

Problem: For running a brushless motor with sinusoidal current commutation it is necessary to know with accuracy the electrical position of a motor. For systems having an incremental position sensor the start of the motor is usually done with an initial pole lock.
Some applications do not allow moving the motor in an uncontrolled way as the initial pole lock does. For such applications for PMSM with encoder and halls, the motor can be started in brushless DC mode (trapezoidal current commutation) until the first hall transition is detected, then switched automatically to the sinusoidal current commutation mode (PMSM).

Solution:

- ◆ **Drive** : Technosoft Intelligent Servo Drive **IBL2403 IBL2403/CAN**
- ◆ **S/W environment** : Technosoft **EasyMotion Studio**

Description: This application note explains you:

- how to configure in your application the 'Start mode' with halls in order to follow the imposed reference from the beginning
- how to run your application.

Project set-up:

1. Install **EasyMotion Studio** on your PC. Please find the setup kit on our web site.
2. Perform all the hardware connections as it is explained in **P091.037.IBL2403.APN-DOC.101.x.pdf** document (**Getting started using IBL2403/ IBL2403CAN with a brushless motor**).
3. Start EasyMotion Studio, and then create a new project using the template "**IBL2403 CAN → BRUSHLESS MOTOR → Incremental Encoder**" (see the section "*1. Create a new project*" of **P091.037.IBL2403.BL.APN-DOC.101.x.pdf** document).
4. In the Project window left side, select "**S Setup**", to access the setup data for your application. Press **View/Modify** button. This opens 2 setup dialogues: for **Motor Setup** and for **Drive Setup** through which you can configure and parameterize your Technosoft drive.
5. In the **Motor Setup** dialogue, perform all the steps described in section 3.A. *Brushless Motor Setup* of **P091.037.IBL2403.BL.APN-DOC.101.x.pdf** document.
6. In the **Drive Setup** dialogue, perform the steps described in section 3.B. *Drive Setup* of **P091.037.IBL2403.BL.APN-DOC.101.x.pdf** document except step 10.
7. At **Start mode** select the option **Direct, using Hall sensors**.
8. Click on the **Drive** icon in your application then perform all the settings in accordance to description in paragraph "*Define the control scheme, tune and test controllers*" of

P091.037.IBL2403.APN.001.x.pdf document. Besides, for the 'Start mode' please select the option 'Hall / encoder' as you can see in the figure below:

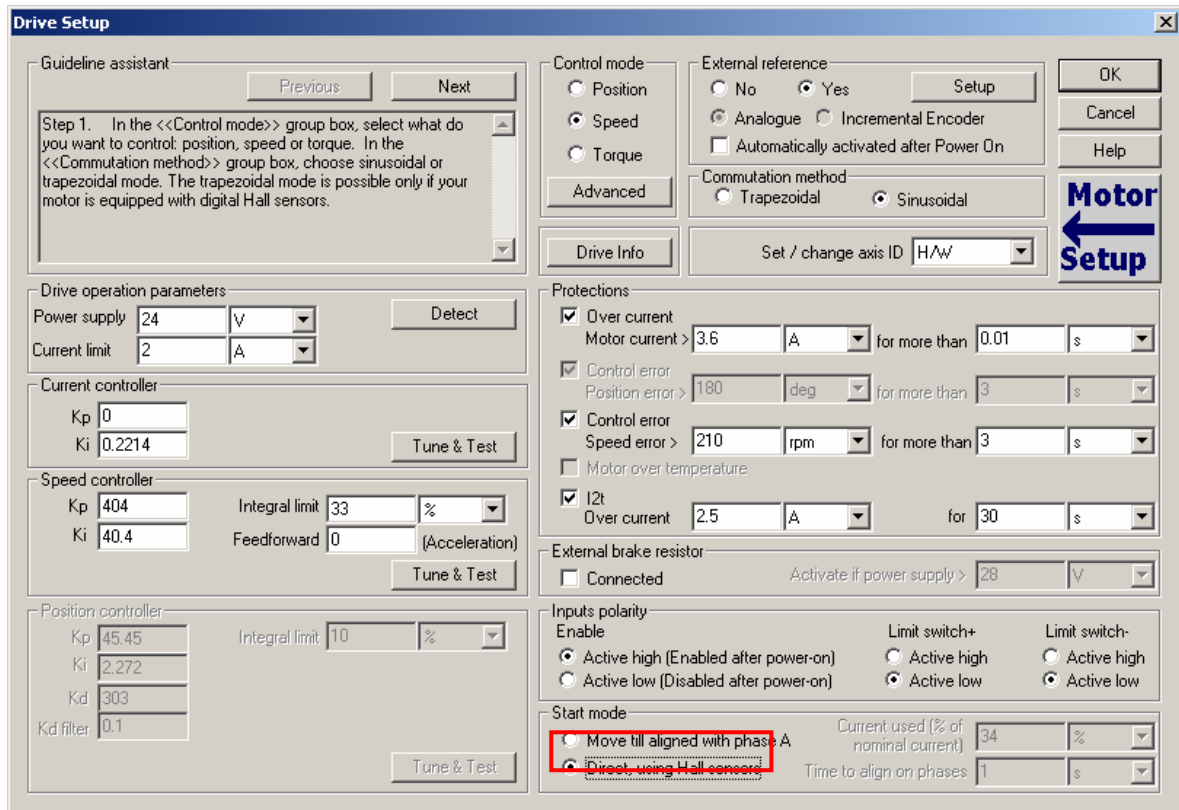




Figure 1. How to set the 'Start mode' with halls

9. Press **Ok** to save your setting and return to **Project** window. From application tree select the '**M Motion**' and insert your motion sequences commands.

Application running:

In order to run your application, follow the next steps:

1. Power up the IBL2403 drive
2. Download the setup, using the menu command '**Application | Setup | Download to Drive/Motor**' or by pressing the correspondent button from EasyMotion Studio toolbar 
3. Download and execute the programmed motion sequences, by pressing the Run button from EasyMotion Studio toolbar 

For more details about other configuration for your application, using of data analysis tools and saving your project/application please refer to **P091.037.IBL2403.APN-DOC.101.x.pdf** document (**Getting started using IBL2403/ IBL2403CAN with a brushless motor**).