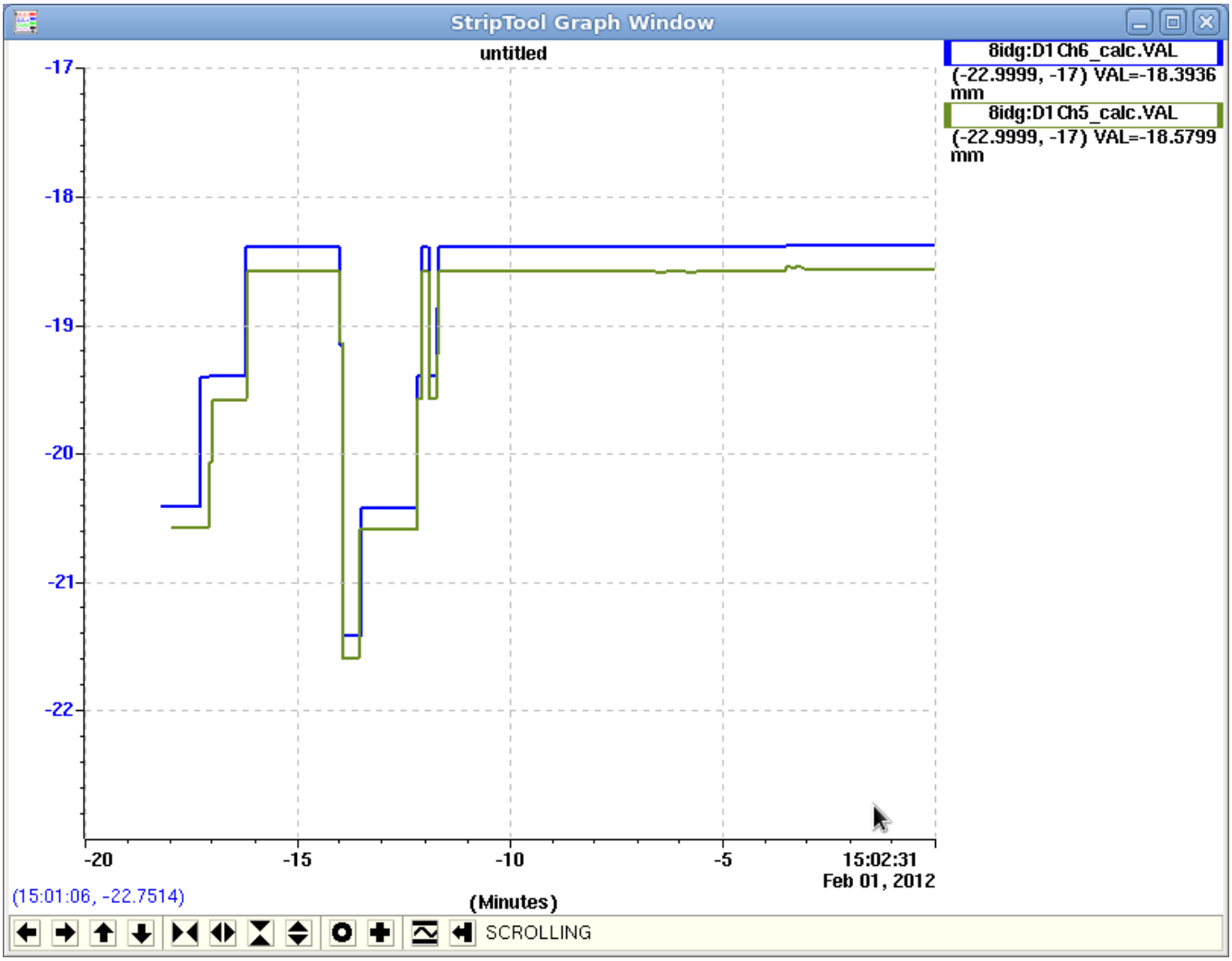
Stability of smarChi (blue) and xtl2x (green) after homing and repositioning.

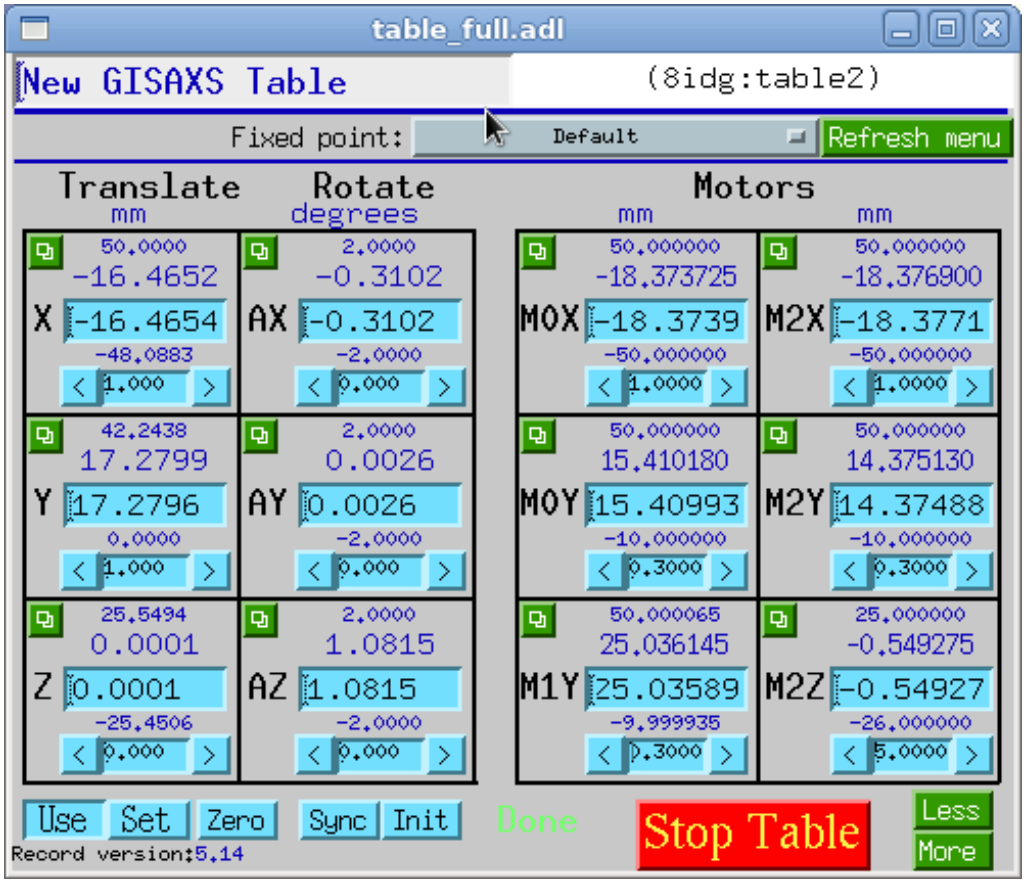
Took some time to make sure beam is going through G-line correctly.

G-diffractometer alignment






StripTool Graph Window
untitled
8idg:D1Ch6_calc.VAL
(-22.9999, -17) VAL=-18.3936 mm
8idg:D1Ch5_calc.VAL
(-22.9999, -17) VAL=-18.5799 mm
-17
-18
-19
-20
-21
-22
-20
-15
-10
-5
15:02:31
Feb 01, 2012
(15:01:06, -22.7514)
(Minutes)
SCROLLING


table_full.adl
New GISAXS Table
(8idg:table2)
Fixed point:
Default
Refresh menu
Translate
mm
Rotate
degrees
Motors
mm
mm
50.0000
-16.4652
X
-16.4654
-48.0883
1.000
2.0000
-0.3102
AX
-0.3102
-2.0000
0.000
50.000000
-18.373725
M0X
-18.3739
-50.000000
1.0000
50.000000
-18.376900
M2X
-18.3771
-50.000000
1.0000
42.2438
17.2799
Y
17.2796
0.0000
1.000
2.0000
0.0026
AY
0.0026
-2.0000
0.000
50.000000
15.410180
M0Y
15.40993
-10.000000
0.3000
50.000000
14.375130
M2Y
14.37488
-10.000000
0.3000
25.5494
0.0001
Z
0.0001
-25.4506
0.000
2.0000
1.0815
AZ
1.0815
-2.0000
0.000
50.000065
25.036145
M1Y
25.03589
-9.999935
0.3000
25.000000
-0.549275
M2Z
-0.54927
-26.000000
5.0000
Use
Set
Zero
Sync
Init
Done
Stop Table
Less
More
Record version:5.14