

Series CSSP

OMRON TMflow

Version: 1.0



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CSSP - TMflow component

This manual explains the how to use the TMflow component to manage the CSSP gripper.

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

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

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

1.1 Cobot requirement

Import the component **TMflow 1.x** if you have one these cobot:

- TM20
- TM16;
- TM14;
- TM12.
- TM 5 – 900
- TM 5 – 700

While import **TMflow 2.x** if you have :

- TM14S
- TM12S
- TM7S
- TM5S

1.2 CSSP - Control Box connection

For the correctly use of the CSSP components and referring to the following images:

Pin number	Function	Cable colour
1	Not connected	White
2	Not connected	Brown
3	Close end stroke sensor (DO PNP +24V)	Green
4	Open end stroke sensor (DO PNP +24V)	Yellow
5	Power supply +24 V DC \pm 10 %	Gray
6	Closing command (DI 0 V +24V)	Pink
7	Opening command (DI 0 V +24V)	Blue
8	Power supply reference 0 V DC	Red

Figure 1.1: Cable connection assignment

1.3 Install the TMflow Components

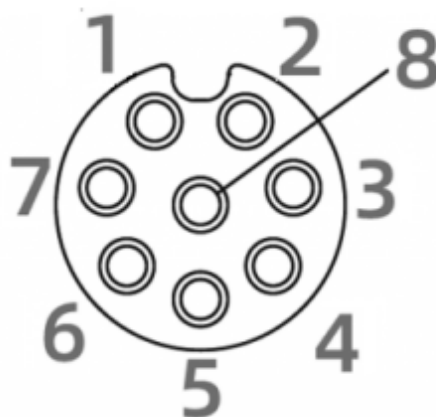


Figure 1.2: CSSP Gripper M8 8-pin female connector

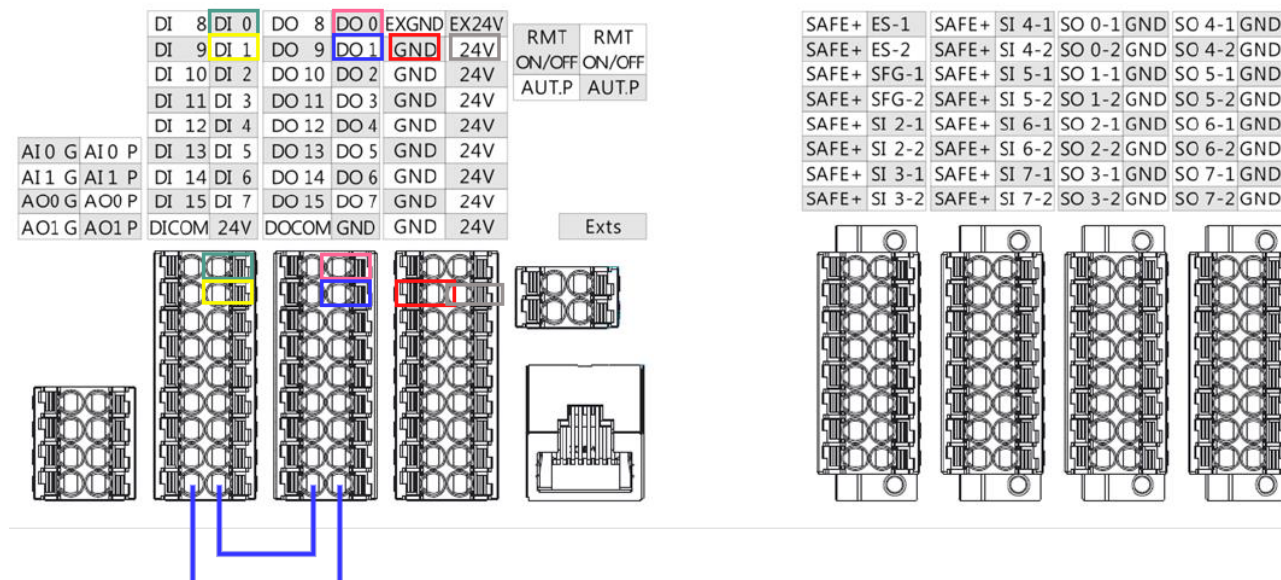


Figure 1.3: Robot S Series control Box


The signal must be connected in following way (Fig.1.3):

- DO 0 for the closing command;
- DO 1 for the opening command;
- DI 0 for the close end stroke sensor;
- DI 1 for the open end stroke sensor;

1.3 Install the TMflow Components

The following instructions are to be referred to TMFlow 2.x. To install the TMflow component, 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 TMflow component to the robot, by plugging the flash drive into the USB port of the controller.

1.3 Install the TMflow Components

- The flash drive must be:
-  formatted in NTFS;
 - labeled in "TMROBOT".

The following steps are needed to be performed:

- (1) Go into the menu;
- (2) Select system.
- (3) Select Import/Export ;

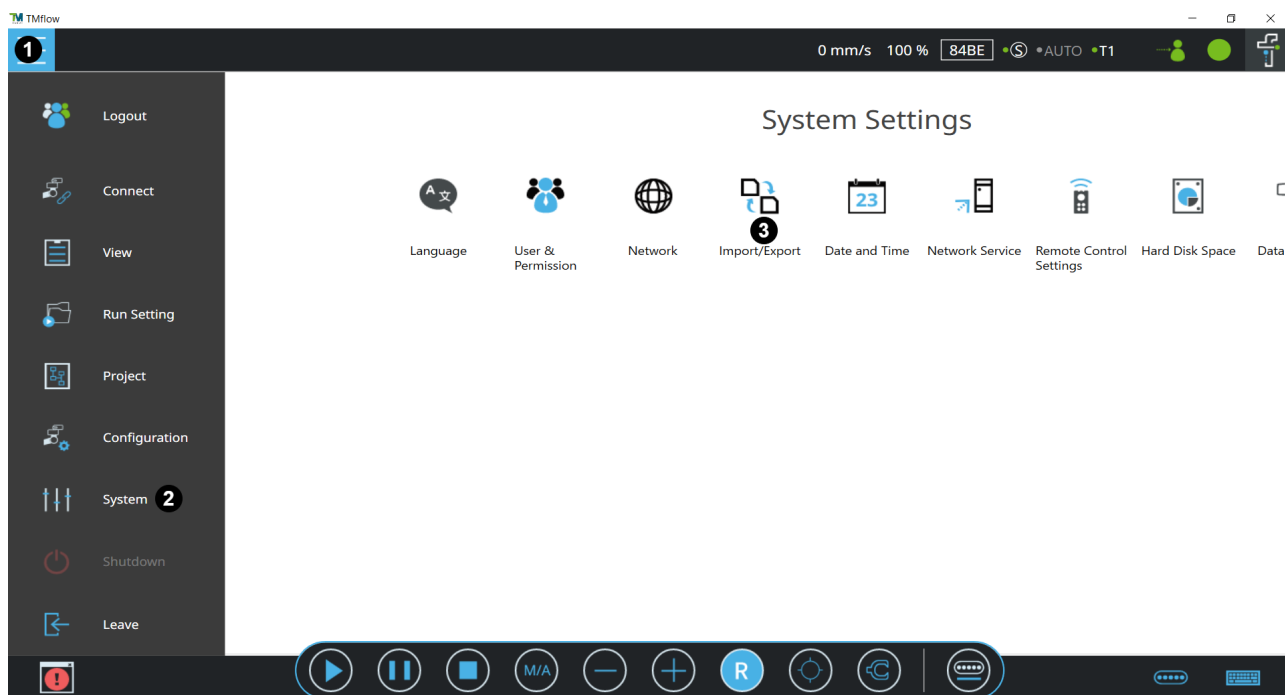


Figure 1.4: Install the TMflow components - Step 1

Then:

- (1) Click on the Import button at the top left;
- (2) Select the robot of the data source in the flash drive from the robot list;
- (3) Click select button;

1.3 Install the TMflow Components

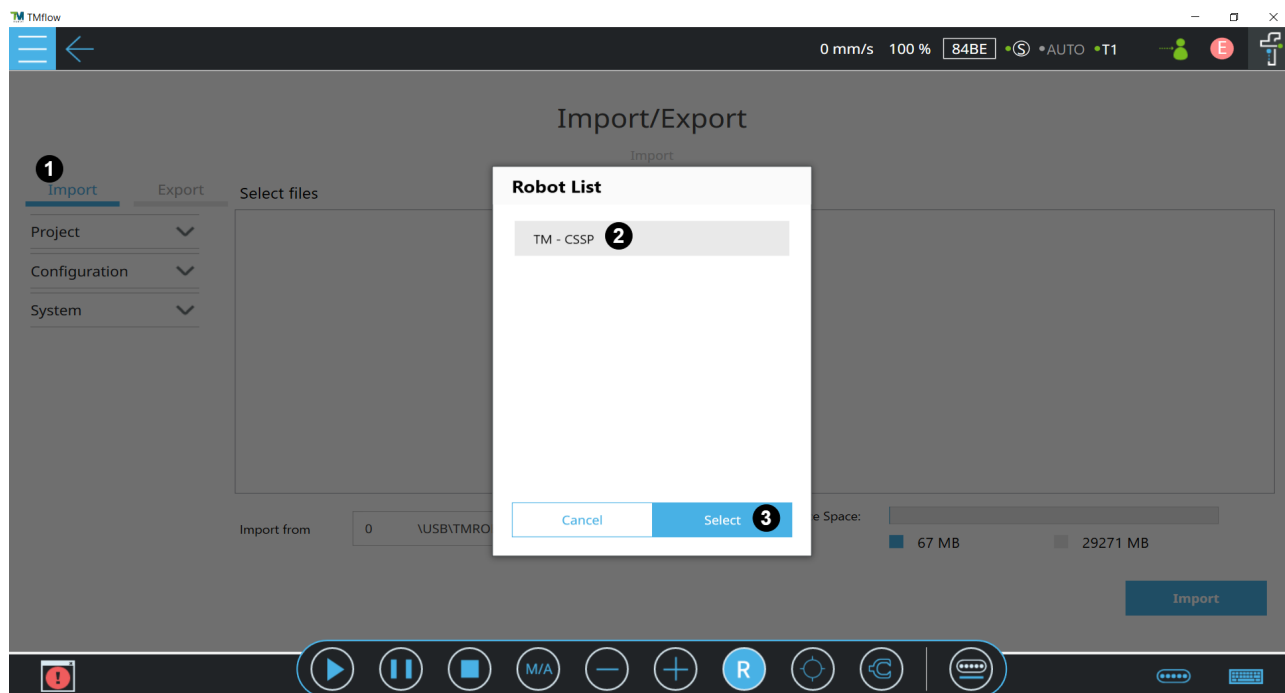


Figure 1.5: Install the TMflow components - Step 2

At that point you need to:

- (1) Click on Configuration;
- (2) Click on Component;
- (3) Select the components "Gripper_CamozziAutomation_CSSP_Close_V100.zip" and "Gripper_CamozziAutomation_CSSP_Open_V100.zip";
- (4) Click on Import.

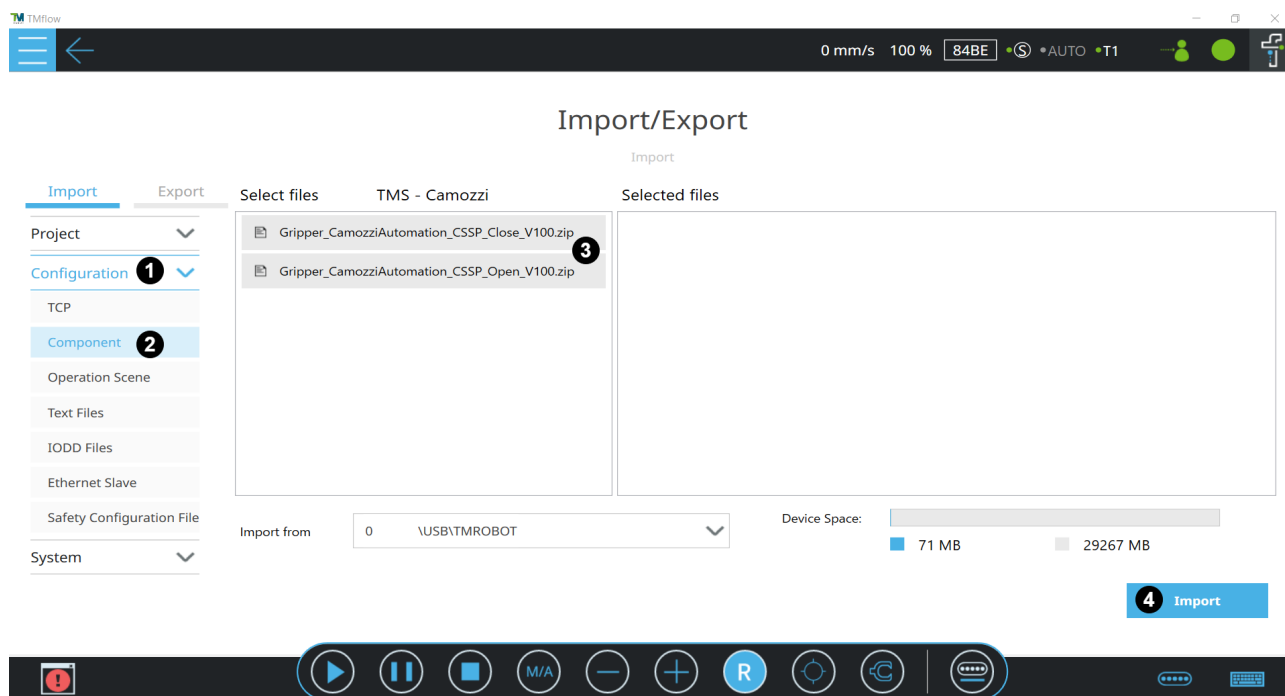


Figure 1.6: Install the TMflow components - Step 3

1.3 Install the TMflow Components

At that moment you need to:

- (1) Go into the menu;
- (2) Click on Configuration;

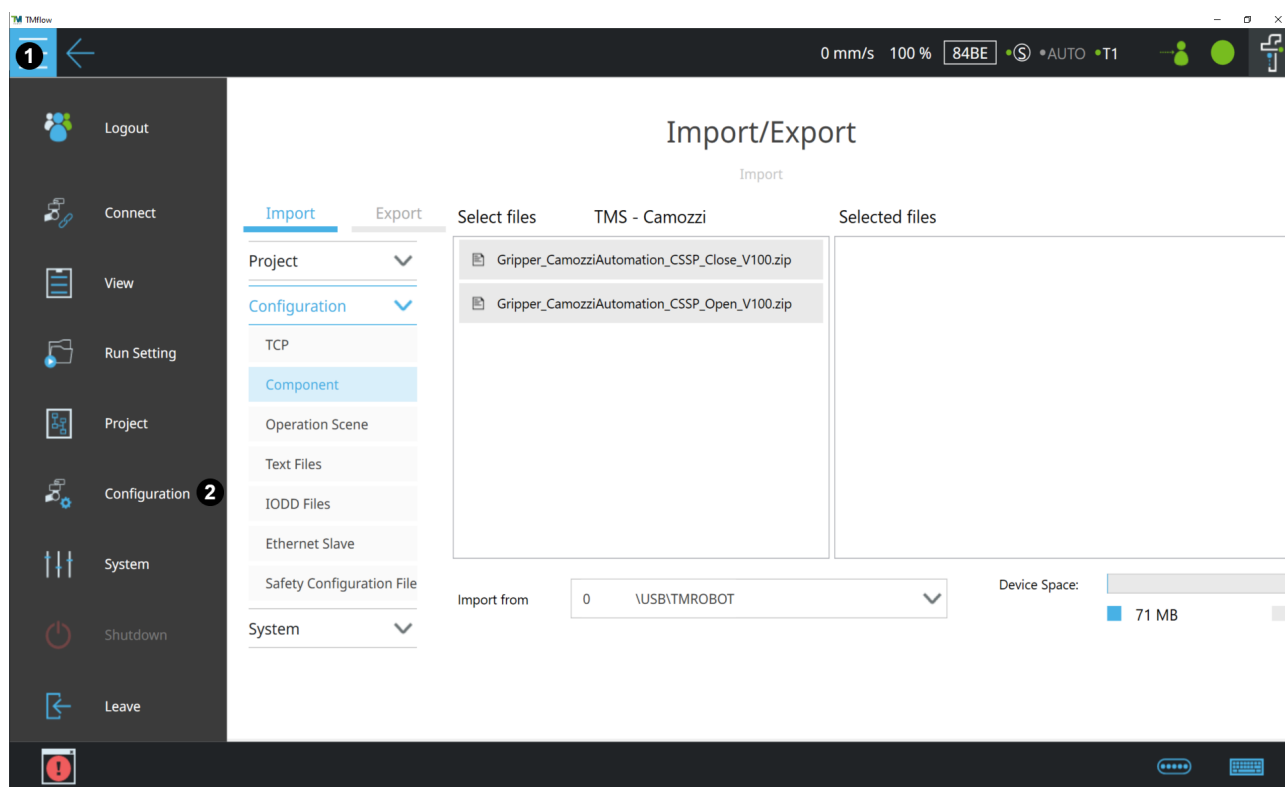


Figure 1.7: Install the TMflow components - Step 4

Thus:

- (1) Click on Component

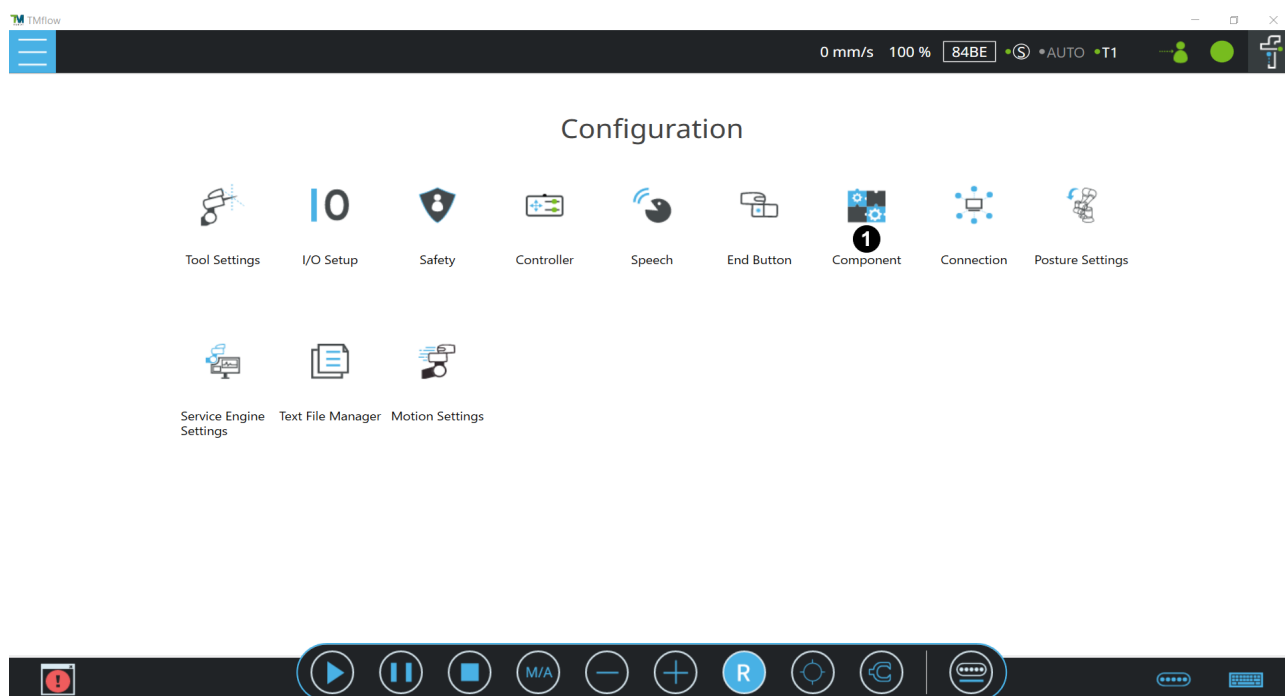


Figure 1.8: Install the TMflow components - Step 5

1.3 Install the TMflow Components

Finally:

- (1) - (2) Activate the components;
- (3) Click on Save;

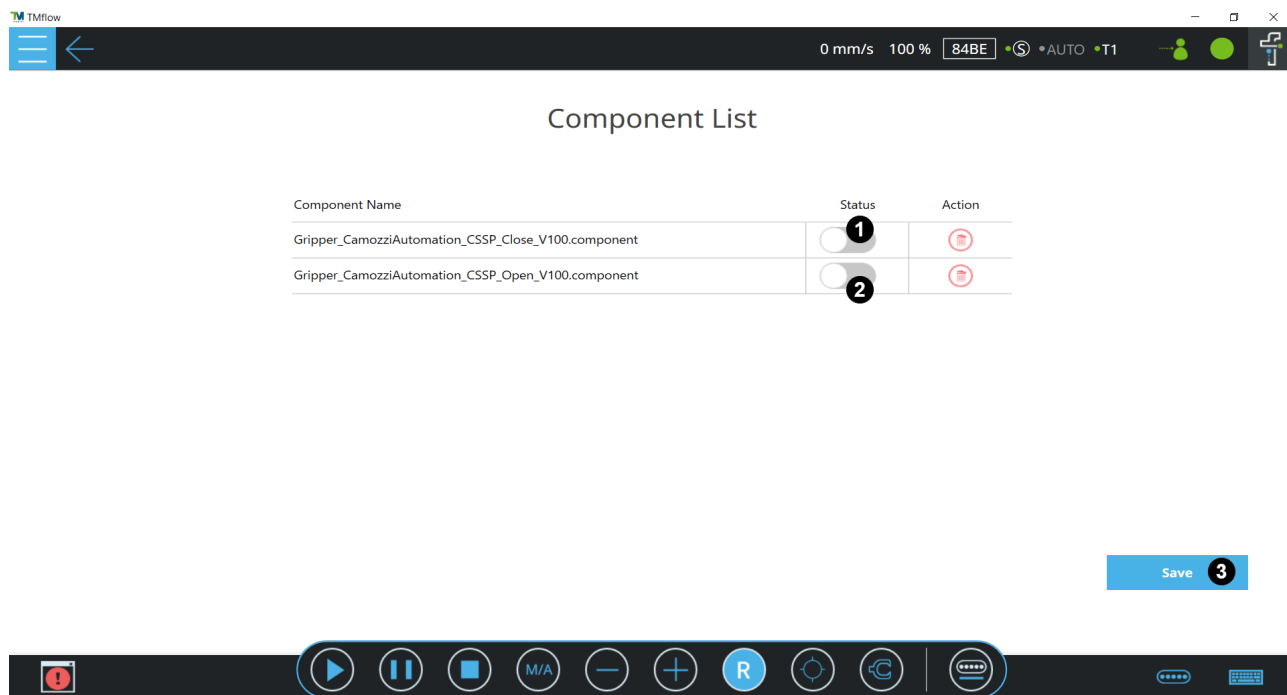


Figure 1.9: Install the TMflow components - Step 7

1.4 Uninstall the TMflow Components

1.4 Uninstall the TMflow Components

In the same panel as the previous chapter (Fig.1.9), to uninstall the TMflow components:

- (1) Select on the bin icon;
- (2) Click on "OK";

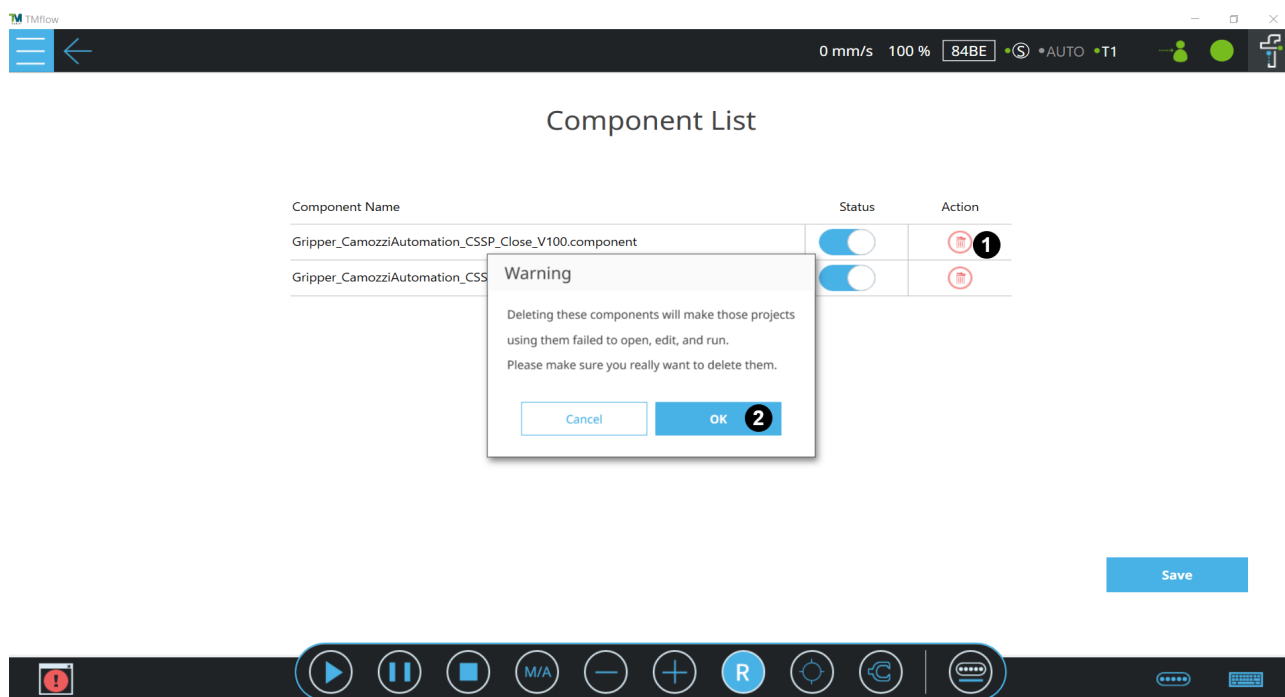


Figure 1.10: Uninstall the TMflow components

1.5 Use of the TMflow Components

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

1.5.1 Project Tab

When the robot is in the project tab, in the section "Components" will be available the TMflow components program node for CSSP gripper. This nodes manage all the functions of the gripper:

- Actuation - open / close;
- Sensing - wait until the jaws are fully open / close;

To access the program line, go to:

- (1) Menu;
- (2) Project;
- (3) Components;
- (4) Click, drag and drop the component in your project.

1.5 Use of the TMflow Components

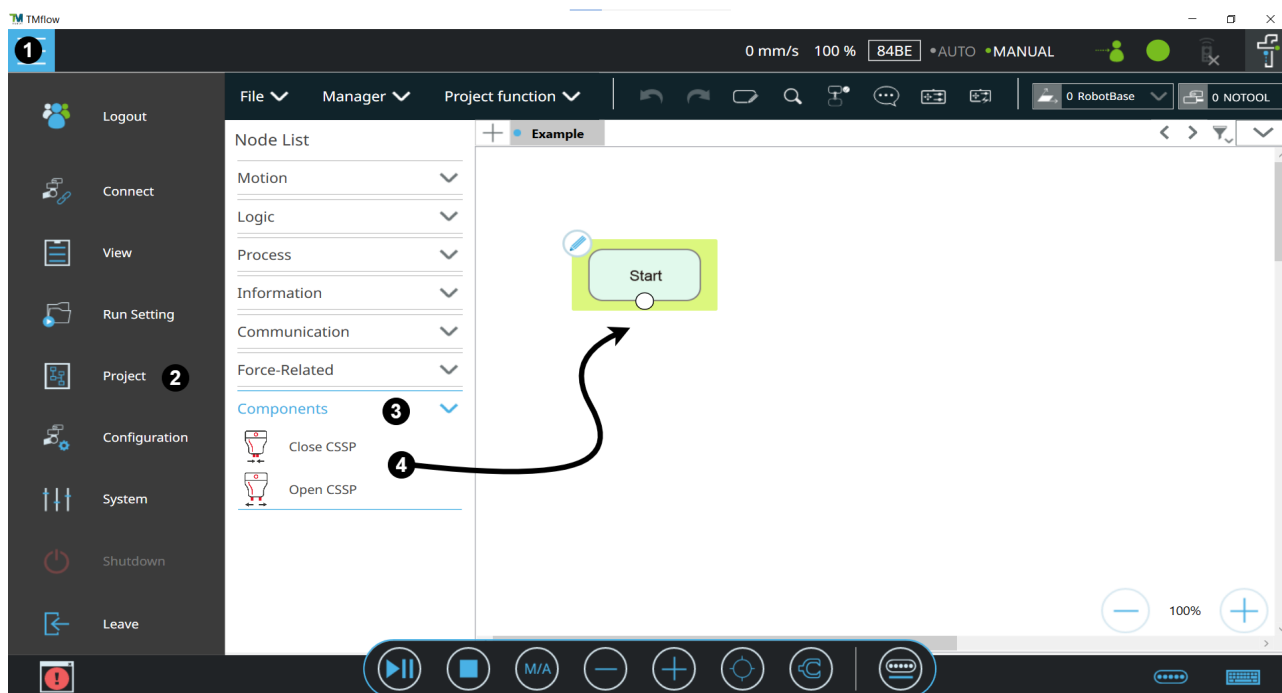


Figure 1.11: Project tab with CSSP components

After the previous step, you can see the the component in your Project tab, Fig.1.12 shows the "Open CSSP" component.

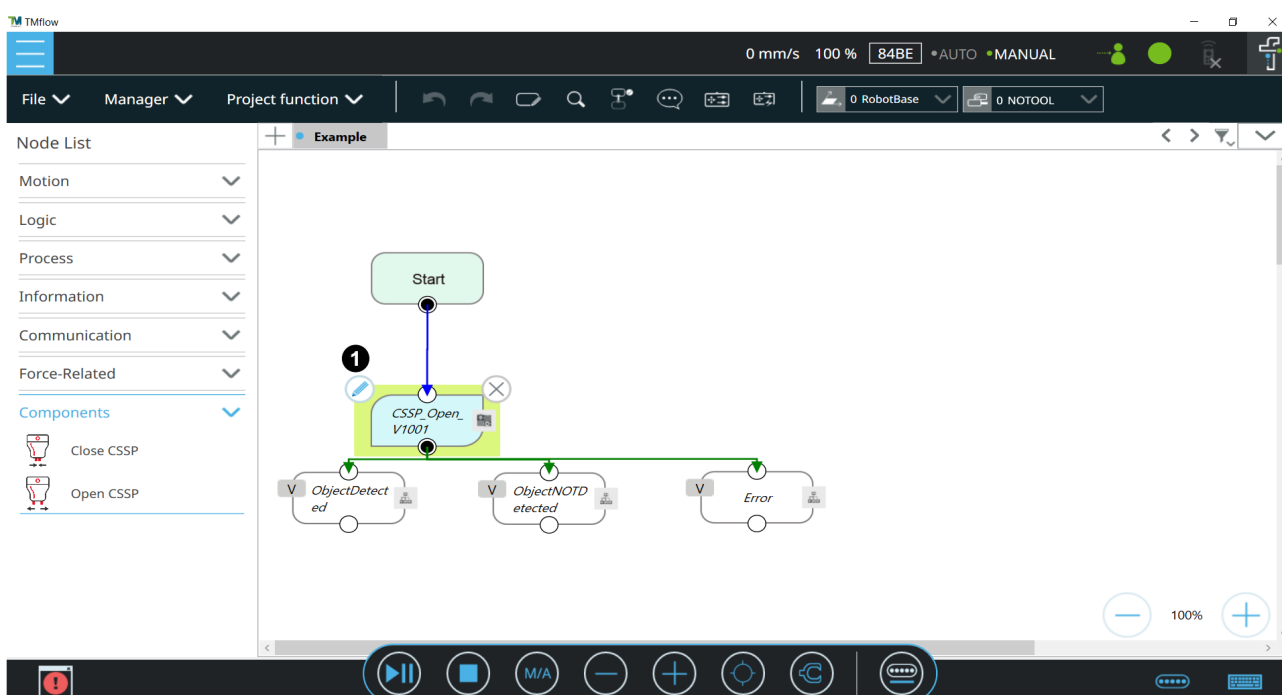


Figure 1.12: Project tab with "Open CSSP" component

In order to set the CSSP control variable click:

- (1) On the pencil icon (Fig.1.12);
- (2) Move the cursor on the right, it will appear a pencil icon and click on it.
- (3) Click on select;

1.5 Use of the TMflow Components

- (4) Finally the component variable are showed, you can modify them by clicking on the pencil icon.

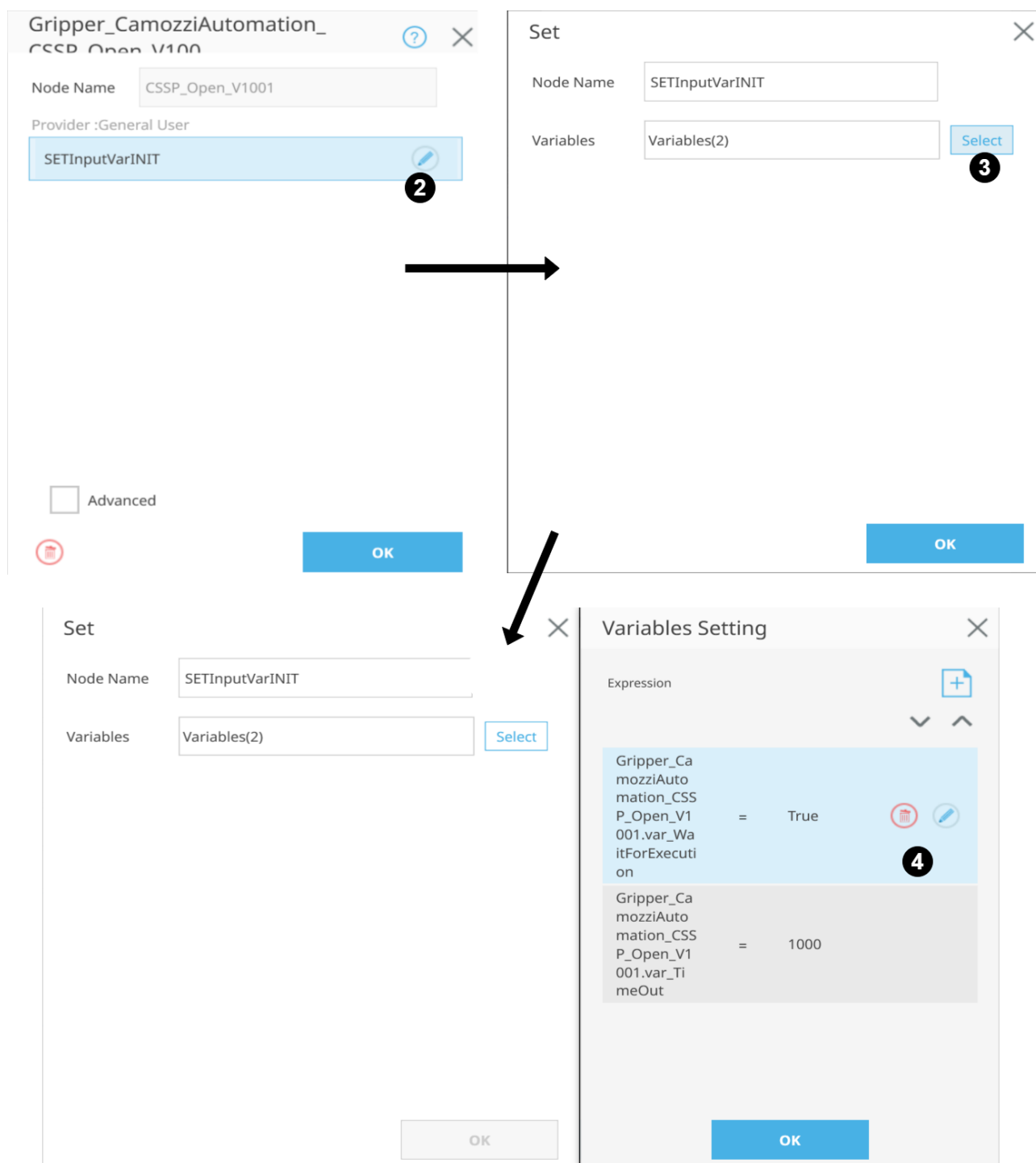


Figure 1.13: Project tab with CSSP_Open_V100 component variables

If the variable "Gripper CamozziAutomation CSSP Open V1001.var WaitForExecution" is set to false, the component terminates without waiting for any feedback or time (both ObjectDetected and ObjectNotDetected states are returned), so you can use it in case you want to activate the 'on-the-fly' clamp. If this variable is set to True the component waits for one of two conditions to occur:

- Receives the open clamp signal (DI1).

1.5 Use of the TMflow Components

- The time defined by the TimeOut variable passes.

After which ObjectDetected is returned if both end-of-stroke sensors are low (the clamp has found an object and stopped in a middle position). ObjectNotDetected if the closing sensor is low and the open clamp is high (the clamp did not find an object and opened completely). Error if the closed clamp signal remained high (the clamp therefore did not move). **For the CSSP_Close_V100 component the behavior is the opposite.**

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