CSSP Manual

URCap
Version: 1.01

Contents

CSSP - URCap

This manual explains the how to use the URCap to manage the CSSP gripper.

Wrist mechanical interface: EN ISO-9409-1-50-4-M6.

Wrist electrical interface: M8 | M8 8-pin (male).

Camozzi cable commercial code: CS-DL08MC-E020U.

For any information regarding the gripper performance and setup, please look at the manual of the gripper.

1.1 Cobot requirement

The cobot compatible which can be used with this application are:

- UR3e
- UR5e;
- UR10e;
- UR16e.

The minimum version of polyscope is: 5.14.6.123463 (Oct 12 2023). If an older version is used, there might be some problem or unwanted behaviour.

1.2 Install the URCap

To install the URCap, it is needed to download the file from the official website of Camozzi. Once the file has been downloaded, it is needed a flash drive to transfer the URCap to the robot, by plugging the flash drive into the USB port on the teaching pendant.

Then the following steps are needed to be performed:

- (1) Go into the menu;
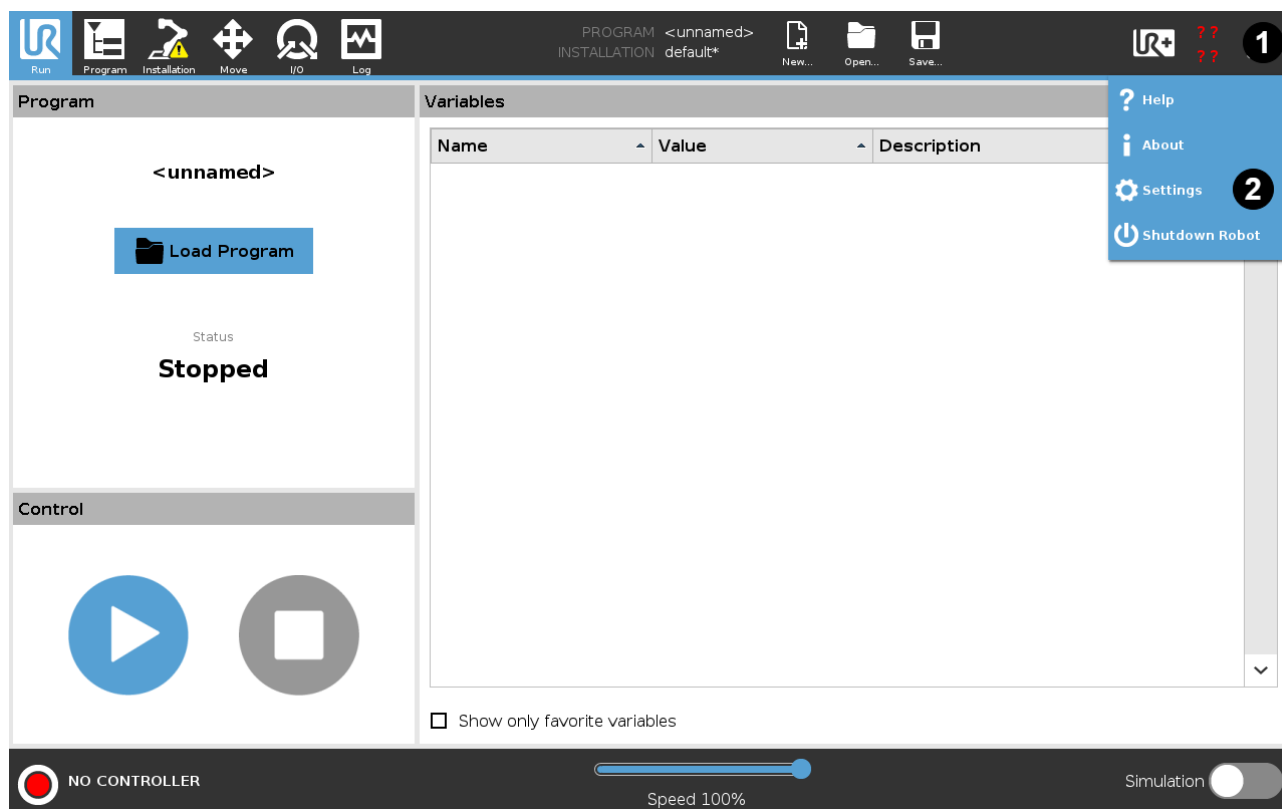- (2) Select setting.

Figure 1.1: Install the URCap - Step 1

Then:
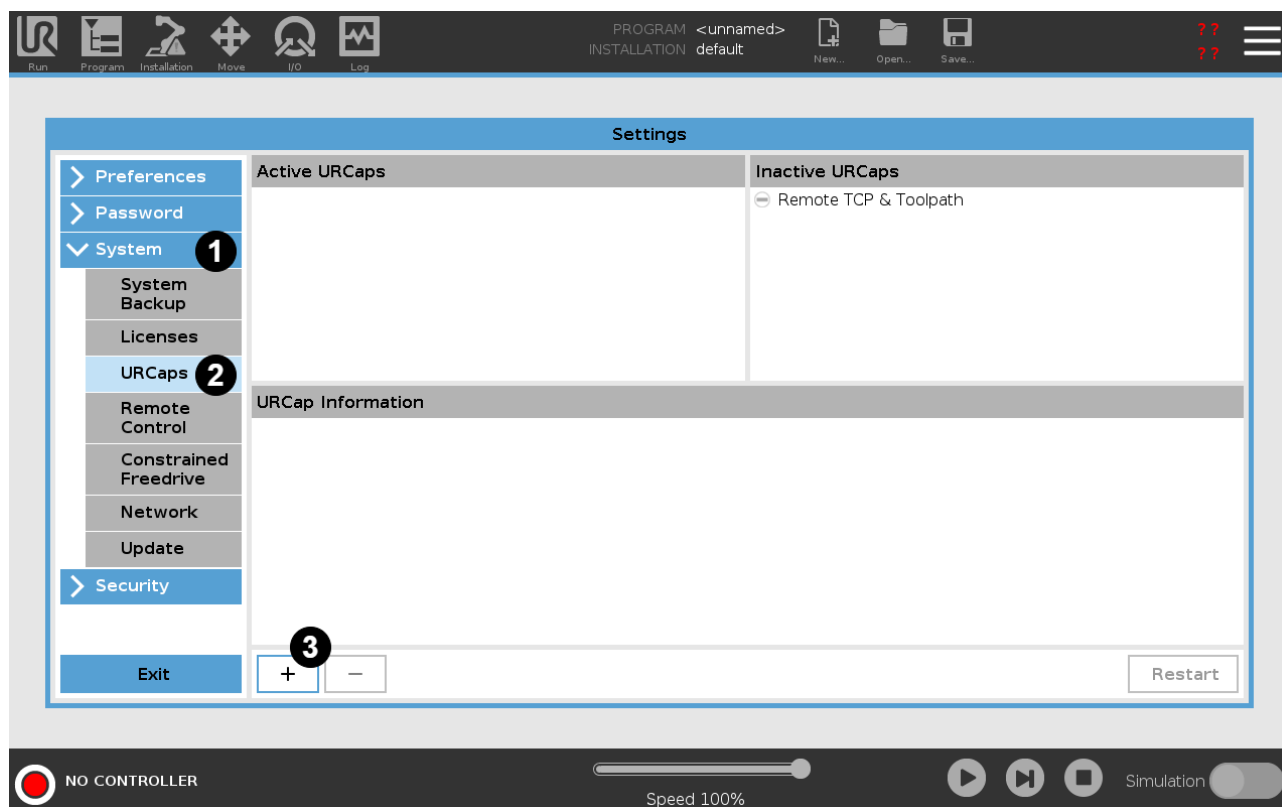- (1) Select system;
- (2) Select URCaps;
- (3) Select '+'.

Figure 1.2: Install the URCap - Step 2

Then:
- (1) Select the USB folder;
- (2) Navigate to the URCap file in the USB folder;
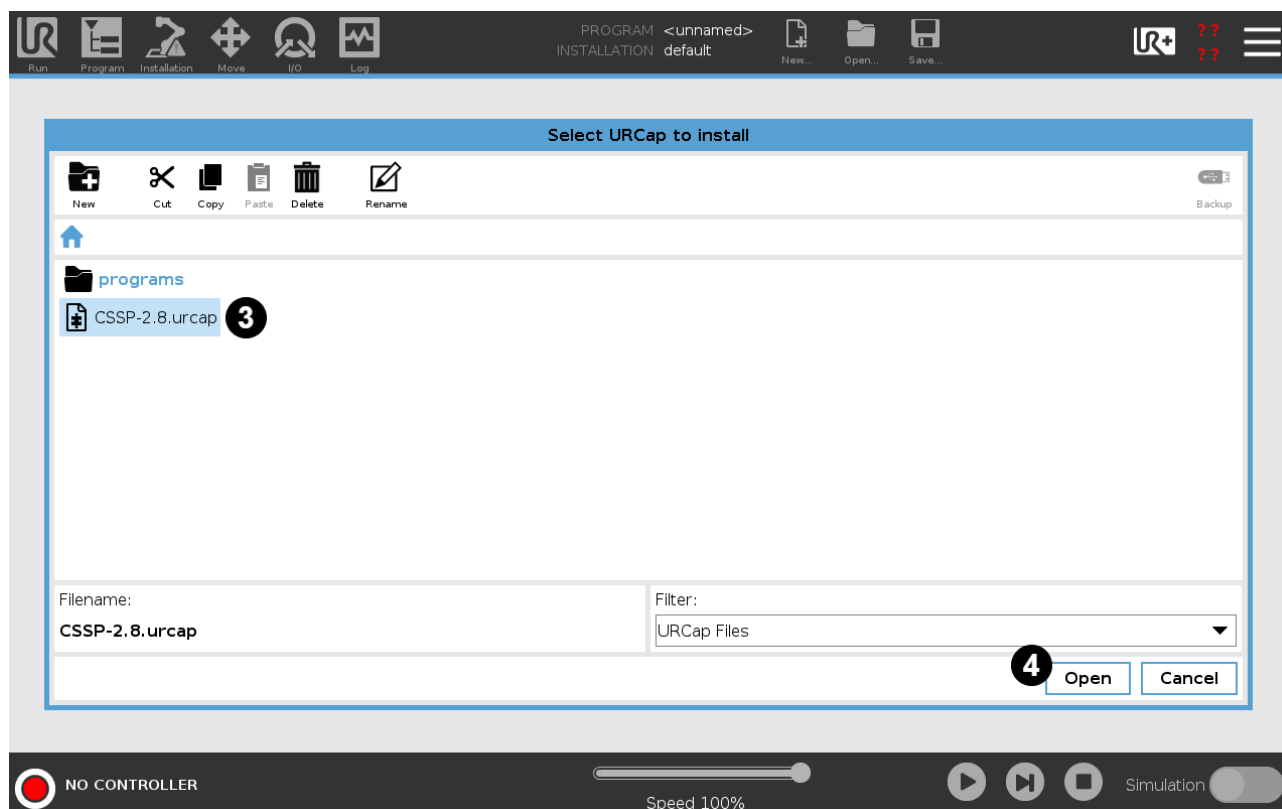- (3) Select the CSSP-*.urcap;
- (4) Open.

Figure 1.3: Install the URCap - Step 3

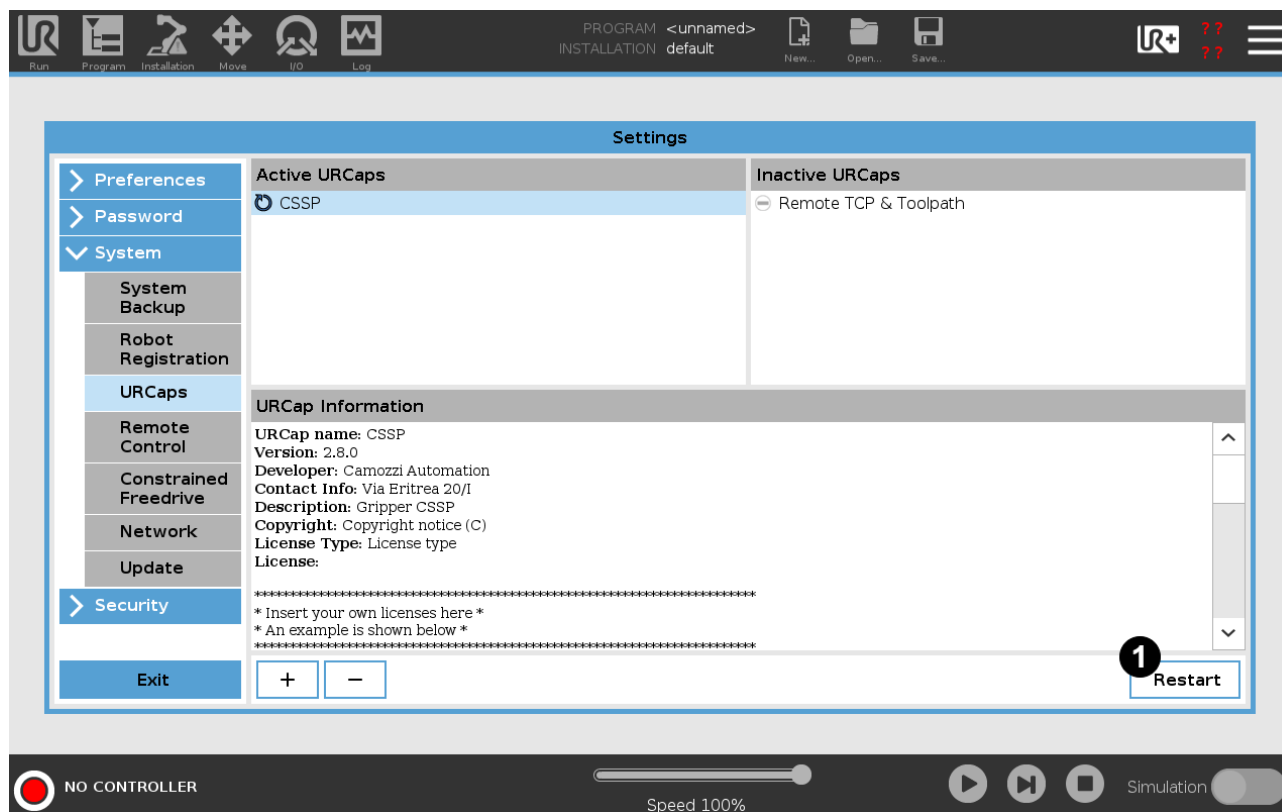Then the following view will appear and it needed to restart the robot (1).

Figure 1.4: Install the URCap - Step 4

Once the robot has been rebooted, the CSSP URCap has been installed. Yuppies :)

1.3 Uninstall the URCap

In the same panel as the previous chapter, to Unistall the CSSP URCap:

- (1) Select CSSP;
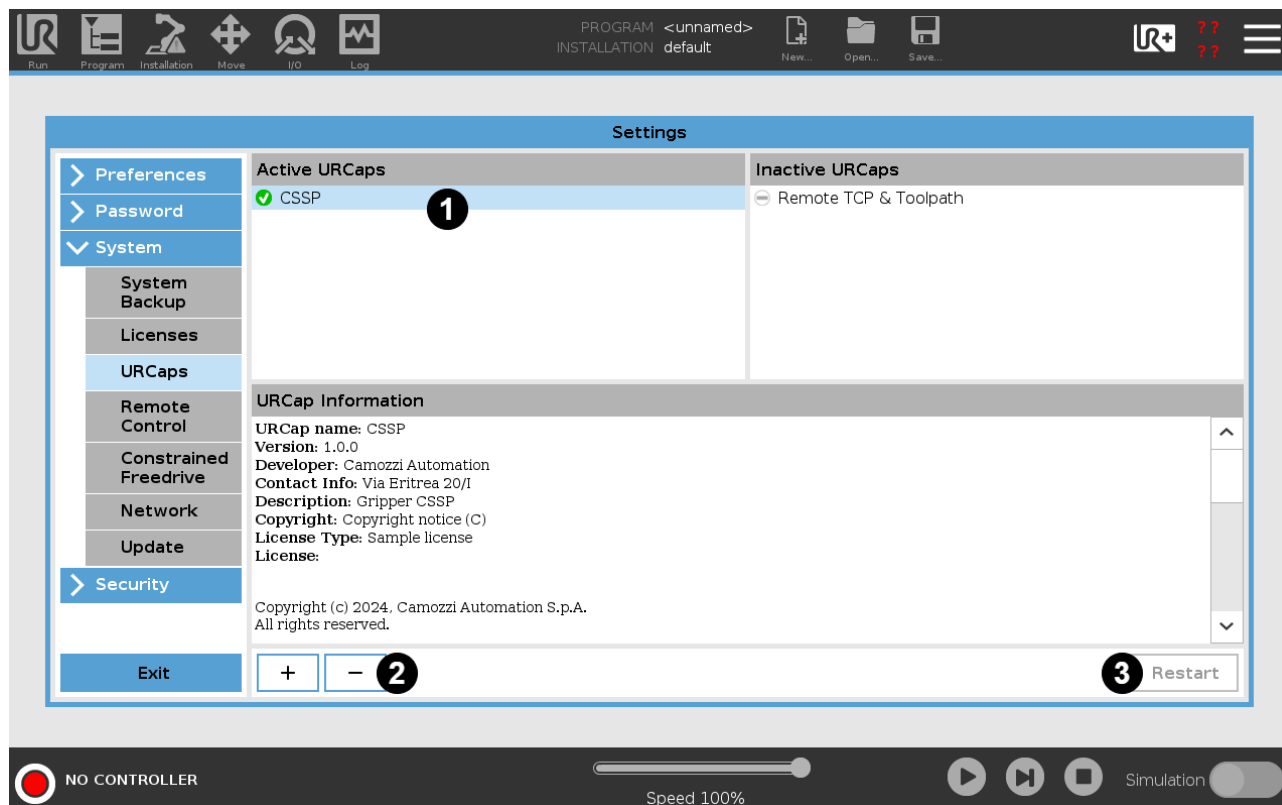- (2) Select '-';
- (3) Restart the robot.

Figure 1.5: Uninstall the URCap - Step 1

1.4 Use the URCap

This section is dedicated to explain how to use the various section of the CSSP URCap.

1.4.1 Installation Tab

The installation setup must be done just once to select the CSSP as default tool.
To set the TCP (tool center pointer) go to:

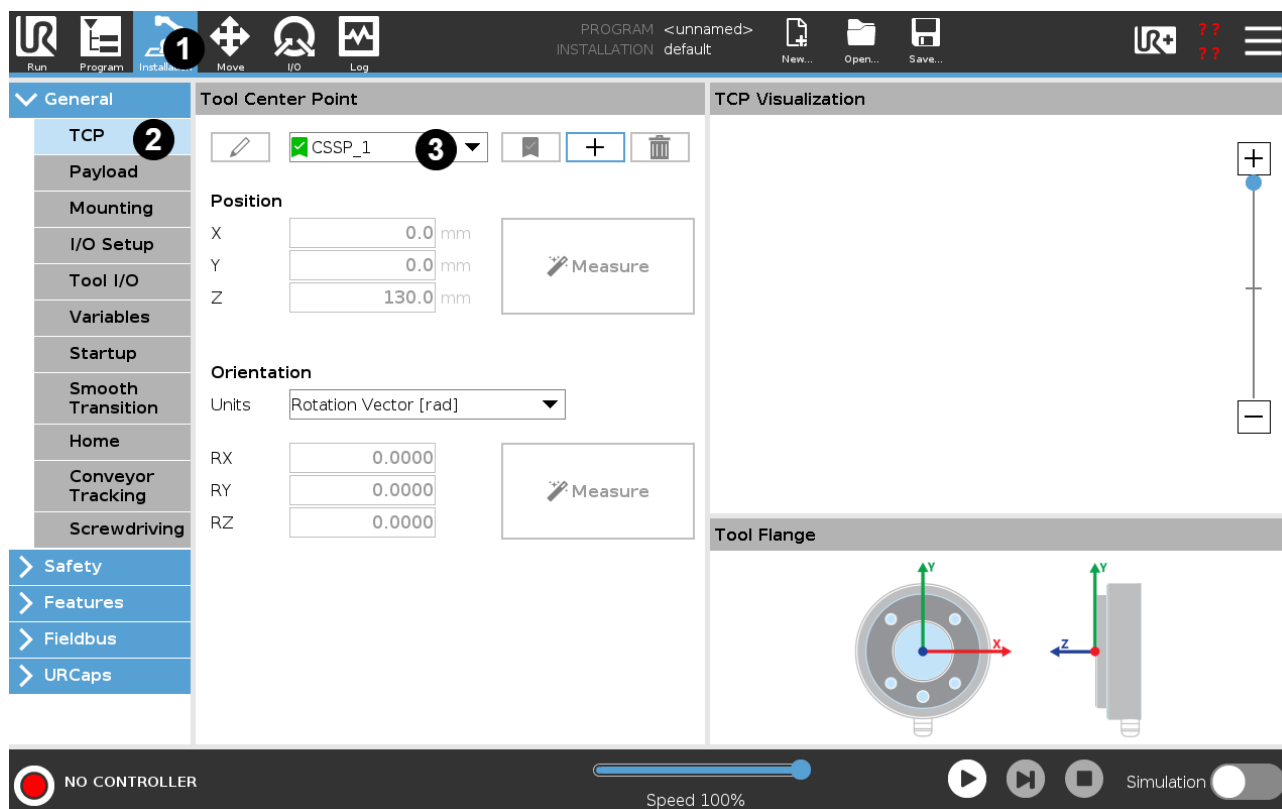- (1) Installation tab;
- (2) General;
- (3) TCP;
- (4) Select CSSP_1.

Figure 1.6: Installation tab - TCP setup

To set the Payload go to:

- (1) Installation tab;
- (2) General;
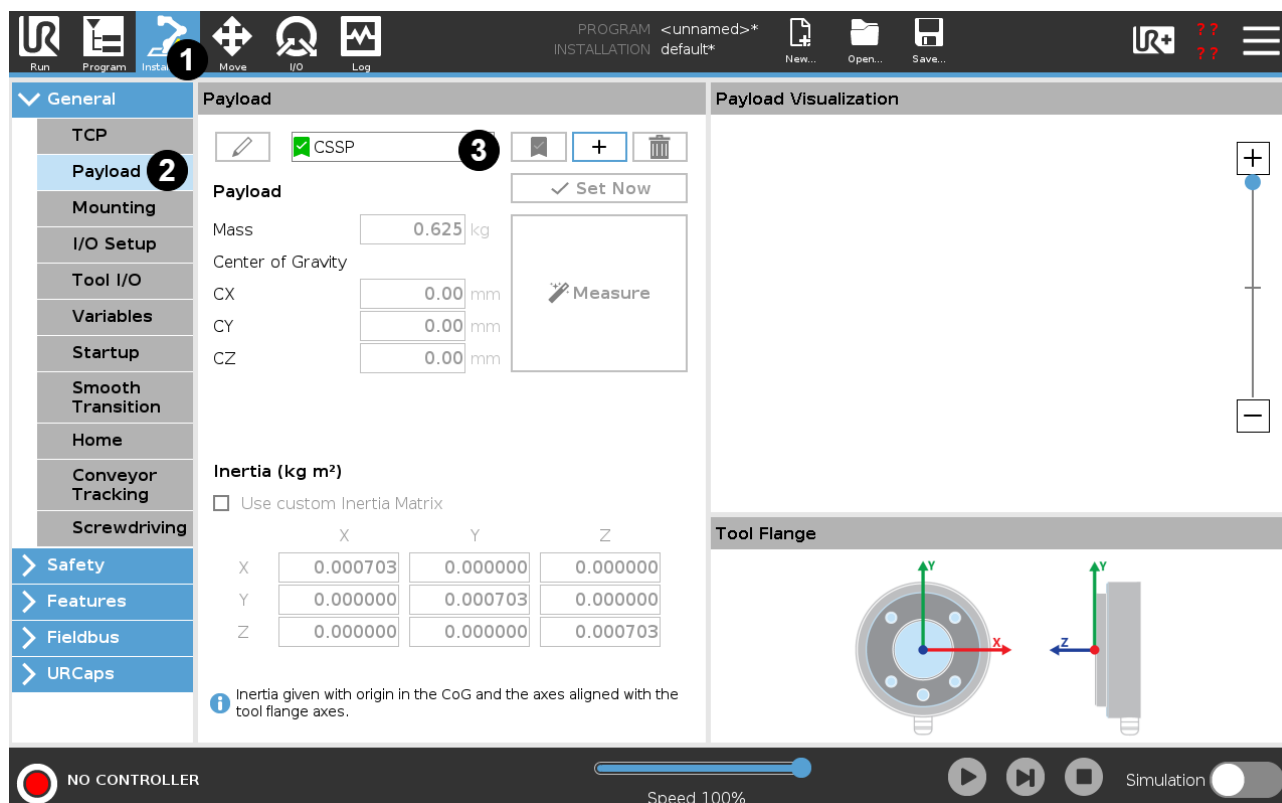- (3) Payload;
- (4) Select CSSP.

Figure 1.7: Installation tab - Payload setup

To set the tool wrist I/O, go to:

- (1) Installation tab;
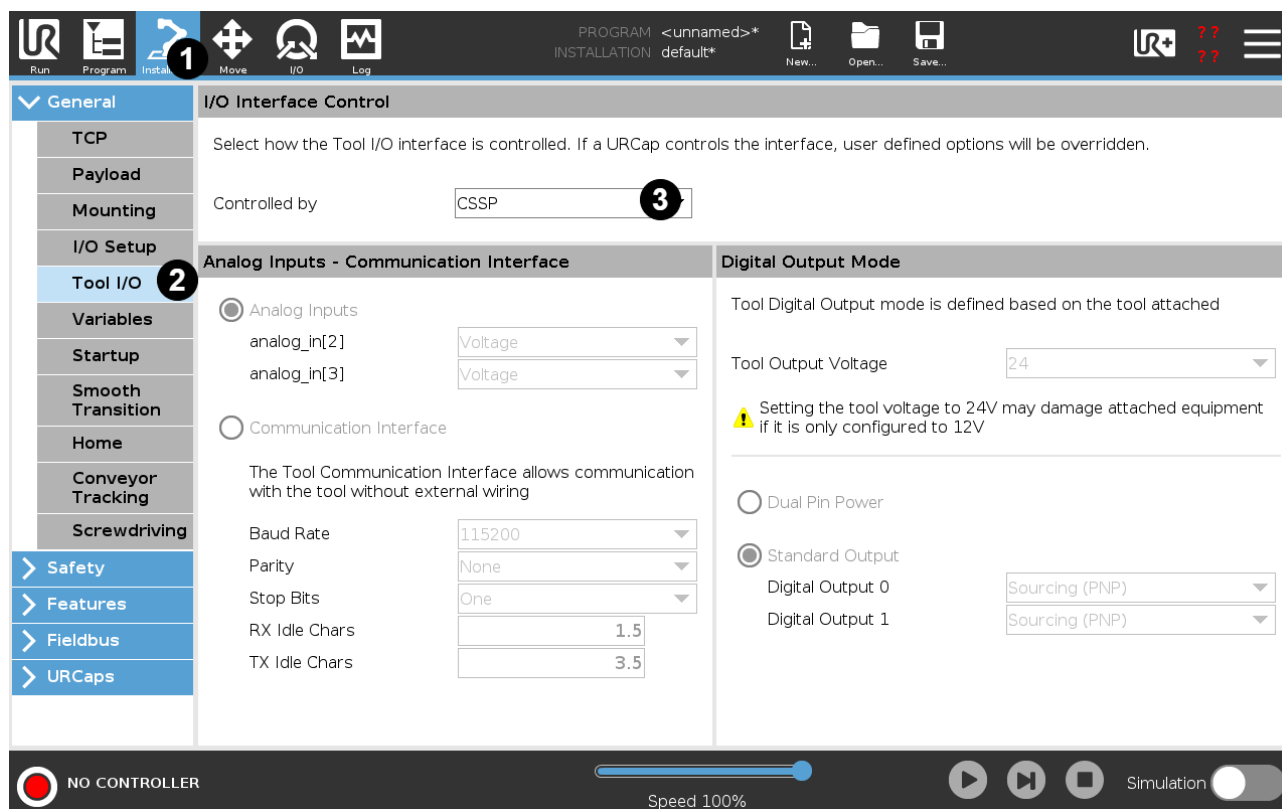- (2) General;
- (3) TOOL I/O;
- (4) Select CSSP.

Figure 1.8: Installation tab - I/O Setup

1.4.2 Program Tab

When the robot is in program tab, in the section URCap there will be available the URCap program node for CSSP gripper. This node manages all the functions of the gripper:

- Actuation - open / close;
- Sensing - wait until the jaws are fully open / close;
- Set the payload;
- Test the action during programming.

To access the program line, go to:

- (1) Program tab;
- (2) Click on URCaps and on Camozzi CSSP;
- (3) Set the action type;
- (4) Set if it is needed to wait until the gripper has performed the action (optional);
- (5) Check object presence (optional);
- (6) Set the object weight (optional);
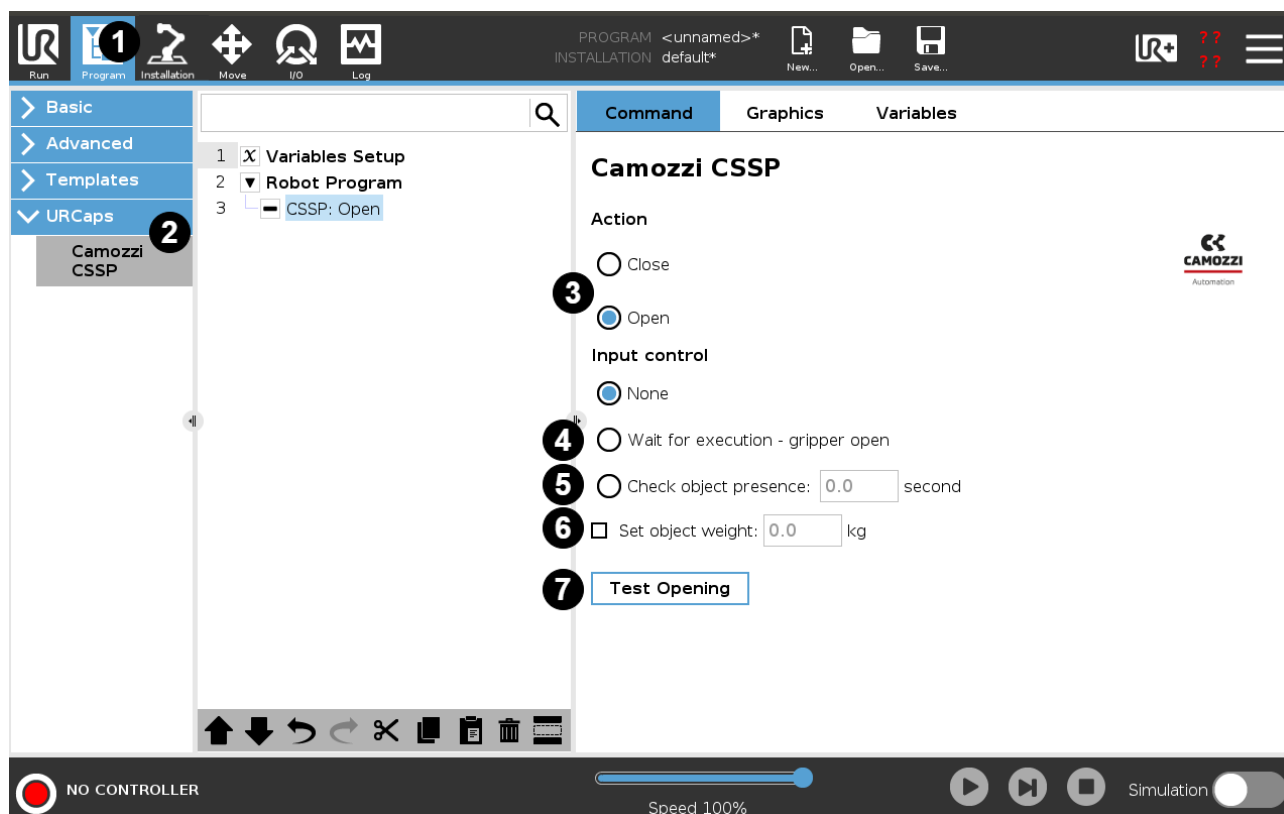- (7) Test the operation, if the robot is running (optional).

Figure 1.9: Program tab

The "None" option does not activate either "Wait for execution - gripper **" nor "Check object presence". It means that the program does not check the end stroke sensors in anyway; thus there is any timeout. The operation "Wait for execution - gripper **" is important because if the jaws are not reaching the end-stroke position, the robot should wait it before doing anything else. There is a timeout of is set to 10 seconds, then if the end-stroke sensor has not been excited, a pop-up error is shown and the program is paused until a choice by an operator is done.

The operation "Check object presence" wait for the time out, while checking the related position sensor. If the position sensor turns on, it means that the object, it was supposed to grab, is not present. Once the time out has expired, the program carries on.

In every tab, the user can access to the UR+, which access to an interface to open or close the gripper whenever the robot is running (Fig.1.10).
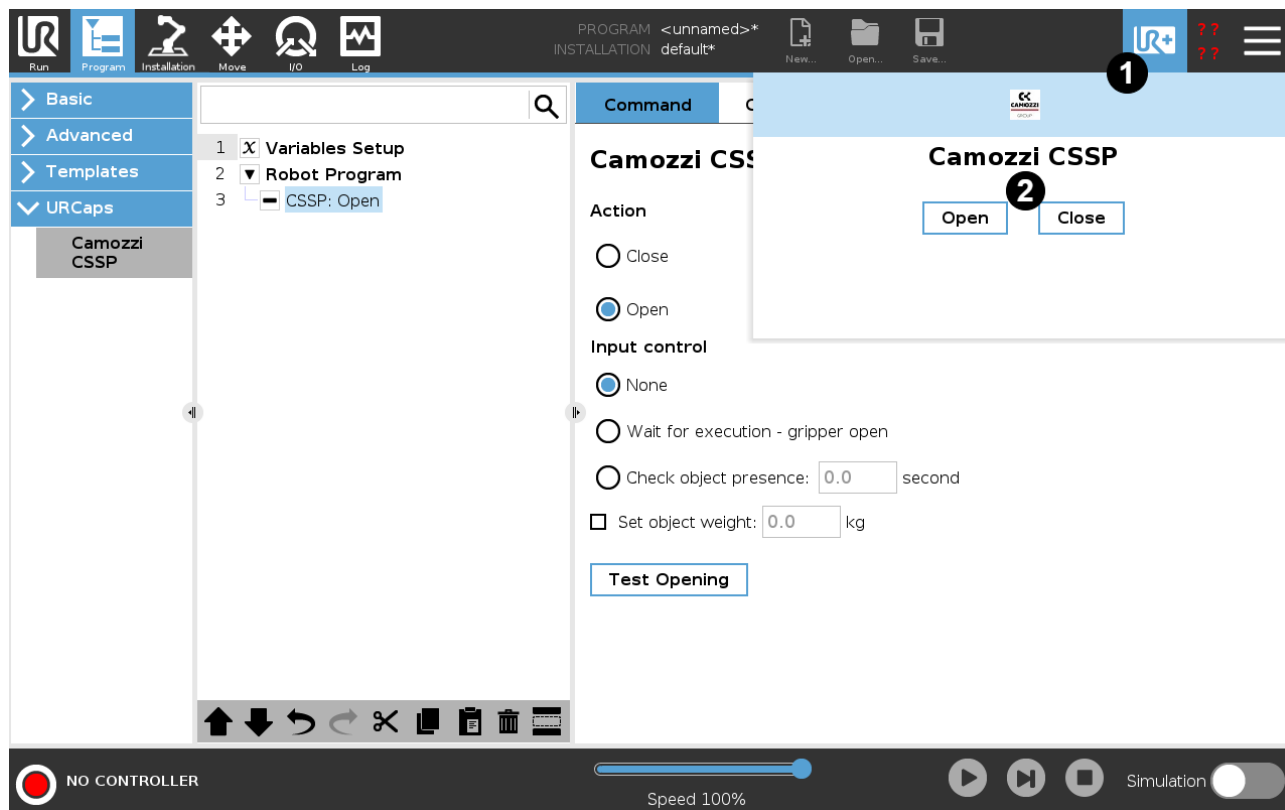
Figure 1.10: UR+ tab

1.5 Error Codes

Code	Description	Gravity	Solution
#C1	Object weight error: OBJECT WEIGHT MUST BE LOWER THAN THE ROBOT PAYLOAD CAPABILITY!	Fault	Insert an object weight compatible with the robot payload.
#C2	Opening object Warning: Open condition has been detected with no object present.	Warning	Don't use the "Check object presence" option if the gripper need to reach the end-stroke position in the open state without an object (release of an object).
#C3	Closing object Warning: Close condition has been detected with no object present.	Warning	Don't use the "Check object presence" option if the gripper need to reach the end-stroke position in the close state without an object.
#C4	Open Warning: After 10 seconds the DI0 is not active.	Warning	Check if the gripper is properly connected to the compressed air. Or check if the gripper is correctly installed (Section 1.4.1).
#C5	Close Warning: After 10 seconds the DI1 is not active.	Warning	Check if the gripper is properly connected to the compressed air. Or check if the gripper is correctly installed (Section 1.4.1).

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