1) Prérequis:

-ubuntu 16.04

-ros kinetic

2) Installation:

1/copy the file libTrioPC-x86_64.so from:

/tal brabo documentation/tal_arm_doc/trio_motion_arm/include

to this two folders:

/usr/local/lib

/usr/lib

2/copy trio_motion_arm folder from:

tal brabo documentation/tal_arm_doc/

to /home/catkin_ws/src

3/open terminal and run:

cd catkin_ws

source devel/setup.bash

catkin_make

3) Programs explanation:

For further ActiveX cammands informations please refer to ActiveX manual.

1/arm control.cpp:

This program is used to control the arm as followed:

axis 1, 2, 3, 4, 5 are defined respectively as axis 8, 9, 10, 11, 13.

two commands were mainly used:

RemoteExecuteCommand(“BASE(1,x)”)

RemoteExecuteCommand(“MOVE(1,y)”)

x:the axis number

y:the desired distance

2/arm position.cpp:

This program is used to display the joints positions.

Two commands were mainly used:

RemoteExecuteCommand(“BASE(x)”)

RemoteGetVariable(“MPOS”,&i)

x:the axis number

MPOS:the measured position of the x axis

3/gripper control.cpp:

This program is used to control the gripper as followed:

RemoteExecuteCommand(“BASE(5)”)
RemoteExecuteCommand(“MOVE(y)”)
RemoteExecuteCommand(“BASE(6)”)
RemoteExecuteCommand(“MOVE(y)”)
y:the desired distance
4/gripper position.cpp:
This program is used to display the two gripper parts positions:
RemoteExecuteCommand(“BASE(5)”)
RemoteGetVariable(“MPOS”,&i)
RemoteExecuteCommand(“BASE(6)”)
RemoteGetVariable(“MPOS”,&i)
MPOS:the measured position of the x axis

Arm control steps:
1/open terminal:
2/launch the following commands:
cd catkin_ws
source devel/setup.bash

4) Arm control:

4.1) ROS Control:

0) press the green button (robot control on) several times to put the servo on.
==>**to control the arm**,run on the terminal: rosrun trio_motion_arm talarm_control
==>**to receive the position of the arm**,run on the terminal: rosrun trio_motion_arm talarm_position
==>**to control the gripper**,run on the terminal: rosrun trio_motion_arm talgripper_control
==>**to receive the position of the gripper**,run on the terminal: rosrun trio_motion_arm talgripper_position

4.2) Teach pendant control:

To access to the teach pendant with full functionality, you should choose:
Admin login
Password: tal123

4.3) Communication avec Linux:

The IP address of the controller is 192.168.0.250

You should add a new connection with the configuration below:

IPv4 Settings

Method: Manual

Addresses

Address: 192.168.0.251

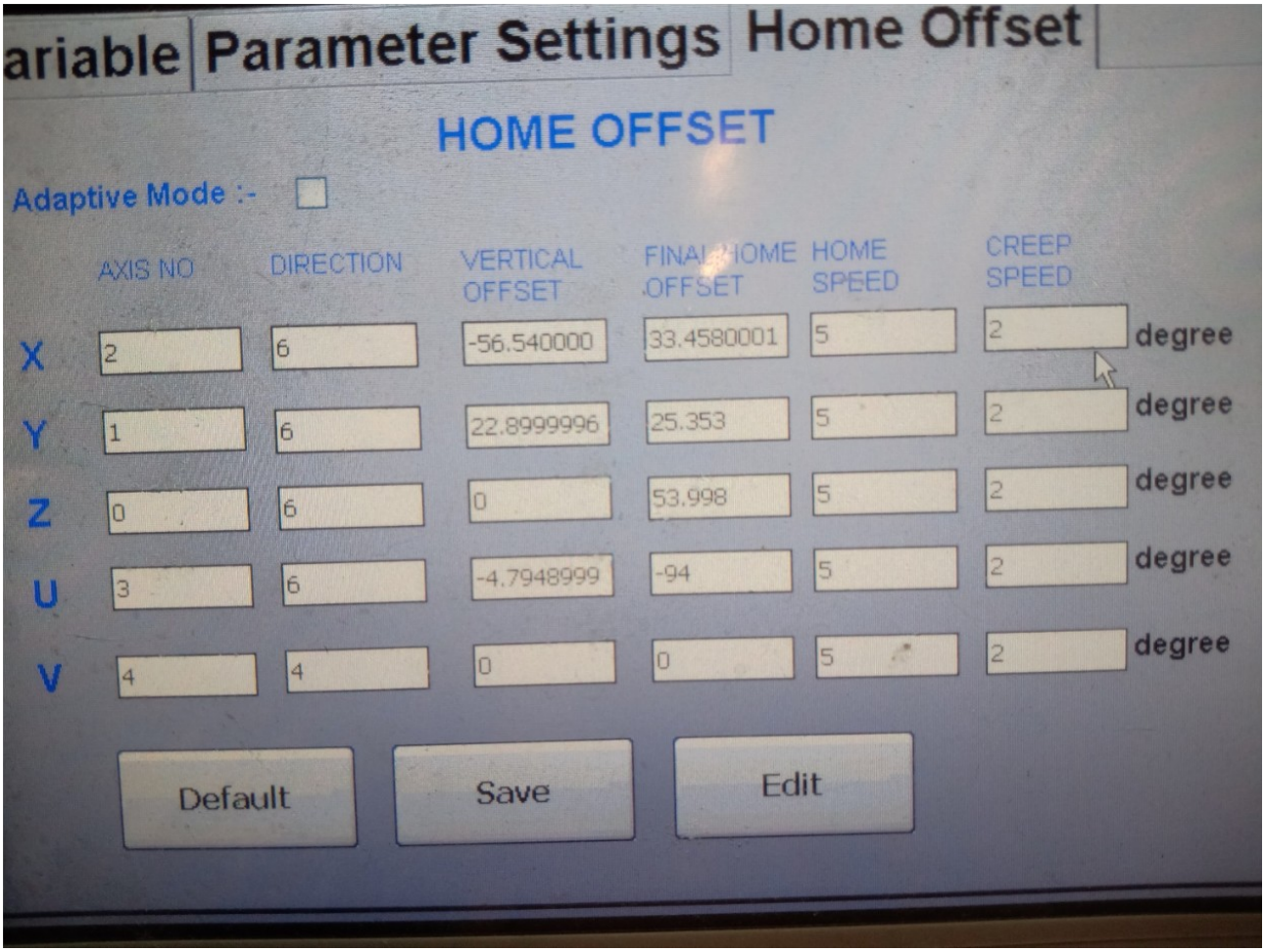
Netmask: 24

Gateway: 192.168.0.1

5) Maintenance:

5.1) homing problem:

Please access to home offset with teach pendant then modify values following the screenshot:



5.2) firmware Problem:

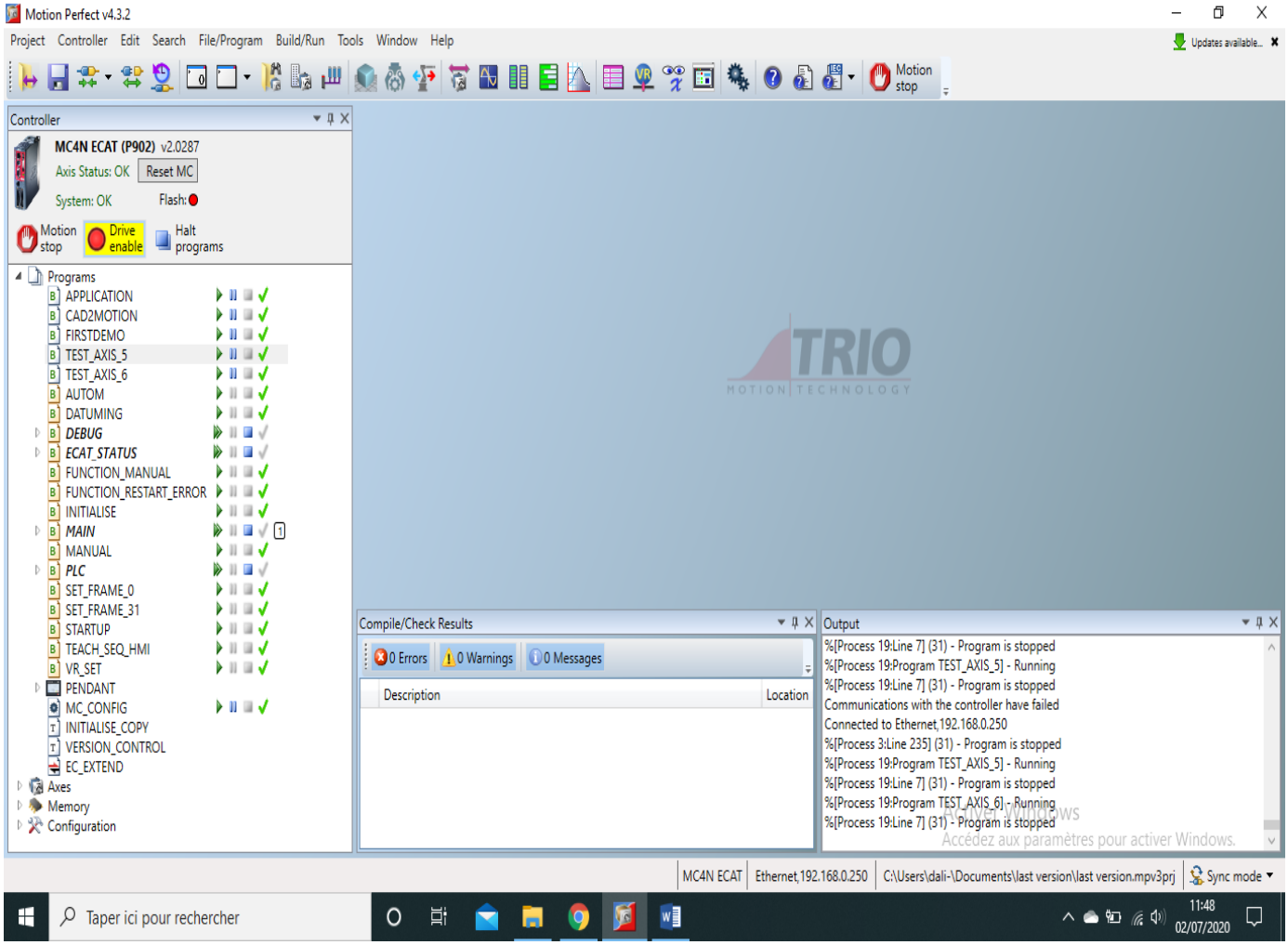
If you have any trouble with firmware, load the firmware in last version folder to the controller.

The password is: brabo

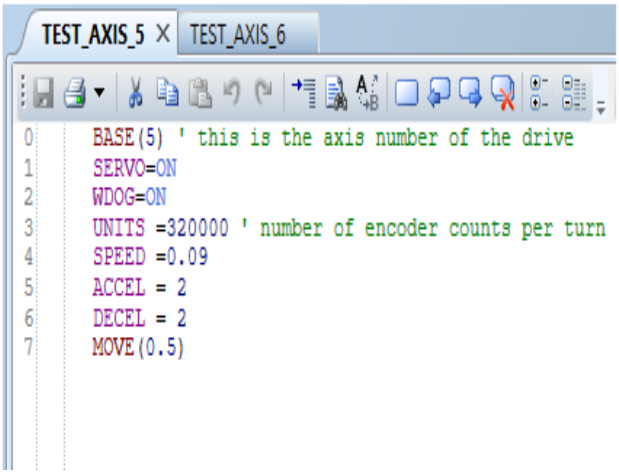
5.3) Motion Perfect problems:

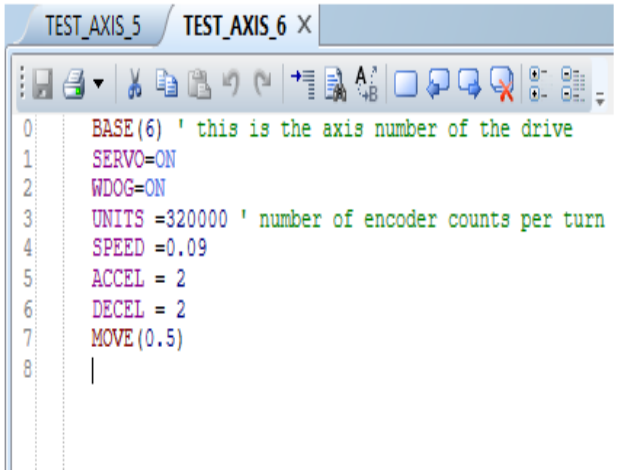
This is the menu displayed when Motion Perfect is opened and the robot is connected to the laptop via an Ethernet cable.

Note: Motion Perfect could not be installed with Linux, it works only with Windows.

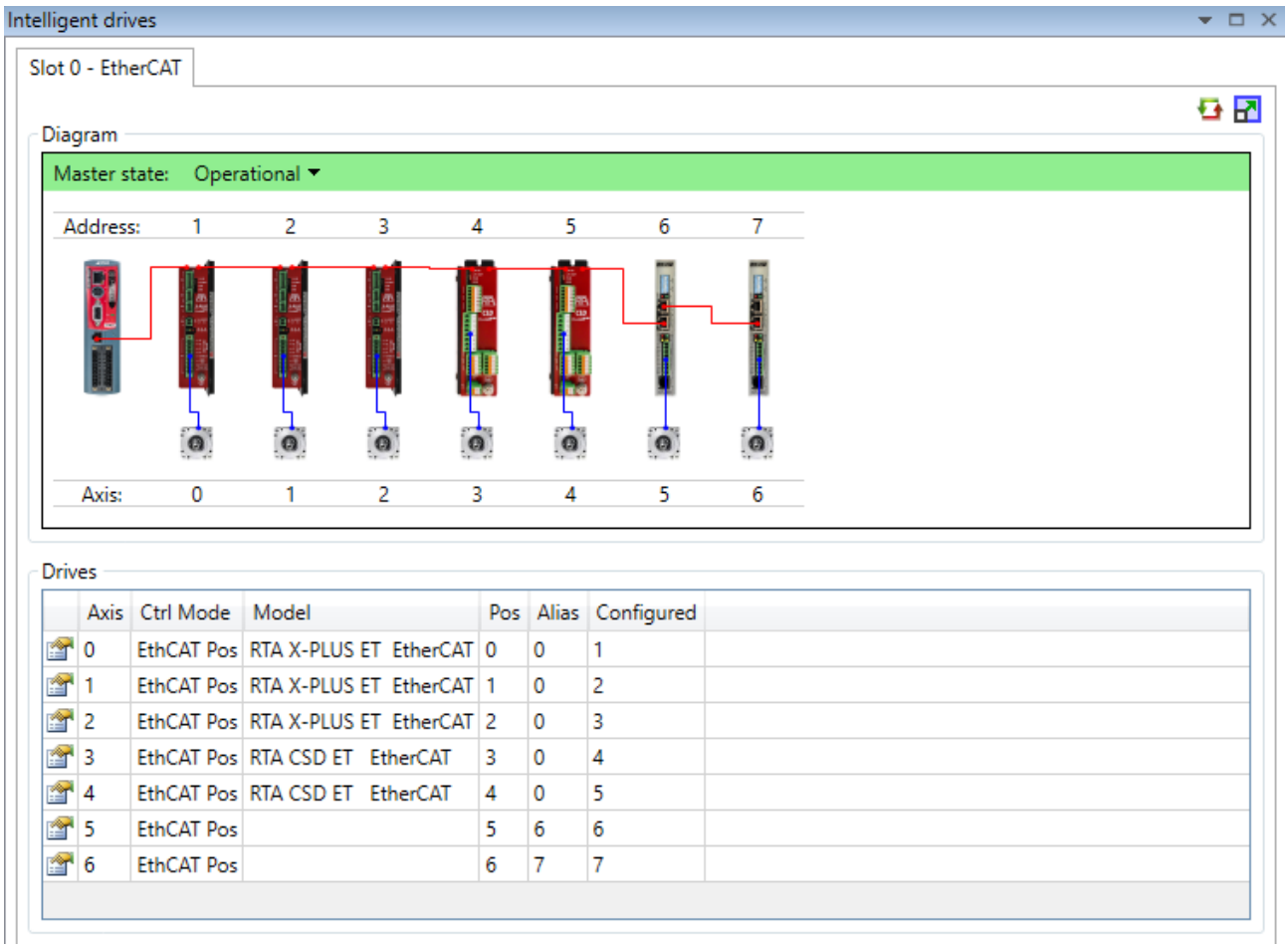


Test axis 5 and test axis 6 are used to control the two parts of the gripper and should be run before controlling the gripper with ROS.

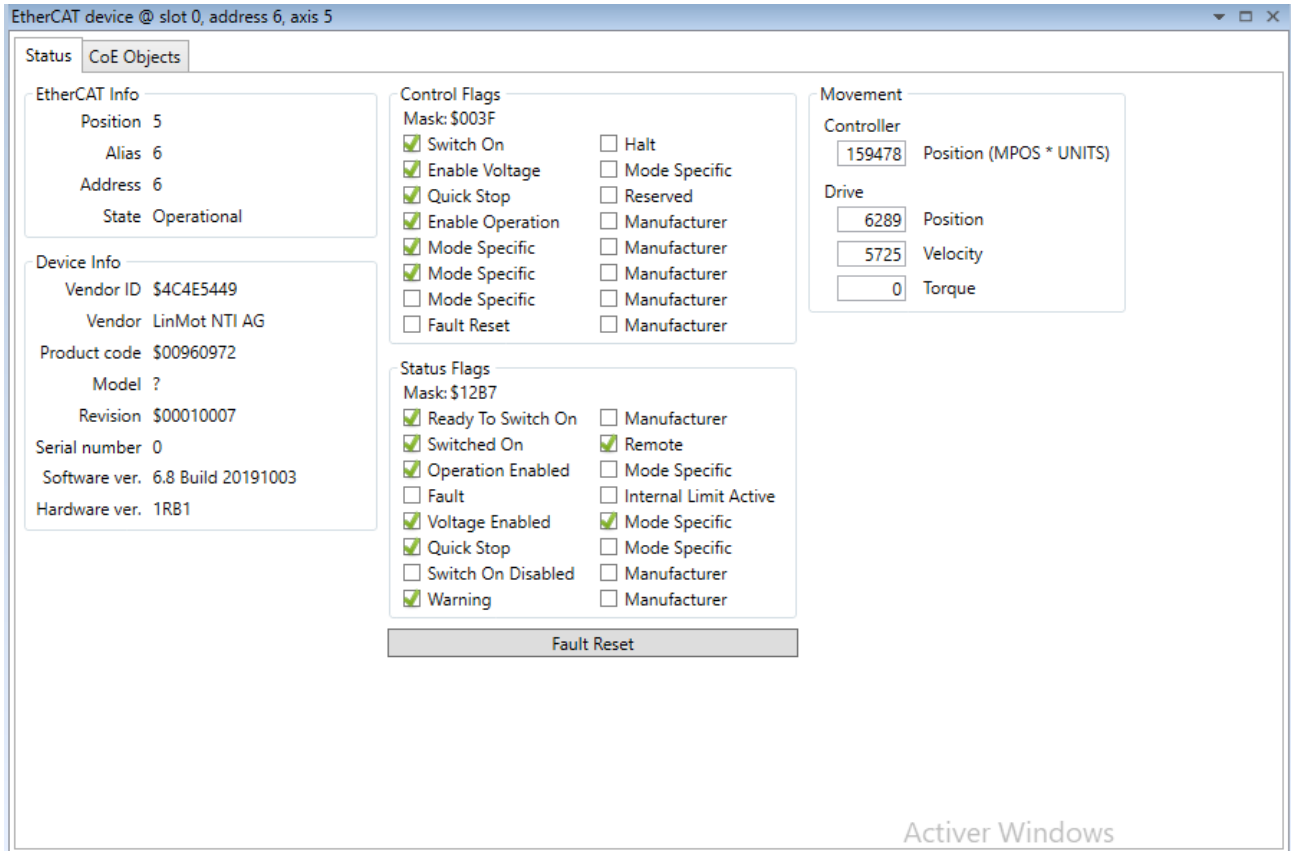




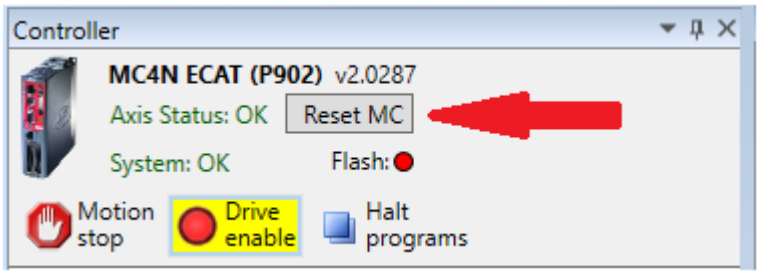
Axis are connected to controller MC4N via Ethercat architecture.



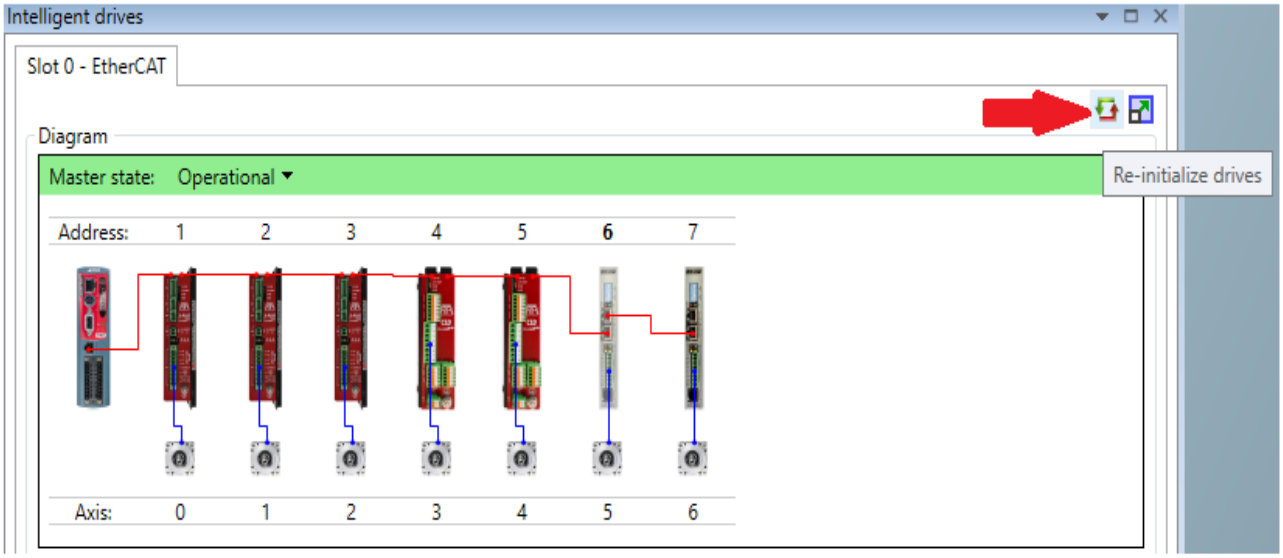
Parameters of every part of the gripper are displayed as below and in case of error, we can do a Fault Reset.



In case of no responding of the controller, press RESET MC as below:



In case of communication problem (Ethercat problem), press Re-initialize drives in Intelligent Drives Configuration:



5.4) Servo on problems:

After booting the robot and pressing the green button (robot control on) to put the servo on, if the servo won’t turn on please disconnect the electricity cable, wait for 3 min and reconnect this cable.