

Quick start for MotionLab

Before start working with i116 board, system and motor must be configured.

MotionLab is a Graphical User Interface (GUI) that tries to help the user in this process.

Following there are summarized the steps that must be done before executing any movement. Do NOT skip any of them.

1. **Connect to the controller**
2. **Load configuration from file** (or perform a configuration from scratch).
3. **Download the configuration into controller**
4. **Save values to non-volatile memory**
5. **Load macros from file**
6. **Download macros to controller** (or perform a configuration from scratch).

In the next sub-chapters each step is explained in detail.

Connecting to the controller

Following are explained the steps that must be followed in order to connect to the controller:

1. **Select network connection:** First the desired communication interface must be selected (see Figure 1). For RS232 interface remember to select the correct COM port in Device number.

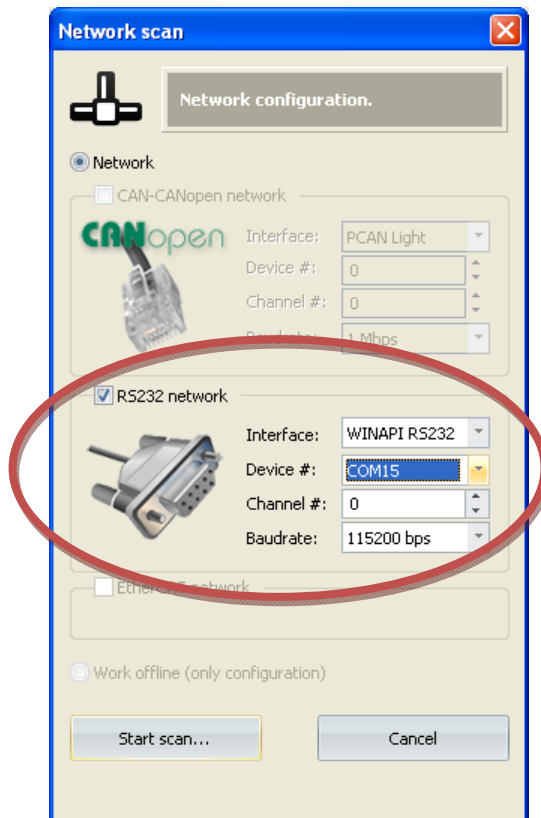


Figure 1: Selecting network connection

2. **Detecting nodes in the bus:** Once the interface is selected and Start scan button pressed the software will look for all nodes connected to the bus. See Figure 2

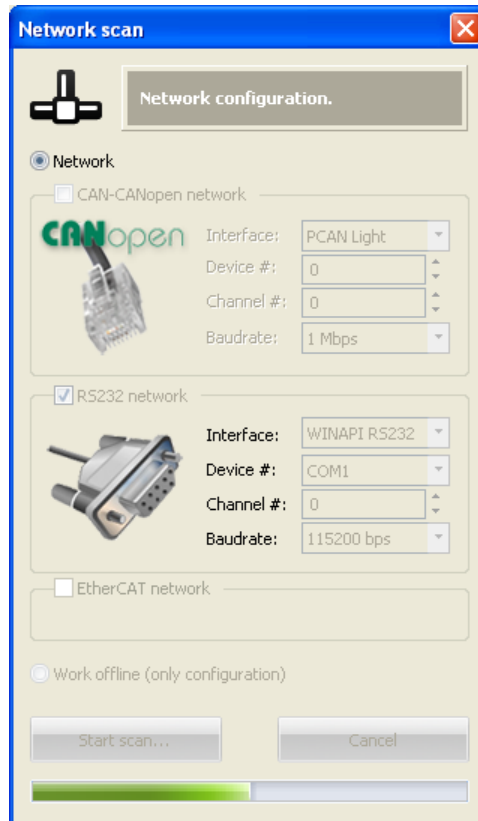


Figure 2: Looking for nodes in the bus

3. **Node detected:** At the end of the scan all detected nodes will appear in the network window with the basic information of each node (See Figure 3). It will be also reported in the message window (at the bottom of the screen).

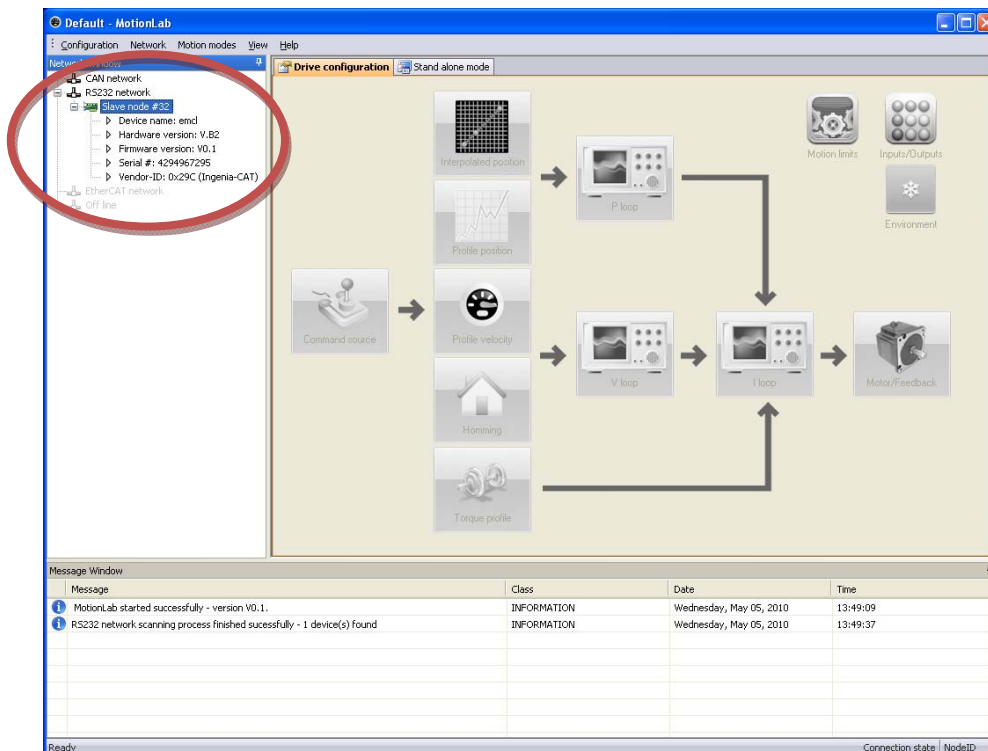


Figure 3: Node 32 detected

4. **Connecting to one node:** It must be noted that until now there is no connection with a node, we only have scanned the bus. In order to connect with a node we must right click over the target node in the network window and press *connect* (See Figure 4)

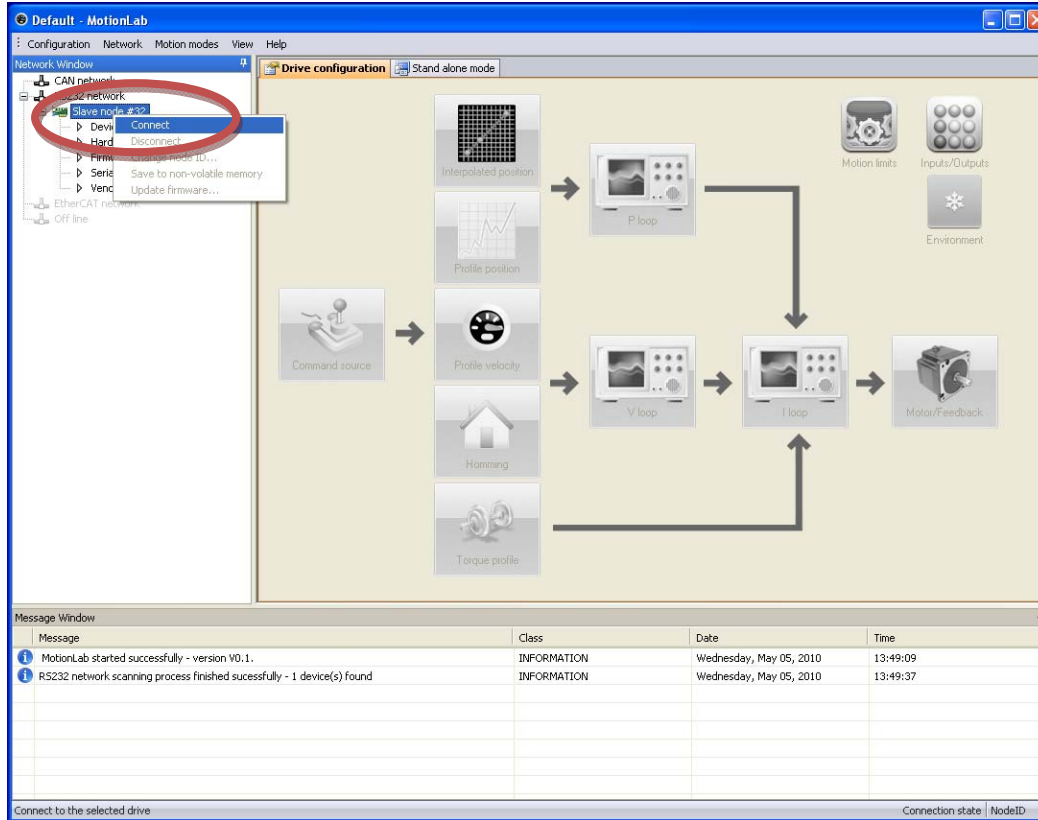


Figure 4: Connecting to a node

Once the connection has been established to system will ask the user if he wants to update the local values of the software with the parameters of the controller. Normally it is recommended to update the values in order to maintain coherency.

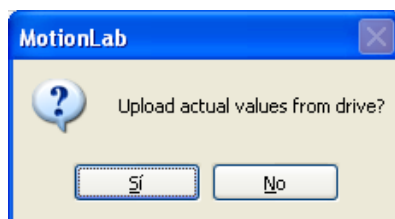


Figure 5: Update local values

Configuring the system

It is mandatory to be connected to a node before to perform the configuration.

When a connection has been established the buttons in Drive configuration tab (right-zone of screen) will become enabled (see Figure 6).

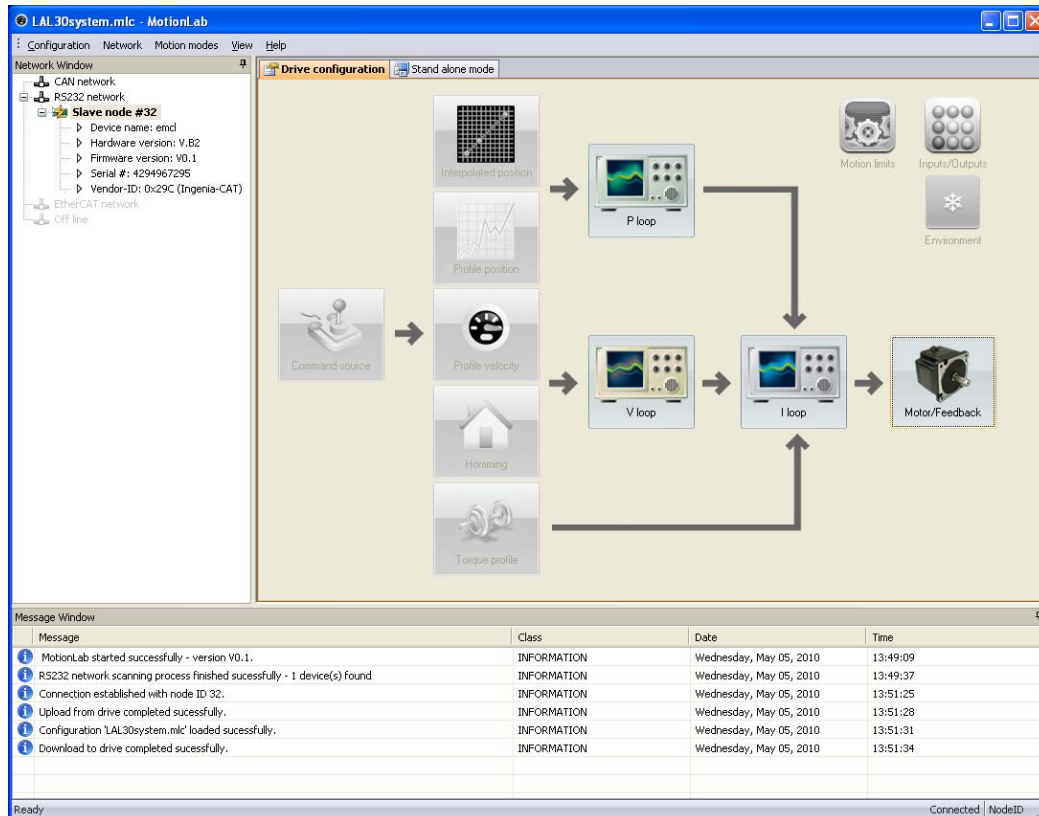


Figure 6: Software connected to a node

Following there are all the steps that must be followed in order to configure the system:

- 1. Configure Motor and feedback:** When pressing at the Motor/Feedback button of the main window a dialog box with all the possible parameter will appear (see Figure 7). Once the motor and feedback is configured the parameters could be sent to the drive using *save to drive* or saved into a file using *save to file* button. Please, note that *save to file* only will save the parameters presents in the motor dialog. If you want to save the whole parameters of the system into a file use configuration option of the main menu bar.

It is also possible to read the parameter from a file or even directly from the controller (*load from drive*).

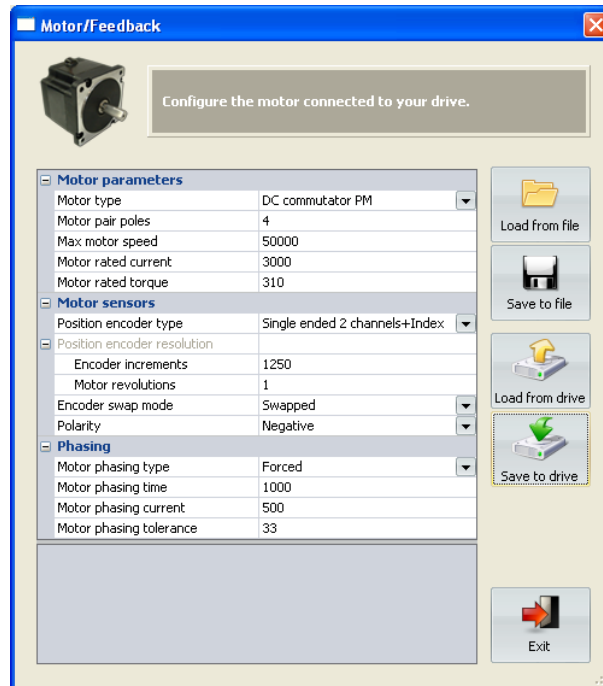


Figure 7: Motor / feedback configuration

- Current loop tuning:** When pressing at the “I loop” button of the main window a dialog box with the parameters of the current loop will appear (see Figure 8). This dialog has a scope that helps to tune the parameters properly. Once the parameters are modified they could be saved into the drive (using save to drive button) and run an execution. The system will apply a step of current and the result will be presented in the scope.

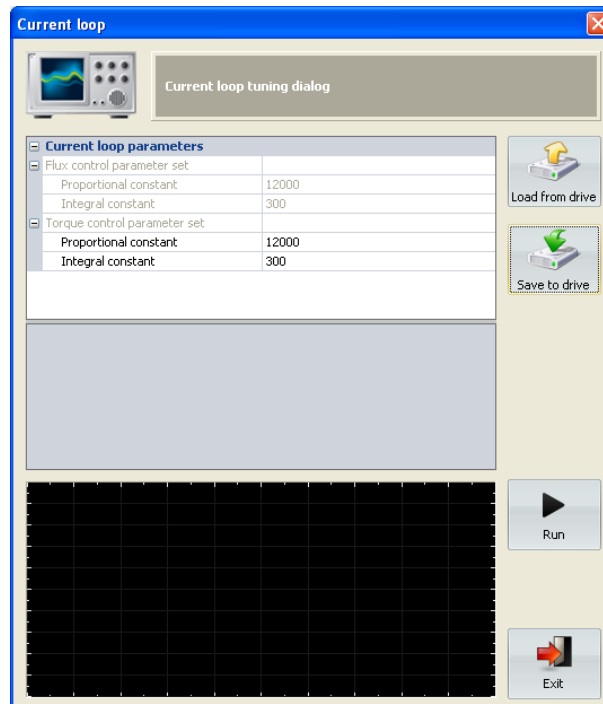


Figure 8: Current loop

- 3. Velocity loop tuning:** When pressing at the “V loop” button of the main window a dialog box with the parameters of the velocity loop will appear (see Figure 9). This dialog has a scope that helps to tune the parameters properly. Once the parameters are modified they could be saved into the drive (using save to drive button) and run an execution. The system will apply a step of velocity and the result will be presented in the scope.

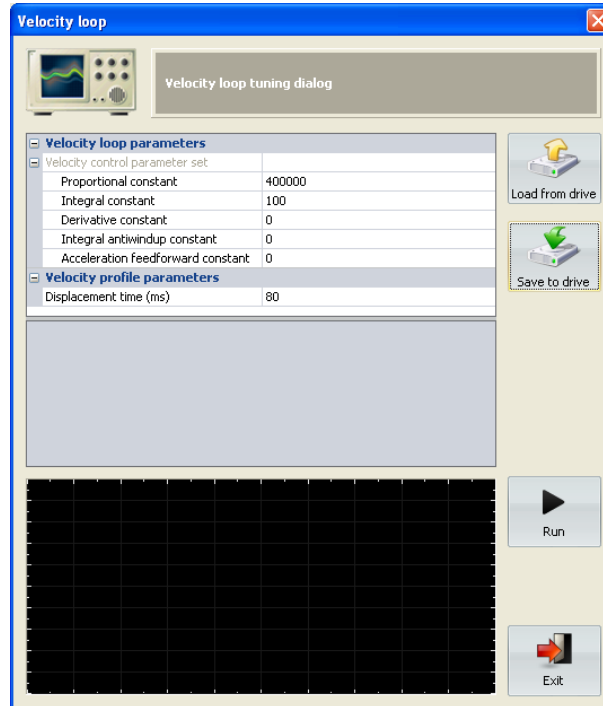


Figure 9: Velocity loop

- 4. Position loop tuning:** When pressing at the “P loop” button of the main window a dialog box with the parameters of the position loop will appear (see Figure 10). This dialog has a scope that helps to tune the parameters properly. Once the parameters are modified they could be saved into the drive (using save to drive button) and run an execution. The system will apply a step of position and the result will be presented in the scope.

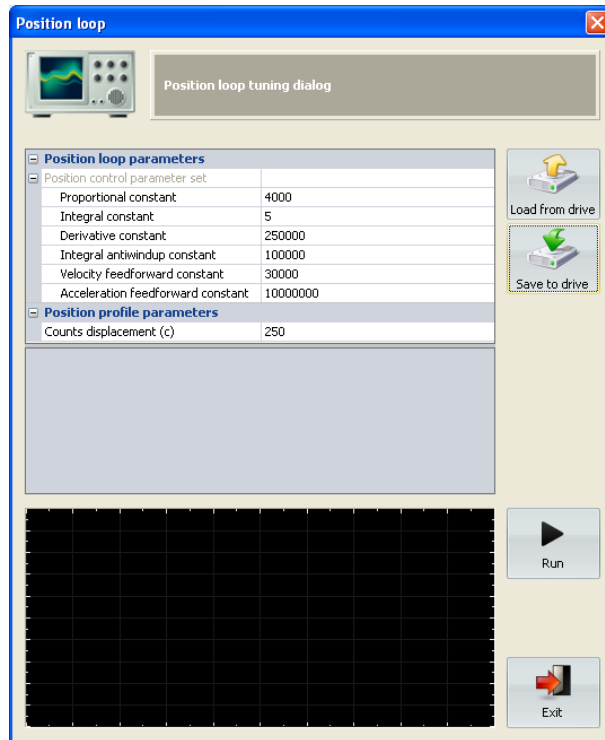


Figure 10: Position loop

Saving and restoring configurations

The main menu bar has an option for working with complete configurations.

The sub-main has the following options:

1. **Save to file:** This option will save all local parameters of the software (Motor/feedback, current, velocity and position loop) into a file. It must be executed after finishing the configuration of the system in order to save a back-up file.
2. **Load from file:** It will restore a previously save file into the local parameters of the software. Please, note that this command will not update the parameters of the controller, only the local software parameters.
3. **Download to drive:** This command will load the local parameters of the software into the controller. Normally, before to work with a motor, the parameters are loaded from file and then downloaded into the drive using this command. Please, note that this command updates the parameters of the controller but it does not save them into the non-volatile memory. Therefore if a hardware reset is produced they will be lost.
4. **Upload from drive:** This command will update the local parameters of the software with the content of the controller.

Saving parameter into non-volatile memory

All parameters in the controller reside in a volatile memory. However it is also possible to save a copy of them into a non-volatile memory. This process of saving is not automatic but could be executed using the MotionLab.

Once the controller is connected and the correct configuration is downloaded right click over the node in the network window and press *Save to non-volatile memory*.

After a power-up the controller reads the parameters from NVM and copies them into the volatile one.

Stand-alone mode

The stand alone features of the controller are accessible through *Stand alone mode* tab (right-zone of screen).

The stand alone window could be divided into two main zones: Macro programming and macro access & execution.

In macro programming zone the macros could be build, load, save into file, etc and all this process could be done without the need of being connected to a node.

The macro access & execution is thought to be used in on-line mode (connected to a node) and helps the user to load macros into the controller, execute them or even link them to an interrupt source.

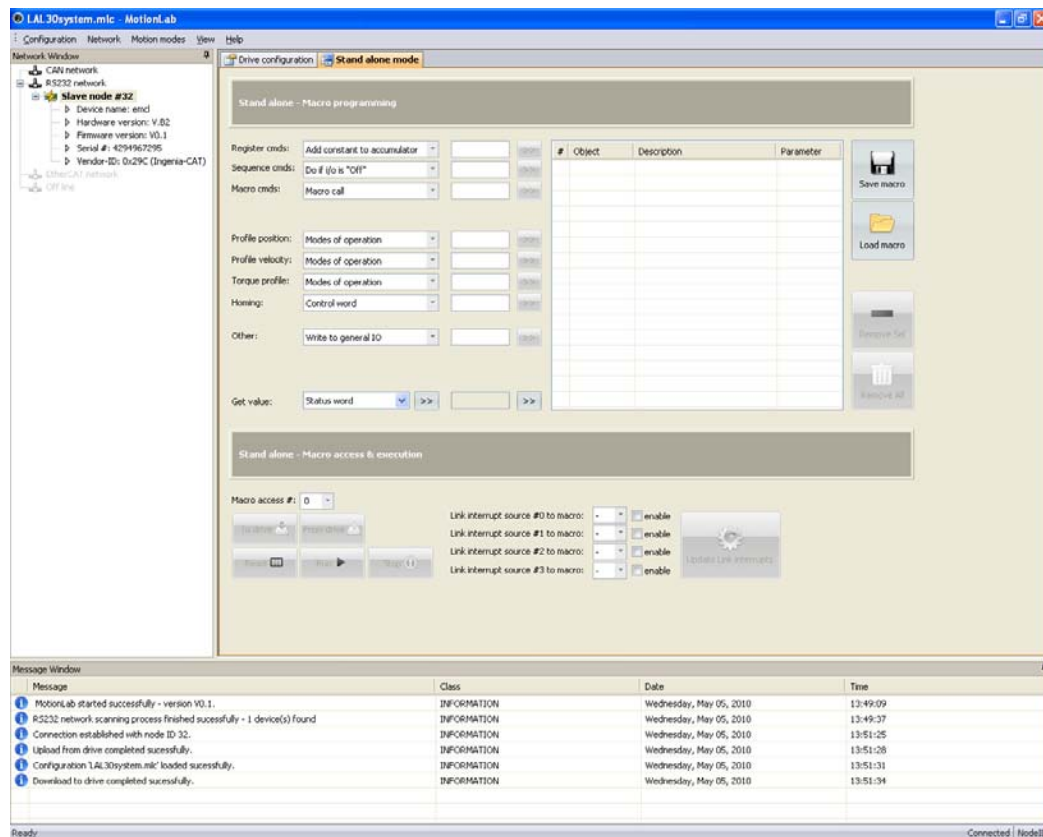


Figure 11: Stand alone mode