

Astorino

ProStation Manual



Preface

This manual describes the handling of the 6-axis robot "astorino" ProStation.

The ASTORINO is a learning robot specially developed for educational institutions. Pupils and students can use the ASTORINO to learn robot-assisted automation of industrial processes in practice.

ASTORINO ProStation Manual

1. The "astorino" software included with the ASTORINO is licensed for use with this robot only and may not be used, copied or distributed in any other environment.
2. Kawasaki shall not be liable for any accidents, damages, and/or problems caused by improper use of the ASTORINO robot.
3. Kawasaki reserves the right to change, revise, or update this manual without prior notice.
4. This manual may not be reprinted or copied in whole or in part without prior written permission from Kawasaki.
5. Keep this manual in a safe place and within easy reach so that it can be used at any time. If the manual is lost or seriously damaged, contact Kawasaki.

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Symbols

Items that require special attention in this manual are marked with the following symbols.

Ensure proper operation of the robot and prevent injury or property damage by following the safety instructions in the boxes with these symbols.



WARNING

Failure to observe the specified contents could possibly result in injury or, in the worst case, death.

[ATTENTION]

Identifies precautions regarding robot specifications, handling, teaching, operation, and maintenance.



WARNING

- 1. The accuracy and effectiveness of the diagrams, procedures and explanations in this manual cannot be confirmed with absolute certainty. Should any unexplained problems occur, contact Kawasaki Robotics GmbH at the above address.**
- 2. To ensure that all work is performed safely, read and understand this manual. In addition, refer to all applicable laws, regulations, and related materials, as well as the safety statements described in each chapter. Prepare appropriate safety measures and procedures for actual work.**

Paraphrases

The following formatting rules are used in this manual:

- For a particular keystroke, the respective key is enclosed in angle brackets, e.g. <F1> or <Enter>.
- For the button of a dialog box or the toolbar, the button name is enclosed in square brackets, e.g. [Ok] or [Reset].
- Selectable fields are marked with a square box . If selected a check mark is shown inside the symbol .

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1 Nomenclature in this manual

The author of the manual tries to use generally valid terminology while achieving the greatest possible logical sense. Unfortunately, it must be noted that the terminology is reversed depending on the point of view when considering one and the same topic. Also it is to be stated that in the course of the computer and software history terminologies developed in different way. One will find therefore in a modern manual no terminologies, which always satisfy 100% each expert opinion.

2 Overview of ASTORINO

The ASTORINO is a 6-axis learning robot developed specifically for educational institutions such as schools and universities. The robot design is based to be 3D printed with PET-G filament. Damaged parts can be reproduced by the user using a compatible 3D printer.

Programming and control of the robot is done by the "astorino" software.

The latest software version and 3D files can be downloaded from the KAWASAKI ROBOTICS FTP server:

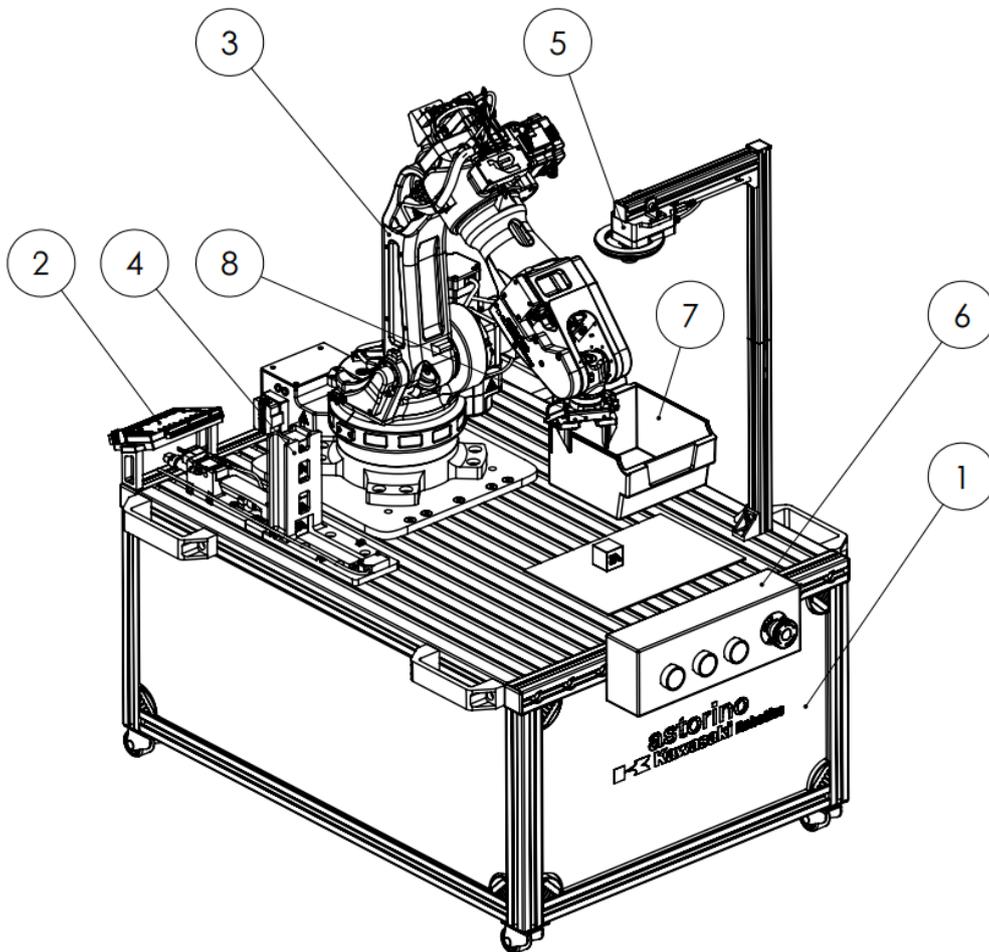
<https://ftp.kawasakirobot.de/Software/Astorino/>

Just like Kawasaki's industrial Robots the ASTORINO is programmed using AS language. Providing transferable programming skills from the classroom to real industrial applications.

3 Technical specifications

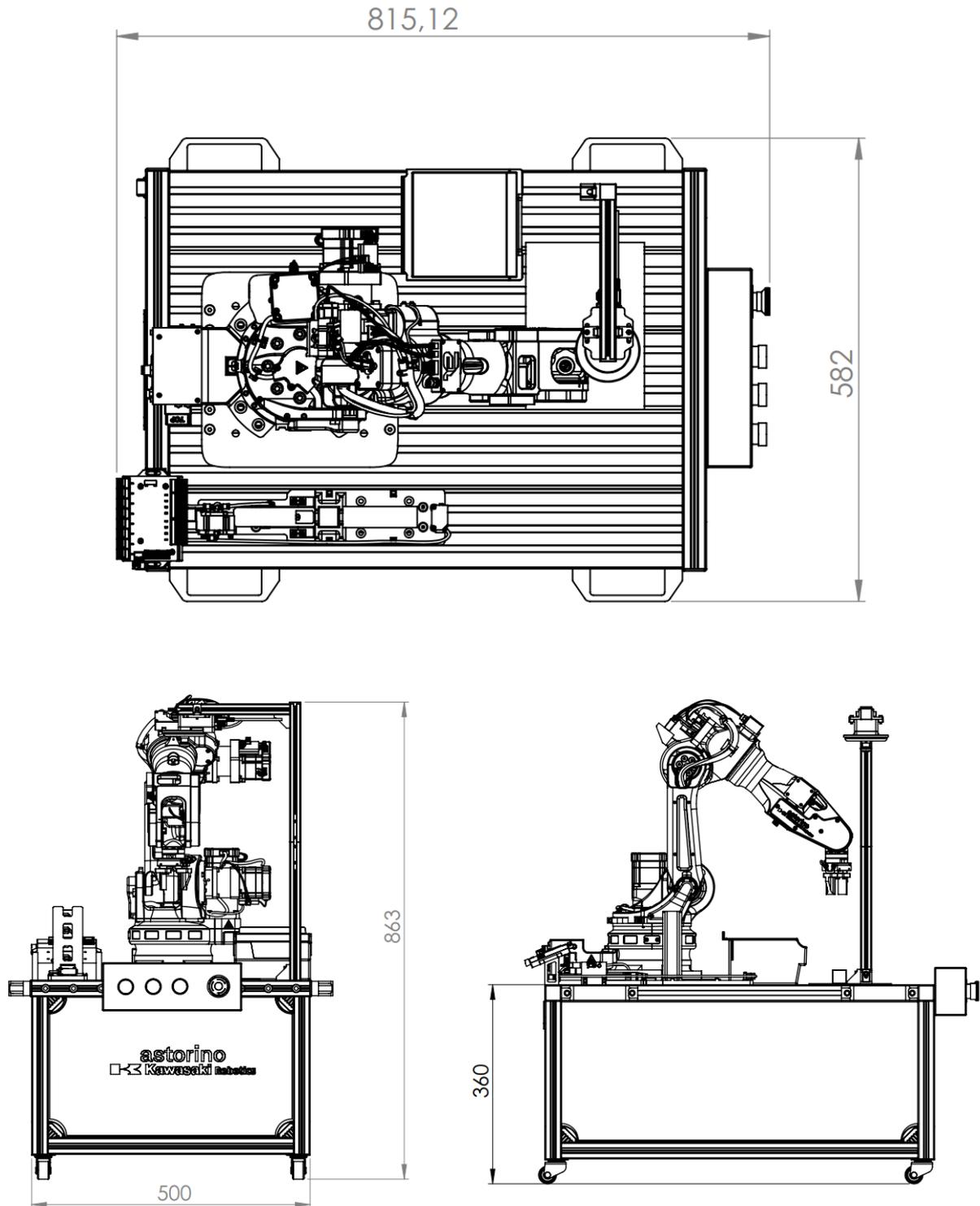
| Characteristics | | ProStation |
|--------------------------|-------------|------------------------|
| Working environment | Temperature | 0-40°C |
| | Humidity | 35-80% |
| Robot | | astorino |
| Max. current consumption | | 5 A |
| Power supply | | 110-230 V AC, 50-60 Hz |
| Weight | | 36 kg |
| Dimensions | | 815x500x863 |

4 ProStation package contents



| | |
|---|---|
| 1 | Table based on 3030 alu profile (air compressor inside) |
| 2 | 24V IO module |
| 3 | Astorino robot |
| 4 | Cubes feeder |
| 5 | Vision system |
| 6 | Buttons cassette |
| 7 | Cubes bin |
| 8 | Pneumatic gripper set |

5 Dimensions

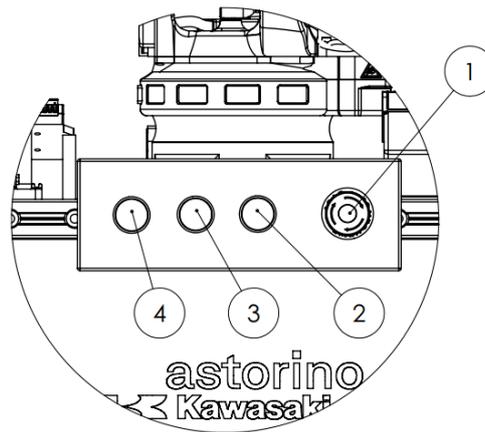


6 General information

Astorino ProStation is a ready to use robotic station. It is equipped with additional hardware that allows to program multiple advanced app. With a station there is delivered example program for Vision system.

6.1 Front cassette buttons

In front cassette there are four buttons disribed as below.



| | | |
|---|-----------------------|-----------|
| 1 | Emergency Stop button | - |
| 2 | Blue button (NO) | Blue LED |
| 3 | Red button (NO) | Red LED |
| 4 | Green button (NO) | GREEN LED |

6.2 Connection to 24V IO Module

ProStation is delivered with preconnected Ios, below is a list of connections

6.2.1 Inputs

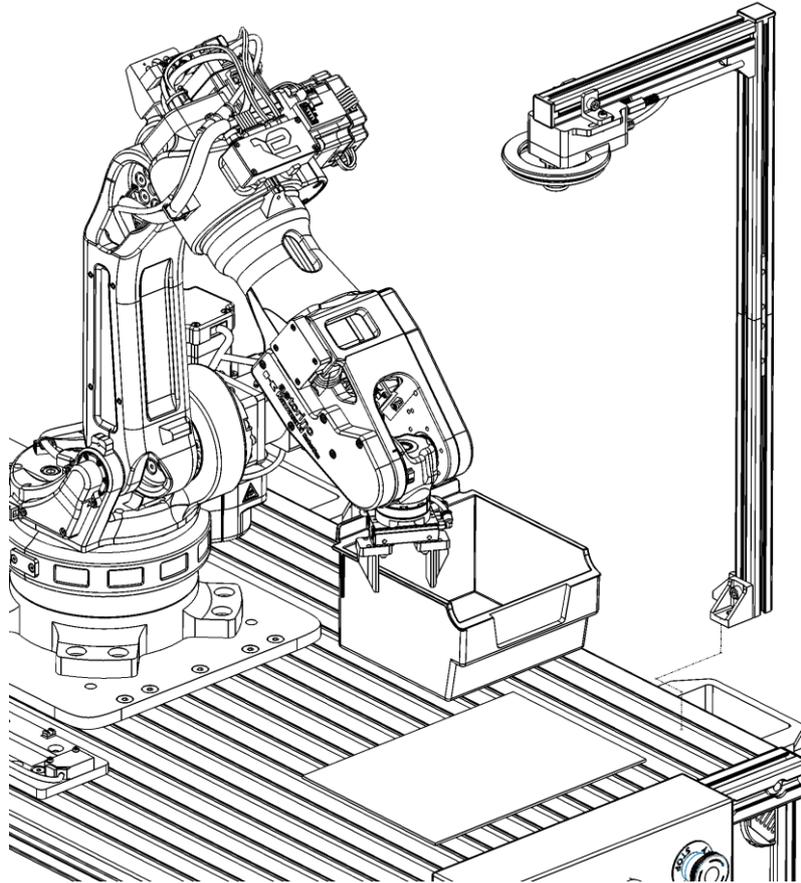
| Input number | Item |
|--------------|--------------------|
| 1 | Green button (NO) |
| 2 | Red button (NO) |
| 3 | Blue button (NO) |
| 4 | Cubes feeder valve |

6.2.2 Outputs

| Output number | Item |
|---------------|---------------------|
| 1 | Green LED |
| 2 | Red LED |
| 3 | Blue LED |
| 4 | Cubes feeder sensor |

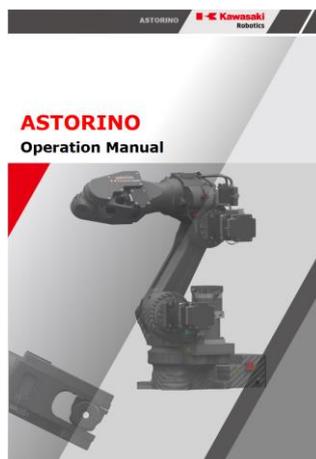
7 Unboxing and starting-up

Remove robot and base plate from the packaging, place it on a solid surface. Install camera stand on the table and connect power.



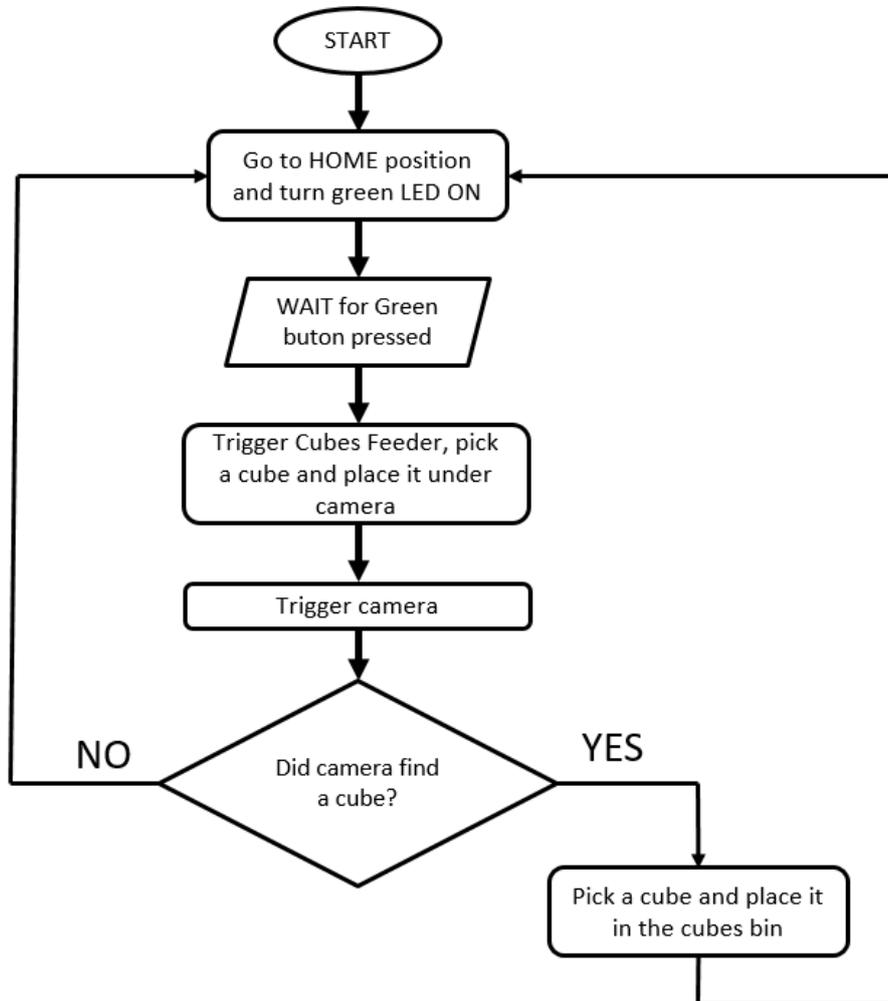
8 Operation

In order to learn how to use the Astorino robot, you need to use the knowledge from the Astorino robot manual, as well as the AS language instructions.



9 Vision system example app

Example ProStation program work algorithm



In order to learn how to use Vision system example program, please refer to astorino Vision System Operation Manual.



10 Manufacturer information

For further questions, contact Kawasaki Robotics support.

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Kawasaki Robot
ProStation Manual

2024-01: 1st Edition

Publication: KAWASAKI Robotics GmbH

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