

Kawasaki Robotics Astorino robot - quick start in 5 steps: safety, equipment and tools, power supply, software, axis zeroing

From this article you will learn:

- how to take care of safety when starting up and operating the Kawasaki Robotics Astorino robot,
- what equipment you will need to operate the robot,
- how to connect the power supply,
- how to install the Kawasaki Robotics Astorino software,
- how to perform zeroing.

To start the Kawasaki Robotics Astorino educational robot, which is designed for learning industrial robotics, you need to learn the safety rules for working with the robot, prepare the appropriate equipment and tools, connect the power supply, install the software on your laptop, and finally perform the axis zeroing procedure. Find out how to get started safely with Kawasaki Robotics Astorino.

The Kawasaki Robotics Astorino educational robot is designed like 6-axis industrial robots, programmed in the same way, and requires certain safety rules - well-known in industry - to be applied before each time the robot is started and after it is stopped.



Kawasaki Robotics Astorino educational robot. Source: ASTOR

Kawasaki Robotics Astorino complies with the following directives (for R&D purposes): Machine Directive 2006/42/EC, Low Voltage Directive 2006/95/EC, EMC Directive 2004/108/EC and norms (for

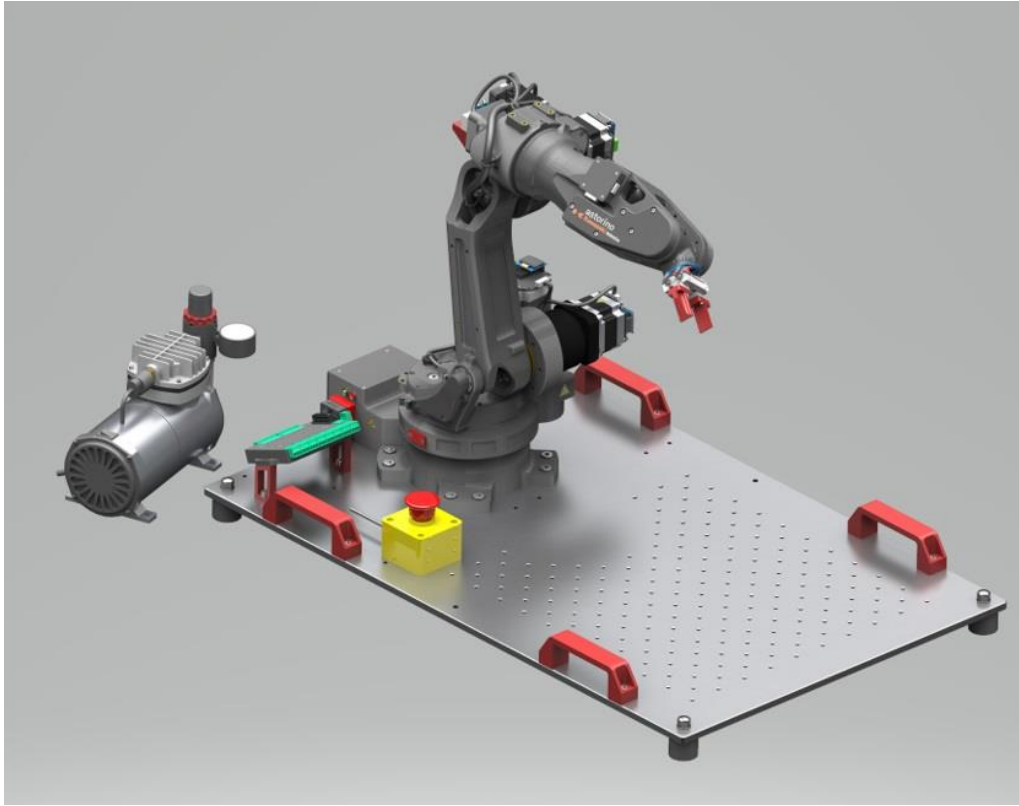
all purposes): PN-EN ISO 12100:2012, PN-EN 61000-6-2:2008, PN-EN ISO 10218-1:2011, PN-EN ISO 10218-2:2011. Kawasaki Robotics Astorino used for research purposes is not subject to the Machinery Directive.

What are the safety rules when starting up and operating the Kawasaki Robotics Astorino robot?

Rule No. 1: Always take care of the personal safety of users and others when operating the robot arm or starting the robot cell.

Before each start-up, read the instructions and inform others who will be around the robot what the rules are. In the basic version, the robot is not equipped with components related to the safety of the robotic workstation (not required). Depending on the application, it may be necessary to include them.

The basic version of the robot and the educational workstation are equipped with an E-STOP emergency button (in the picture yellow with a red button), the operation of which can be assigned to a specific person (e.g. a teacher). E-STOP can also be integrated into the safety system of the existing workstation.



Educational workstation with Kawasaki Robotics Astorino robot equipped with, among other things, a yellow E-STOP emergency button. Source: ASTOR

Rule No. 2: Always perform a risk assessment related to the use of additional equipment and add further safety elements according to the result.

The Kawasaki Robotics Astorino robotic arm, when operating with additional equipment (vision system, cube feeder with optical sensor, track, gripper with application, 24 V I/O module with power supply unit)

in applications similar to industrial ones, must be subject to a risk assessment in each case and must comply with the applicable regulations to ensure personal safety.



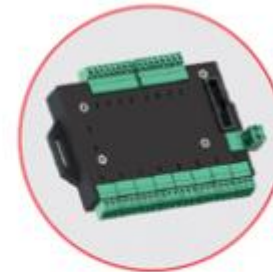
Chwytnik



System wizyjny



Tor jezdny



Moduł I/O



Podajnik kostek

Additional equipment for the Kawasaki Robotics Astorino educational robot. Source: ASTOR

Depending on the result of the assessment, safety components must be added. These are usually safety relays and door switches. This task is the responsibility of the system commissioning engineer and, in an educational institution, of the teacher. Educational applications generally do not require additional safety elements.

When operating a robot equipped with a pneumatic gripper or cube feeder, operate with an operating pressure of no more than 4 bar to limit the power of the actuators.

Rule No. 3: Work on the robot's electronics should only be carried out by qualified personnel. Check the latest electrostatic discharge (ESD) guidelines.

The robot controller contains a 24 V power supply unit, which itself requires mains power (100/240 V). Check the label on the power supply unit. Only qualified personnel may connect the power supply unit to the mains and start it up.

Always disconnect the robot from the mains power (100/240 V) when working on the robot base (driver) or any electronics connected to the robot controller.

Rule No. 4: Do not install or remove any modules or plug/disconnecting connectors (e.g. emergency stop button, DIO modules, motor connectors) while the power is on. Do not hot plug the robot. This may cause permanent damage to the motor modules.

The robot arm must be placed on a stable surface and screwed or otherwise secured.

Rule No. 5: Operate and store the robot only in a dry and clean environment. We recommend that you start the Kawasaki Robotics Astorino robot only at room temperature (15° to 32°C).



Learning with Kawasaki Robotics Astorino robots in the robotics laboratory (room temperature). Source: ASTOR

What equipment and tools will you need to start up your Kawasaki Robotics Astorino robot?

Make sure you have everything from this list:

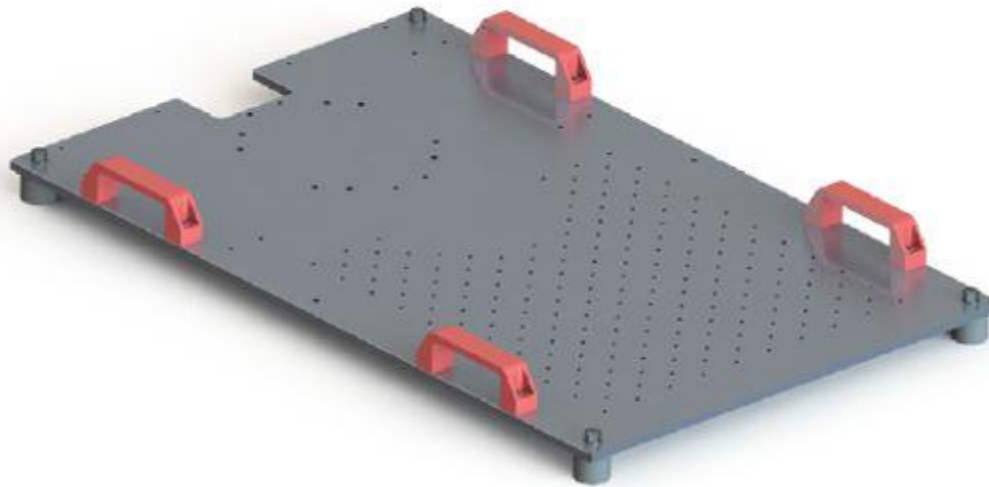
- Kawasaki Robotics Astorino educational robot,
- laptop with Windows (Windows 7 or higher) to install the software,

- software installation file (included, on a memory stick),
- USB cable (included) to connect the robot to the laptop,
- mounting plate and allen keys to screw the robot to the ground,
- safety instructions,
- E-STOP emergency button (included),
- 24V power supply unit (included).

Unpacking and screwing the Kawasaki Robotics Astorino robot to the mounting plate

The robot is delivered in a box, with special foams that ensure safe transportation. After taking it out of the box, place the robot on a hard surface.

Mount the robot on a suitable base, table, metal (aluminium) plate. Dimensions recommended by the manufacturer to mount the robot and additional accessories are 800 × 500 mm, 10 mm thick. The plate supplied by the manufacturer includes, in addition to the mounting holes for the robot, 180 holes allowing any additional equipment to be mounted.



Mounting plate for Kawasaki Robotics Astorino robot and equipment for applications such as pick & place. Source: ASTOR

A robot without a gripper or other additional equipment will perform basic operations independently, such as zeroing and teaching movements close to the robot base.

For safety reasons, it is recommended to screw the robot base on before switching it on.

Next, screw the power connector and E-STOP button onto the robot.



Turning on the power and installing drivers

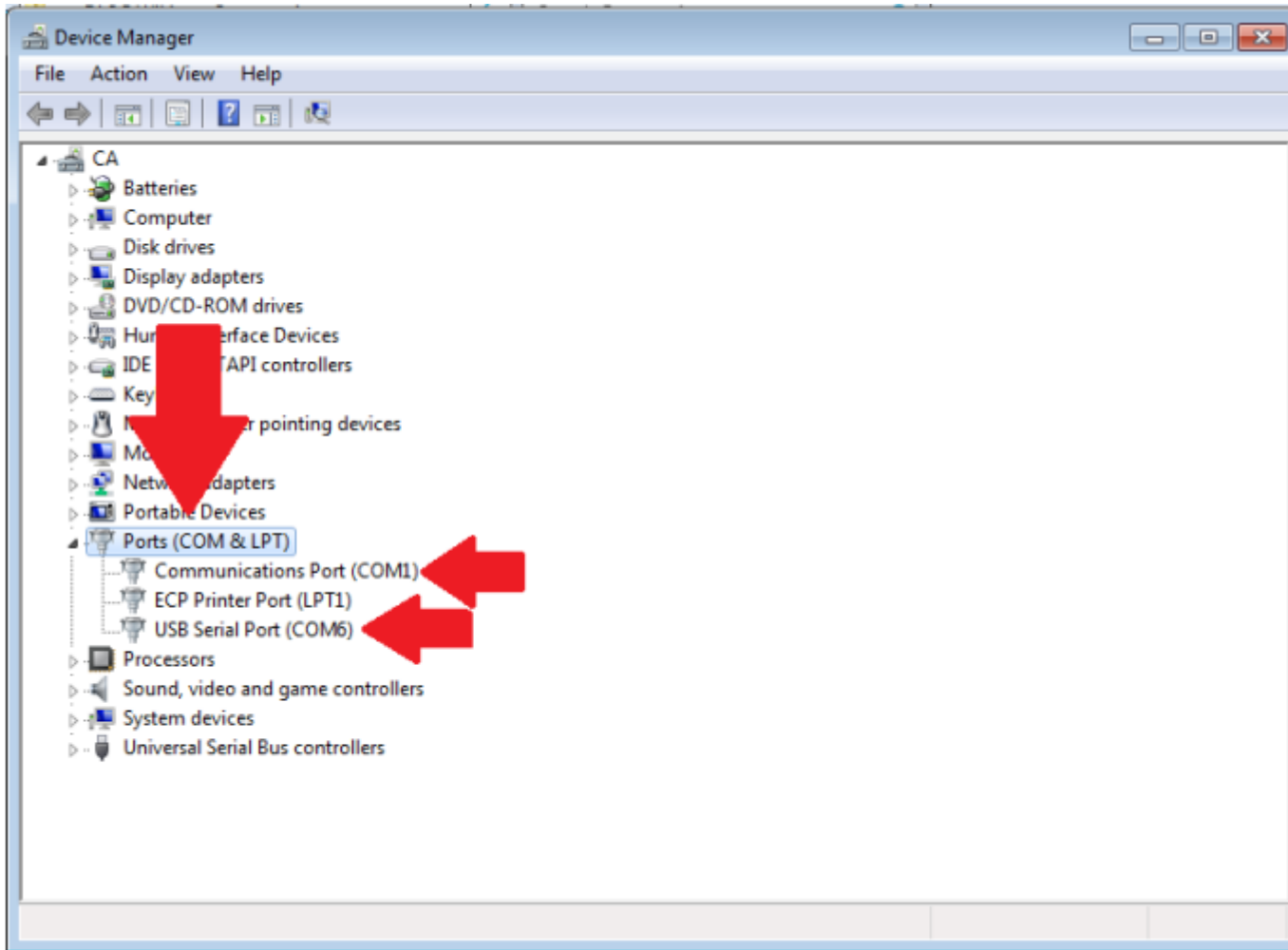
Turn the power on:



Connect the USB cable to the USB port on the robot base, then connect the cable to your computer and wait for Windows to install the drivers.

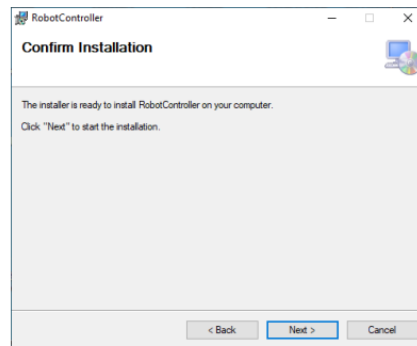
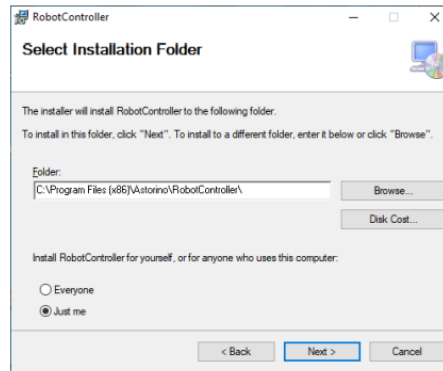
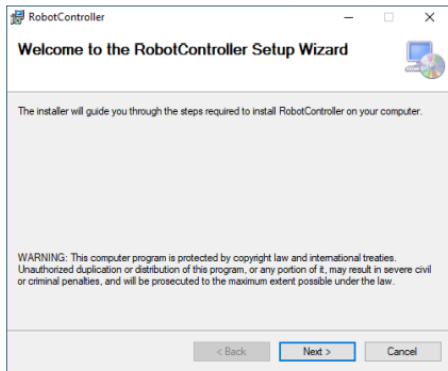


Prepare your laptop with Windows, connect the USB cable to the robot and the laptop. The robot should display as a COMx port.

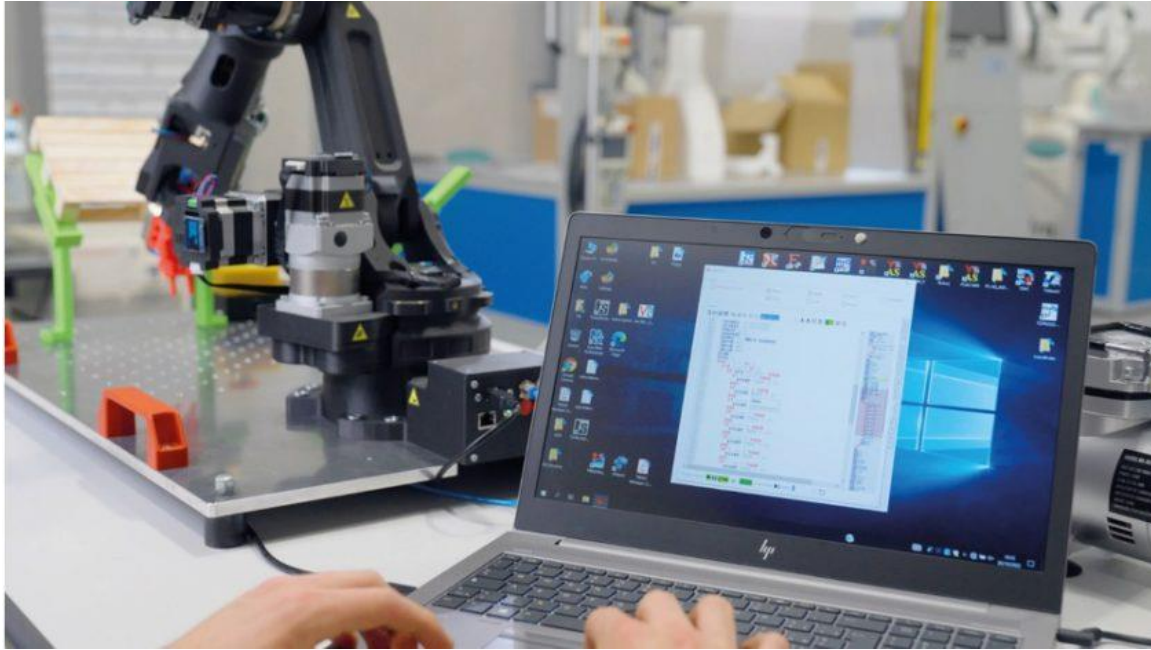


Installing and running the Kawasaki Robotics Astorino robot software

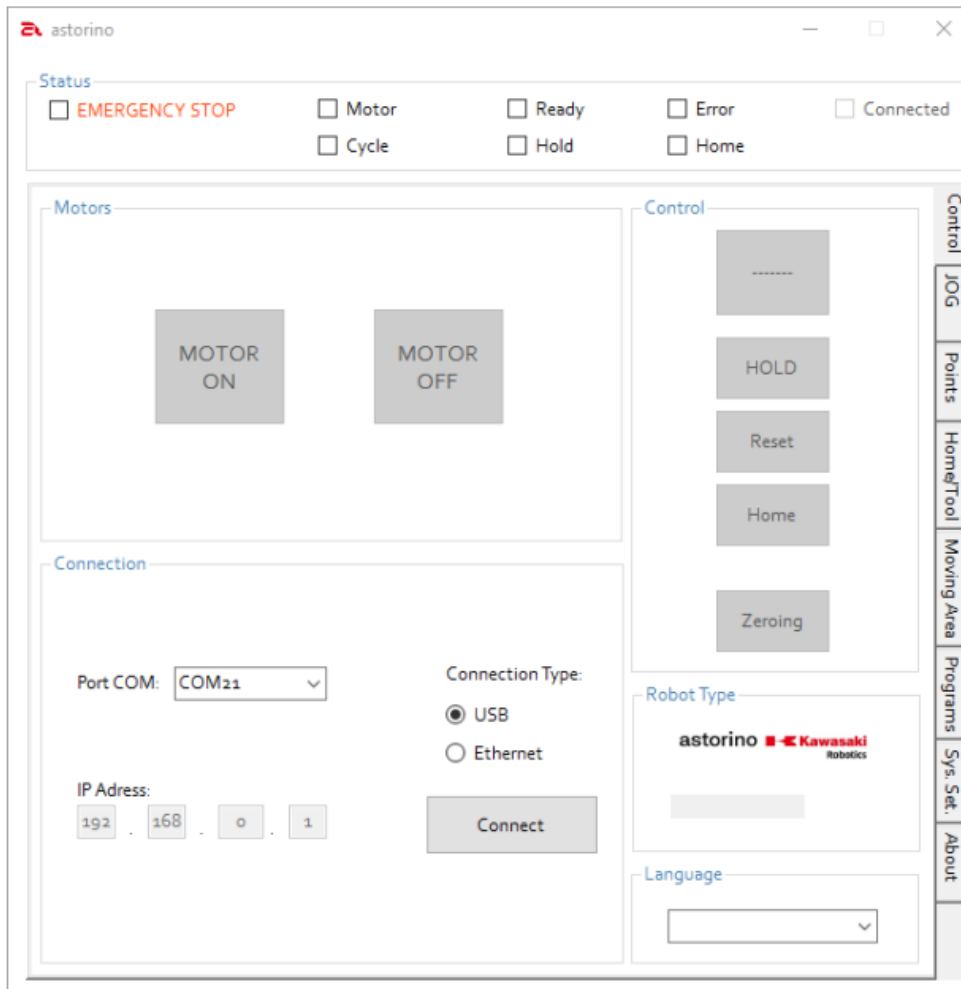
Install the Kawasaki Robotics Astorino software:



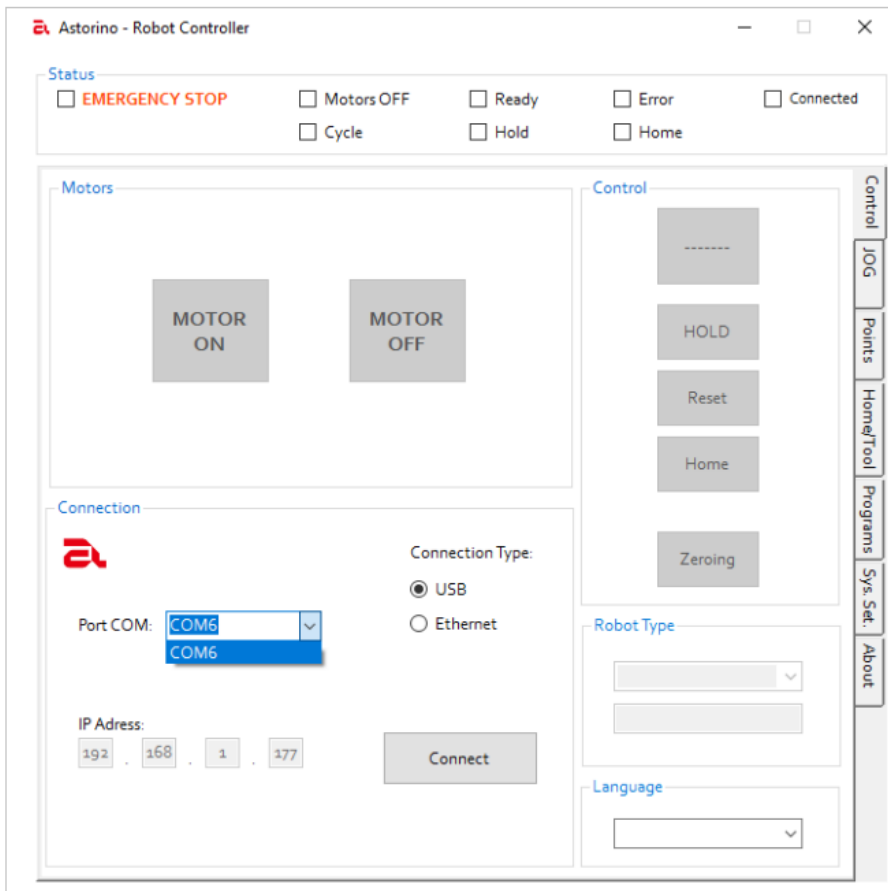
Run the Kawasaki Robotics Astorino software:



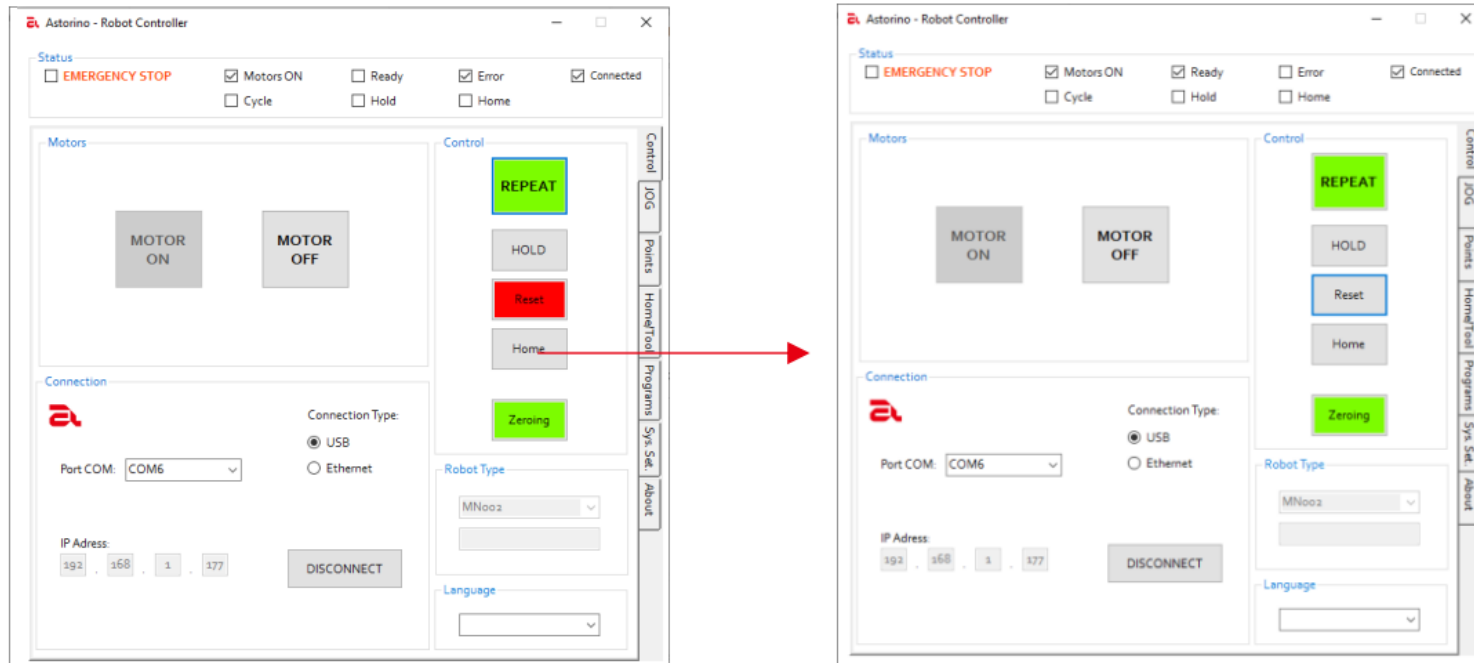
Kawasaki Robotics Astorino robot software on a laptop with Windows (Windows 7 or higher). Source: ASTOR



The COM port to which the robot is connected should automatically appear in the drop-down list.



If the error tick box (Error) is checked, press RESET:

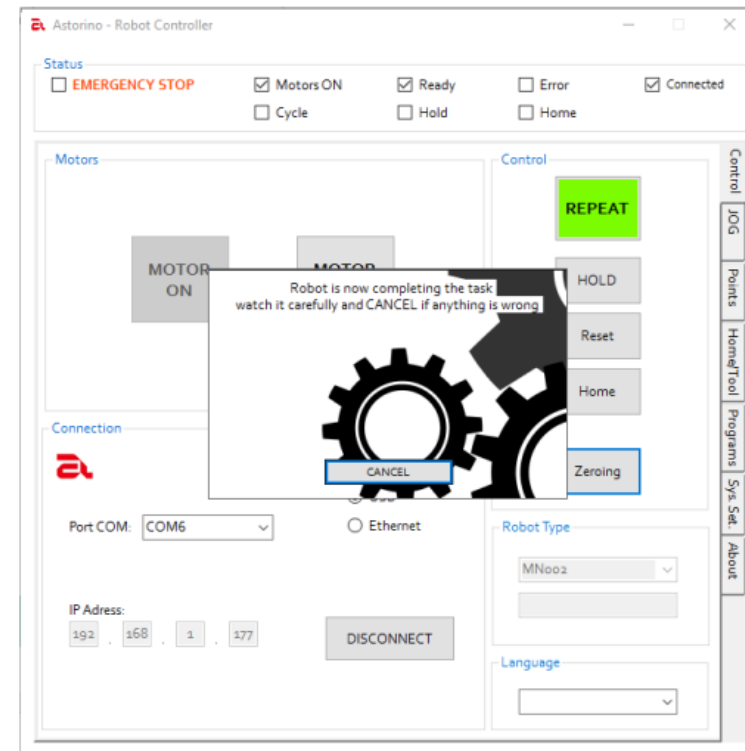
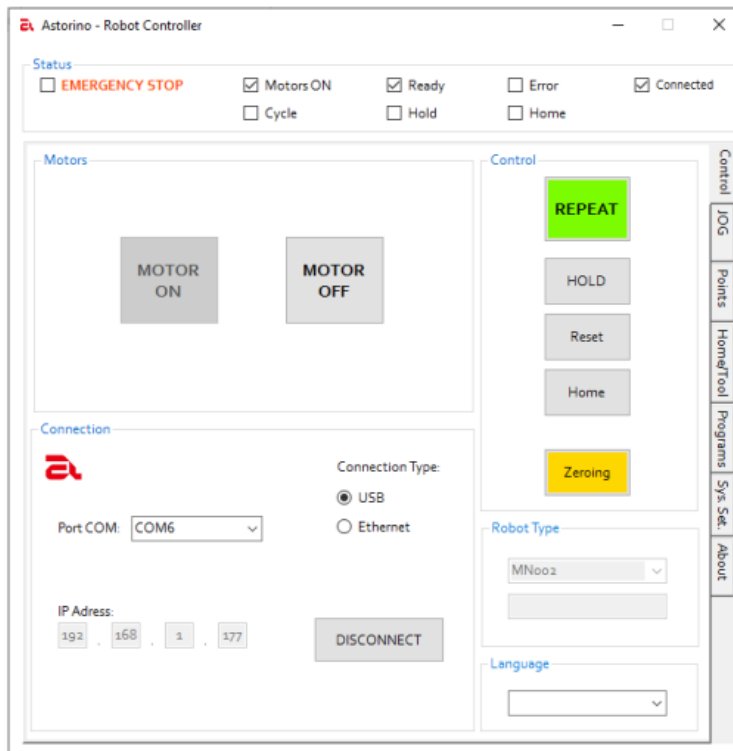


Switch on the motors, click RESET again. The Ready status should be checked.

Zeroing the Kawasaki Robotics Astorino robot axes

Click the flashing zeroing button. The zeroing procedure will start.

Note: make sure there is no risk of the collision between the robot and the surrounding.



After zeroing is complete, the Kawasaki Robotics Astorino robot will position itself at 0 degrees on each axis. It is now ready for programming.



The Kawasaki Robotics Astorino robot after zeroing the axes, ready for programming. Source: ASTOR

Learn more about the Kawasaki Robotics Astorino software in the next article.