

# Ever Studio Quick Start Guide

Release 1.1 Build 00 (07/12/2022)



## Ever Studio



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## Revision History

Release	Date	Description
1.0	29-09-2021	Initial release.
1.1	07-12-2022	Added Chapter Wiring Check and Motor Wizard

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## **Related Publications**

*eePLC Studio Software Manual*

*Manual\_TitanioPlatinoVanadio\_DS402*

## 1.0 Introduction

Ever studio is a WINDOWS PC software tool for the configuration of **Titanio-Platino-Vanadio** line drives.

Using this tool, you can set all the operating parameters for drive and application.

All drives of the Titanio-Platino-Vanadio line are equipped with a SCI interface (serial service) through which you can configure the drives and debug the application in real time. However, Titanio-Platino-Vanadio drives can also be configured via CANbus or Ethernet depending on the model.

This manual explains how to use Ever Studio for configuration and debugging.

## 1.1 System Requirements for Installation

The Ever Studio has the following system requirements:

- **CPU:** i3 class or better.
- **Operating system:** Windows™ 7/8/8.1/10
- **Memory:** The minimum required by the operating system plus 512 MB
- **Hard Disk:** 50Mb free space
- **Comm. Interface:** 1 Serial Interface (RS232/485) or CAN Interface<sup>(1)</sup> (typically EverElettronica new lines drives are provided with a serial service KIT)

## 1.2 Installation

In order to install EVER Studio, you need to double click  **EVER\_Studio\_Setup.exe** that you can find in the USB stick provided by EverElettronica.

Alternatively you can go to the website '[everelettronica.com](http://everelettronica.com)' in the section:

*Products → Software → Configurators → EVER Studio*

And then download EVER Studio.

<sup>(1)</sup> The CAN interfaces supported are: IXXAT USB-to-CAN Compact, IXXAT iPC-I 320/PCI, IXXAT TinCAN V4. ([www.ixxat.com](http://www.ixxat.com)), PEAK PCAN-USB, GC USBCAN-I (provided by EVER)

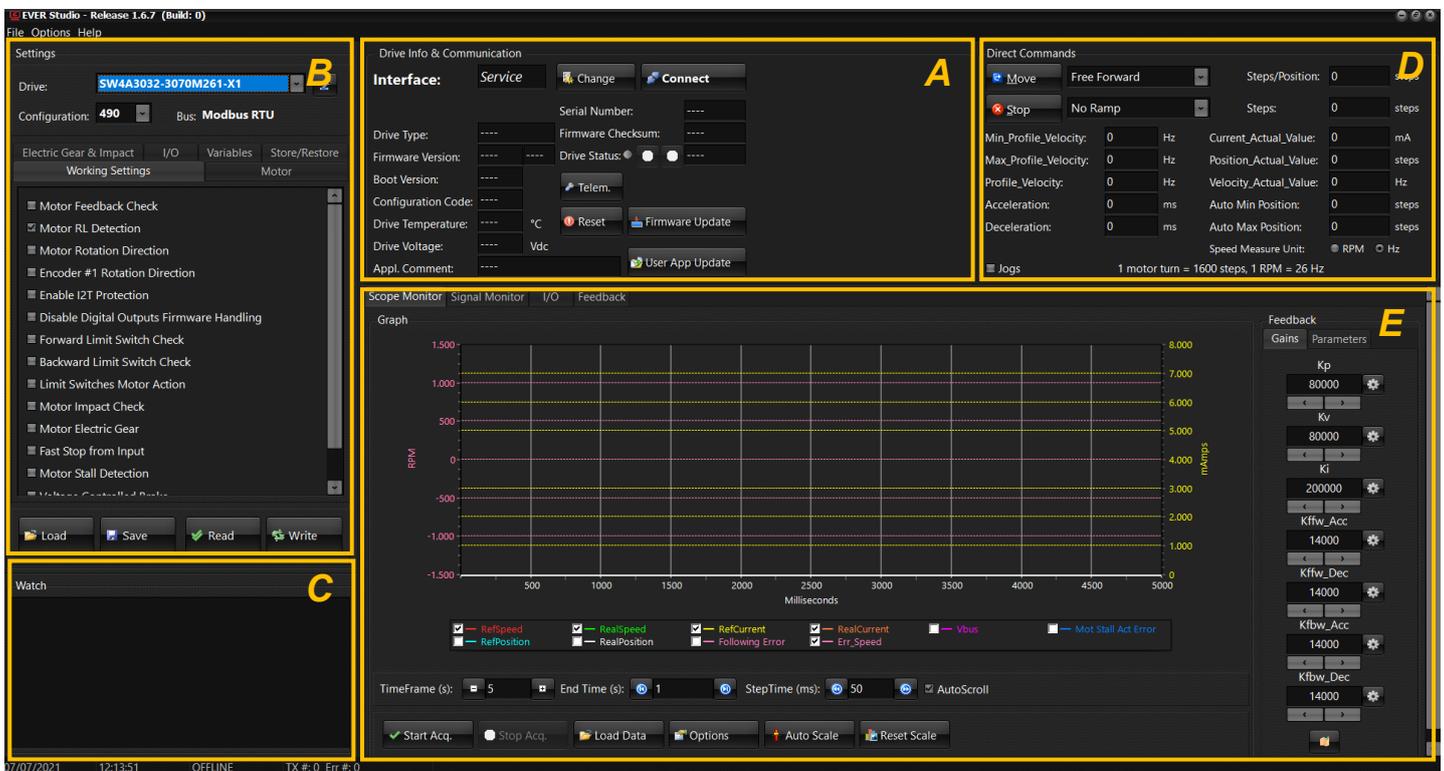
## 2.0 Ever Studio User Interface

At the start of the application, the User Interface is divided in five Windows:

- **Drive Info & Communication Window (A)**
- **Settings Window (B)**
- **Watch Window (C)**
- **Direct Commands Window (D)**
- **Diagnostic Window (E)**

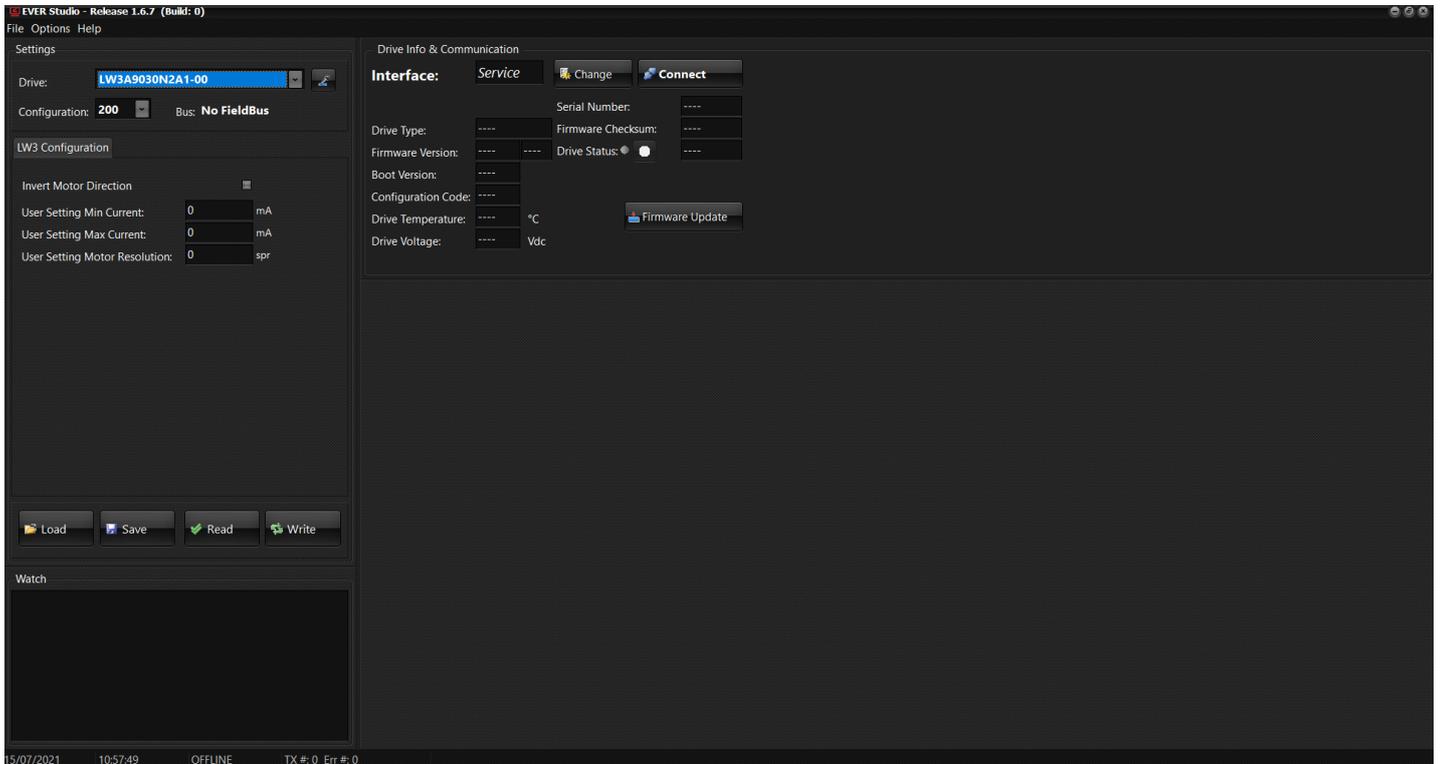
**(Please note: the five windows content depends on the Drive model selected)**

**(Please note: depending on Drive model, not all Windows may appear)**



Above there's the User Interface which appears by selecting an SW4 drive; as you can see all Windows appears.

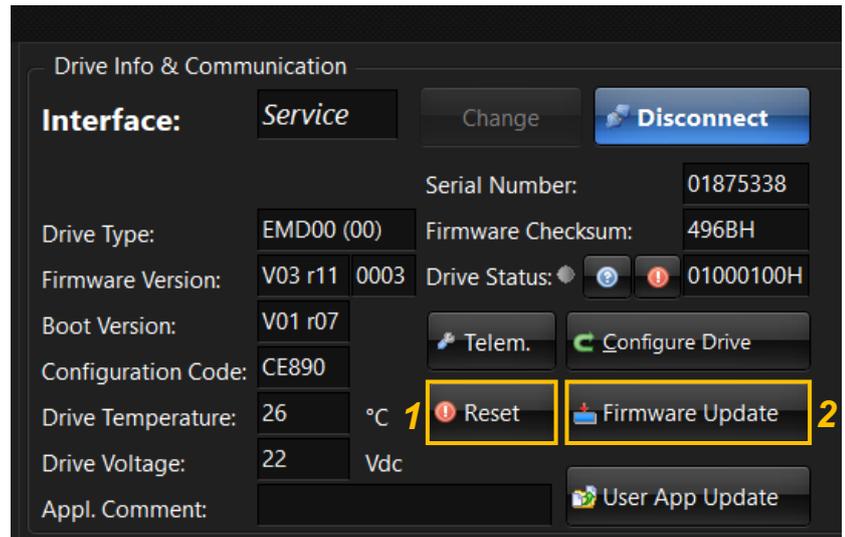
Below there's the User Interface which appears by selecting an LW3 drive; there aren't the Direct Command Window (D) and the Diagnostic Window (E), and the Settings Window (A) is much more limited.



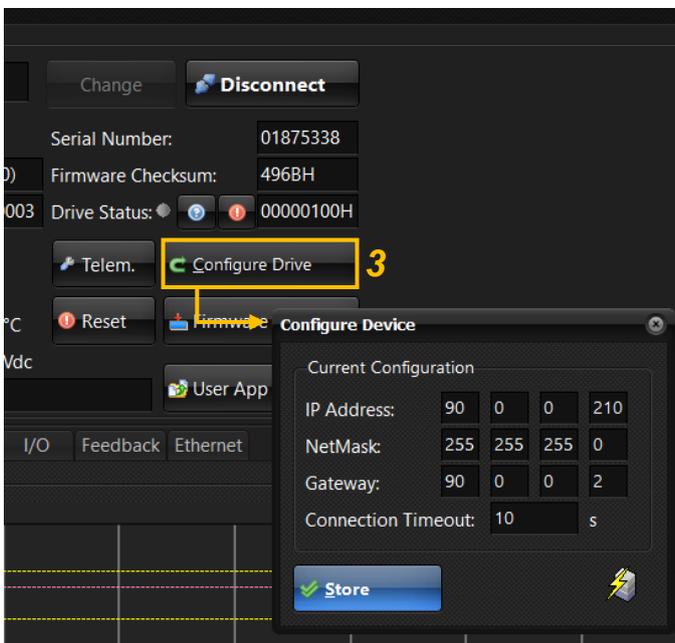
The content of the windows is explained in the next chapters.

## 2.1 Drive Info & Communication Window

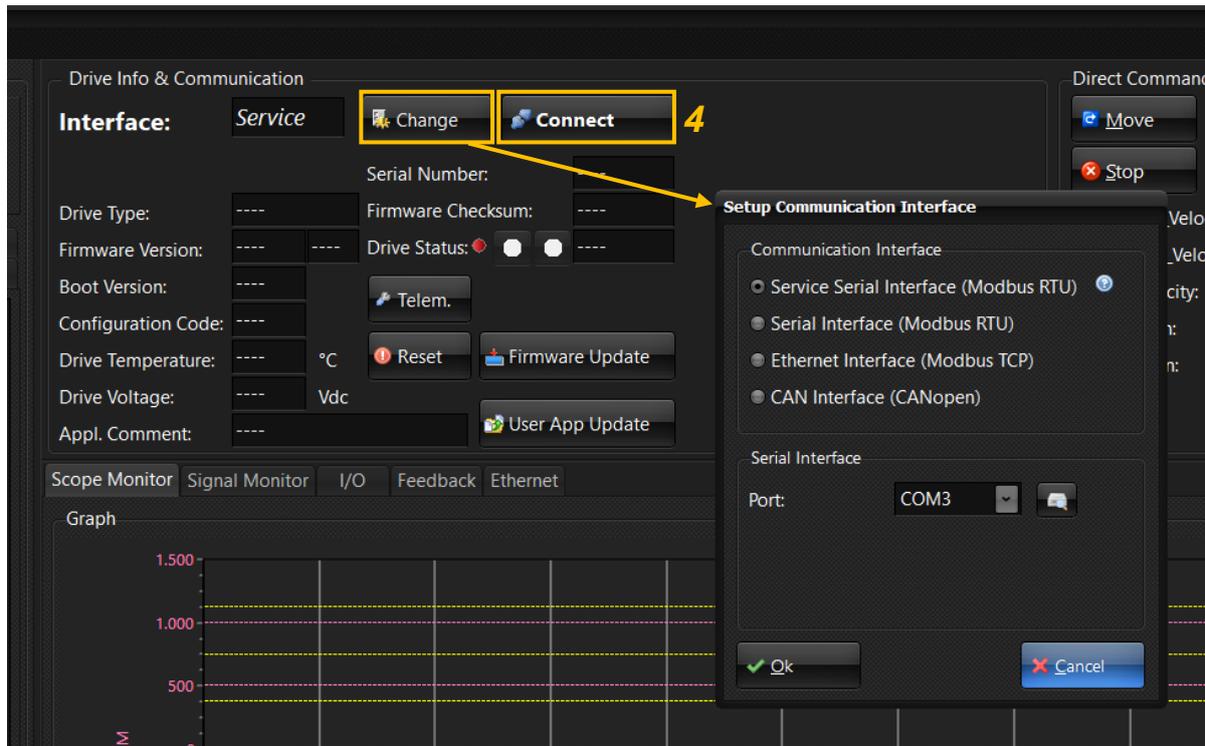
This window contains the information about the drive connected to Ever Studio, such as **'Drive Type'**, **'Firmware version'**, etc... It also contains the **'Reset'** Drive button (1) and the **'Firmware Update'** button (2).



In addition, during connection with the drive, there's a **'Configure Drive'** button (3) that allows to change IP Address, NetMask, Gateway and Connection Timeout.



With drive disconnected, you can press '**Change**' button and define the '**Setup Communication Interface**':



In this interface, you can select the COM Port for serial interface or the IP Address for Ethernet and CAN interface.

Selecting 'Service Serial Interface' or 'Serial Interface' and using the button , you can visualize the COM Port connected in that moment to your drive.

Since you have chosen the correct COM Port, pressing '**Connect**' (4) the drive will be automatically recognized.

In case EVERSTUDIO doesn't find any COM Port, probably you have to update the COM port driver of PC. You can do it in '*Device Manager*' of your Computer, selecting the driver available in USB stick provided by EVERELETTRONICA.

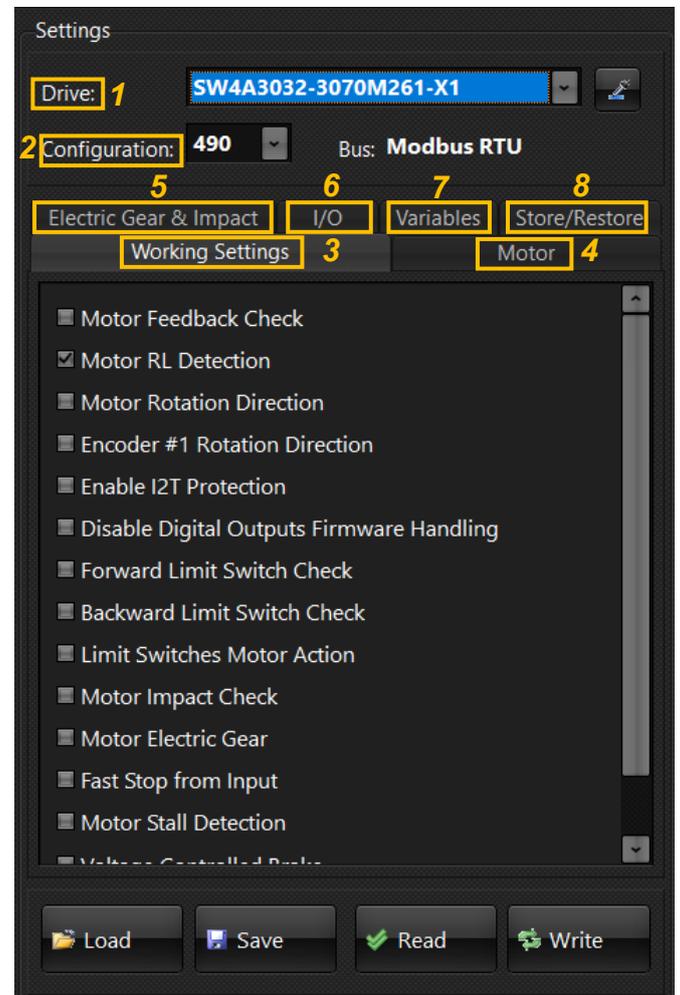
## 2.2 Settings Window

This window contains all drive types and configurations, which are automatically viewed when you

connect the drive. It also contains all settings and parameterizations of drive and motor.

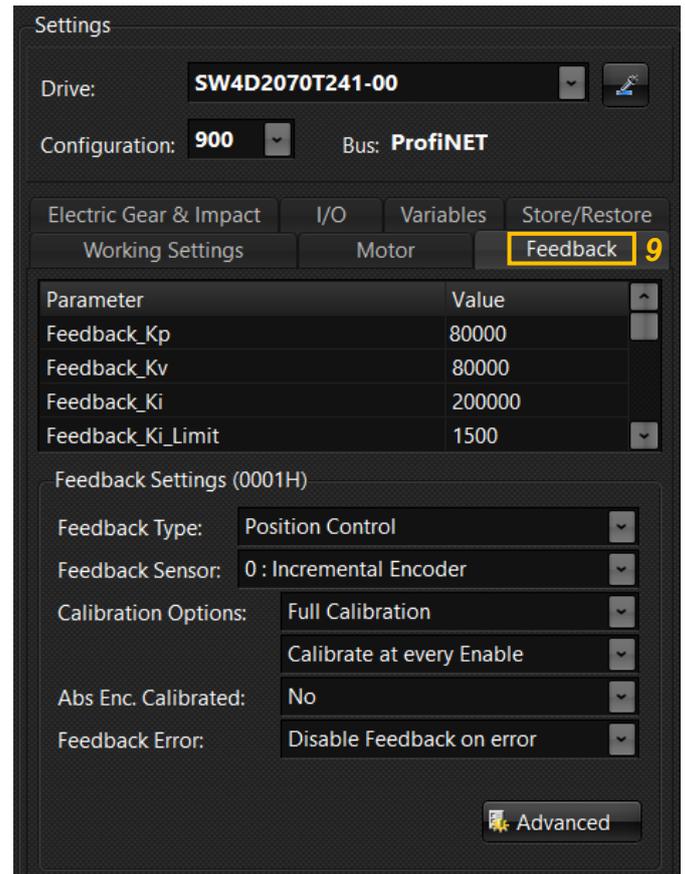
### Subwindows:

- **Drive (1)**: it contains all drive models configurable by Ever Studio
- **Configuration (2)**: It contains all configurations of drives
- **Working Settings (3)**: it is used to parametrize drive working modalities (see **eePLC Studio Software Manual**)
- **Motor (4)**: it contains all motor specifications and a 'Motor Wizard' ([2.7](#)) to simplify the parametrization (see **eePLC Studio Software Manual**)
- **Electric Gear & Impact (5)**: it contains all electric gear and impact specifications (see **eePLC Studio Software Manual**)
- **I/O (6)**: it contains digital and analog inputs and outputs configurations; it also contains the Biss Interface used to set Biss Encoder parameters (see **eePLC Studio Software Manual**)
- **Variables (7)**: it contains all *User\_Long\_Vairables* and all *User\_Float\_Variables* (see **eePLC Studio Software Manual**)
- **Store/Restore (8)**: it is used to store in NVRAM or restore from NVRAM all parameters set in the previous subwindows.



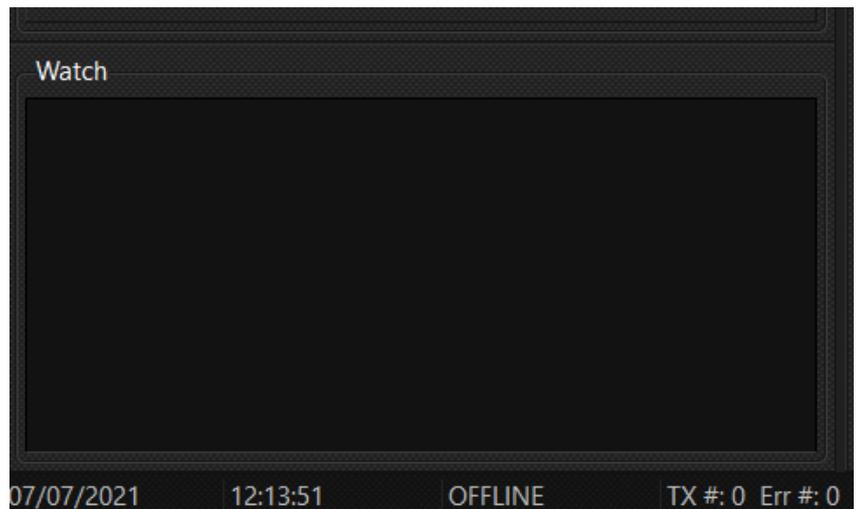
There are also four buttons used for '**Read**' a configuration from the drive, '**Write**' a configuration in the drive, '**Save**' a configuration in the PC, '**Load**' a configuration from the PC.

If you set 'Motor Feedback Check' in 'Working Setting' window, a new subwindow called '**Feedback**' (9) will appear; it contains all Feedback settings (see **eePLC Studio Software Manual**).



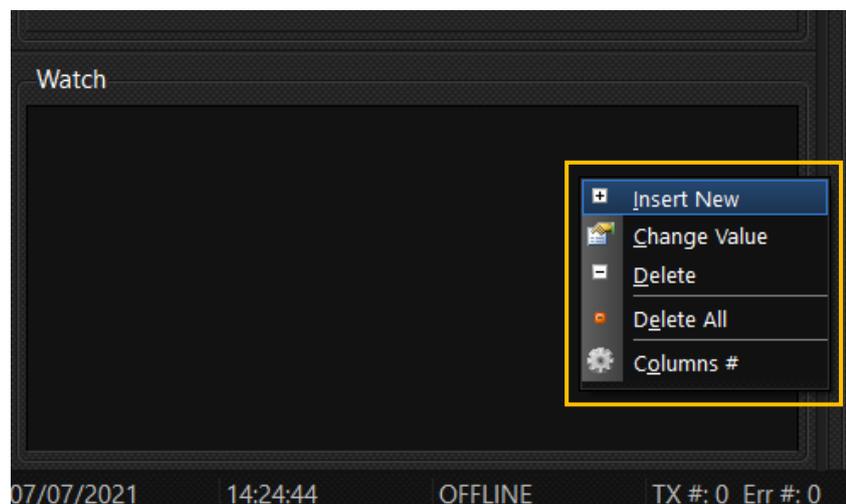
## 2.3 Watch Window

In this window, you can insert and modify all variables and parameters of the drive:

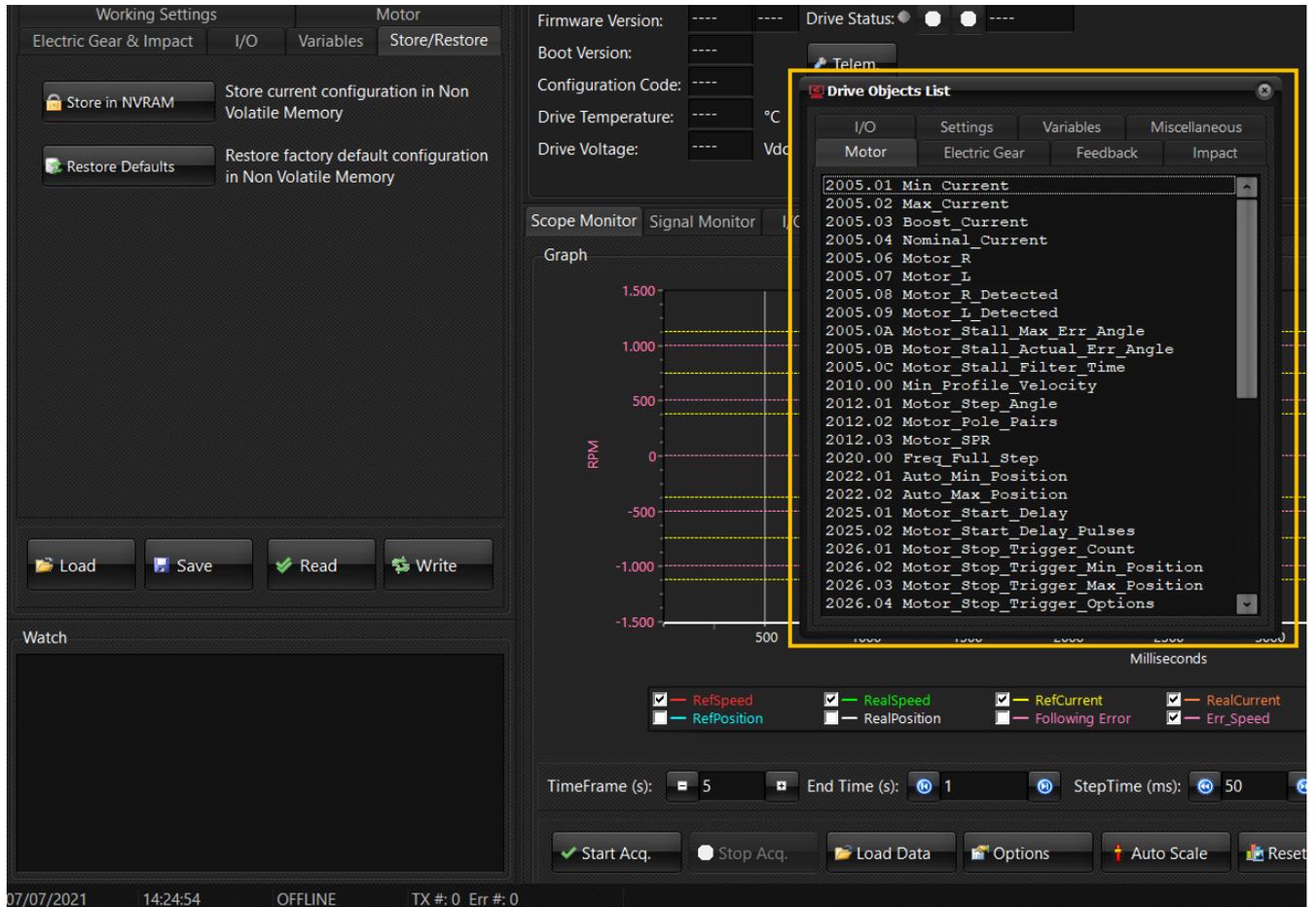


Pressing the right mouse button in the watch window, a subwindow will appear; it contains these functions:

- **Insert New:** it allows to insert all variables and parameters.
- **Change Value:** it allows to change the values of variables and parameters. These changes are used by the drive until the reset of the drive itself.
- **Delete all:** it allows to delete all objects in the watch window.
- **Columns #:** it allows to modify the number of columns in the watch window.

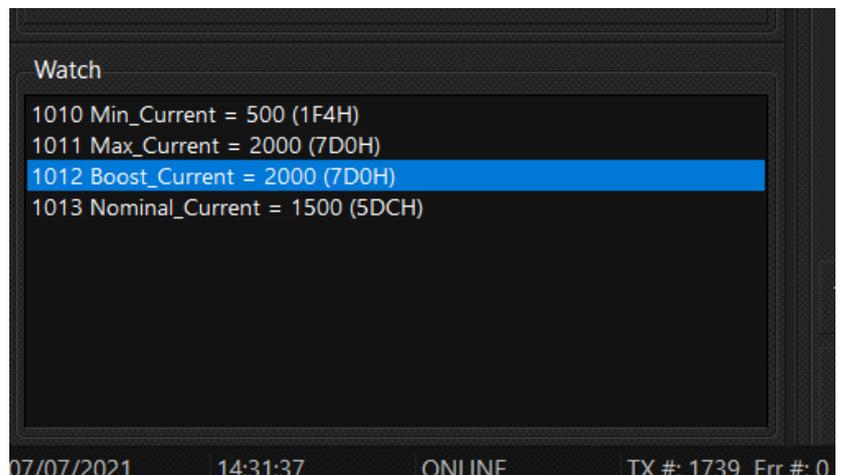


Using **'Insert New'** command, a new window called **'Drive Objects List'** will appear, so you can select the objects that you want to see in the watch window:



(For the objects description see **eePLC Studio Software Manual**)

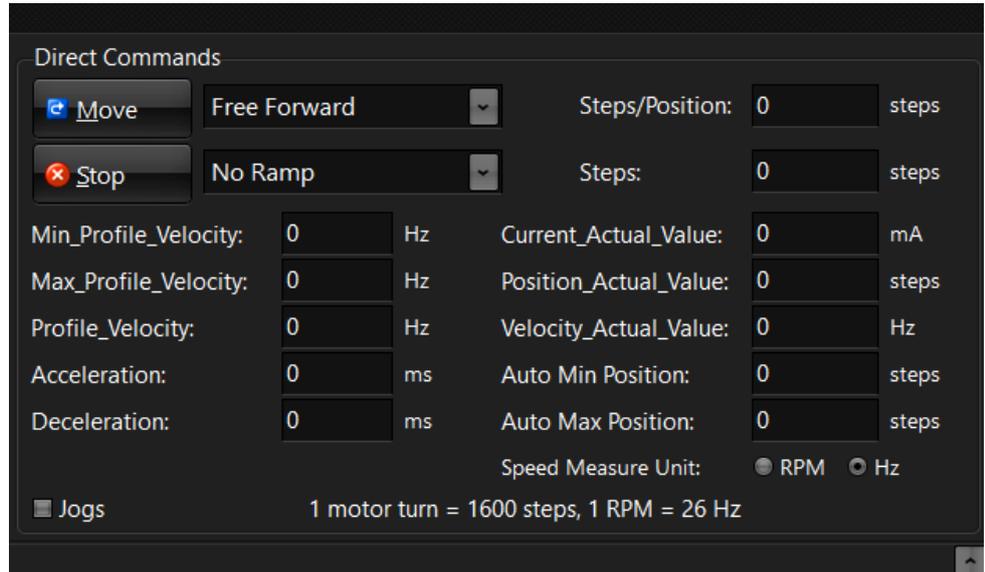
With a double click, you can select the objects you want and they will visualize in the watch window:



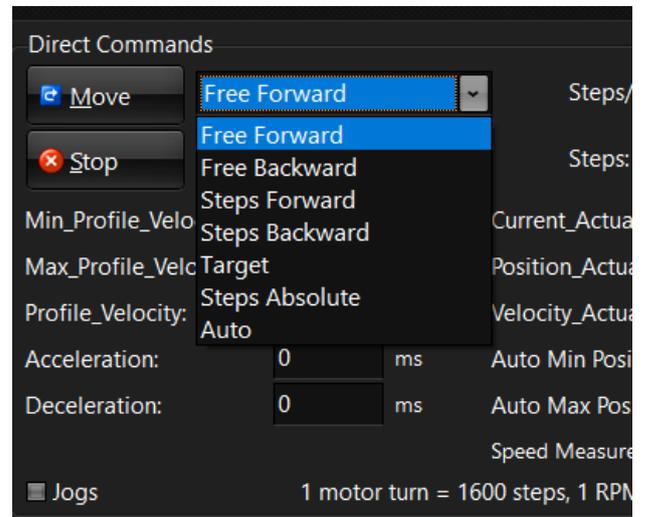
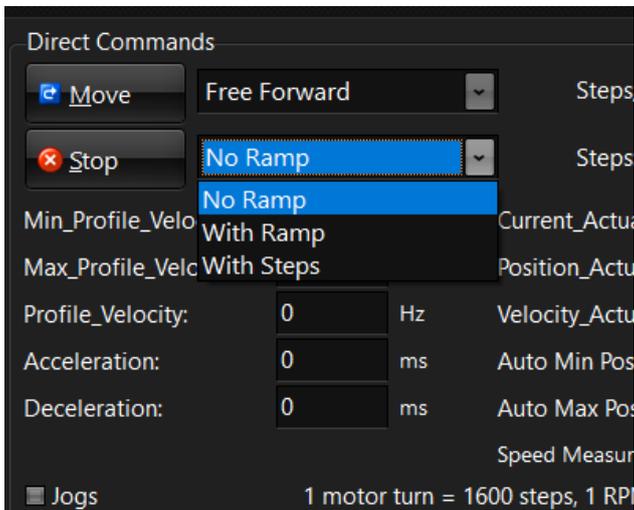
## 2.4 Direct Commands Window

The Direct Commands Window is used to test the Motor movements; in this window you can change different values related to speed and position of the motor and the current delivered to it.

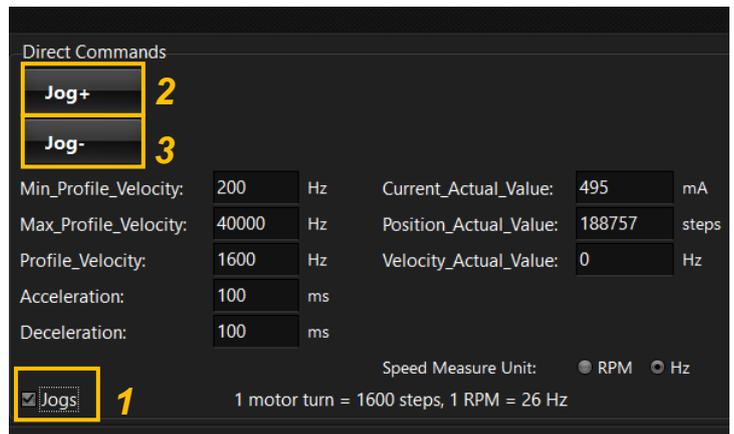
**(Please note:** the values modified in this windows are used by Drive until the Drive Reset: they are not stored in NVRAM)



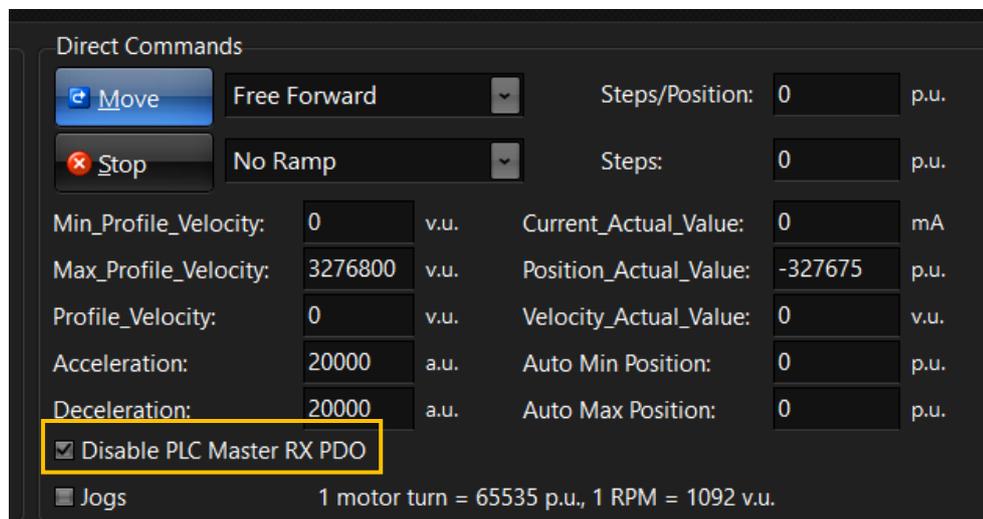
There are some type of MOVE command and STOP commands, some of which involve the definition of number of Steps.  
(See also **eePLC Studio Software Manual**)



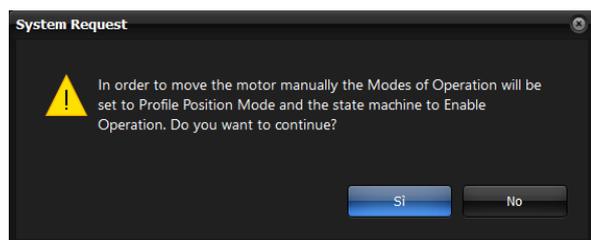
In **JOG modality** (1) you can command the motor to move in clockwise and counterclockwise until you press respectively the '**Jog+**' (2) and the '**Jog -**' (3) buttons.



**Please note:** If you have a non-programmable EtherCAT or CANbus drive, if you want to move the motor you will be required to 'disable PLC Master Rx PDO'.



In addition when you press the 'move' button, this window will appear:



This window appear because with these type of drives, in order to do a motor movement using direct commands, it is required to be in 'Profile Position Mode'.  
 (For all information about DS402 please consulting **Manual\_TitaniaPlatinoVanadio\_DS402**).

## 2.5 Diagnostic Window

The Diagnostic Window is a useful tool containing many diagnostic instruments heavily dependent on the type of drive selected.

### 2.5.1 Scope Monitor

It contains a Graph that allows to observe the real time trend of some variables and to compare them with reference values:



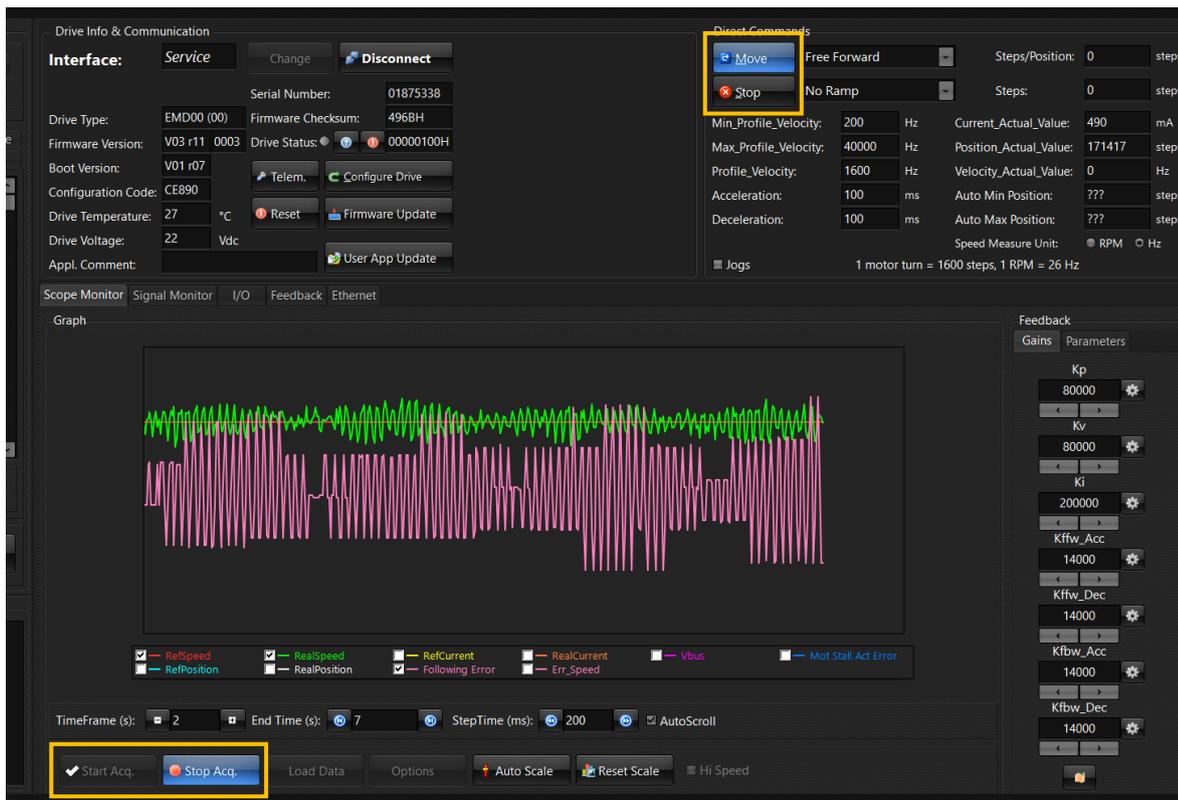
It also permit to modify **Gains and Parameters** (1) used in Feedback Modality, to find the better conditions.  
(See eePLC Studio Software Manual for Gains and Parameters description).

Pressing the **'Start Acquisition'** (2) button and starting motor movement, it is possible to see the change of the selected variables. (See the example in the next page)

Other button specifications:

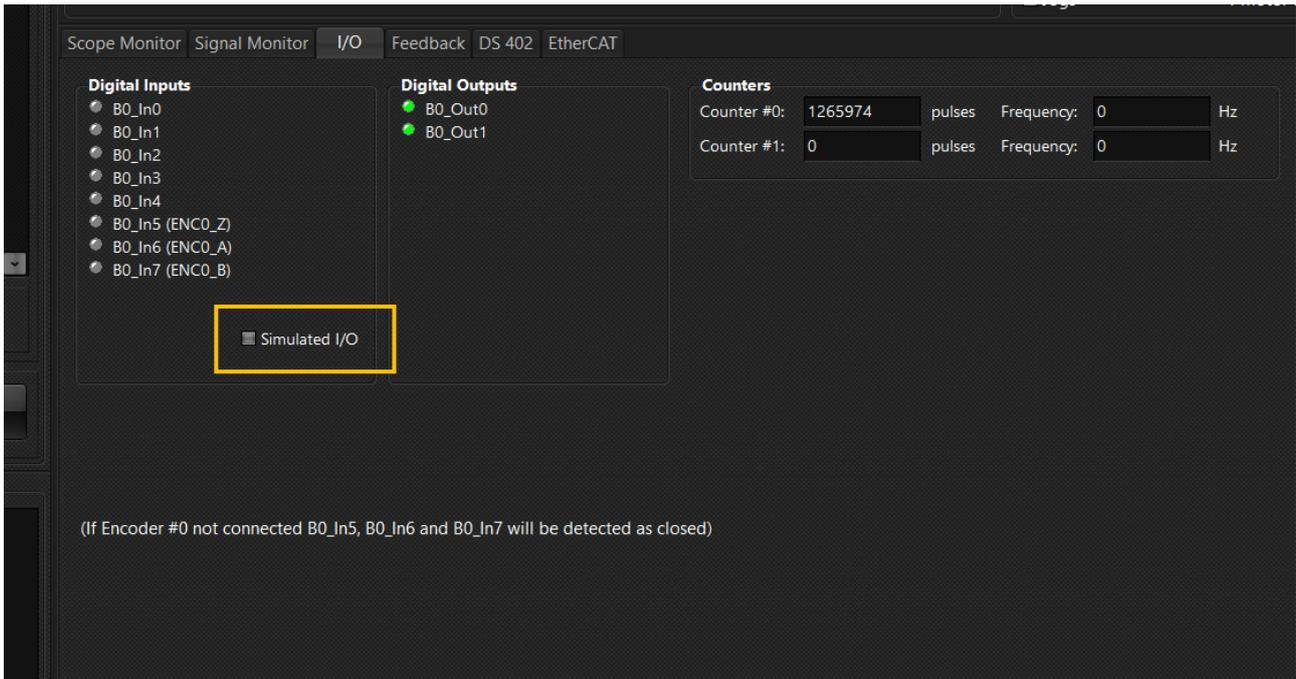
- **'Load Data'** (3): load previously stored data file from disk
- **'Options'** (4): change graph options
- **'Auto Scale'** (5): auto scale axis
- **'Reset Scale'** (6): reset axis scale to default
- **'Auto Scroll'** (7): enable or disable graph auto scroll

Here there's an example of an acquisition using a motor with an encoder in Close Loop:

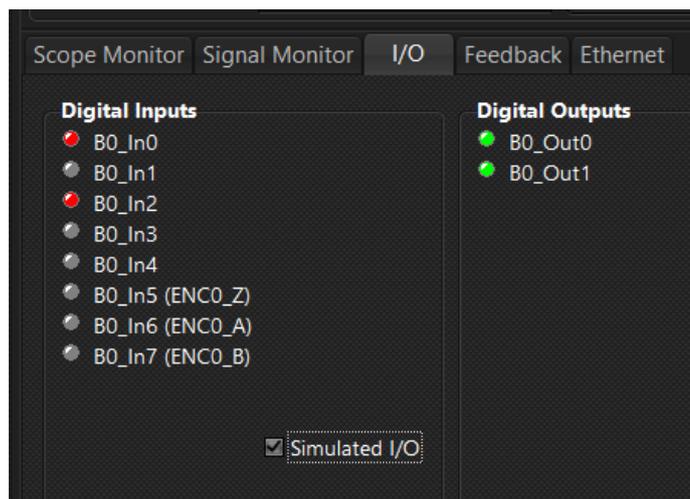


## 2.5.2 I/O

This window contains all digital inputs and outputs state; it allows to simulate I/O.



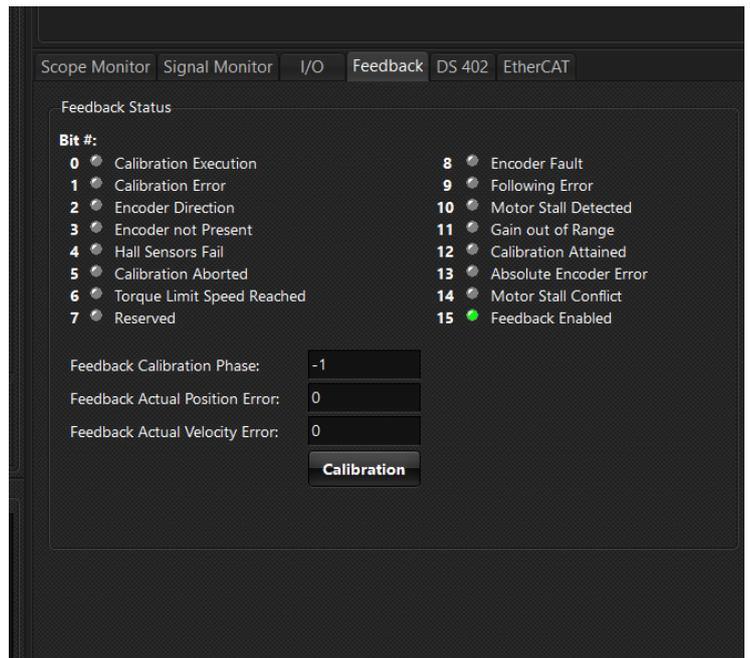
Once you have selected 'Simulated I/O', with a double click on the desired Digital I/O you can turn it ON/OFF.



### 2.5.3 Feedback

In case of Close Loop, this window allows to see the feedback status. It's also possible to do a calibration of the encoder.

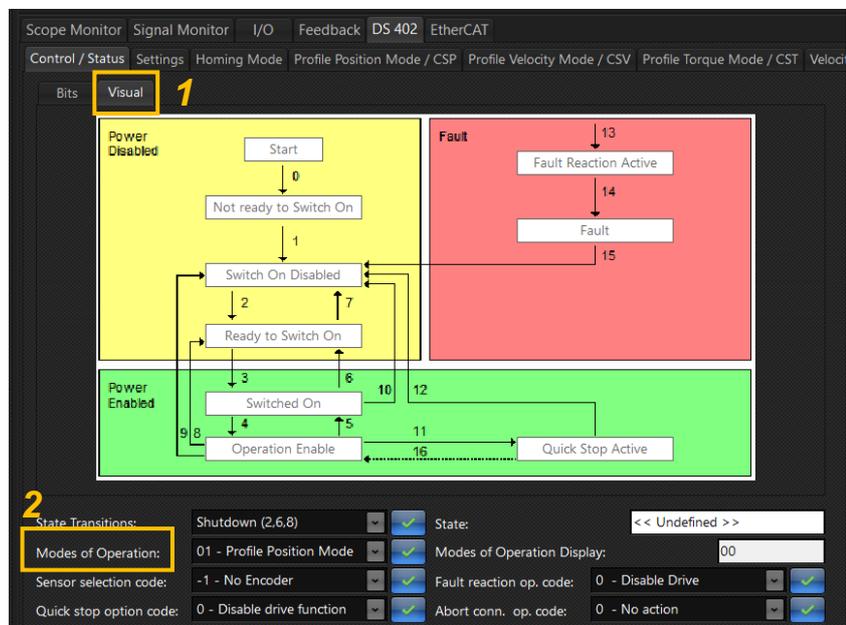
(See eePLC Studio Software Manual for Feedback Bit description and calibration description).



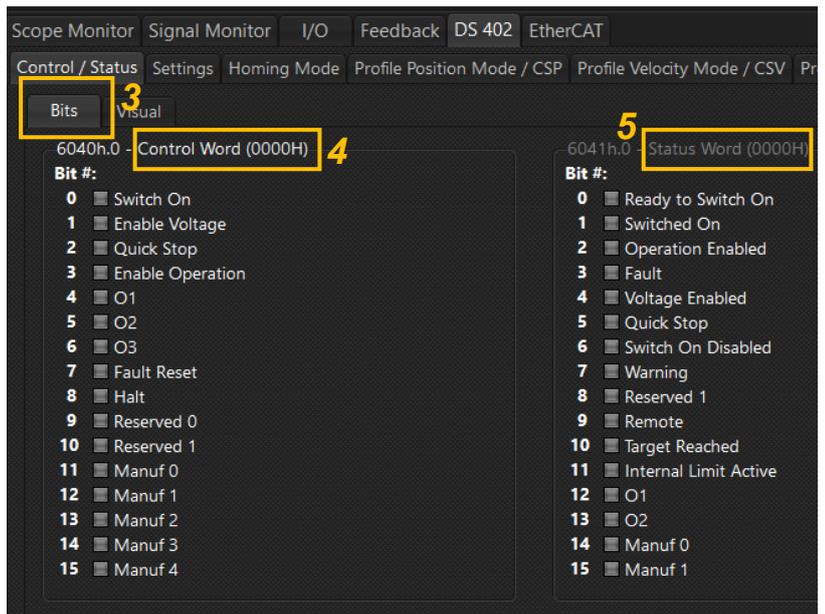
### 2.5.4 DS402

This window is available only for **Titanio-Platino-Vanadio** family drives that are not programmable and so they need necessarily a master system. DS402 is a standard designed and used for motion control.

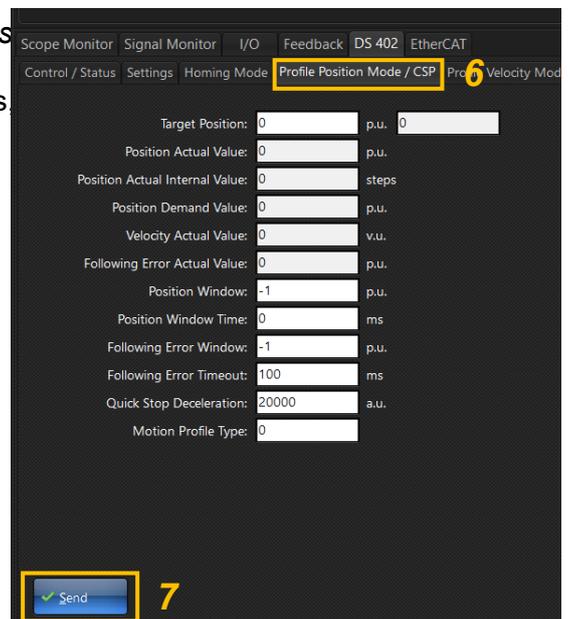
(For all information about DS402 please consulting **Manual\_TitanioPlatinoVanadio\_DS402**) The DS402 window includes a number of subwindows that are used for visualization of DS402 drive status, for setting the working state (in '**Visual**' (1) subwindow you can click on the icons to set them), and for visualizing and modifying parameters of the **Operation Mode selected** (2).



In '**Bits**' (3) subwindow is also possible to set the **Control Word** (4) and to see the **Status Word** (5).  
 (For all information about DS402 please consulting **Manual\_TitanioPlatinoVanadio\_DS402**).



Here there is a sample image of **Profile Position Mode** (6) s  
 Each time you modify the value of one or more parameters  
 '**Send**' (7) button.

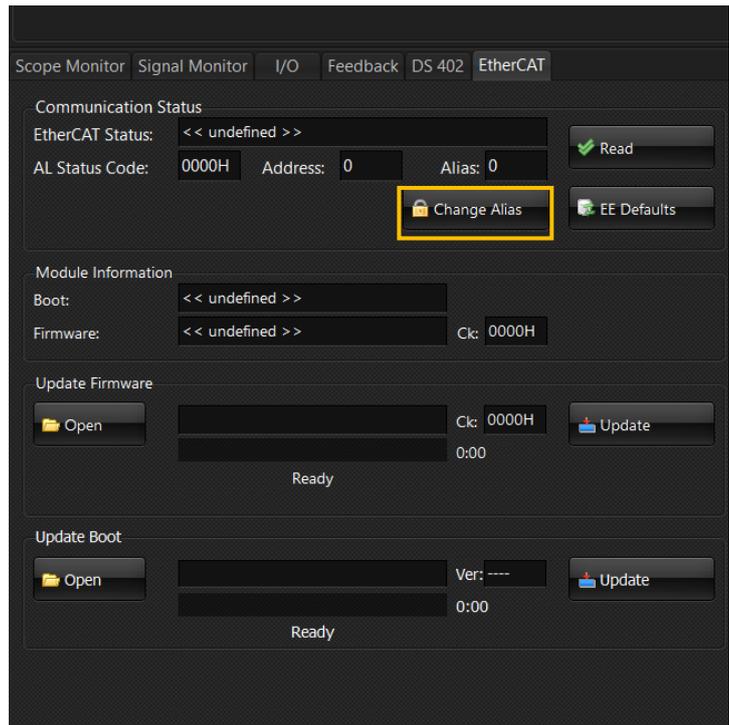


## 2.5.5 EtherCAT

This is an additional window available only for EtherCAT drives.

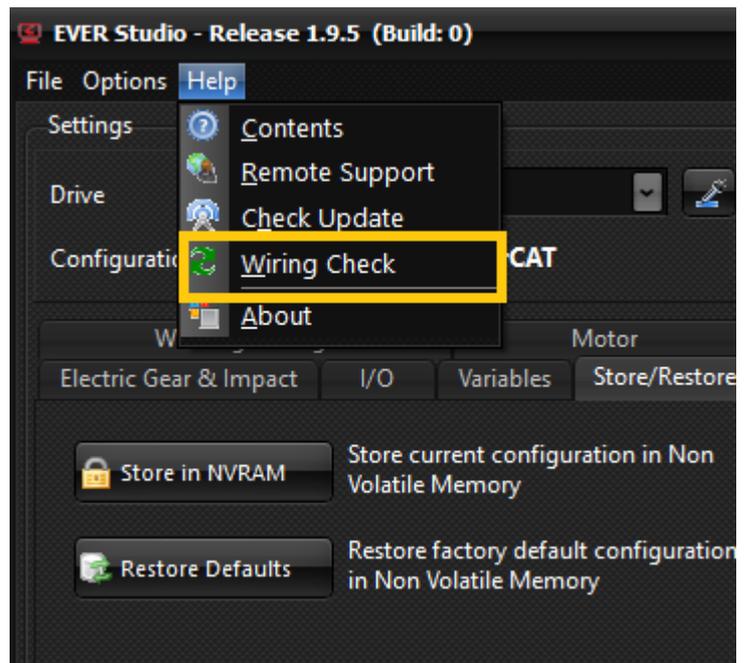
It is possible to see information of the EtherCAT communication board of the drive and update the firmware (or Boot) if necessary.

It is also possible to change Alias value.

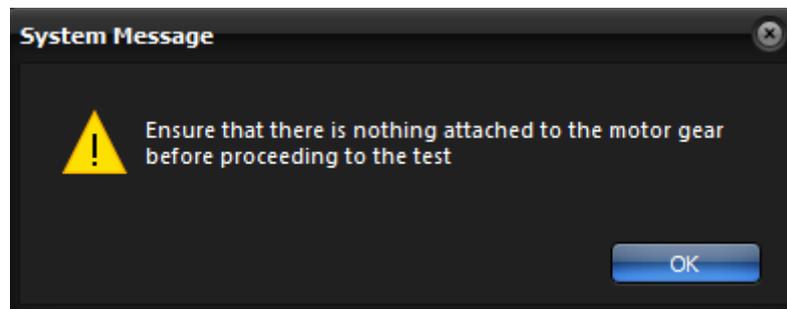


## 2.6 Wiring Check

Wiring Check is a wizard to verify if a motor or a sensor is connected correctly. Furthermore, it can verify if with given parameters it can function in Closed Loop thank to 'Motor Wizard' ([2.7](#)) In order to execute it, click on '**Help**' tab as showed in the picture.



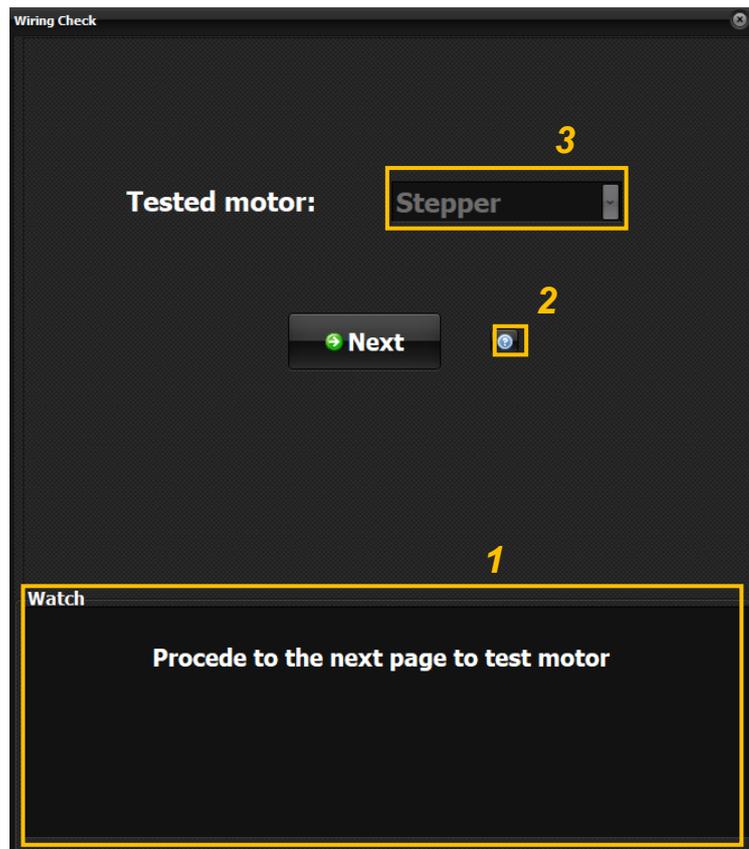
This message will appear as a warning to keep motor gear free to move before proceeding further to the test



### 2.6.1 Test Procedure

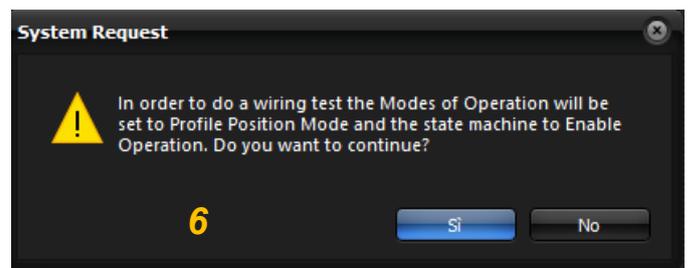
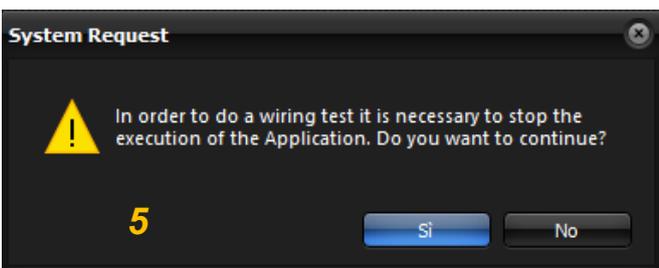
Wiring Check is a guided procedural wizard. It means that a **message box** (1), which will appear for every page, will indicate the instructions to follow in order to go forward. Eventually it will indicate if an error occurred during test. In the 'Initial Page' **Wiring Check** controls if there are any alarms like *Open Phase, Voltage Protection* etc. If yes, 'Error Occurred! Check the Drive Status!' message will appear. The 'button'(2) will redirect to the 'Drive Status and Drive Register'. Otherwise, message box will say 'Proceed to the next page to test motor'. Message will say 'Drive disconnected' if a port is missing.

 button will be enabled. By pressing it, **Wiring Check** advances to test either *Stepper, BLDC or BLAC motor* (3)



If the motor have installed an eePLC Firmware, will appear a message that **Wiring Check** will stop whatever application it has in execution (5).

Otherwise if it is a 402 Firmware, will appear a message that the state machine will be set on *Enable Operation* and Modes of Operation to *Profile Position* (6).

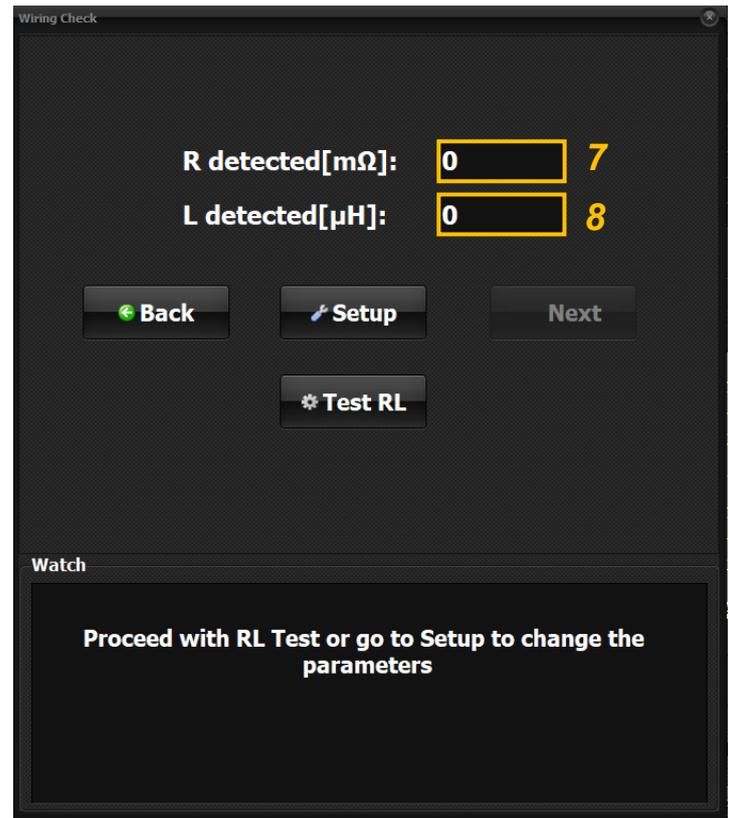


In this page instead, **Wiring Check** detects *Resistance(7)* and *Inductance(8)* in order to use them in the further tests. However, before doing so,

you have to set some parameters in 

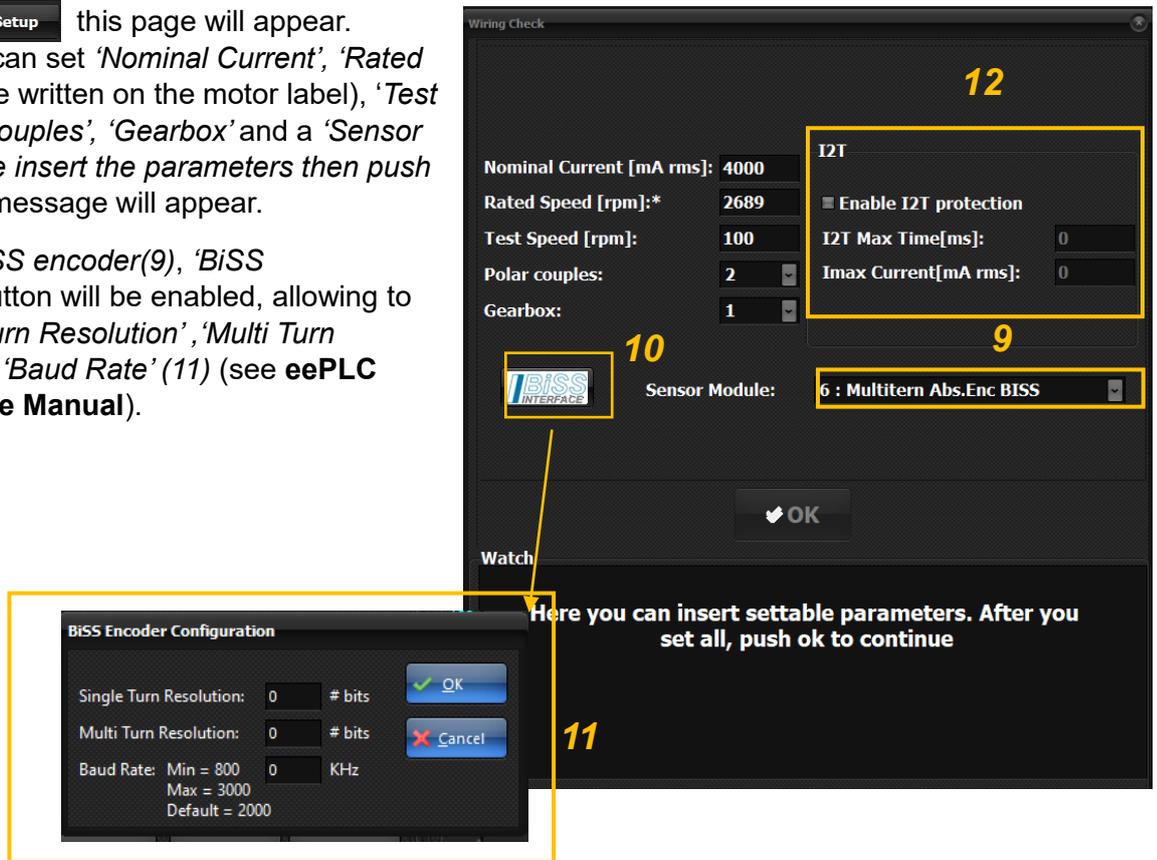
Indeed, the message box will say *'Click on setup and set the parameters'*. After the parameters have been set  button will be enabled and

the message *'RL values calculated. Proceed to the next page'* will appear. By pressing it, the detected values will be written in *'Motor\_R'* and *'Motor\_L'* drive objects, so they can be used even if *'Motor RL detection'* is disabled. *'RL values Calculated. Proceed to the next page'* message will appear, enabling  button.



By clicking  this page will appear. There the user can set 'Nominal Current', 'Rated Speed' (it can be written on the motor label), 'Test Speed', 'Polar couples', 'Gearbox' and a 'Sensor Module'. 'Please insert the parameters then push ok to continue' message will appear.

By selecting *BISS encoder*(9), '*BiSS interface*'(10) button will be enabled, allowing to select '*Single Turn Resolution*', '*Multi Turn Resolution*' and '*Baud Rate*' (11) (see **eePLC Studio Software Manual**).



Eventually, depending on which motor in used an option to '*Enable I2T protection*' (12) will appear.

To exit from this page, press 

On every page eventually user can go to the previous page by pressing 

On this page user should control by sight if the motor is turning clockwise. Meanwhile, motor will execute a free running forward on a set Profile Velocity and the message is shown as in the image. Whatever is a BLDC, Stepper or BLAC motor, the GIF will change the object.

You can change the test speed by pressing 

By pressing  , motor movement will be terminated and **Wiring Check** will close.

If user thinks that the movement is correct, it can go to the next page by pressing 



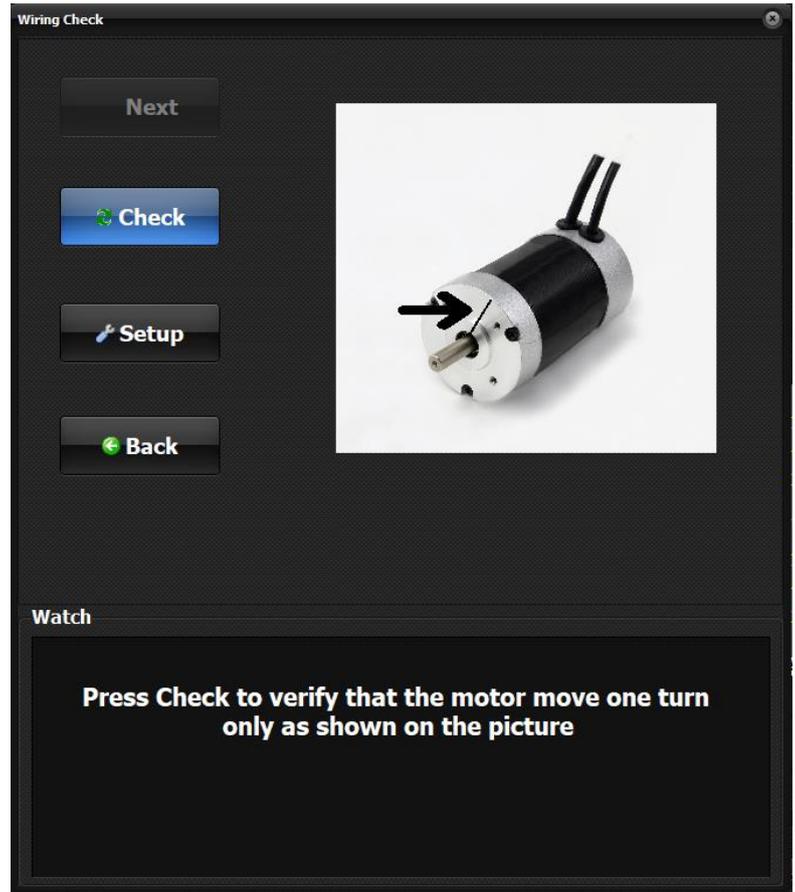
On the following page user tests if the set poles and gearbox are correct.

Press  to check if motor does one turn as stated by the message in the image, shown on enter.

Another message will appear *'Check if the motors turn for 360°, otherwise check the motor pairs poles or gearbox ratio'*.

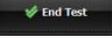
Button  will be enabled, allowing the user to go to the next page.

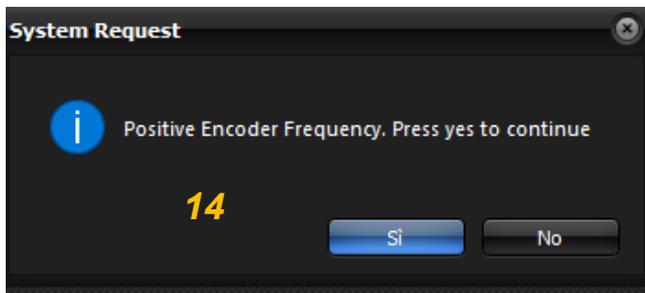
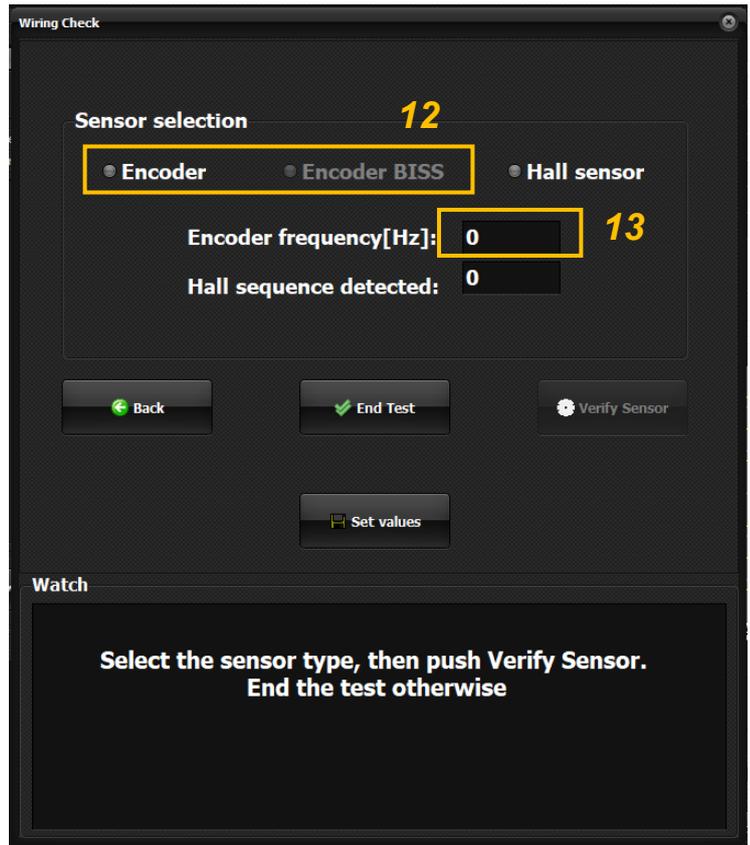
After checking if motor was wired correctly by turning it clockwise and after controlling if the polar poles and gearbox are correct by turning it once, the user will proceed to test the sensor selected in the 'Setup' page.



## 2.6.2 Incremental Encoder and BiSS Encoder

The message will change based on the chosen encoder. If user chose 'Multitern Abs. Encoder + Inc. Encoder', both option will be enabled (12).

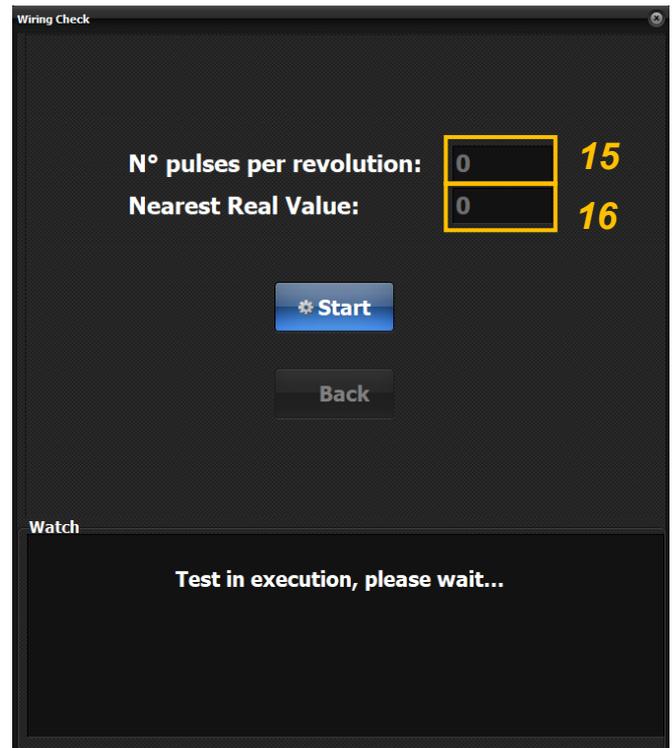
By pushing  motor will do a free running forward in order to test if the 'Encoder Frequency'(13) is positive, verifying that way if the phases are connected correctly. If yes, this message will appear (14) asking if the user wants to proceed to test encoder pulses. An error message will appear otherwise, disabling all options except .



If users decides to proceed, it will have to verify if the attached encoder is the supported one.

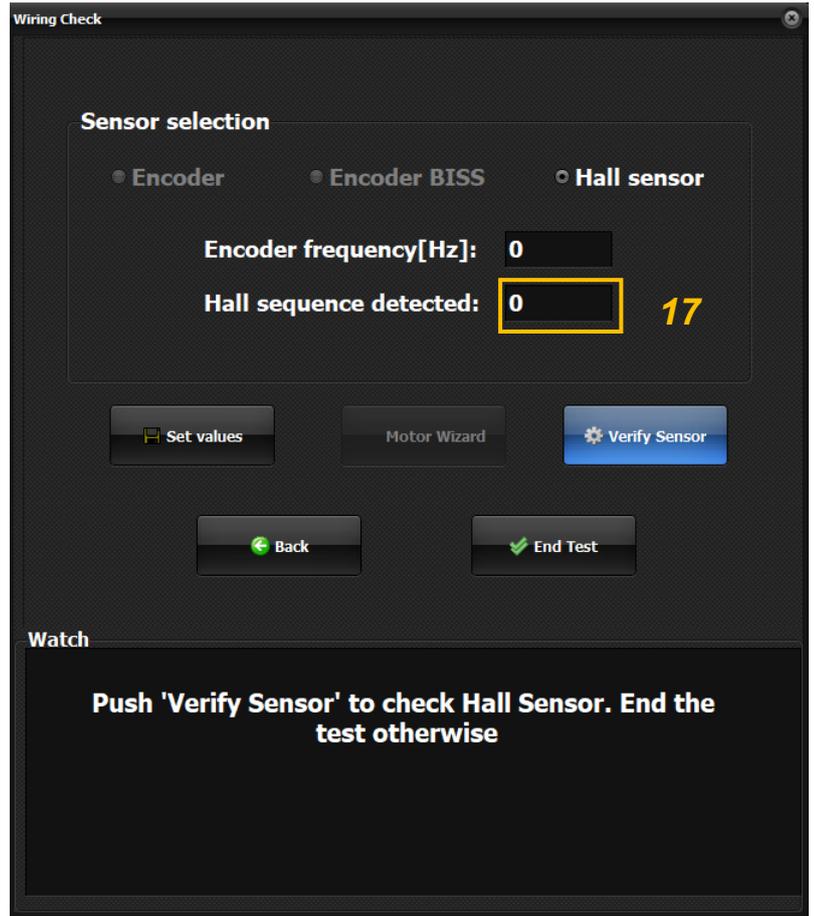
By pressing **Start** motor will do 20 turns and then it will calculate *pulses per revolution*(15) and will check the *nearest supported value*(16). If the difference between those two values is too high, test will report an error. Otherwise, the *Nearest Real Value*(16) will be written in *Feedback\_PPR*.

After the test **Back** will be enabled and Message box will say '*Detection of encoder pulses per revolution completed, push back to return or restart to repeat the test*'.



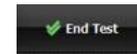
### 2.6.3 Hall Sensor

If user selected *Hall Sensor* in *Setup* (or *Hall Sensor + Inc Encoder*, in which case both options are enabled and checkable), pressing  motor will do a slow movement, than it will verify the *hall sequence(17)*. If it doesn't contain 0s or 7s or repeated numbers, it's will be written in the *Hall\_Sensor\_Sequence\_Settings* object, otherwise the test will report an error and disable all options, except

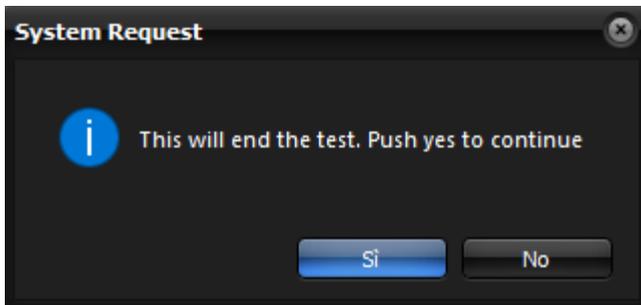


## 2.6.4 End Test

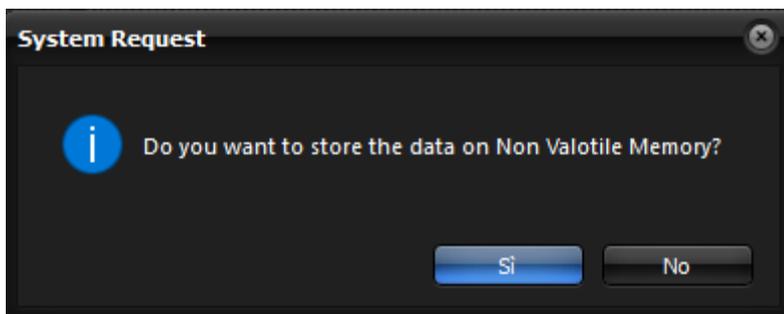
If the user deems the test satisfying (or if an error occurred), it can press



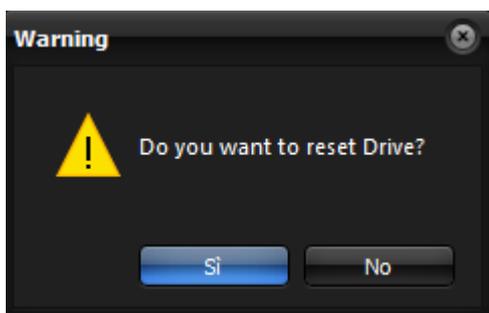
First. First, it will appear a pop up asking if the User is sure to terminate the test.



Second, it will ask if the user desire to save Data on *Non Volatile Memory*.

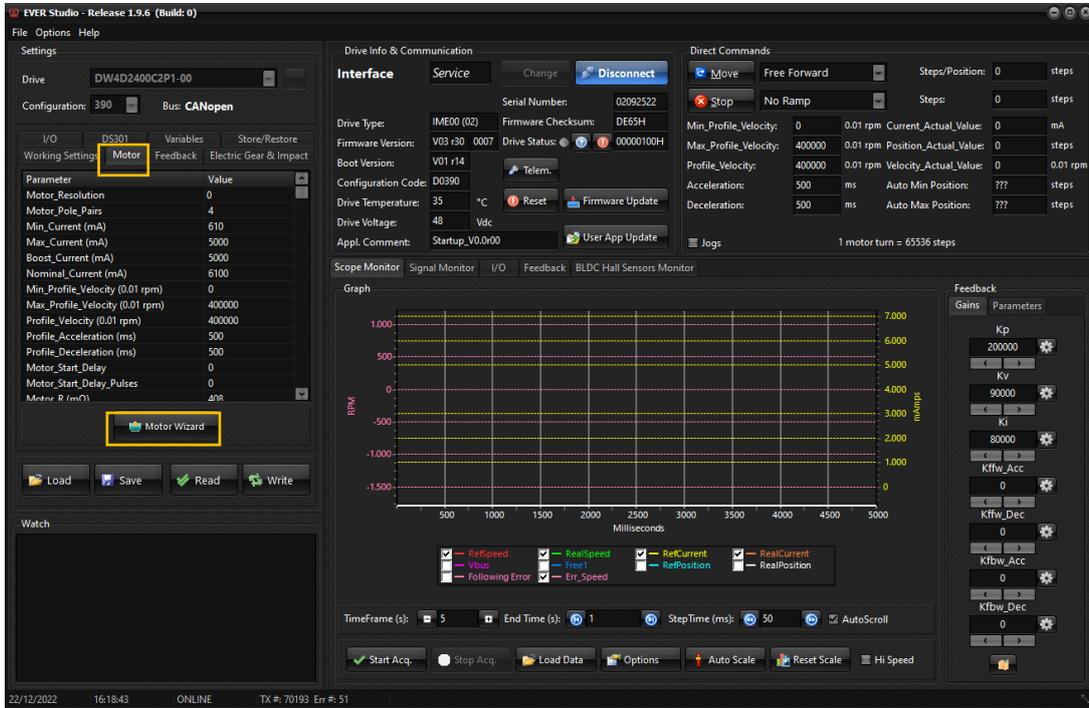


In the end, it will ask User desire to Reset Drive.



## 2.7 Motor Wizard

**Motor Wizard** is a simple tool that allows to search the connected motor in a built-in list and to set its parameters, included the default gains for the Closed Loop. It can be found in 'Settings' window (2.2) and **Motor** subwindow.

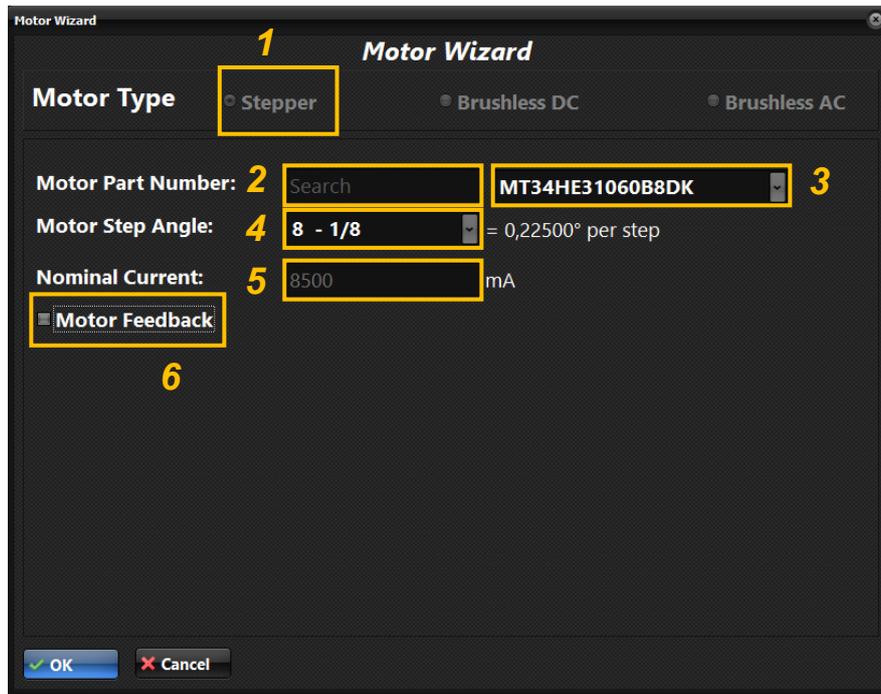


One of the following option will be selected, based on connected MotorType: **Stepper**, **Brushless DC** or **Brushless AC**.

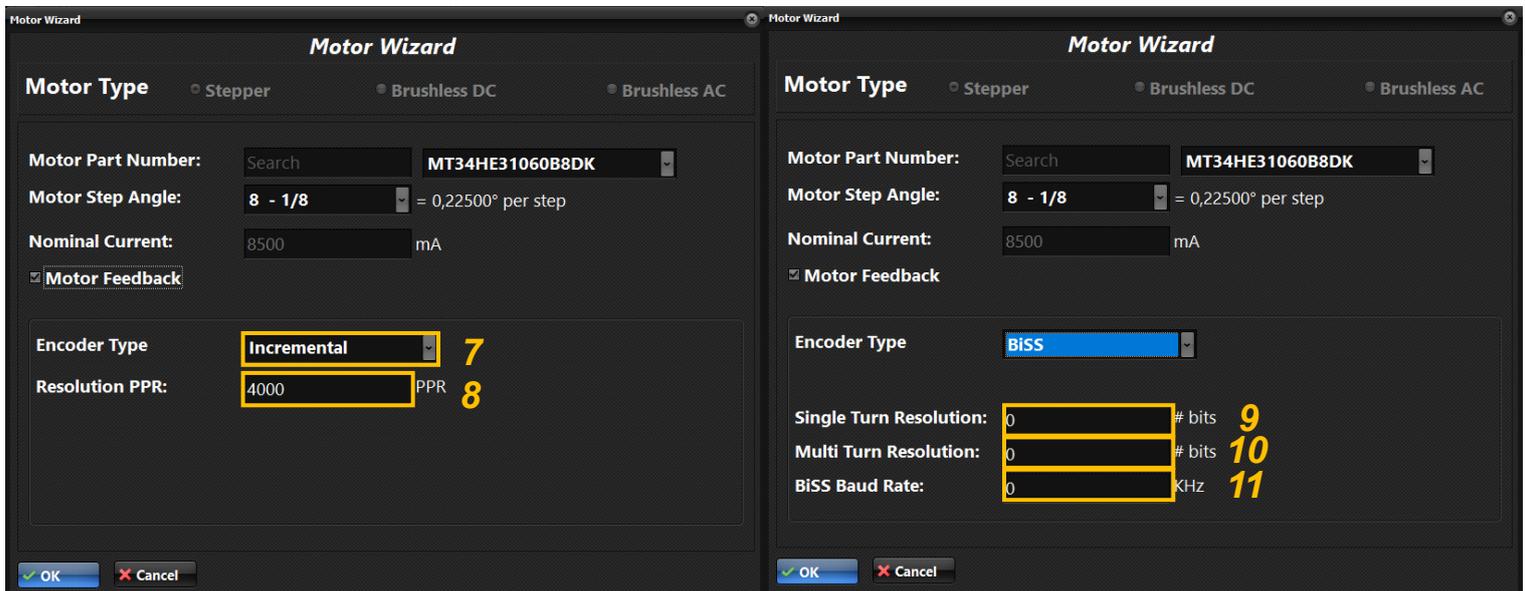
### 2.7.1 Stepper

If the connected motor it is a Stepper, **Stepper**(1) option will be chosen. A search bar(2) make find the **Motor Part Number**(3) much easier. Based on it (Generic or Not), **Nominal Current**(5) could be editable.

**Motor Step Angle**(4) is modifiable too.



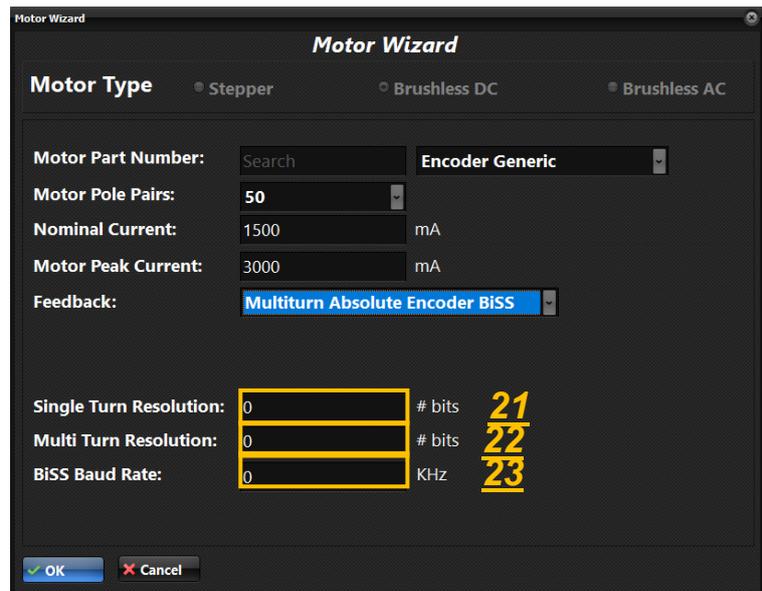
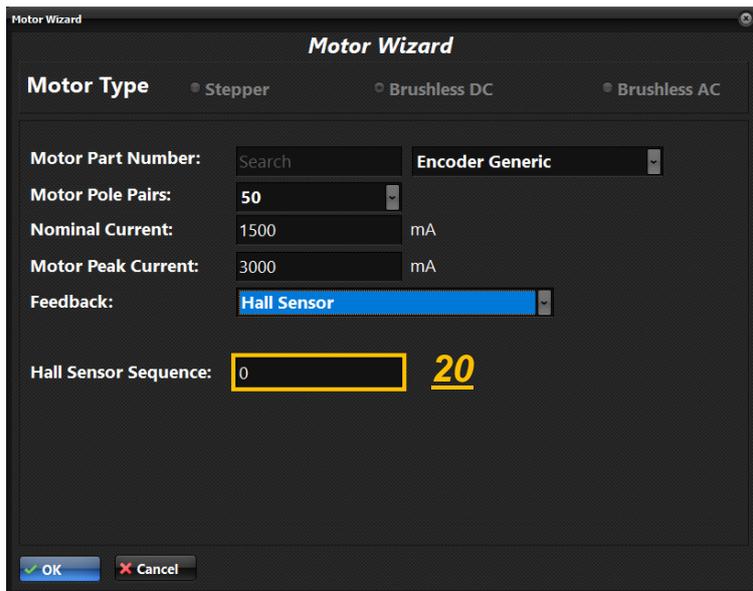
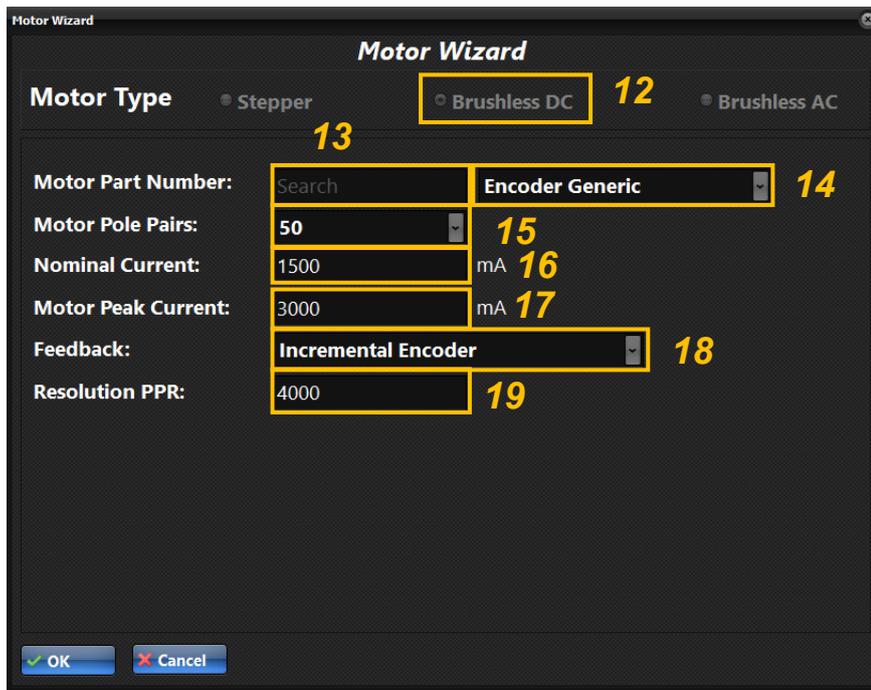
**Feedback**(6) can be enabled and than **Encoder Type**(7) can be selected. If it's a Encoder – **Resolution PPR**(8) will appear. If it is a BiSS encoder instead, **Single Turn Resolution**(9), **Multi Turn Resolution**(10) and **BiSS Baud Rate**(11) parameters are available.



### 2.7.2 Brushless DC

If the connected motor it is a BLDC, **Brushless DC**(12) option will be selected. A search bar(13) make find the **Motor Part Number**(14) much easier. Based on it (Generic or Not) , user can change some parameters:

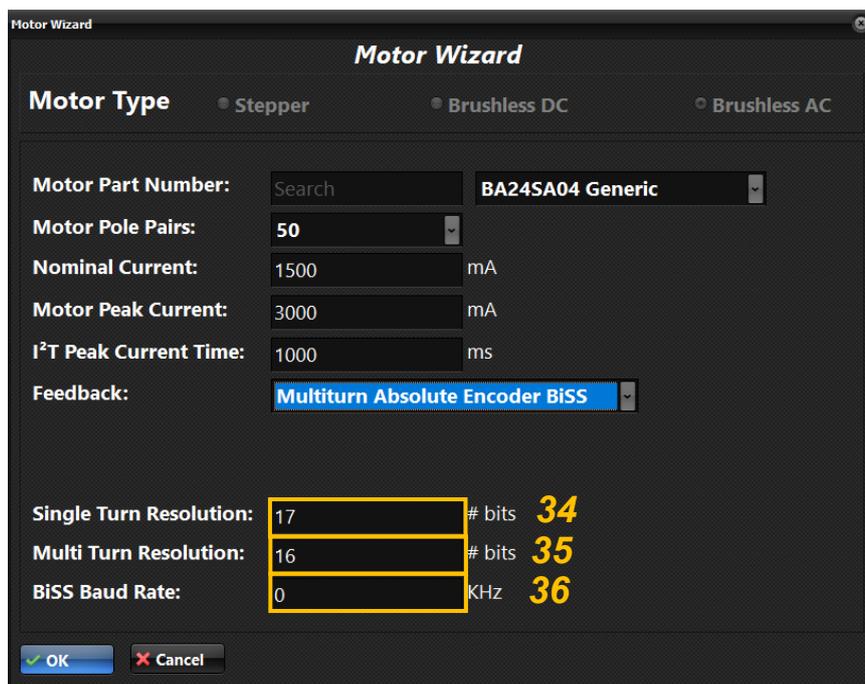
**Motor Pole Pairs**(15), **Nominal Current**(16), **Motor Peak Current**(17). Based on the chosen motor, different **Feedback**(18) (sensor type) is selected. If it's a Encoder – **Resolution PPR**(19) will appear, if it's a Hall - Hall **Sensor Sequence**(20) (or both if it's an Incremental Encoder +Hall). If it is a BiSS encoder instead, **Single Turn Resolution**(21), **Multi Turn Resolution**(22) and **BiSS Baud Rate**(23) parameters are shown.



### 2.7.3 Brushless AC

If the connected motor it is a BLAC, **Brushless AC**(24) option will be selected. A search bar(25) make find the **Motor Part Number**(26) much easier. Based on it (Generic or Not) , user can change some parameters:

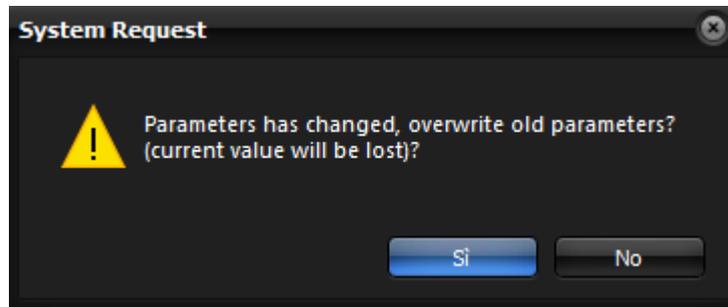
**Motor Pole Pairs**(27), **Nominal Current**(28), **Motor Peak Current**(29) and **I<sup>2</sup>T Peak Current Time**(30). Based on the chosen motor, different **Feedback**(31) (sensor type) is selected. If it's a Encoder – **Resolution PPR**(32) will appear, if it's a Hall - Hall **Sensor Sequence**(33) (or both if it's an Incremental Encoder +Hall). If it is a BiSS encoder instead, **Single Turn Resolution**(34), **Multi Turn Resolution**(35) and **BiSS Baud Rate**(36) parameters are shown.



## 2.7.4 Conclusion

To exit from **Motor Wizard** there are two options:  and .

 sets the parameters inside Settings Window([2.2](#)), including the gains in Closed Loop, based on the selected motor. If the parameters change as compared to Settings Window, this warning will appear.



 on the other hand simply exit from Wizard without modify anything.

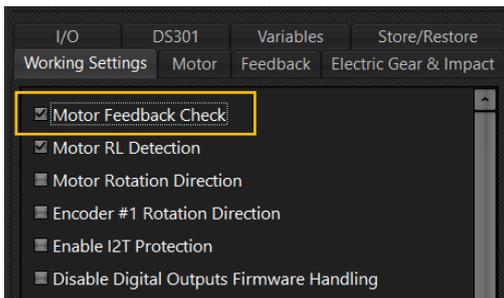
### 3.0 Ever Studio Usage Examples

In this chapter you can find some examples with the steps necessary to run the motor.

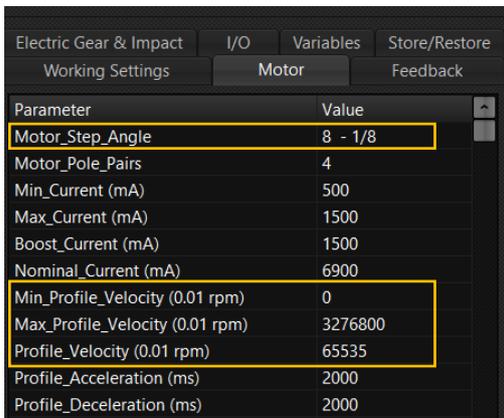
#### 3.1 Closed Loop Stepper Motor with Incremental Encoder

First of all you have to connect the drive in 'Drive Info & Communication' window (2.1). Then you have to set the desired parametrization in 'Settings' window (2.2), paying particular attention to:

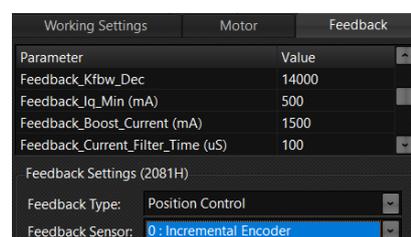
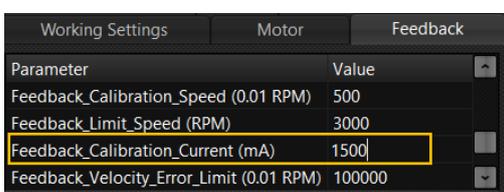
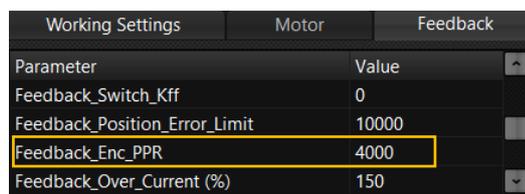
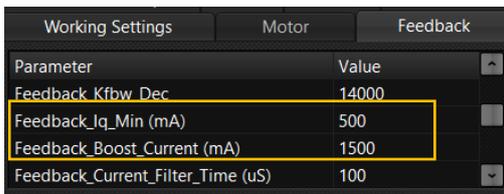
- Set 'Motor\_Feedback\_Check' in 'Working Settings' subwindow (see eePLC Studio Software Manual)

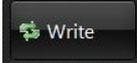


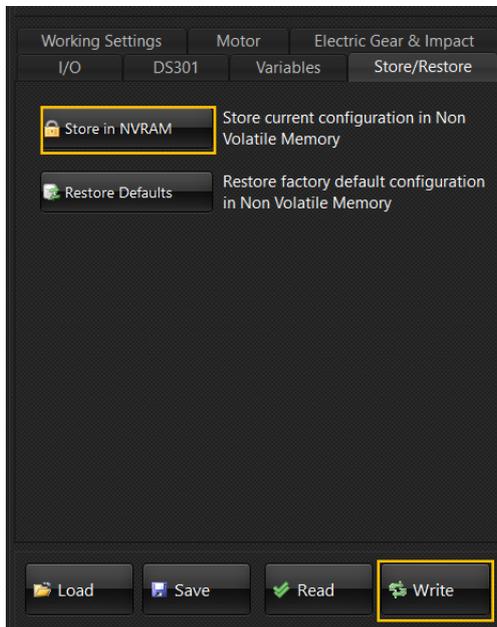
- Set 'Motor\_Step\_Angle', 'Min\_Profile\_Velocity', 'Max\_Profile\_Velocity', 'Profile\_Velocity' in 'Motor' subwindow (see eePLC Studio Software Manual).



- Set 'Feedback\_Boost\_Current', 'Feedback\_Iq\_min', 'Feedback\_Enc\_PPR', 'Feedback\_Calibration\_Current', and select 'Feedback Sensor' → '0: Incremental Encoder' in 'Feedback' subwindow (see eePLC Studio Software Manual).



Now you have to press  button and if you want to conserve the settings in the drive also in case of drive switch off, you have to press  button in '**Store/Restore**' subwindow.

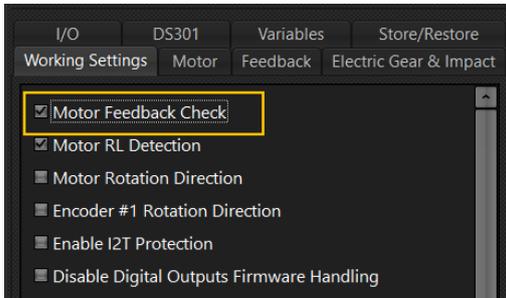


At this point, using '*Direct Commands*' window ([2.4](#)), it's possible to move the motor.

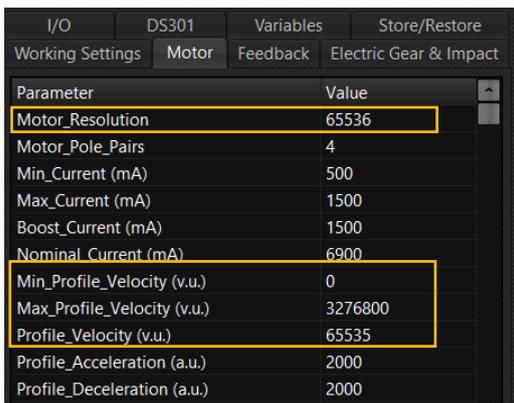
### 3.2 BLDC Motor with Hall Sensors

First of all you have to connect the drive in 'Drive Info & Communication' window (2.1). Then you have to set the desired parametrization in 'Settings' window (2.2), paying particular attention to:

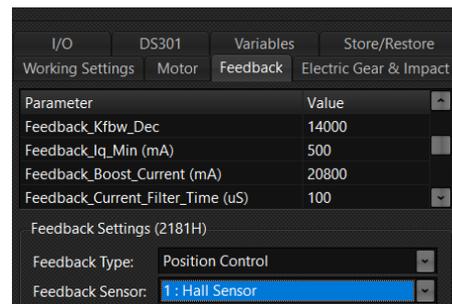
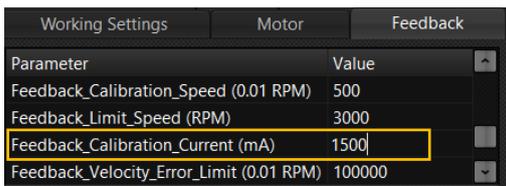
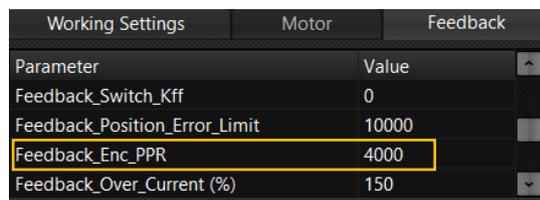
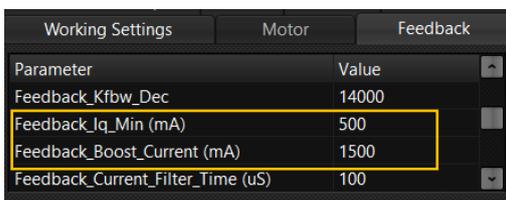
- Set 'Motor\_Feedback\_Check' in 'Working Settings' subwindow (see eePLC Studio Software Manual)



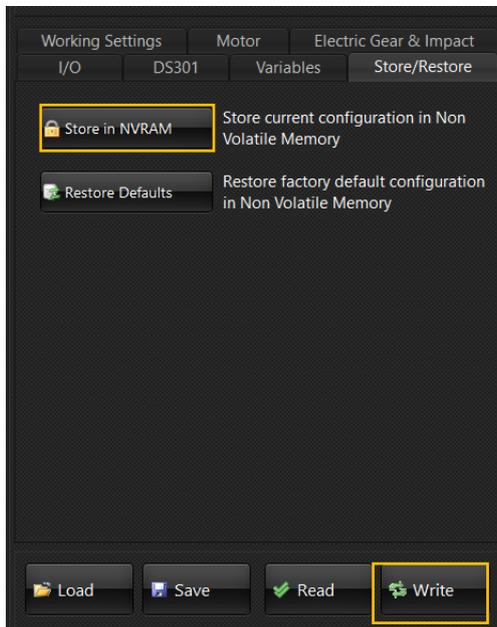
- Set 'Motor\_Resolution', 'Min\_Profile\_Velocity', 'Max\_Profile\_Velocity', 'Profile\_Velocity' in 'Motor' subwindow (see eePLC Studio Software Manual).



- Set 'Feedback\_Boost\_Current', 'Feedback\_Iq\_min', 'Feedback\_Calibration\_Current', and select 'Feedback Sensor' → '1: Hall Sensor' in 'Feedback' subwindow (see eePLC Studio Software Manual).



Now you have to press  button and if you want to conserve the settings in the drive also in case of drive switch off, you have to press  button in '**Store/Restore**' subwindow.

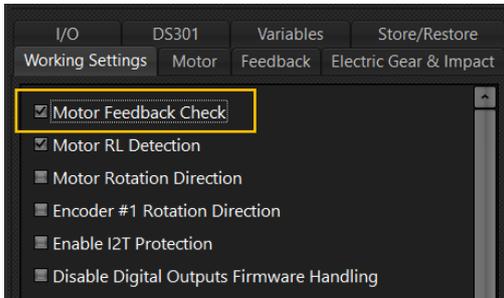


At this point, using '*Direct Commands*' window ([2.4](#)), it's possible to move the motor.

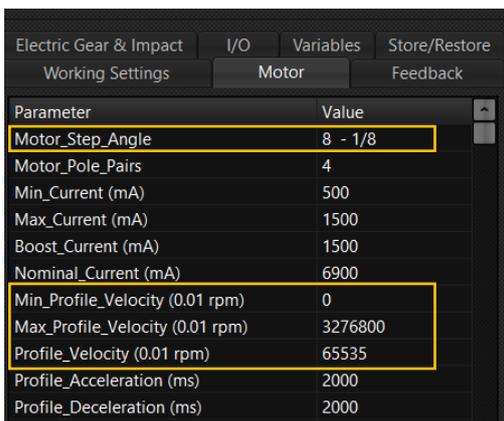
### 3.3 Closed Loop Stepper Motor with Absolute Encoder BiSS

First of all you have to connect the drive in 'Drive Info & Communication' window (2.1). Then you have to set the desired parametrization in 'Settings' window (2.2), paying particular attention to:

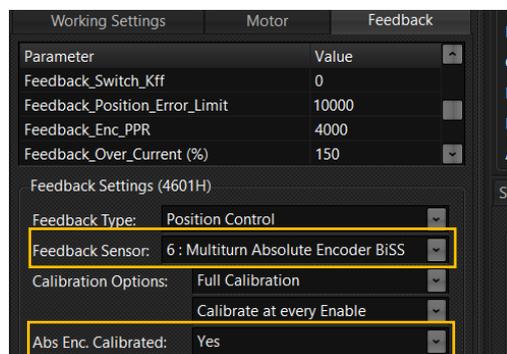
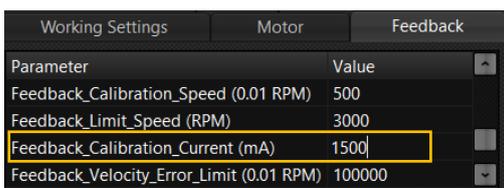
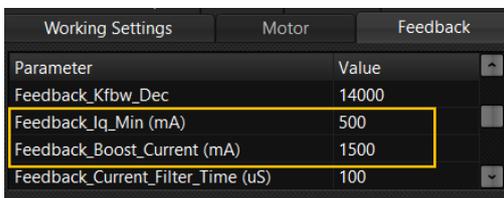
- Set 'Motor\_Feedback\_Check' in 'Working Settings' subwindow (see eePLC Studio Software Manual)



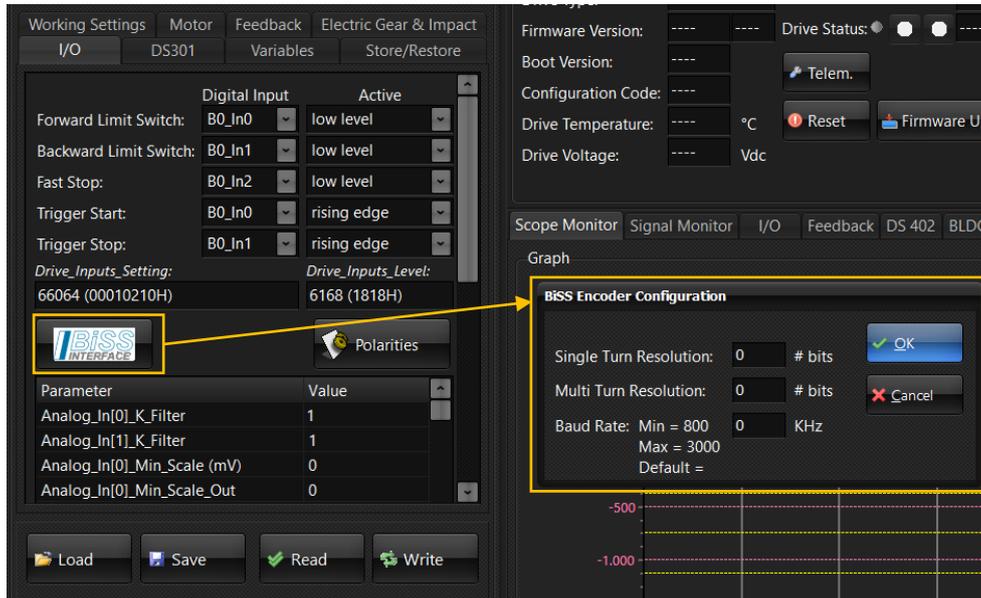
- Set 'Motor\_Step\_Angle', 'Min\_Profile\_Velocity', 'Max\_Profile\_Velocity', 'Profile\_Velocity' in 'Motor' subwindow (see eePLC Studio Software Manual).

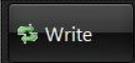


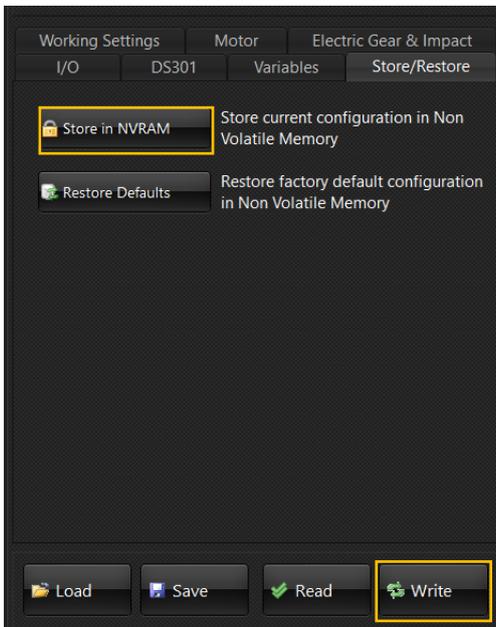
- Set 'Feedback\_Boost\_Current', 'Feedback\_Iq\_min', 'Feedback\_Calibration\_Current', and select 'Feedback Sensor' → '6: Multiturn Absolute Encoder BiSS' and 'Abs. Enc. Calibrated' → 'Yes' in 'Feedback' subwindow (see eePLC Studio Software Manual).



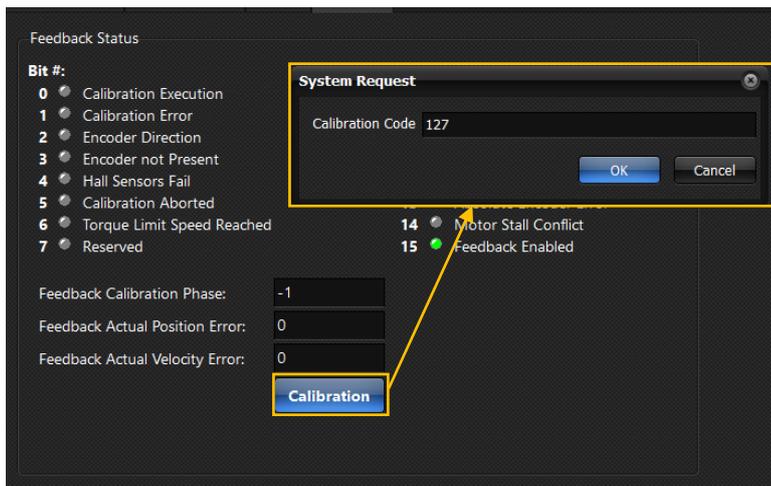
- In 'I/O' subwindow, press 'BiSS Interface' button and select 'Single Turn Resolution', 'Multi Turn Resolution' and 'Baud Rate' (see **eePLC Studio Software Manual**).



Now you have to press  button and if you want to conserve the settings in the drive also in case of drive switch off, you have to press  button in 'Store/Restore' subwindow.



At this point, to do the Encoder calibration you need to press the 'Calibration' button in 'Diagnostic' window ([2.5](#)) and insert the Calibration Code '127'.



Thanks to this procedure, every time the drive is switched on, the encoder does not need to be calibrated and this avoids unwanted movements of the motor that could change the encoder position value.

Finally, using 'Direct Commands' window ([2.4](#)), it's possible to move the motor.