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 **IDM240 – 5EI** **IDM640 – 8EI**
- **S/W environment :** Technosoft **IPM MotionStudio – V2.0.1.1** or above

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 **IPM MotionStudio – V2.0.1.1** or above on your PC. Please find the setup kit on our web site.

2. Perform all the hardware connections as it is explained in **P091.048.051.IDM.APN.001.x.pdf** document (***Getting started using IDM240-5EI / IDM640-8EI with a brushless motor***).

3. Start IPM MotionStudio, then create a new project using the template "**IDMx40 ->IDMx40 – yEI -> Brushless Motor**"[1] (see the paragraphs "*Start the execution of IPM Motion Studio*" and "*Start a new project*" of **P091.048.051.IDM.APN.001.x.pdf** document)

4. Click on the **Motor** icon in your application then perform all the tests as it is described in the paragraph "*Choose and test the motor and load*" of **P091.048.051.IDM.APN.001.x.pdf** document.

5. 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 **P091.048.051.IDM.APN.001.x.pdf** document. Besides, for the 'Start mode' please select the option 'Hall / encoder' as you can see in the figure below:

[1] IDMx40 – yEI means: (x=2, y=5) for IDM240-5EI or (x=6, y=8) for IDM640-8EI

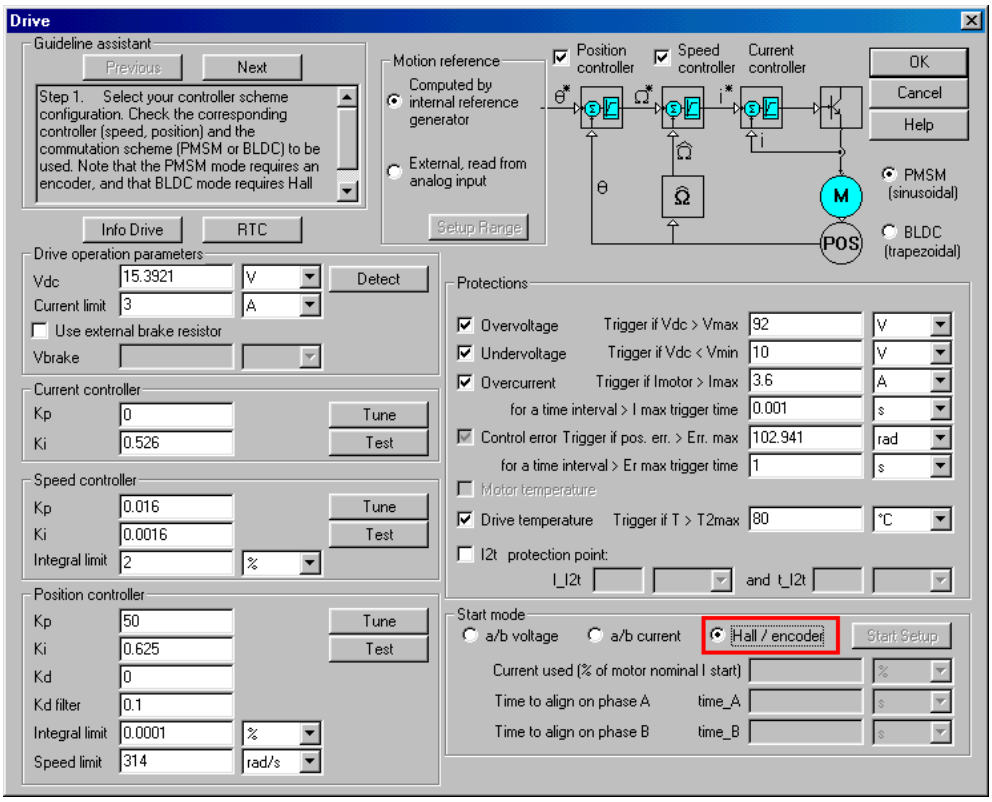

Figure 1. *How to set the 'Start mode' with halls*

6. Click on the **Motion** icon and insert your specific motion sequences commands.

Application running:

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

- power up the IDMx40 drive
- click the icon 
- if you want to visualize for example the speed and speed reference, open the 'Motion Position' Control Panel and select the 'Start' menu with the right mouse button.
- to stop the motor press the icon 

For more details about other configuration for your application, using of data analysis tools and saving your project/application please refer to **P091.048.051.IDM.APN.001.x.pdf** document (***Getting started using IDM240-5EI / IDM640-8EI with a brushless motor***).