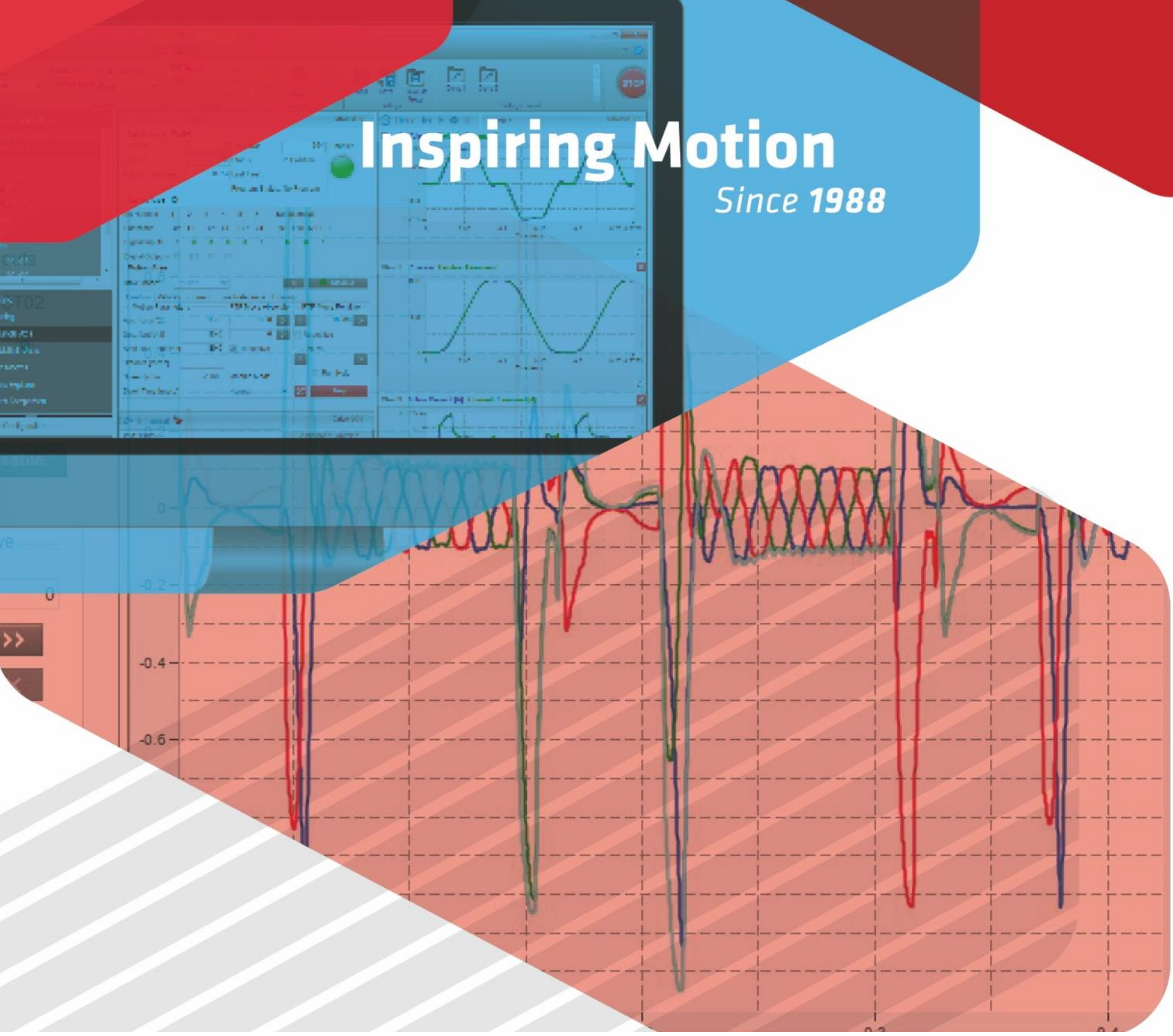


Product Brief

Exercise #1

Expert Tuning

September 2014

www.elmomc.com

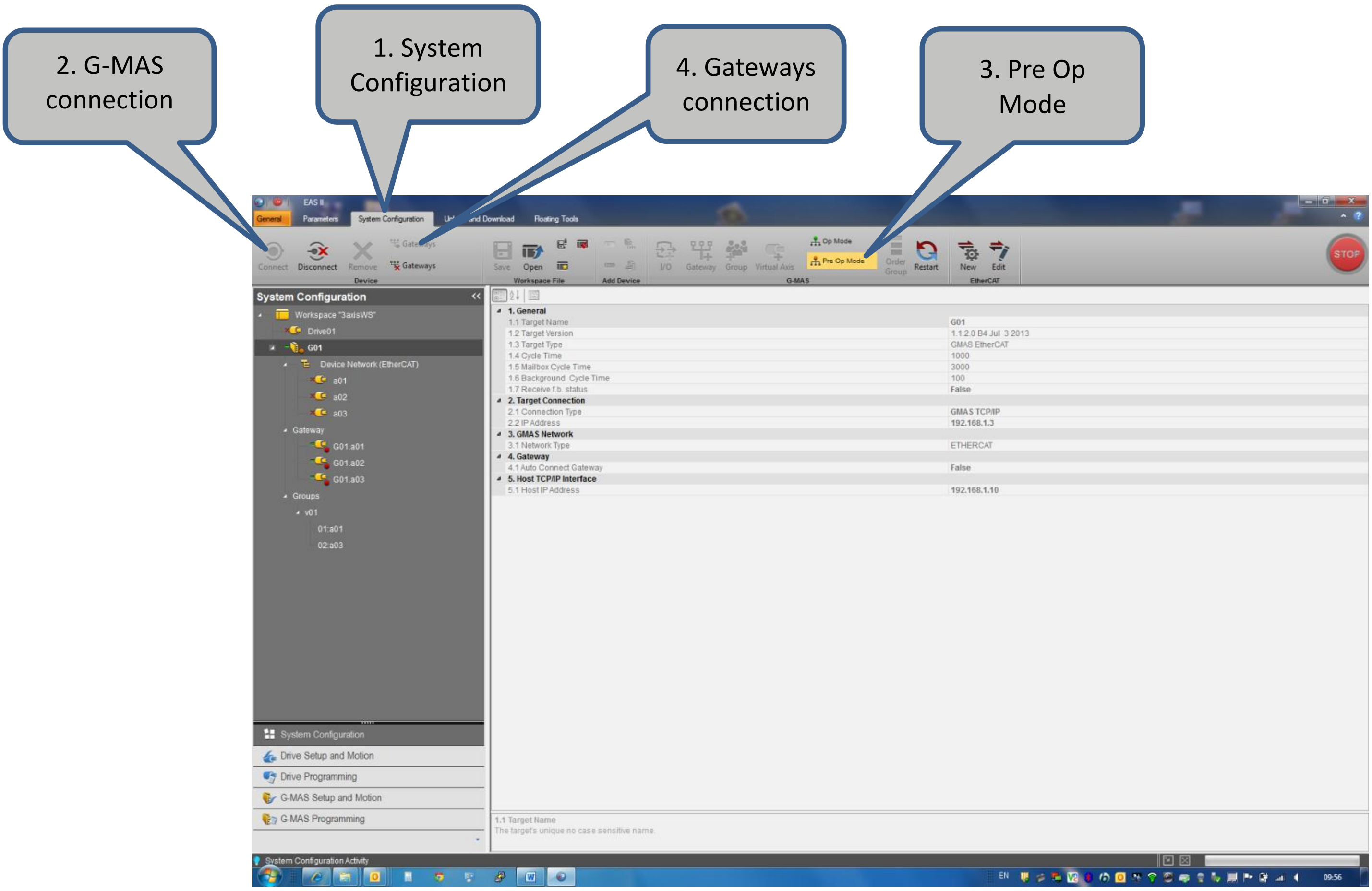
Elmo Motion Control

The key points of this demo show that:

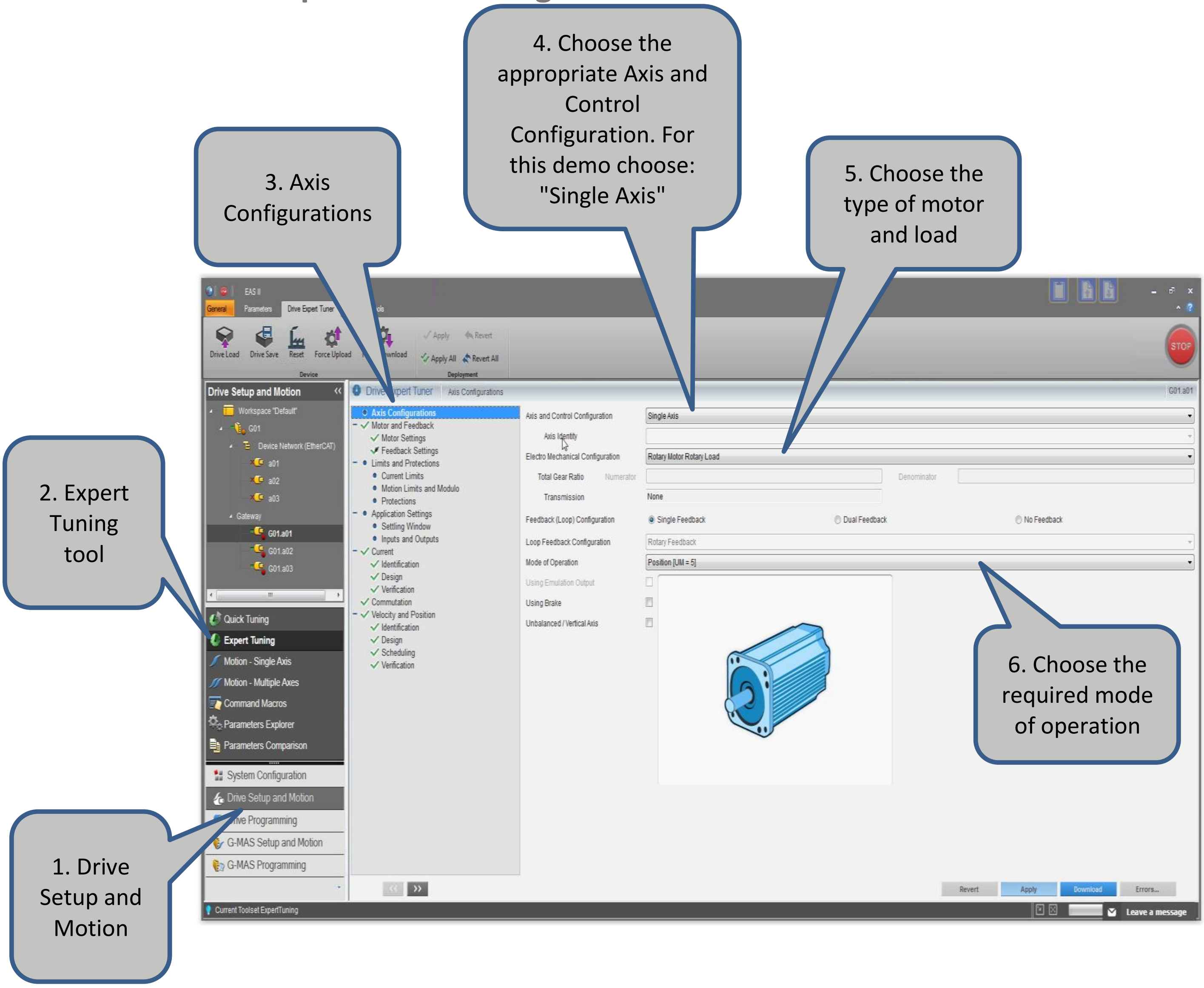
- **Tuning takes only minutes**
- **The tuning process is backed by powerful algorithms for optimization**
- **Elmo's tuning algorithms are based on high precision mathematical methods**
- **Even though the application is smarter and faster, tuning is still simple and friendly**
- **Elmo's software package offers multiple tools for additional "tweaking" and customization**

List of parameters for this demo:				
Parameter	**Value**		**Parameter**	**Value**
Motor type	Rotary. Brushless		Feedback, Socket 1	Encoder Quad, Port A
Continuous. Stall Current	1		Feedback Resolution	2500
Peak current	2			
Max speed	3000		G-MAS IP	192.168.1.3
# Pole pairs	4		Computer IP	192.168.1.XXX

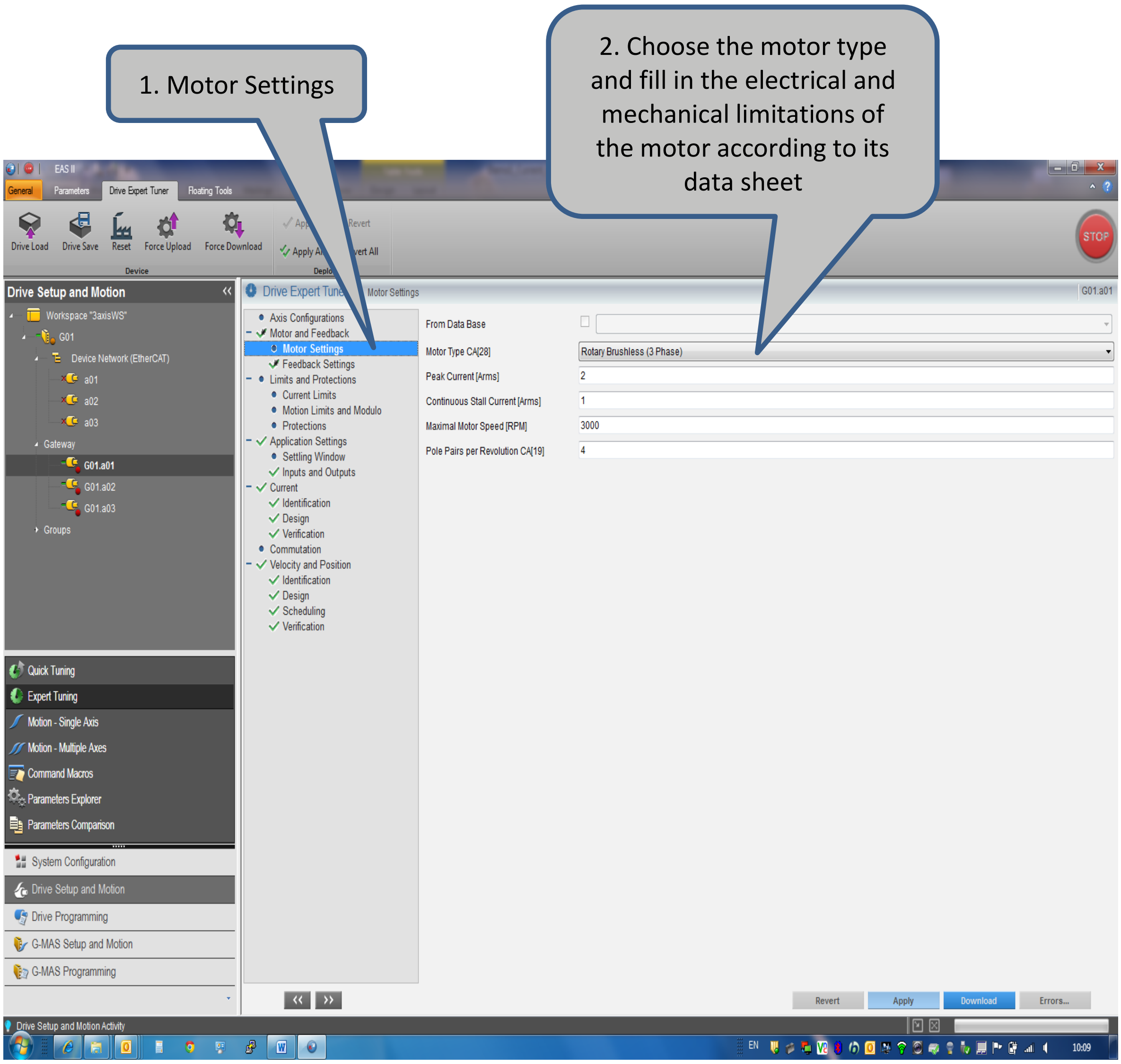
1. Start by connecting the relevant drive via System Configuration.



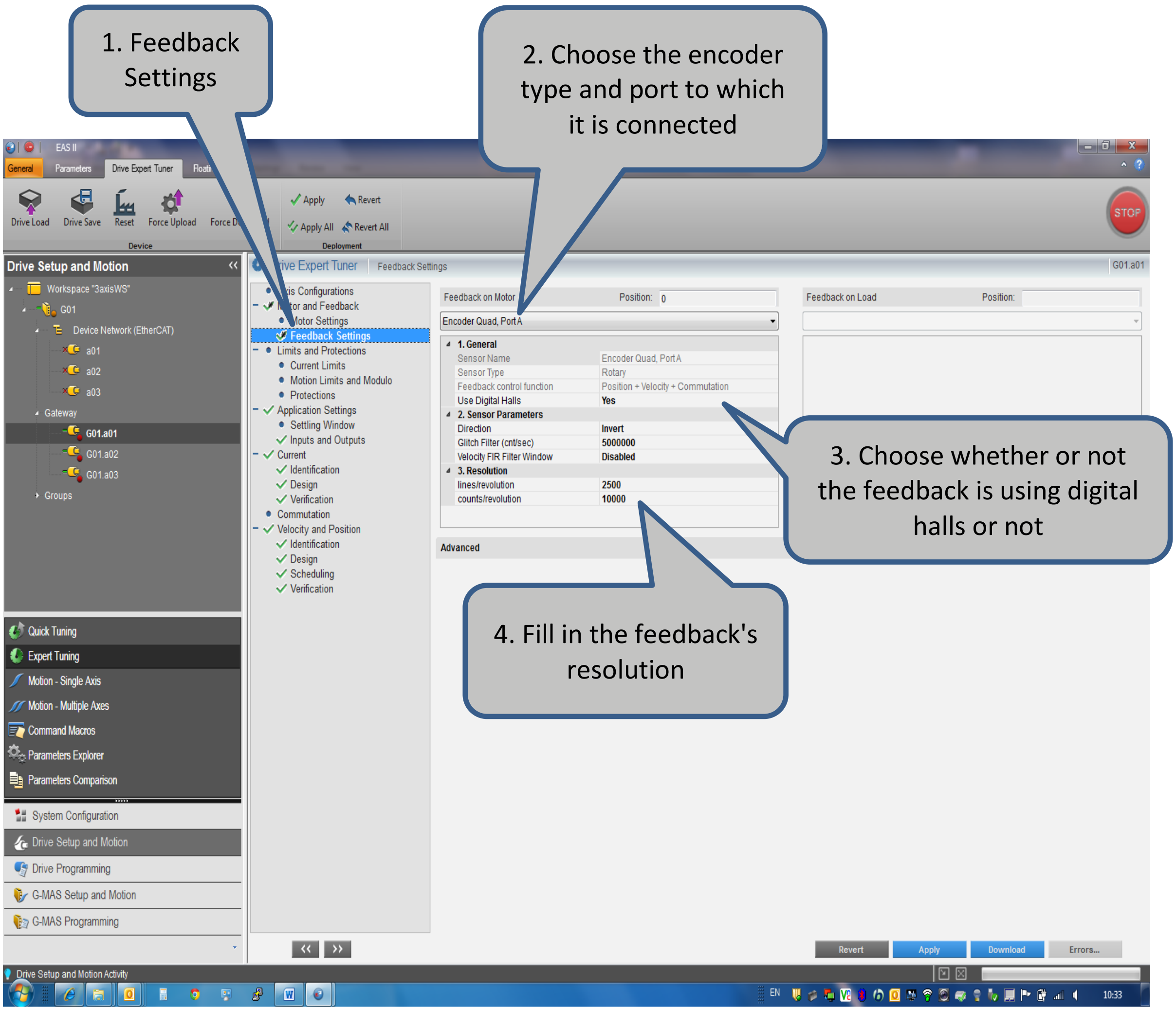
2. Setup the Axis Configuration.



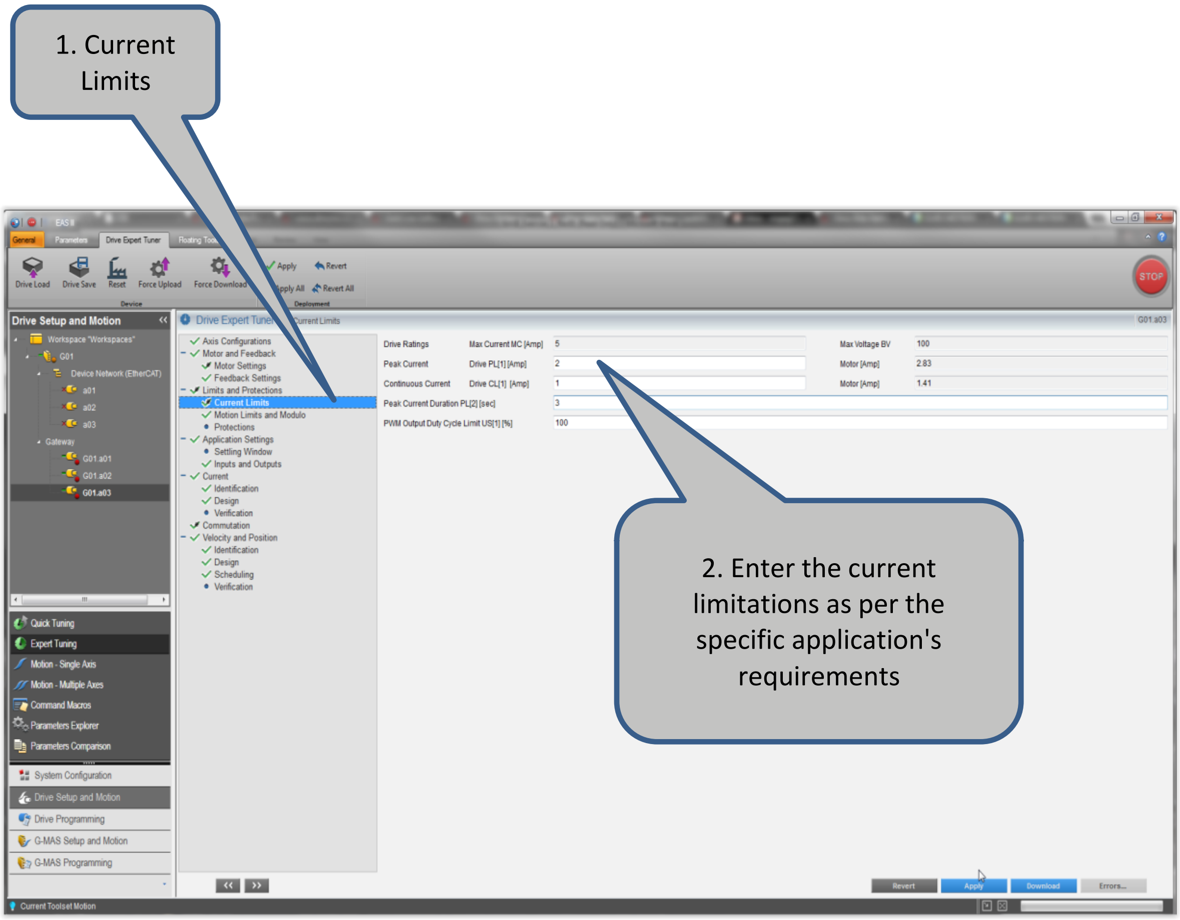
3. Fill in motor settings as listed in the motor data sheet.



4. Fill in feedback settings as listed in the data sheet.

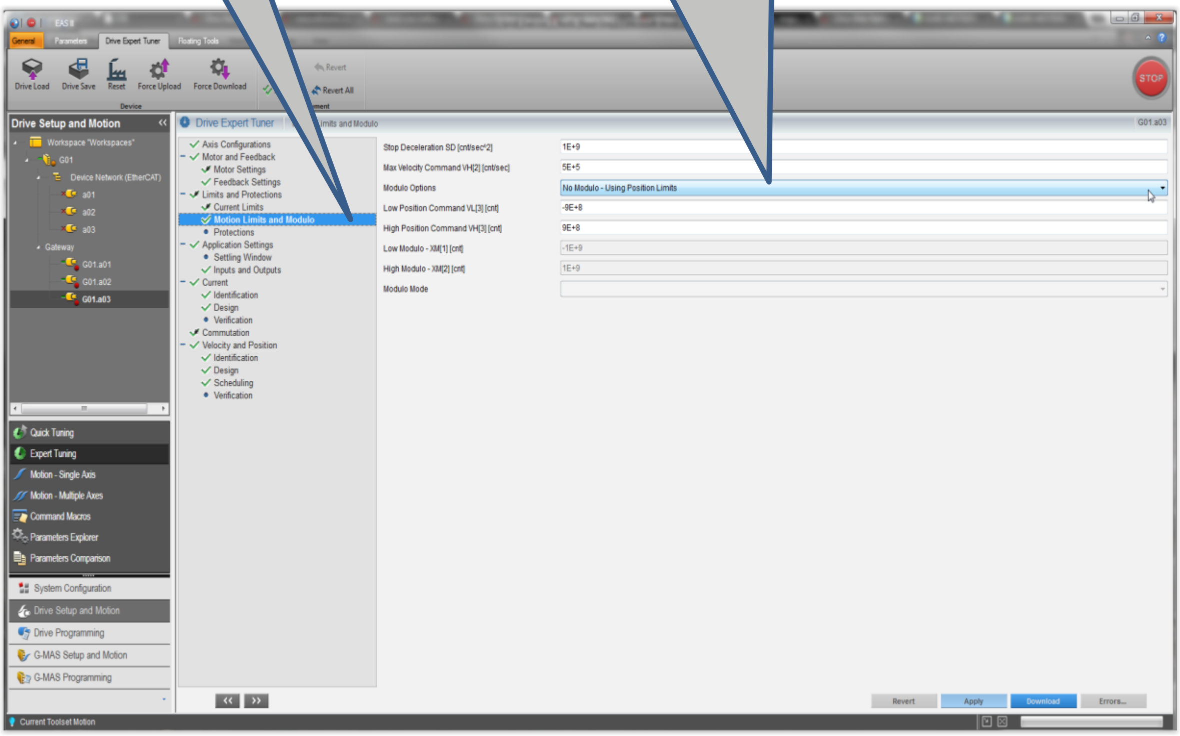


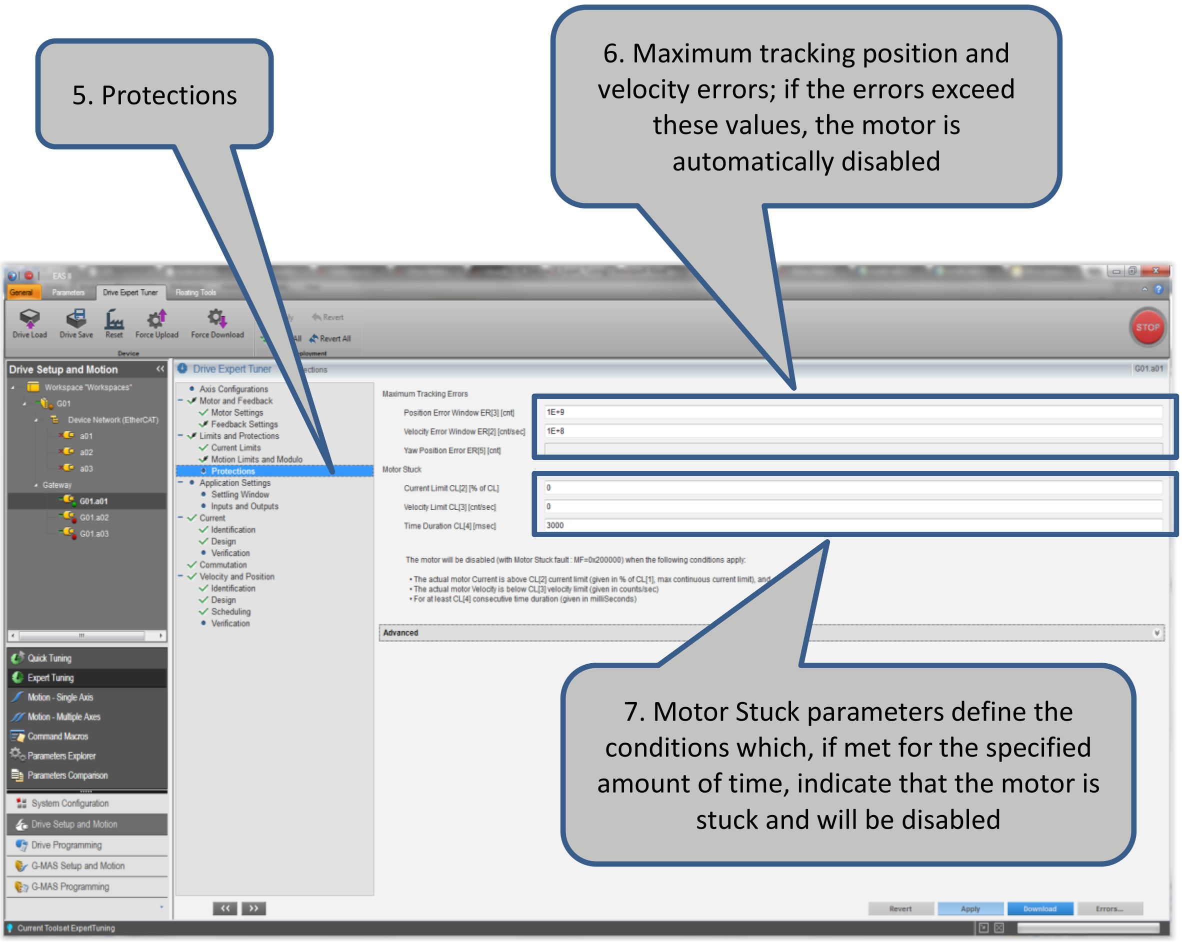
5. Fill in the current limits based on the application's requirements.



3. Motion limits and modulo

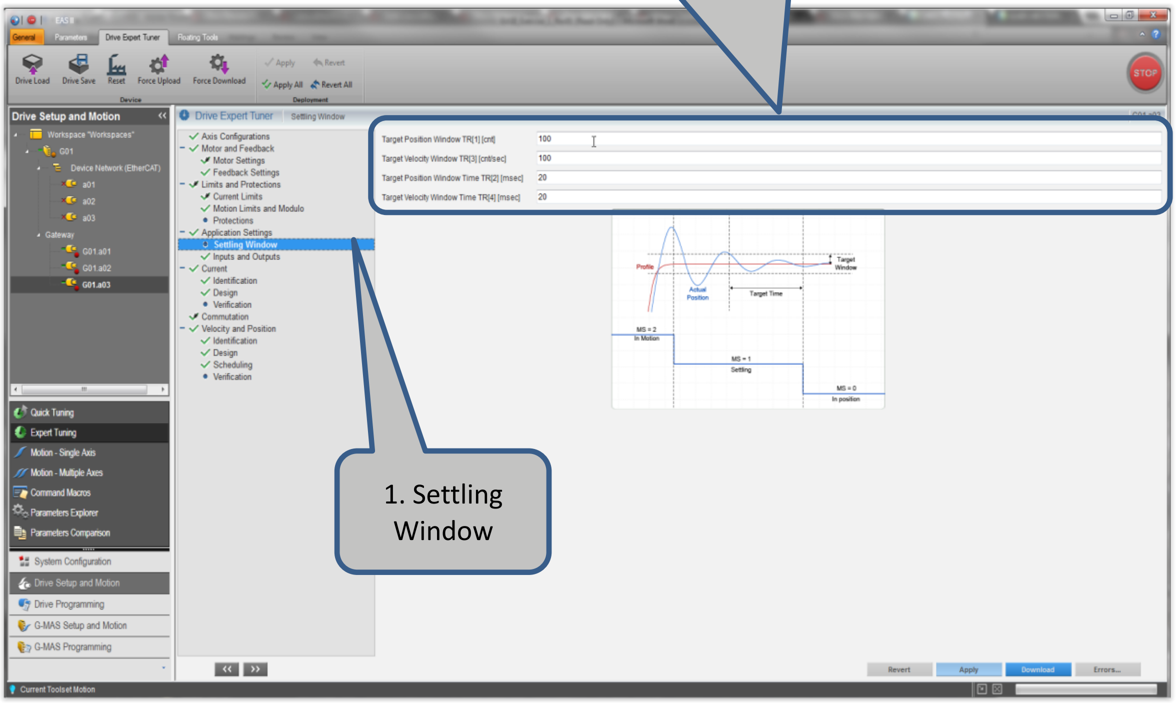
4. In this screen you can choose whether you want to use a modulo – used in applications that require the motor position to be counted cyclically, and choose the motion limits

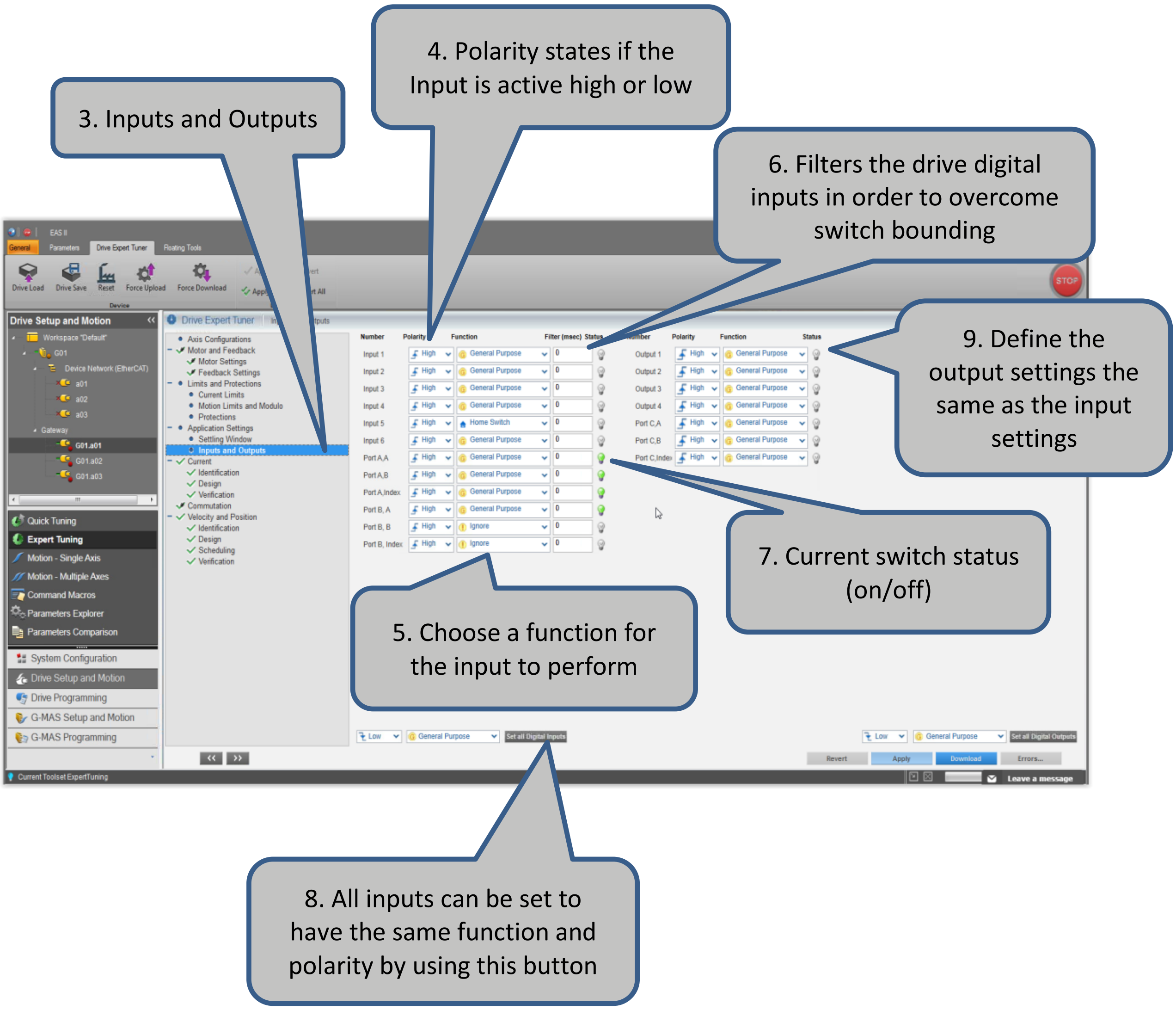



5. Protections
6. Maximum tracking position and velocity errors; if the errors exceed these values, the motor is automatically disabled
7. Motor Stuck parameters define the conditions which, if met for the specified amount of time, indicate that the motor is stuck and will be disabled

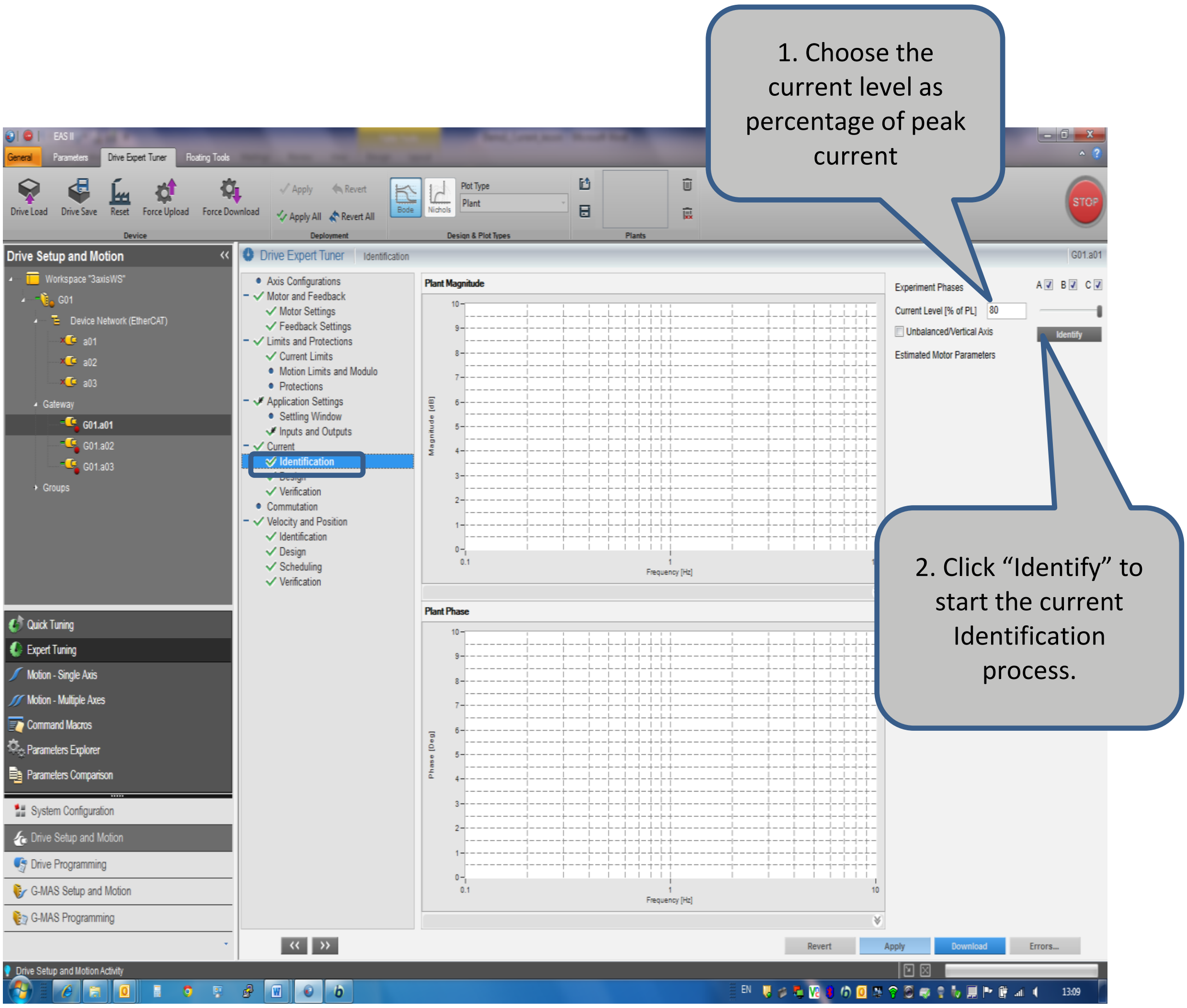
6. Application Settings.

2. These parameters define the target position and velocity windows needed to determine when the motor reaches the desired position/velocity

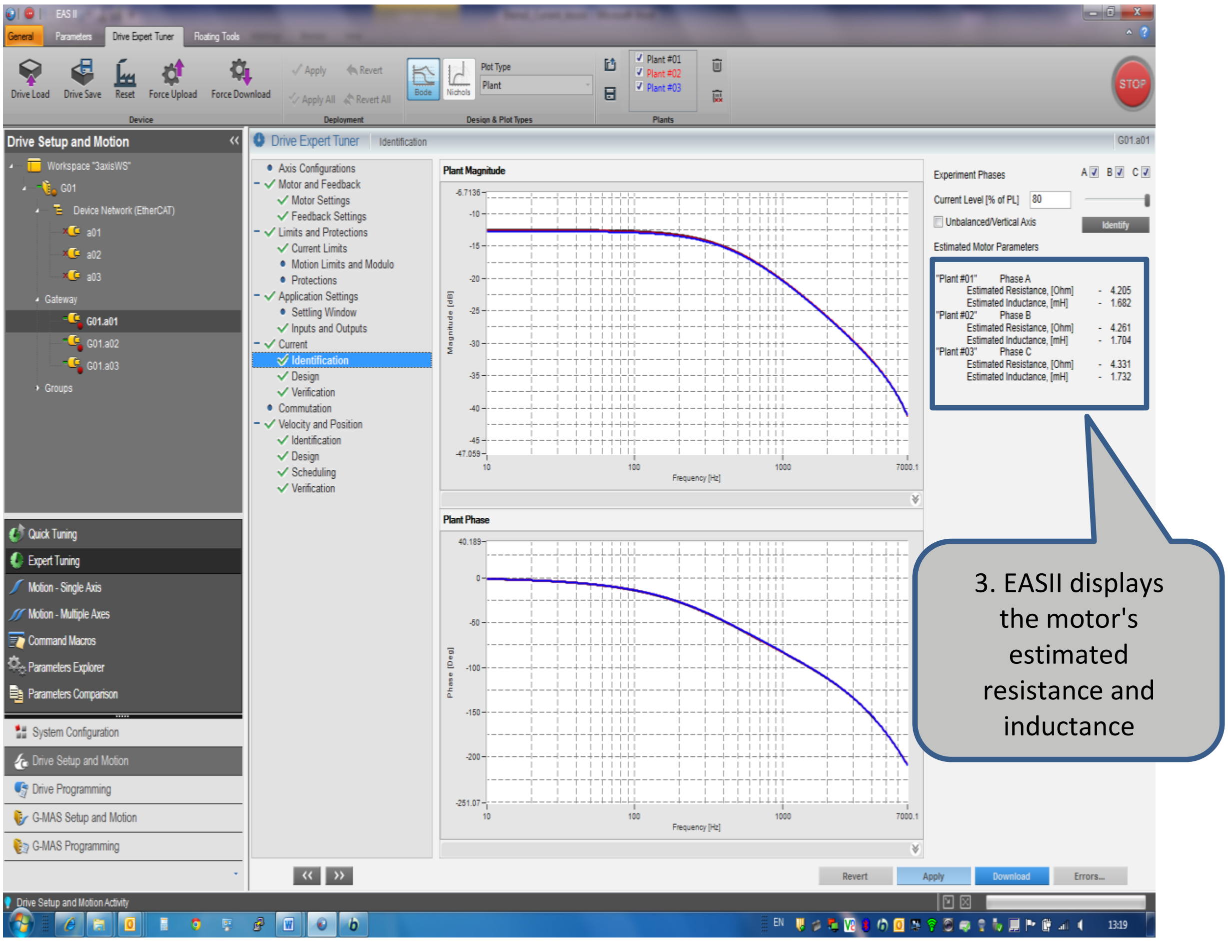



3. Inputs and Outputs
4. Polarity states if the Input is active high or low
5. Choose a function for the input to perform
6. Filters the drive digital inputs in order to overcome switch bounding
7. Current switch status (on/off)
8. All inputs can be set to have the same function and polarity by using this button
9. Define the output settings the same as the input settings

7. Perform the Identification process for the current loop.

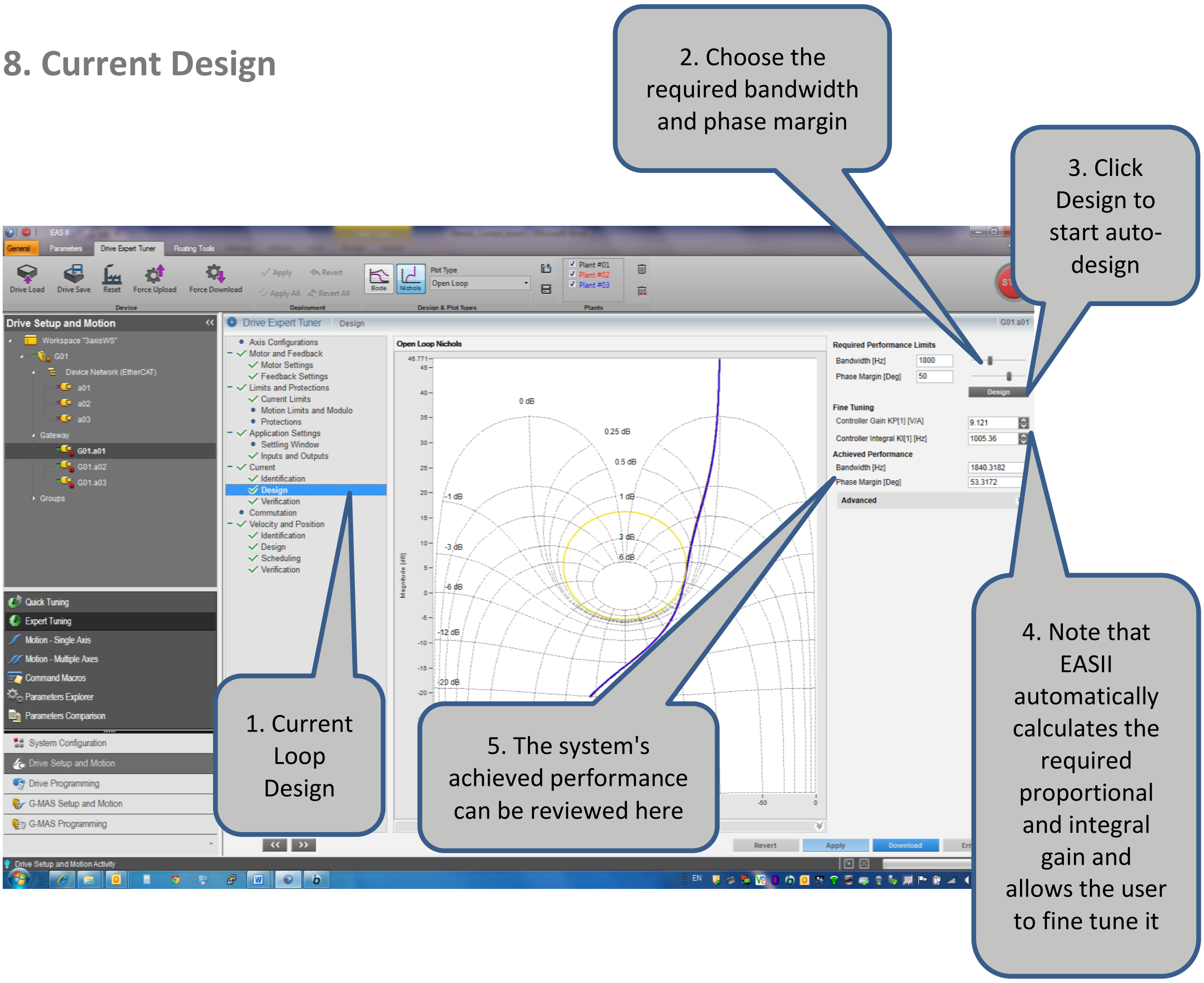


The Current loop Identification result:

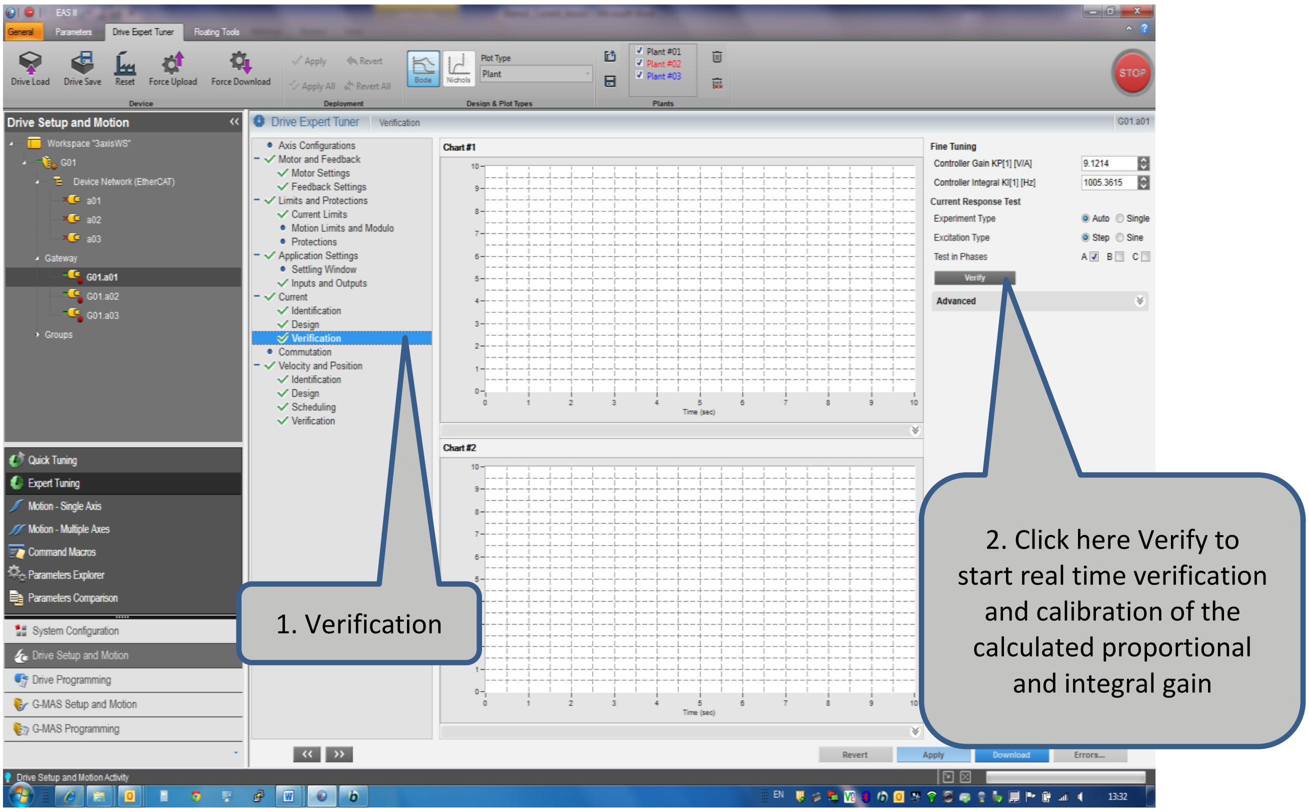


Elmo Motion Control

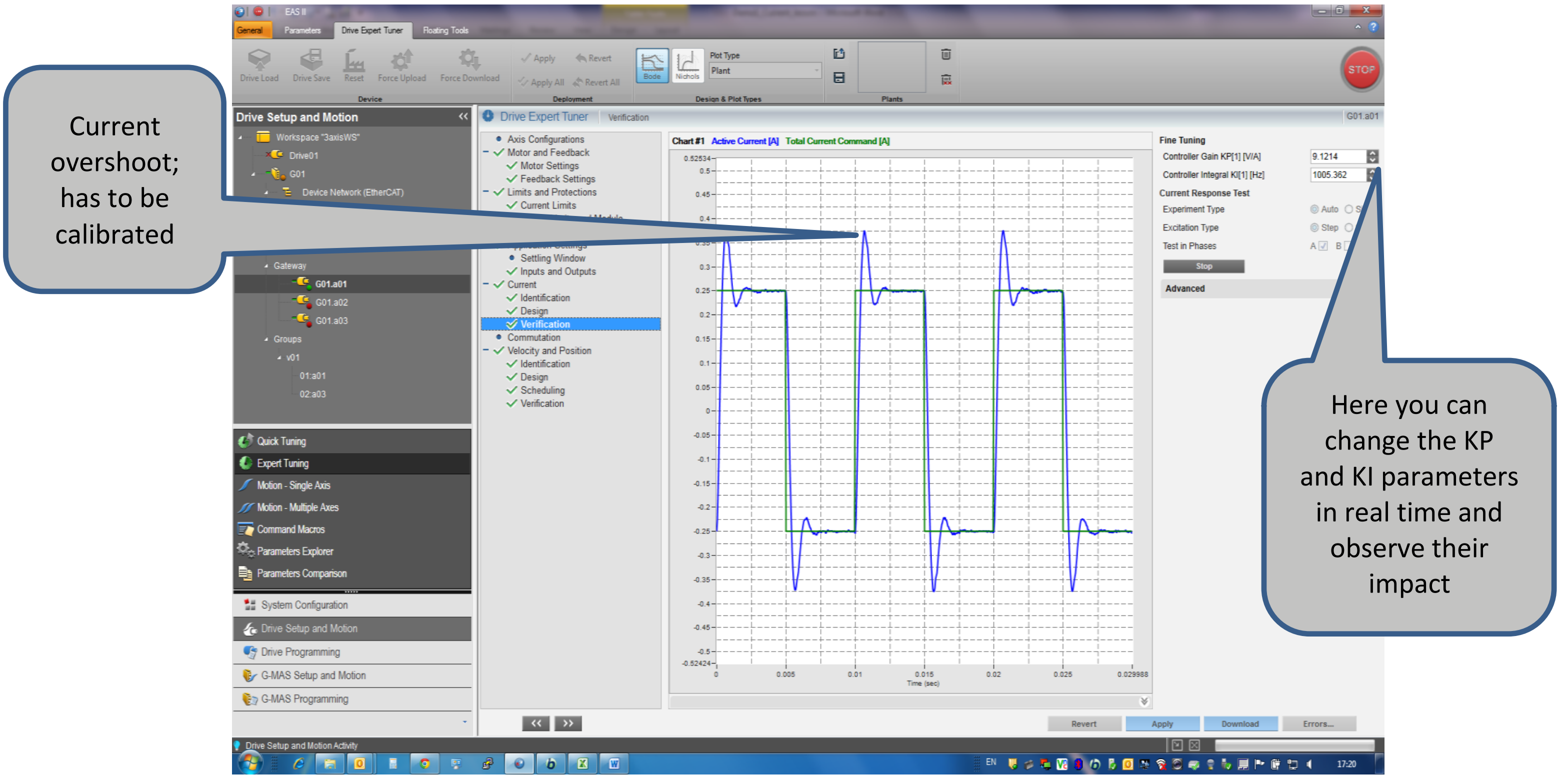
8. Current Design



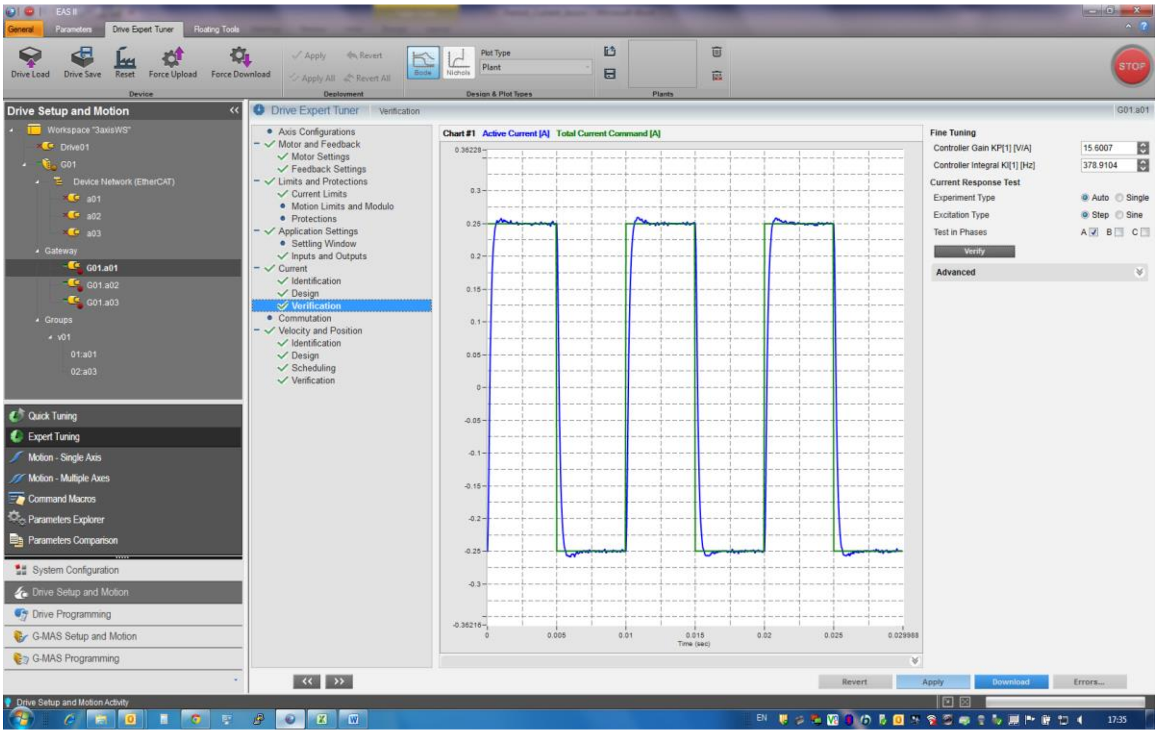
9. Test the Current loop performance in real time.



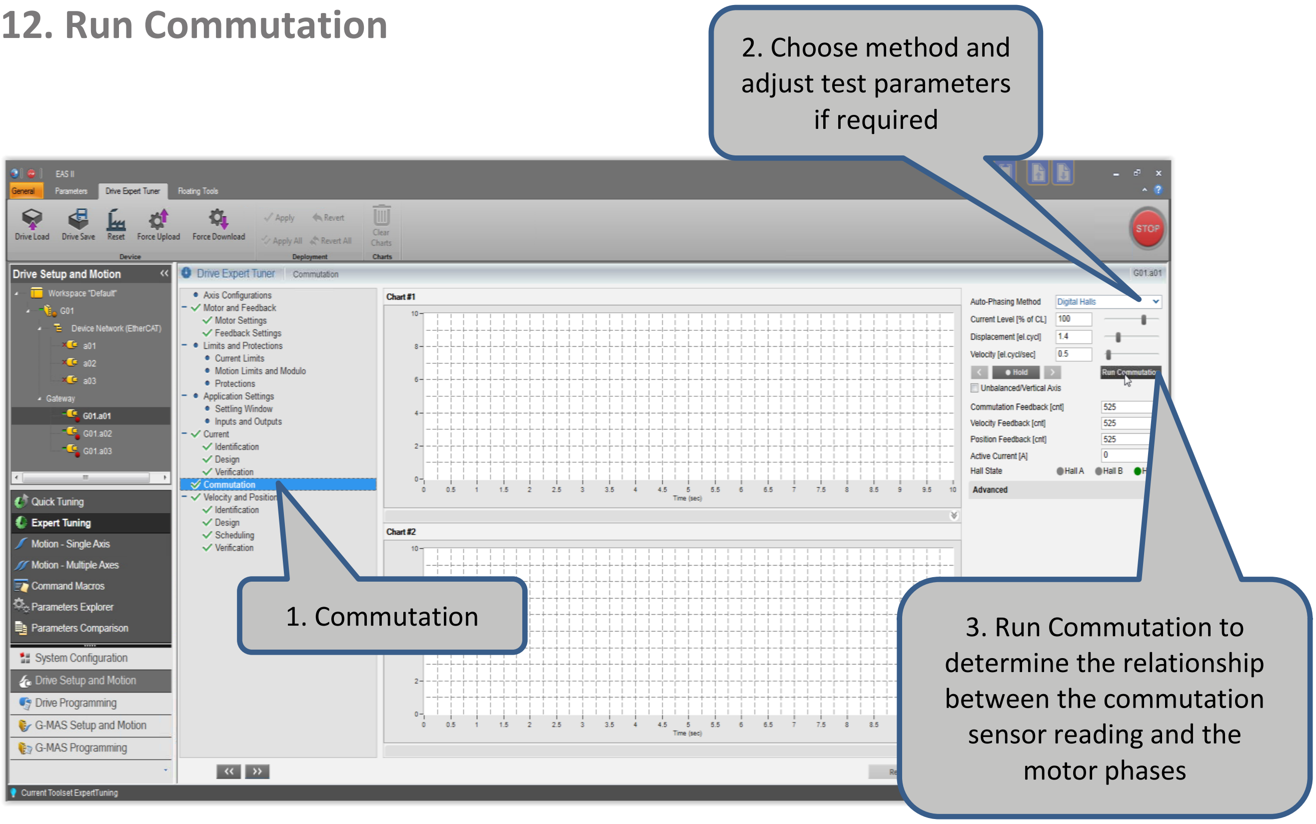
10. Change the Current loop performance in real time.

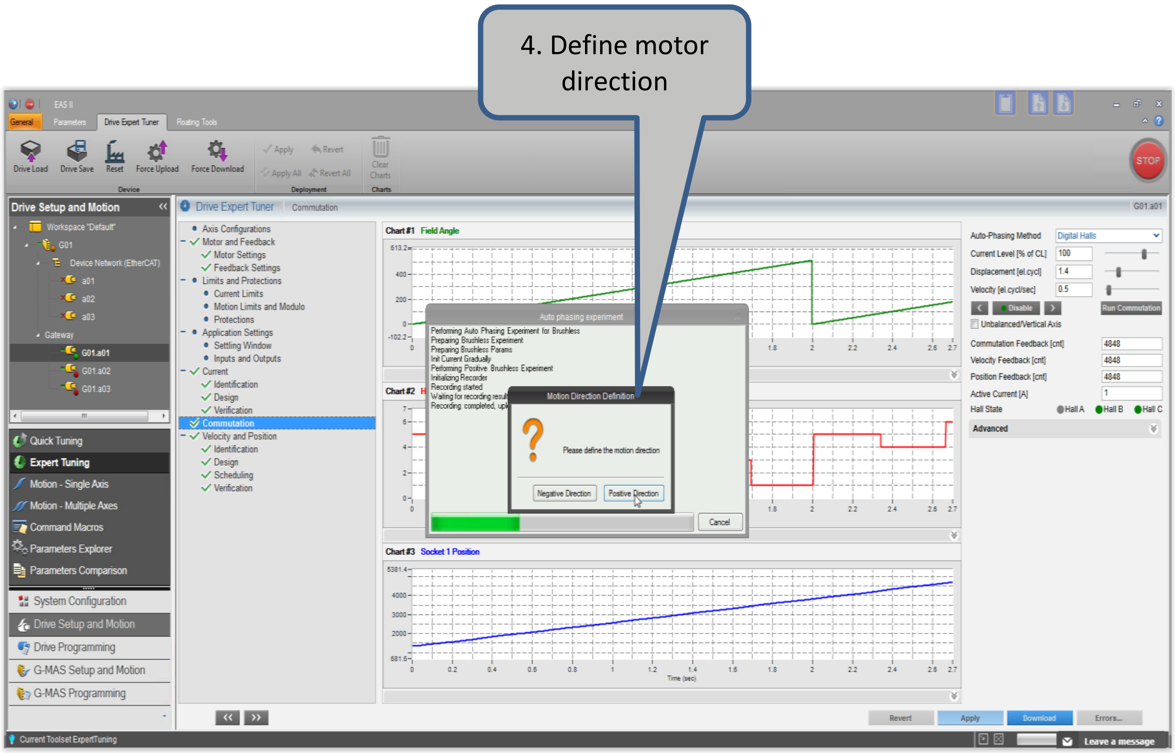


11. Verify the Current loop performance after calibrating in real time.

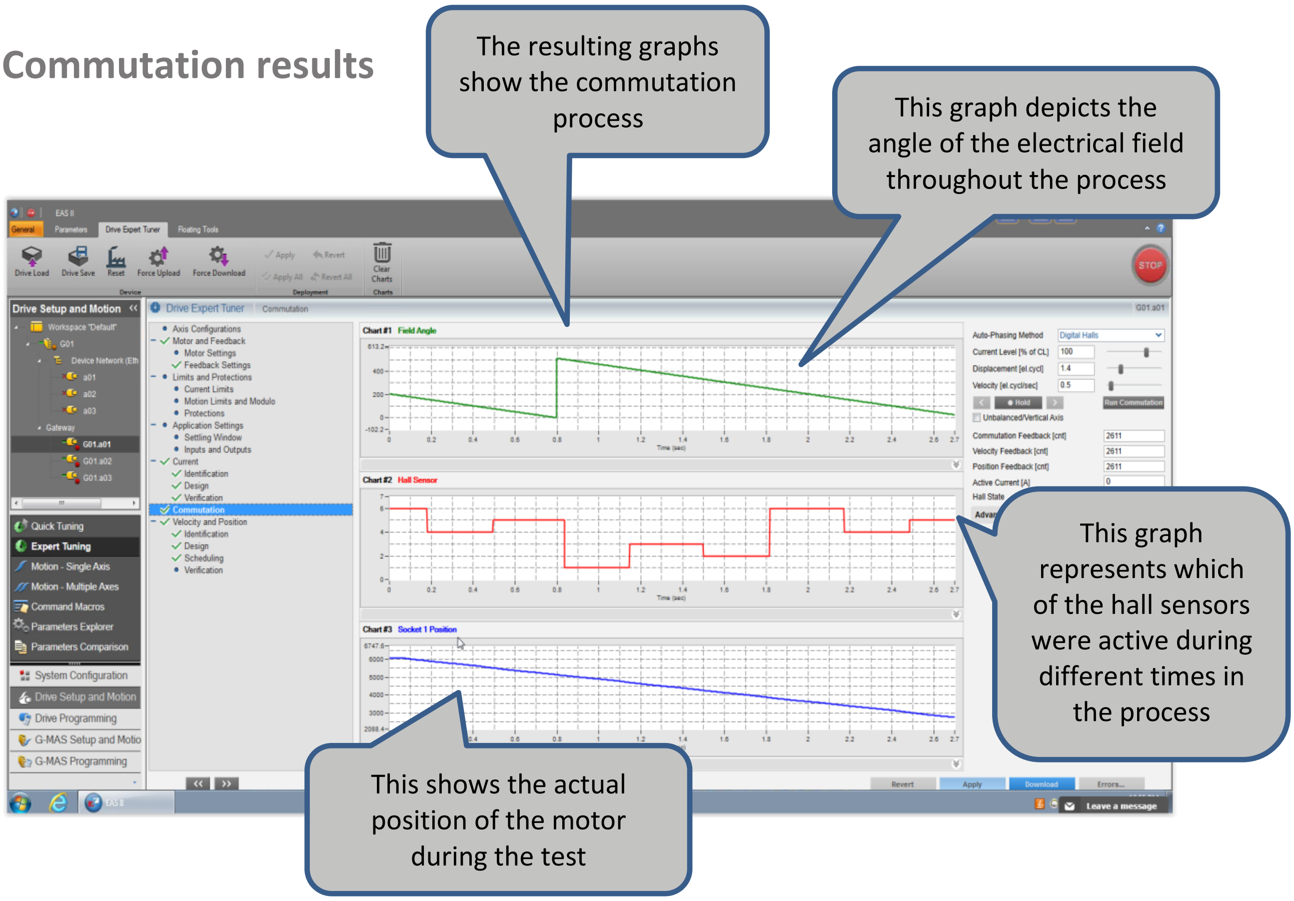


12. Run Commutation

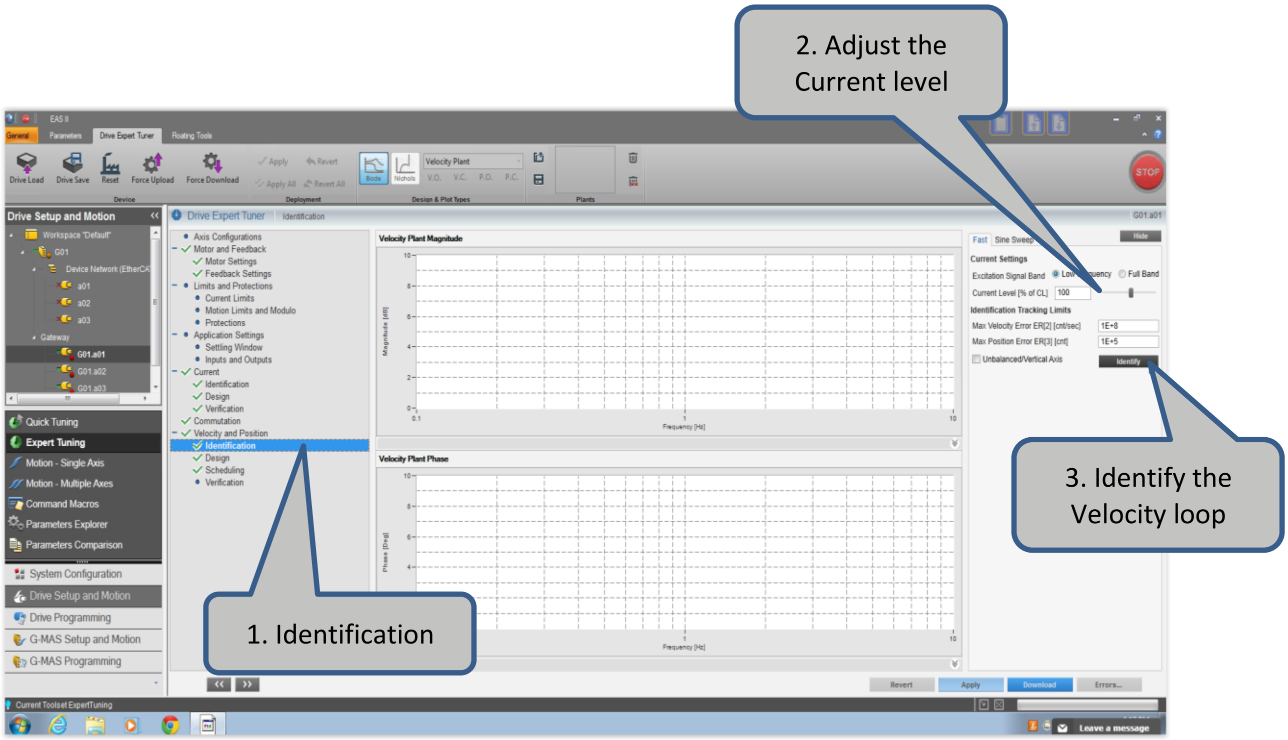


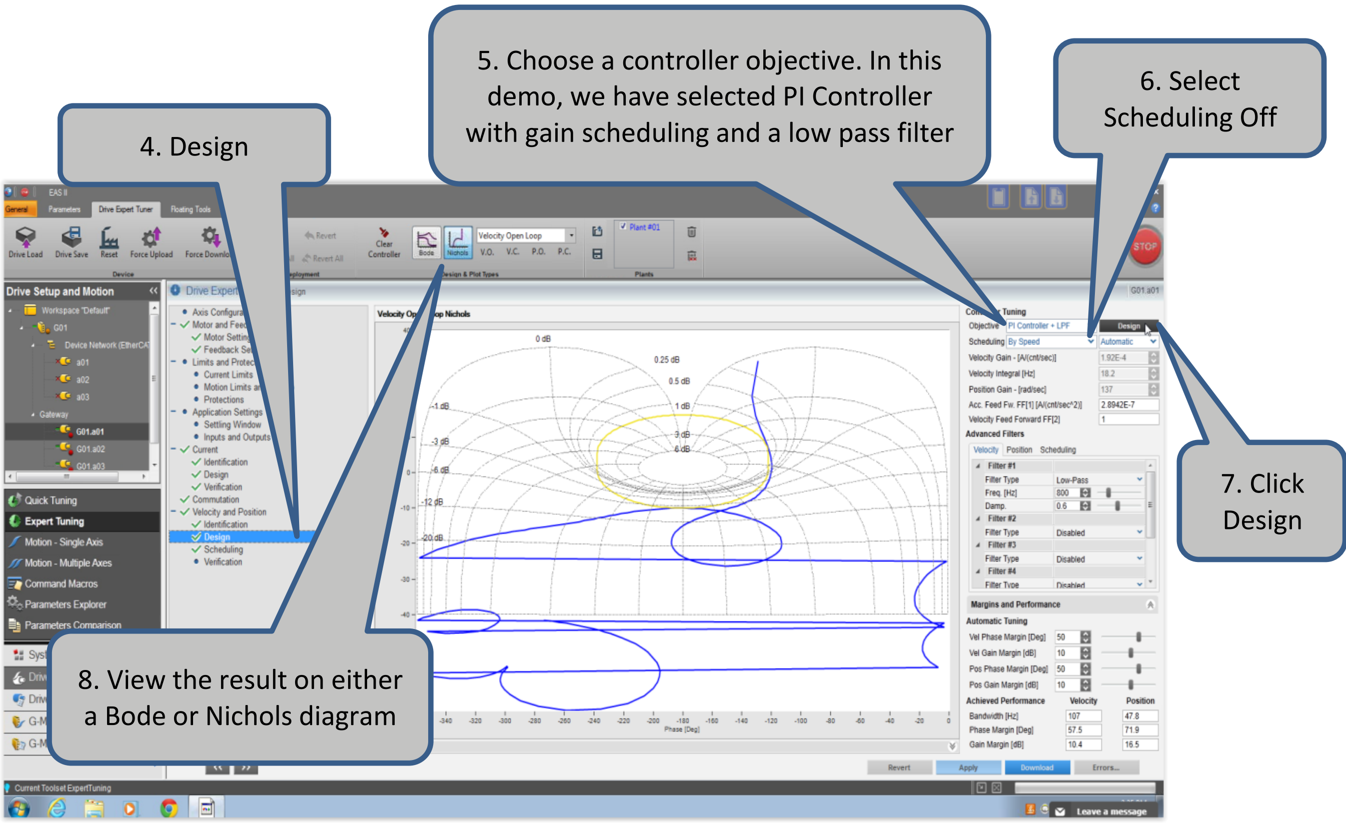


Commutation results



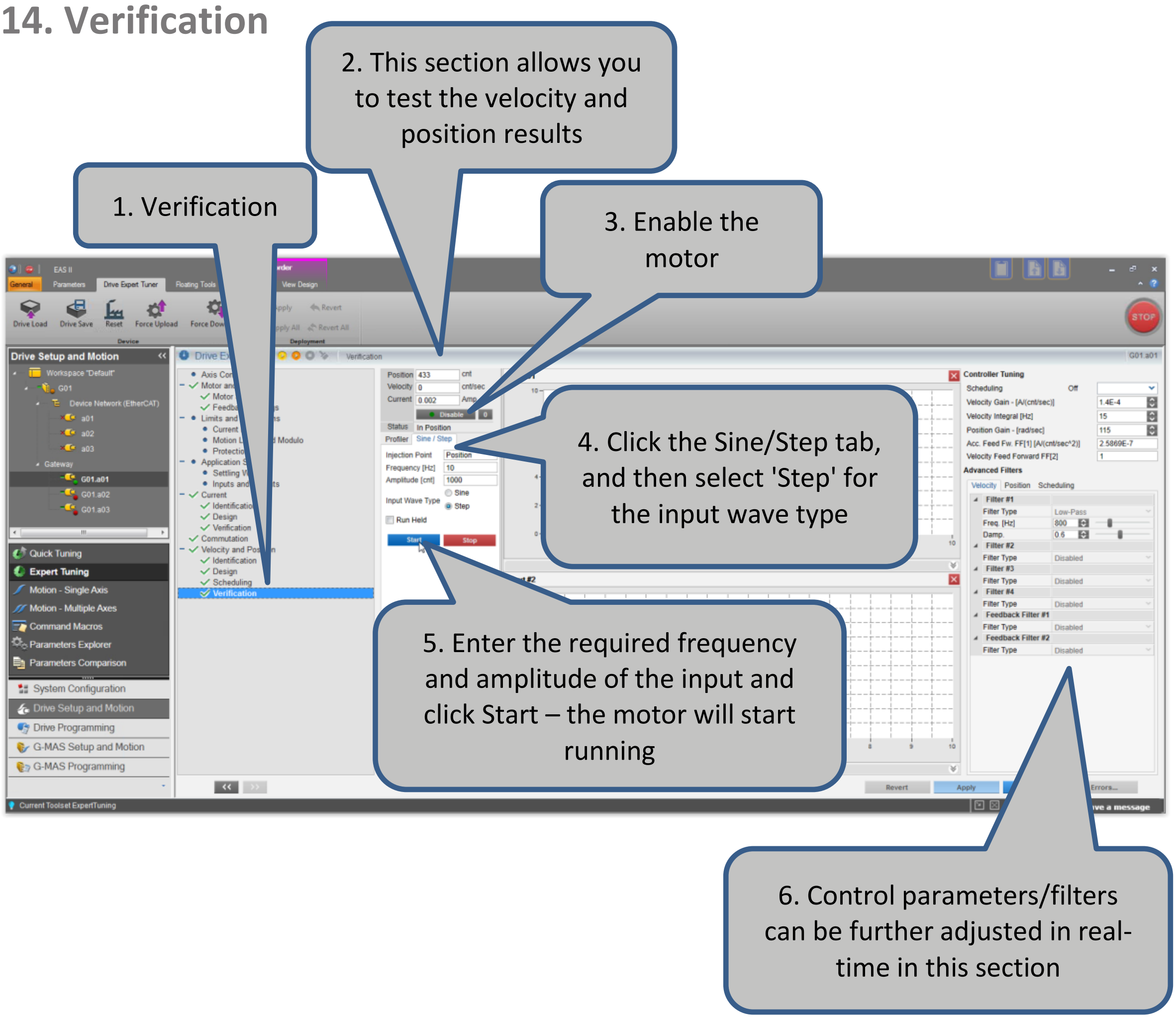
13. Velocity and position.



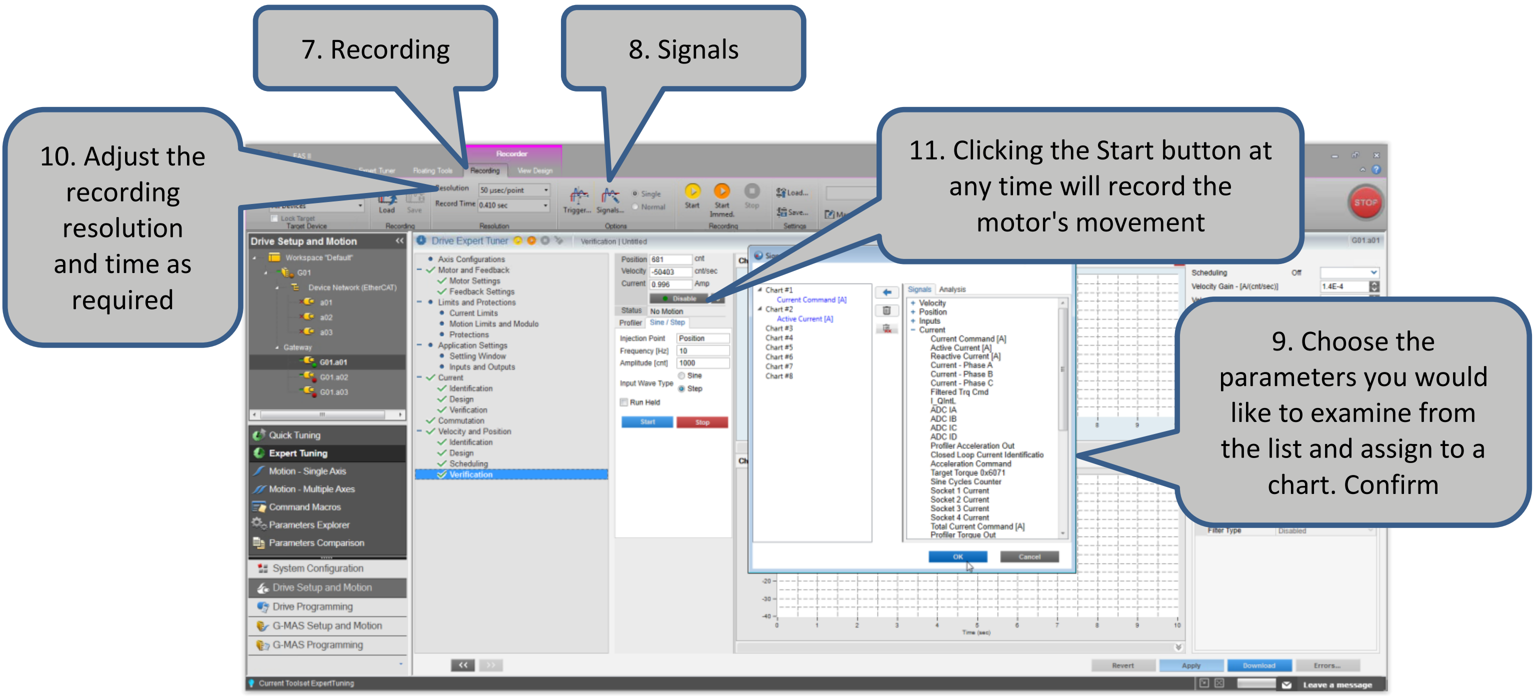


4. Design
5. Choose a controller objective. In this demo, we have selected PI Controller with gain scheduling and a low pass filter
6. Select Scheduling Off
7. Click Design
8. View the result on either a Bode or Nichols diagram

14. Verification



To observe the different parameters, use the recorder function



View the result and save data to the drive: