

Super Agilis Series

CONEX-SAG Controller with SAG-xxxx Stages



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Original instructions.

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1.0 Introduction

1.1 Purpose

The purpose of this document is to provide instructions on how to use the CONEX-SAG Controller GUI.

1.2 Overview

The CONEX-SAG Controller GUI is a graphical user interface (GUI) which allows the user to interact with the CONEX-SAG Controller that is connected to stages. The user can initiate moves, change the state of the controller, adjust parameters, etc.

The CONEX-SAG Controller GUI runs on Windows 7, 8 and 10 platforms.

NOTE

The CONEX-SAG Controller GUI supports the standards screens of personal computers. Other kinds of screens are not supported (pads, smartphones, etc.).

2.0 Getting Started

2.1 Software

All Necessary files can be obtained from the <http://www.newport.com> website.

2.2 CONEX-SAG Controller GUI Installation

To install CONEX-SAG Controller GUI follow the steps below:

- Download the "Newport CONEX-SAG Applet.zip" folder from the website.
- Extract in the folder of your choice.
- From this folder, select and launch "Newport CONEX-SAG Applet.application".

The installation completes and a shortcut is created on the desktop and in the start menu of your computer.

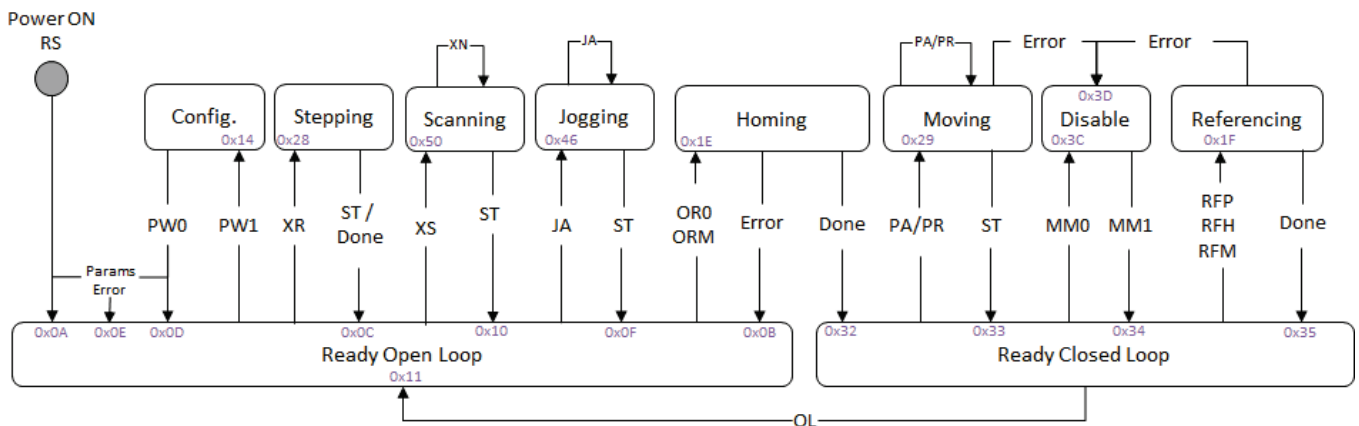
2.3 Launching Application

- Double-click on the shortcut.



2.4 Controller State Diagram

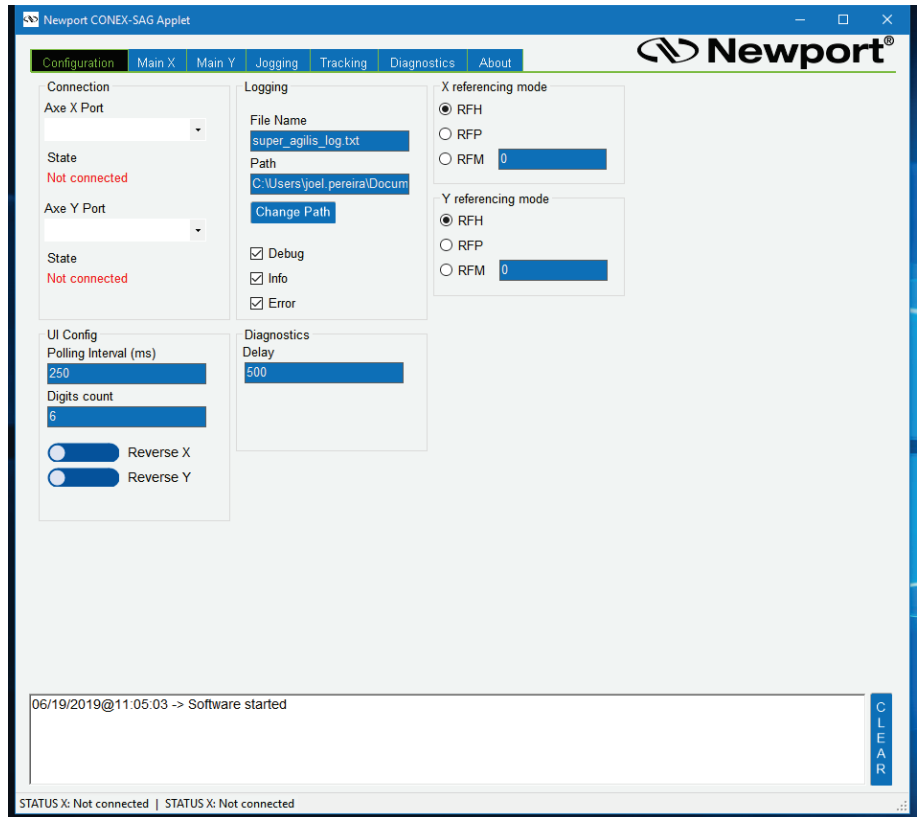
The CONEX-SAG Controller is defined by the following state diagram (refer to product user manual for more details).



3.0 GUI Description

3.1 Configuration Tab

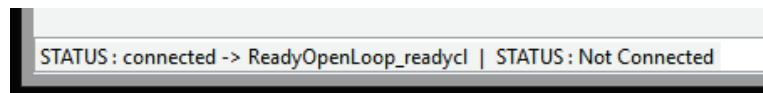
Upon start-up, the following window appears with "Configuration" tab selected. The Configuration tab allows the user to view and / or change configuration information.



- The communication area in the bottom displays the commands and errors. This area appears in all the different tabs. It can be erased with the "Clear" button on the right.

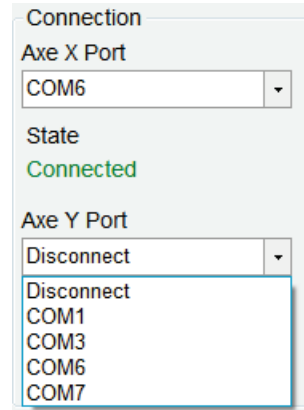


- The axes STATUS are always displayed on the bottom of the application window (X status | Y status).

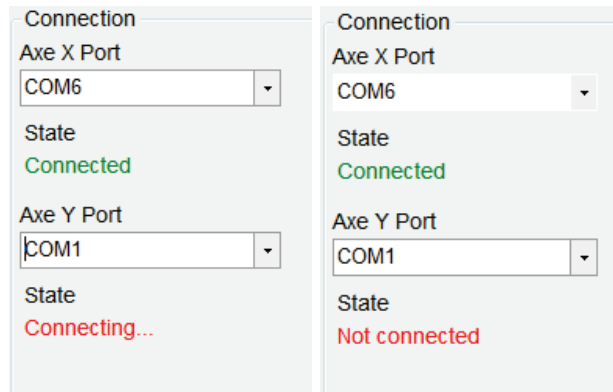


3.1.1 Connection Panel

Connection panel allows selecting the USB ports on which X and Y stages are connected and shows axes connection state (Connected / Not connected).



- In case a wrong port is selected, after searching for some time, the "Not connected" state is displayed and an error is reported in the communication area.

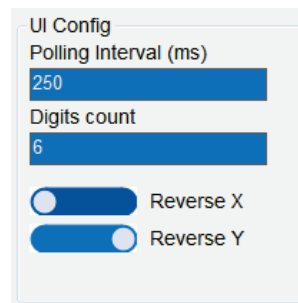


Note that if the same port is selected again for the second axis, it will be automatically disconnected from the first axis.

3.1.2 UI Config Panel

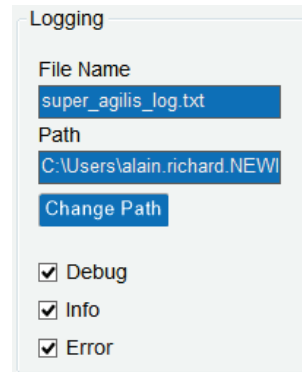
This panel allows setting Polling interval (refresh interval) and Digits count (decimal digits number for closed loop position).

Axes can also be reversed to fit desired positive direction.



3.1.3 Logging Panel

This allows changing log file name, path and recorded data.



Logging

File Name
super_agilis_log.txt

Path
C:\Users\alain.richard.NEWI

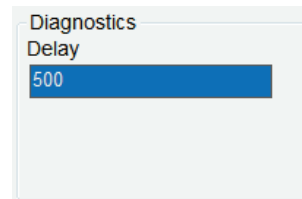
Change Path

Debug
 Info
 Error

Note: this file is size limited and filled in FIFO.

3.1.4 Diagnostics Panel

Here, delay between command executions in a command file can be set.

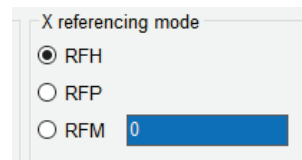


Diagnostics

Delay
500

3.1.5 X Referencing Mode

This panel allows selecting X referencing mode. For RFM referencing mode we can add the value for the final position.

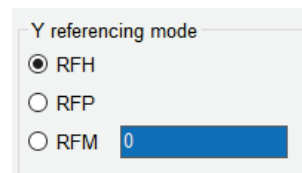


X referencing mode

RFH
 RFP
 RFM 0

3.1.6 Y Referencing Mode

This panel allows selecting Y referencing mode. For RFM referencing mode we can add the value for the final position.



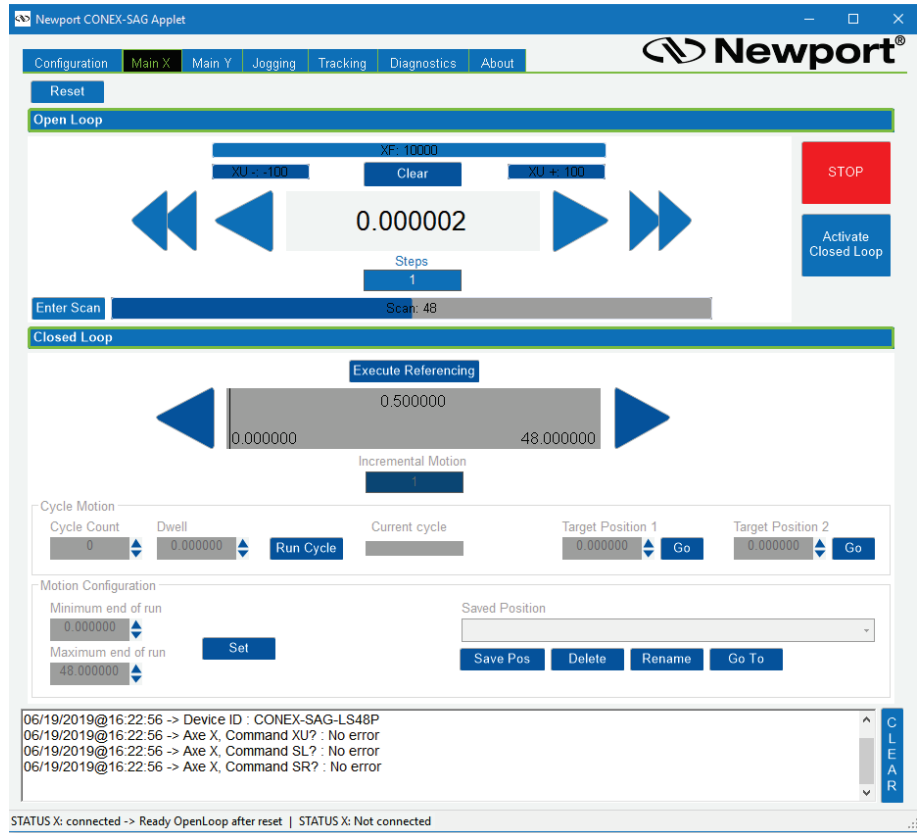
Y referencing mode

RFH
 RFP
 RFM 0

3.2 Main X/Main Y Tabs

Main X and Main Y tabs can be used to move the corresponding axis stage in open loop or closed loop (= encoder controlled loop - only for compatible stages).

- Top "Reset" button resets the controller (eq. to power off/on)



3.2.1 Open Loop Panel

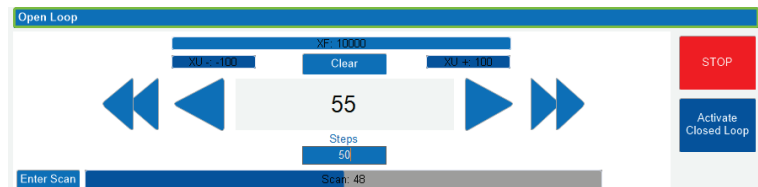
This panel is used to move the stage in open loop (no encoder feedback).

Step mode:

The stage is moved by the specified "Steps" number (approx. 1.5 µm per step*) in positive (right) or negative (left) direction:

- at low speed (500 Hz ≈ 0.75 mm/s*) by clicking the simple arrows
- at high speed (10 kHz ≈ 15 mm/s*) by clicking the double arrows

(*) For step size at 100% (see command XU = -100,100)



The theoretical position in steps number is displayed at the center (for Open Loop Stage).

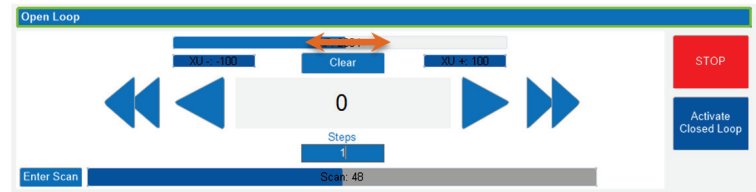


The theoretical position in steps number is mm at the center (for Close Loop Stage).

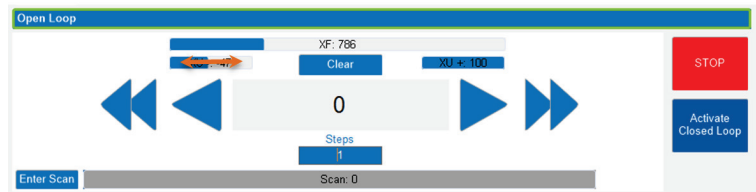
- It can be reset to zero by clicking "Clear" button.

This counter has no absolute reference and attention must be paid to the physical position of the stage. In particular, no warning is reported if an end of run is reached and however, the stage won't move further.

- The stepping frequency can be adjusted by clicking on the XF bar and moving the mouse from left to right.



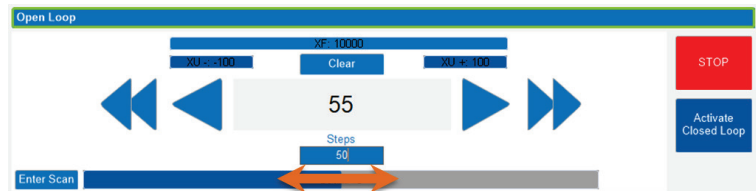
- The current of open loop step size can be adjusted by clicking on the XU bars and moving the mouse from left to right. The variable step size is available only for XF frequencies up to 1 kHz. For higher frequencies the step size is always 100%.



- During a move, displacement can be stopped by the "Stop" button.

Scan mode:

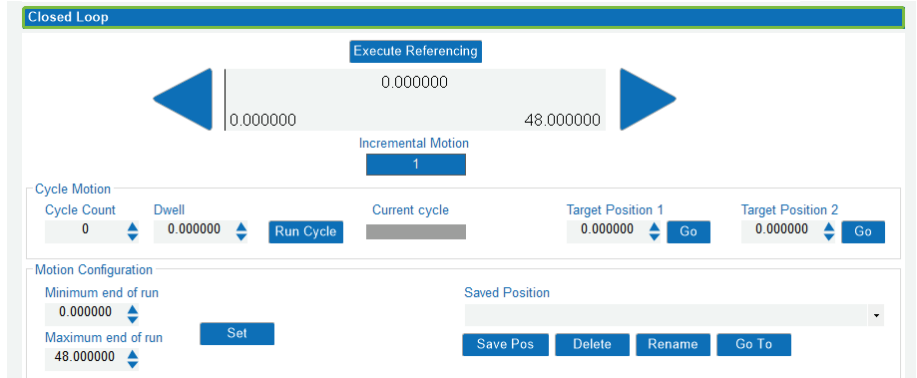
If a sub-step positioning is necessary, click on "Enter scan" button. In this mode, the piezo actuator is locked on the current step and additionally expanded between 0 and maximum elongation (approx. 1.8 μm) by clicking in the scan bar and moving the mouse from left to right.



- In scan mode, the arrows are inactive. It is therefore mandatory to be positioned at the step preceding target position before entering scan mode (axis not reversed).
- However, in case the axis is set to "Reverse" in Configuration tab, it must be positioned at the step following target position before entering scan mode.
- Click on "Stop Scan" to leave scan mode and go back to step mode. Note that the piezo additional expansion gets back to zero quickly and this generates a small drift.

3.2.2 Closed Loop Panel

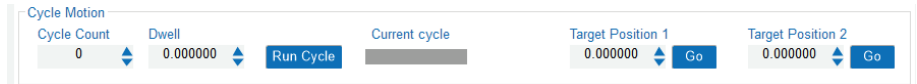
If the stage design allows, it can be driven in closed loop on encoder by clicking "Activate Closed Loop" button.



- A referencing can be set by clicking “Execute Referencing”. The sequence executed is depending on the choice done in the Tab Configuration (see 3.1.5 & 3.1.6).
- The stage is moved by the specified value in the “Incremental Motion”.

Cycle motion:

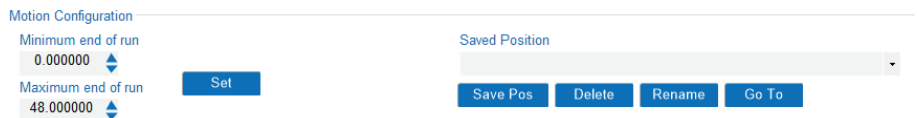
In this mode, a motion cycle can be set.



- The number of cycle is set in Cycle Count.
- Dwell is a temporization in second between each position.
- Target Position 1 is the first position for the cycle.
- Target Position 2 is the second position for the cycle.
- The cycle can be started by clicking on “Run Cycle”.

Motion configuration:

Travel range can be reduced using “Minimum end of run” and “Maximum end of run”. These virtuals end of run are activated clicking on “Set” button.

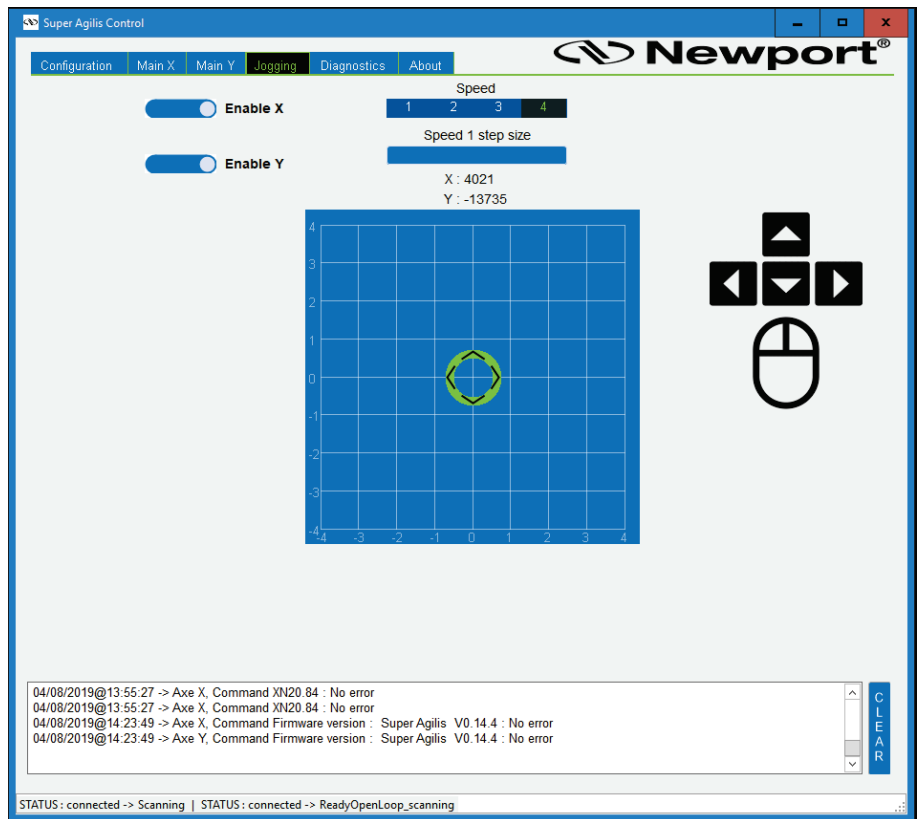


Position can be saved using the button “Save Pos”. Position saved can be found in the list box “Saved Position”.

- A position saved can be deleted using the button “Delete”.
- A position can be renamed using the button “Rename”.
- A displacement to a position saved can be operated clicking on the button “Go to”.

3.3 Jogging Tab

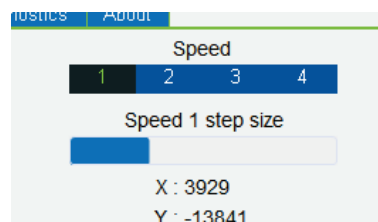
This tab allows moving the stages in jog mode exactly like with a joystick.



- Click on the green circle, maintain and move in the desired direction by one, two, three or four square intervals to move at speed 1 to 4.
- Speed 1 corresponds to 50 Hz, speed 2 to 1 kHz, speed 3 to 5 kHz and speed 4 to 10 kHz.
- Move horizontally for X axis, vertically for Y axis and in diagonal for both.

Axes can also be moved by pressing the keyboard arrows.

- In this case, select velocity by clicking one of the four "Speed" buttons on the top.
- In speed 1, velocity can be decreased further by reducing step size. Click on "Speed 1 step size" bar to set (also applicable to joystick).

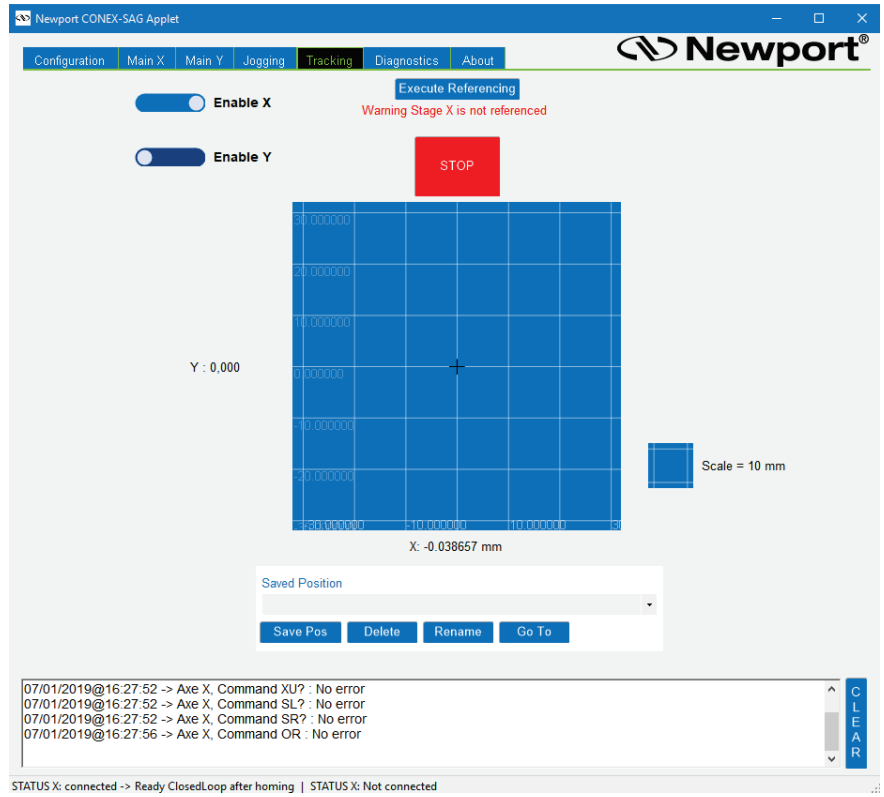


NOTE

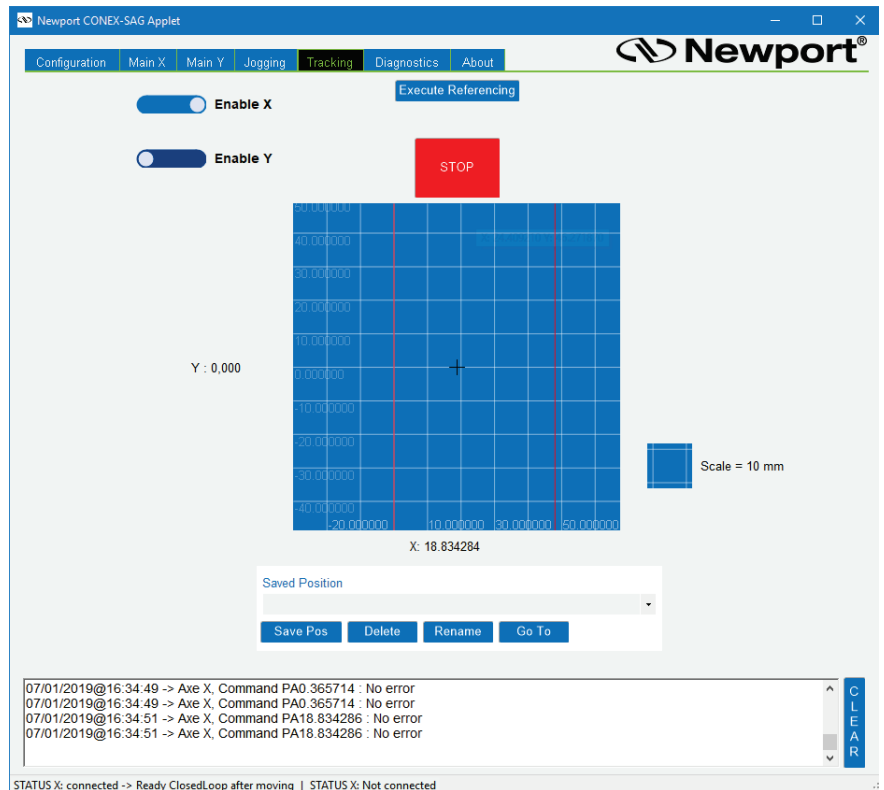
X or Y axis can be disabled by toggling "Enable X" or "Enable Y".

3.4 Tracking Tab

This tab allows moving the stages in track mode. In order to active this mode a referencing must be perform, the button “Execute Referencing” accomplish this sequence.



After the referencing, track mode is active. Two red lines appear to represent the limit of the travel range.



- Choose the position desired with the mouse and click. The stage displace to the position.
- With the scroll wheel a dynamic zoom can be done on the blue square.
- During a move, displacement can be stopped by the "Stop" button.

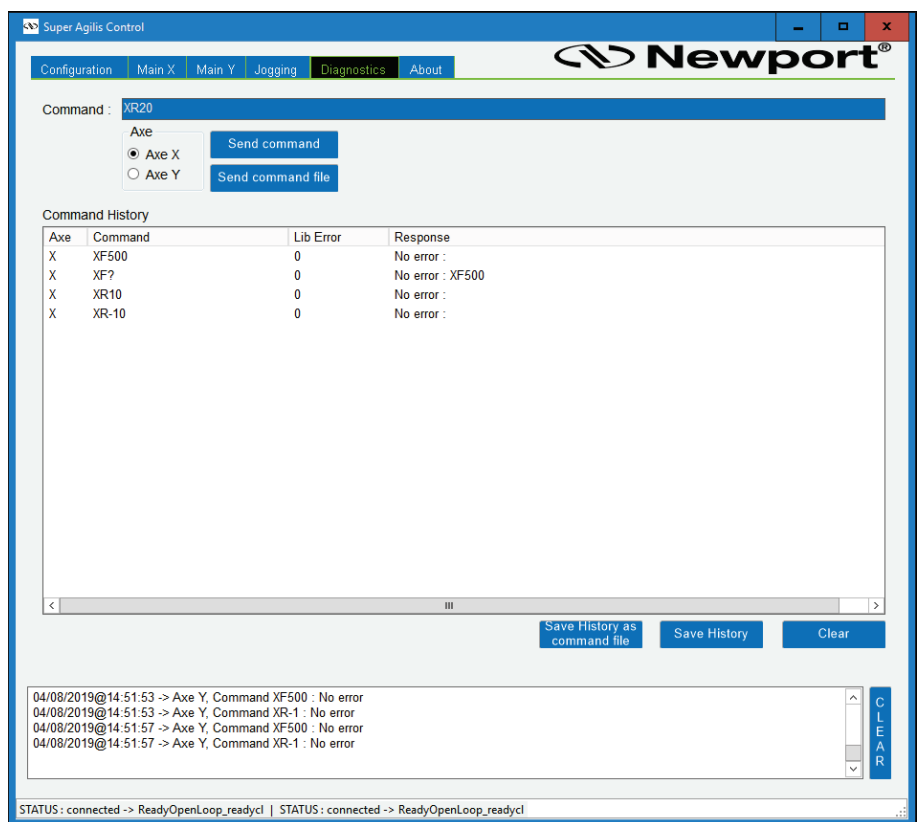
NOTE

X or Y axis can be disabled by toggling "Enable X" or "Enable Y".

3.5 Diagnostics Tab

This tab allows sending direct ASCII commands or a command file to the controller. These commands will be immediately executed (with a delay between commands from a file).

Refer to CONEX SAG Controller and stage User Manual for command set description.



- Tick the involved axis
- Type the command in the "Command" area and click "Send command" (or press Enter).

The command (with the response) is added to the "Command History" list in the middle.

- Double click on a line of the list to copy this command in the "Command" area for execution again.

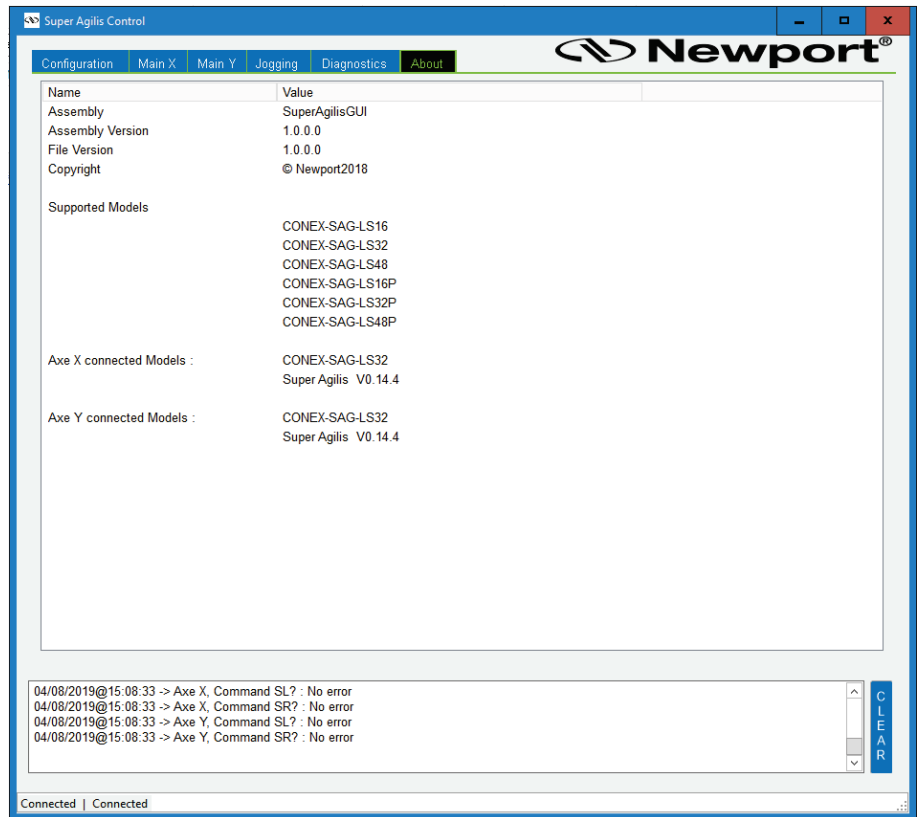
A list of command can also be sent by clicking "Send command file". Browse the file location and click OK for execution.

The "Command History" list can be saved by clicking "Save History as command file" (commands only) or "Save History" (commands + error + response).

This list can also be erased with the "Clear" button.

3.6 About Tab

This one displays information about GUI name and version, supported stages, connected stage names and firmware versions.



4.0 Closing the Application

To close the GUI software:

- Close the application by clicking Windows cross on top right.



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