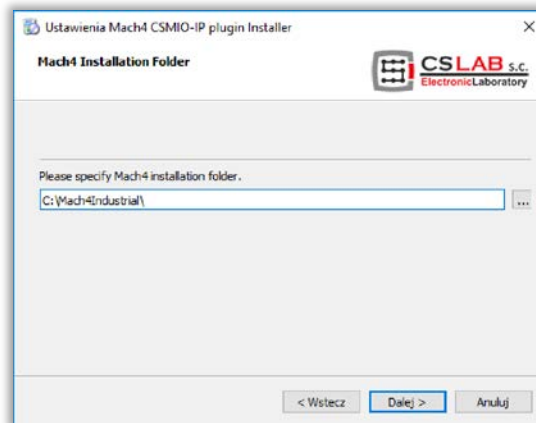# Test firmware CSMIO/IP v3.000 for Mach4.

Requirements and general information

- CSMIOv3 firmware is in test phase therefore it should be used only by users with good knowledge of configuration, operation and installation of CNC machines and on their own risk.
- Update to the v3 version is reversible; it means that you can go back to an older version anytime. For that you should update your CSMIO/IP-S controller using a file with firmware e.g. 2.910 and follow further instructions.
- Errors, if any should be reported to: csmiov3beta@cs-lab.eu. The report should include firmware version information and description of what way the error was done and where it's placed. If necessary CS-Lab's workers will ask for more information.
- CSMIOv3 firmware is designed and tested on PCs and under Microsoft® Windows 10 or Windows 7. We do not guarantee proper operation with older systems.
- Installation of Mach4 version Hobby or Industrial is required.
- Mach4 demo version allows for a few minutes of work. You can purchase Mach4 license in CS-Lab online store or contact us: office@cs-lab.eu.
- CSMIOv3 firmware includes protection in case E-STOP signal isn't set. A controller can't go into ready mode if the signal wasn't set (see more information in next sections).
- CSMIOv3 firmware is only compatible with CSMIO/IP version FP4. You can verify your hardware version looking at a front panel of your controller.
- The firmware is temporarily only for CSMIO/IP-S controllers. Soon another versions for IP/M and IP/A models will be released.
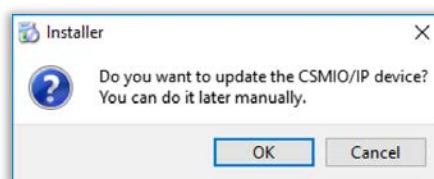
CSMIO/IP-S v3 beta firmware and Mach4 plugin installation.

Installation

1. Make sure you have the internet connection, it's required by the firmware installer utility to download the latest version of the firmware from CS-Lab's server.
2. Mach4 Hobby or Industrial software should be installed first. If it wasn't installed before you should do it now.
3. Download and run csmioSetup.exe installer utility.
4. Follow the instructions. If you have different versions of Mach4 installed please indicate the path.
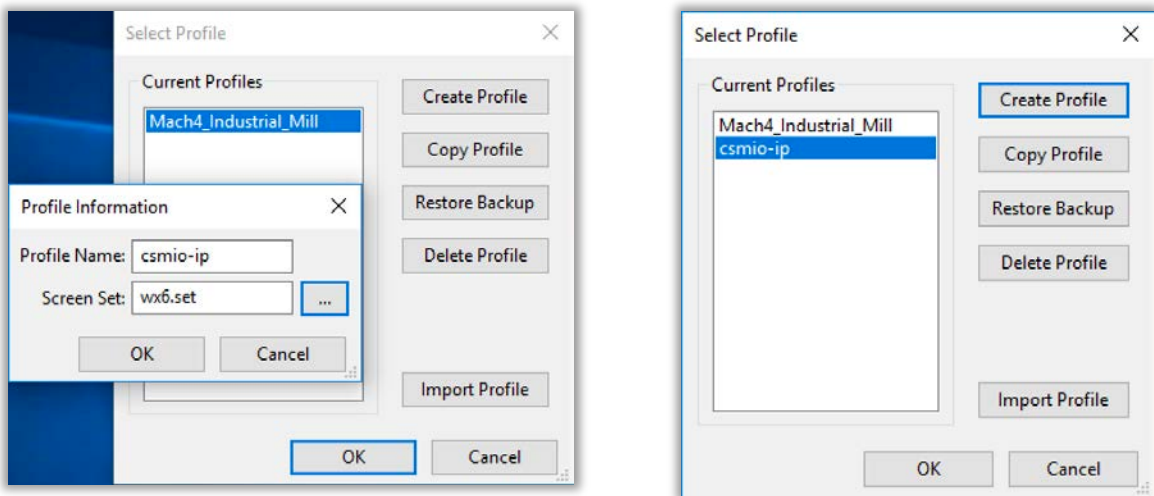

5. During the installation you can update CSMIO/IP controller. You can also do it later by selecting „Start" CSMIO-IPv3_Mach4/CSMIOF4Uploader from the menu.
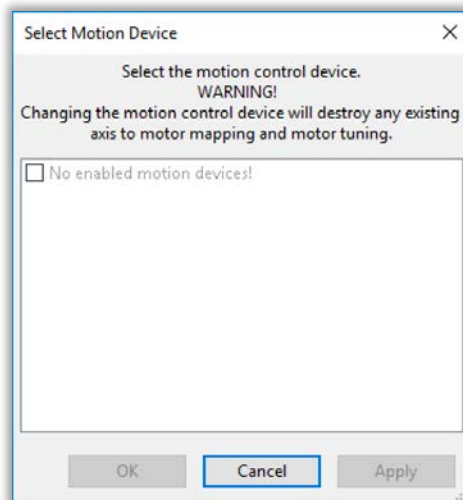6. After it's finished you can close the window and run Mach4 software.
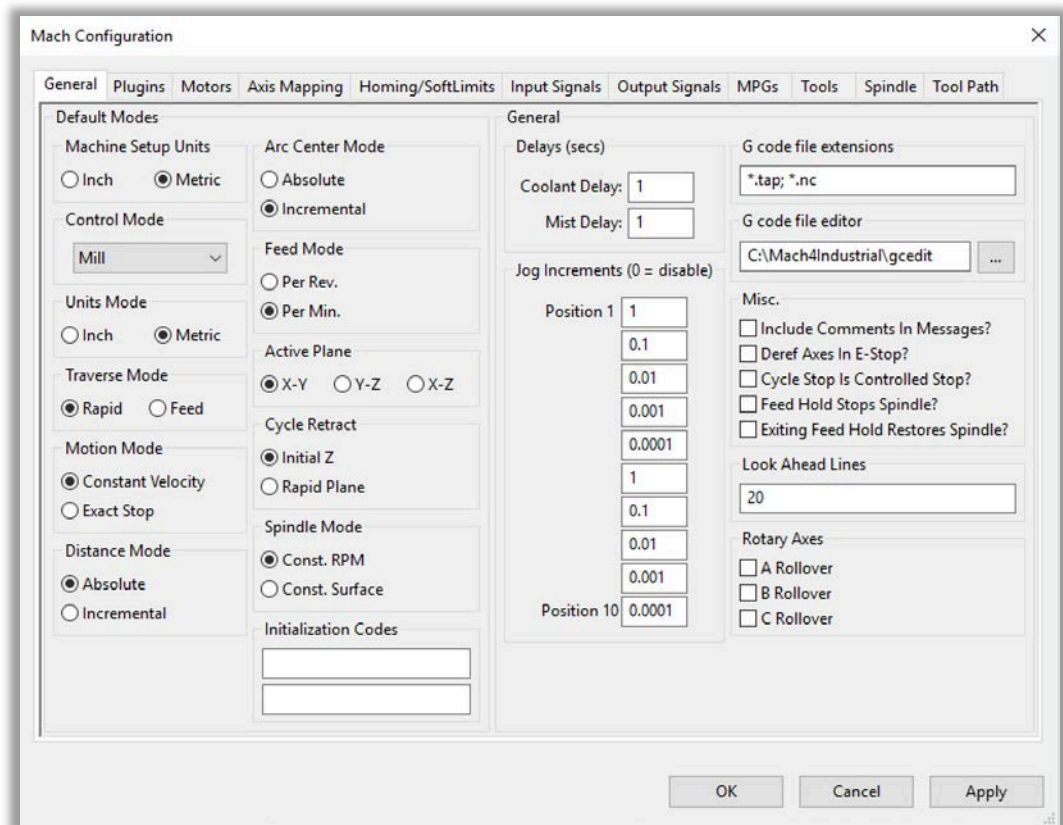
Mach4 software configuration

The first run

1. You should run Mach4 Loader, e.g. „Mach4 Industrial Loader" and create a new configuration profile. You shouldn't use a profile that was used with older version of CSMIO/IP firmware.
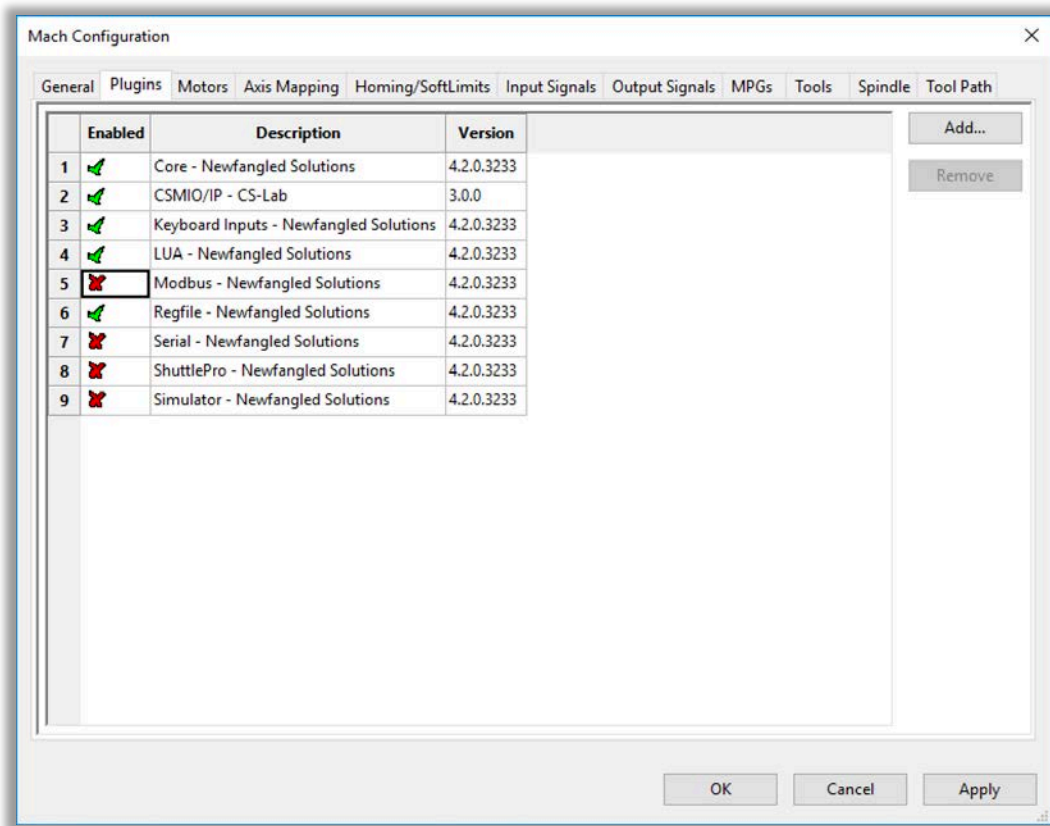

2. Of you run it for the first time you will see a window of motion controller selection. Due to the fact that CSMIO/IP plugin isn't enabled yet the list is empty. You should ignore the window with „Cancel".

3. Open configuration window by „Configure/Mach" menu. If we use the metric system (mm), then it's good to select it in the first tab („General"), group „Machine Setup Units" and „Units Mode". Changing the unit you will get information that the program restart is required but you can skip it now.
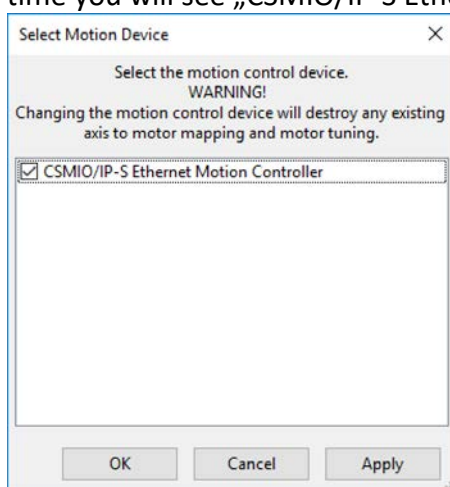
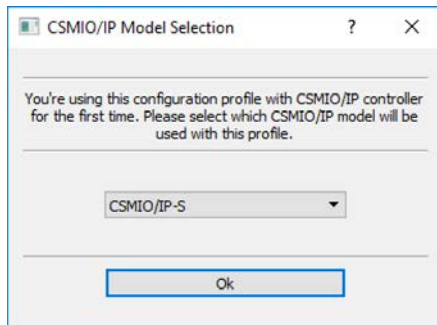4. Go to the second tab („Plugins") and select the proper plugs.

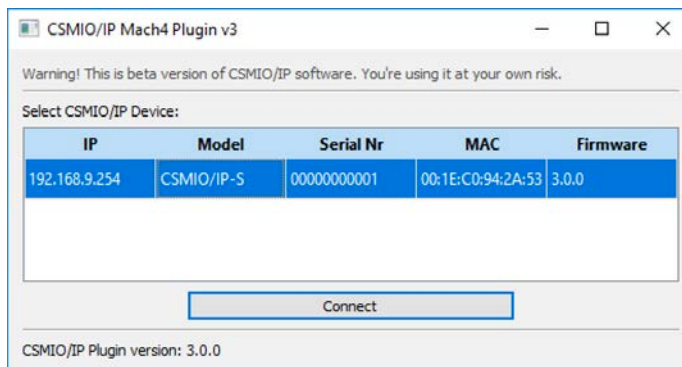5. Close the configuration window and restart Mach4.

Basic configuration

1. Starting the Mach4 again you will see the window of motion controller selection. This time you will see „CSMIO/IP-S Ethernet Motion Controller" which you should select.

2. In the v3 version there are no separate plugins for each CSMIO/IP controller type and that is why during the first configuration of a profile in Mach4 you should select what CSMIO/IP you're going to use.
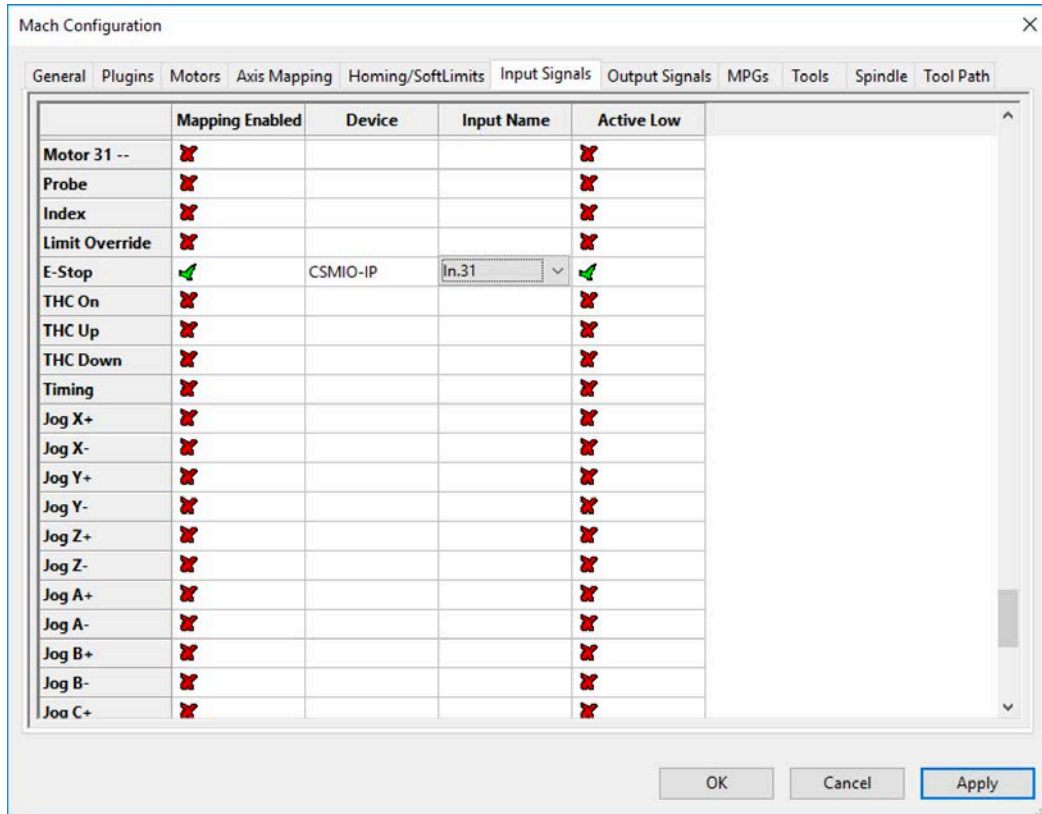

3. Next you will see CSMIO/IP controller window which the software will connect with. If the list is empty verify if CSMIO/IP controller is updated to the v3 version and if it has power supply and Ethernet cable connected. Restart Mach4 and try the connection again.
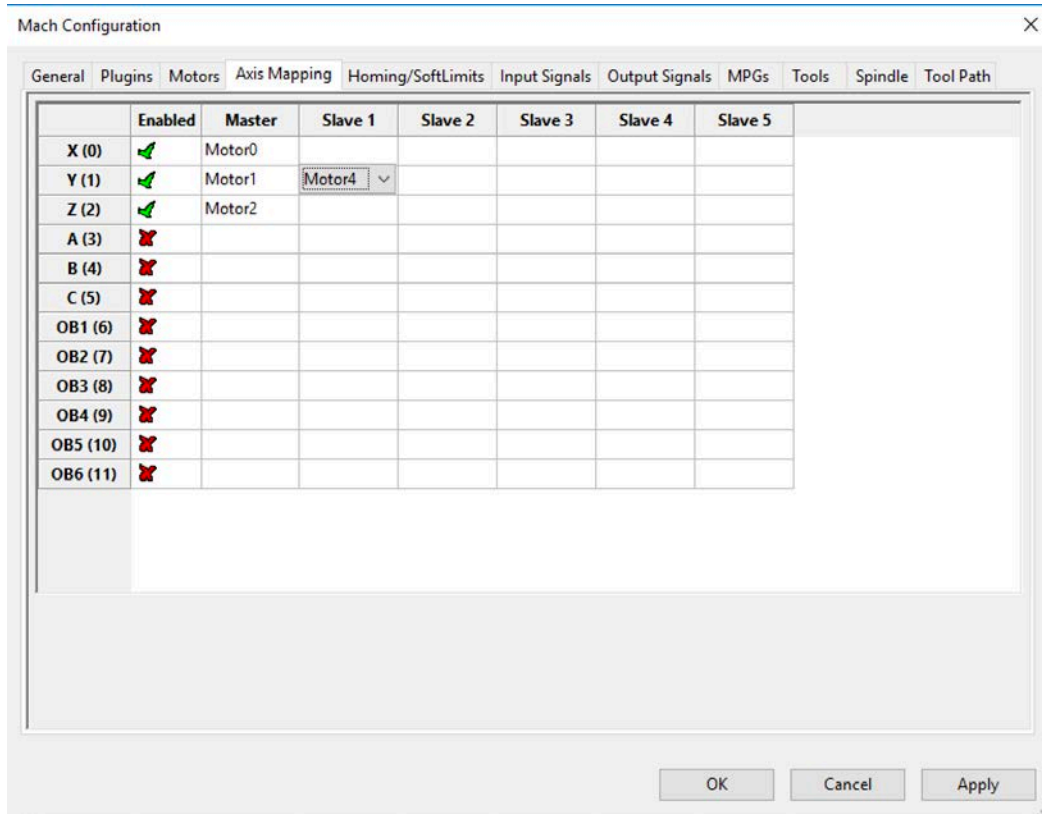

4. Mach4 is set and connected with the CSMIO/IP motion controller. Now you can set the basic parameters of a machine.
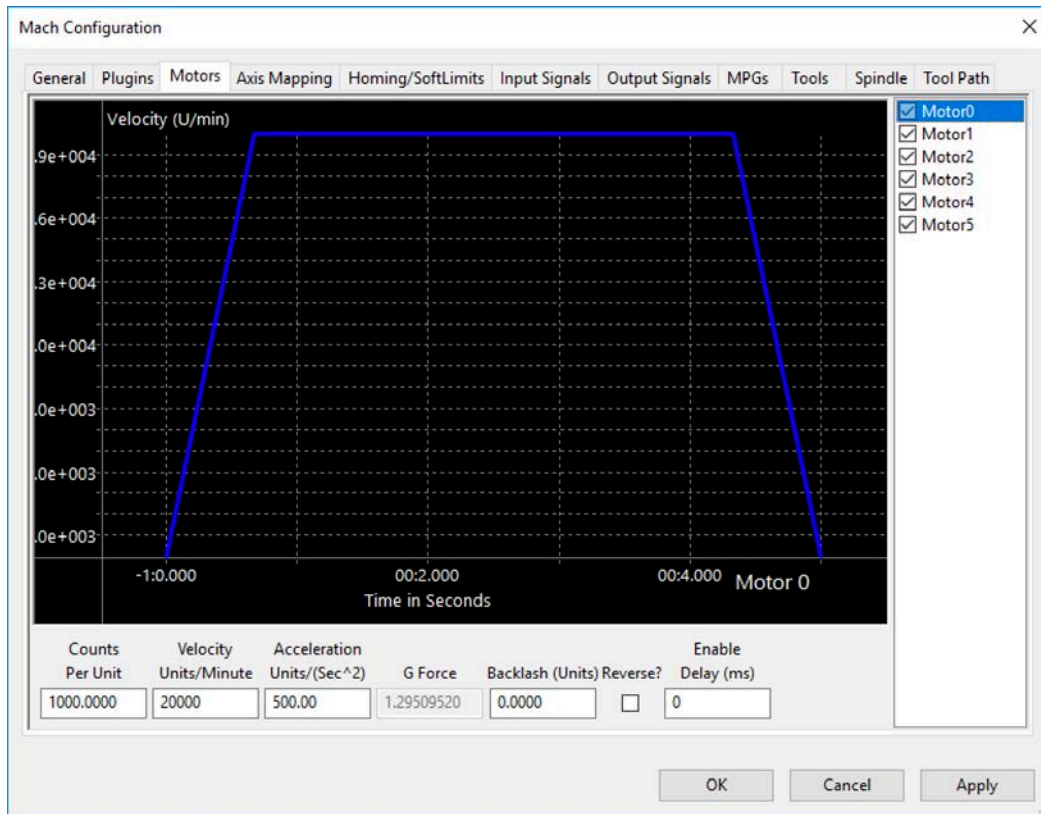
5. „E-STOP" emergency stop configuration.
   CSMIO/IP controller will not let you to go into a ready mode if the „E-STOP" wasn't
   configured. You should select „Configure/Mach" from the menu and „Input Signals"
   tab. Find „E-STOP" in the list and assign an input of the controller where the
   emergency stop button is connected.

6. The minimum of configuration are also settings of axis motion control signals. CSMIO/IP-S has six STEP/DIR channels, which in Mach4 are assigned to "Motors" 0 – 5. You should assign the correct outputs to the axes according to configuration of your machine. Bellow you can see a sample configuration of a 3axis machine with two motors on Y axis.

7. Set parameters of dynamics and motion scaling for your motors („Motors" tab). The parameters must be in accordance with your machine and drives. Here is an example:

a. „Counts Per Unit" is motor steps number per 1 unit (mm or inch - according to the „General" tab configuration).
b. „Velocity" is max. axis velocity shown in units per minute.
c. „Acceleration" is max. axis acceleration in units per s^2.
d. „Backlash" is a parameter for backlash compensation function. The compensation value should be as lower possible. If the machine backlash is too large you should to review mechanics of the machine and eliminate the clearances.
e. „Reverse" – motor revs direction change.
f. „Enable Delay" – time of delay (ms)
8. Set working area and other I/O signals and a spindle according to you machine and installation.
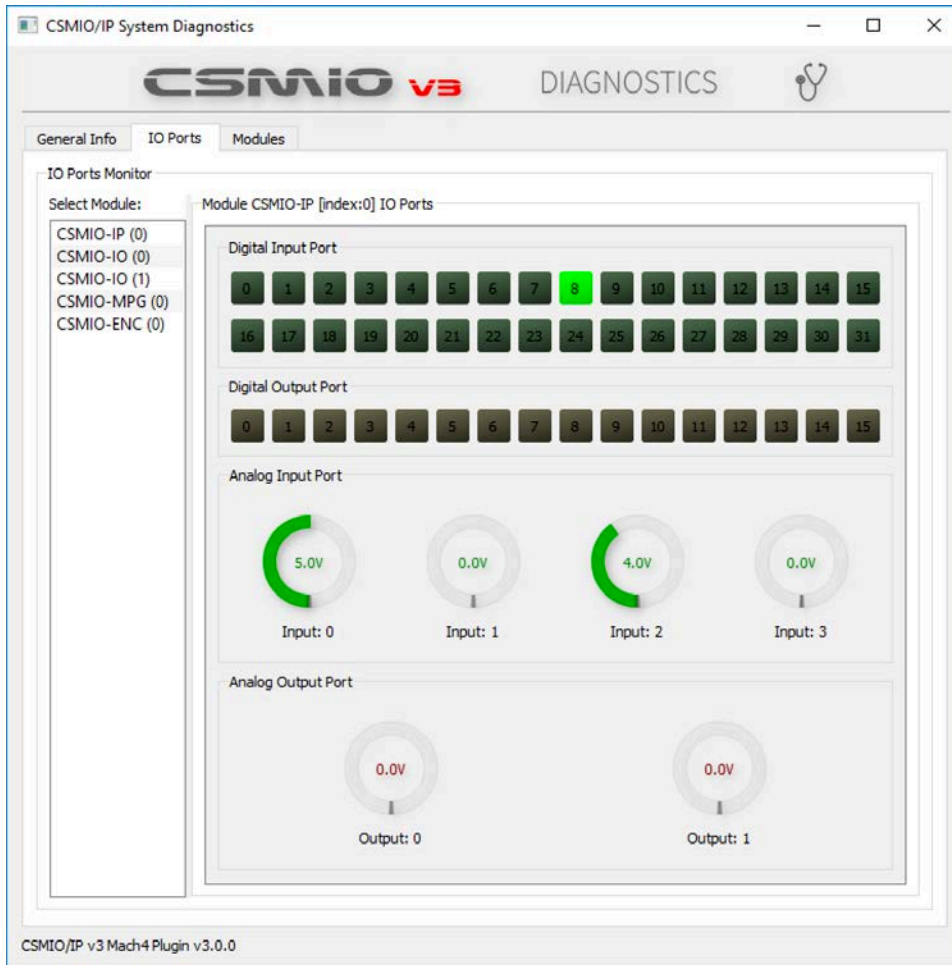
CSMIO/IP plugin configuration

Configuration of function and special I/O for a CSMIO/IP you should do in the plugin configuration window („Configure/Plugins/CSMIO/IP" menu). Description will be available with next firmware versions.

Diagnostics

The CSMIO/IP plugin also have a diagnostic window to see the most important parameters and I/O states. The window can be opened through the „Diagnostic/CSMIO/IP – CS-Lab" menu.

Automatic Updates

Along with possible improvements new beta versions of CSMIOv3 will be released. CSMIOv3 installer utility has an updates detection function. To verify if new updated are available you should run the „CSMIOMaintenance" and select „ Update Components". A shortcut to the CSMIOMaintenance utility was automatically created on your desktop during CSMIO/IP v3 installation.