

OPERATING INSTRUCTIONS

MATCH Comfort App

for Universal Robots
DIO/Analog
DDOC01738

THE KNOW-HOW FACTORY

MATCH

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1 Supporting documents

NOTICE



Read through the installation and operating instructions before installing or working with the product.

The installation and operating instructions contain important notes for your personal safety. They must be read and understood by all persons who work with or handle the product during any phase of the product lifetime.



The documents listed below are available for download on our website www.zimmer-group.com.

- Installation and operating instructions
 - Catalogs, drawings, CAD data, performance data
 - Information on accessories
 - Technical data sheets
 - General Terms and Conditions, including warranty information.
- ⇒ Only those documents currently available on the website are valid.

In these installation and operating instructions, "product" refers to the product designation on the title page!

1.1 Notices and graphics in the installation and operating instructions

DANGER



This notice warns of an imminent danger to the life and health of people. Ignoring these notices can lead to serious injury or even death.

► You absolutely must comply with the described measures for avoiding these dangers!

⇒ The warning symbols are assigned according to the type of danger.

WARNING



This notice warns of a situation that is potentially hazardous to personal health. Ignoring these notices can cause serious injury or damage to health.

► You absolutely must comply with the described measures for avoiding these dangers!

⇒ The warning symbols are assigned according to the type of danger.

CAUTION



This notice warns of a situation that is potentially hazardous for people or that may result in material or environmental damage. Ignoring these notices may result in slight, temporary injuries or damage to the product or to the environment.

► You absolutely must comply with the described measures for avoiding these dangers!

⇒ The warning symbols are assigned according to the type of danger.

NOTICE



General notices contain usage tips and valuable information, but no warnings of dangers to health.

INFORMATION



This category contains useful tips for handling the product efficiently. Failure to observe these tips will not result in damage to the product. This information does not include any information relevant to health or workplace safety.

2 Proper use

NOTICE



The product is only to be used in its original state with its original accessories, with no unauthorized changes and within the stipulated parameter limits and operating conditions.

Any other or secondary use is deemed improper.

- ▶ Operate the product only in compliance with the associated installation and operating instructions.
- ▶ Operate the product only when it is in a technical condition that corresponds to the guaranteed parameters and operating conditions.
- ⇒ Zimmer GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.

The product is intended for installation and operation on the robot control panel *3PE* of the *OEM* robot control system.

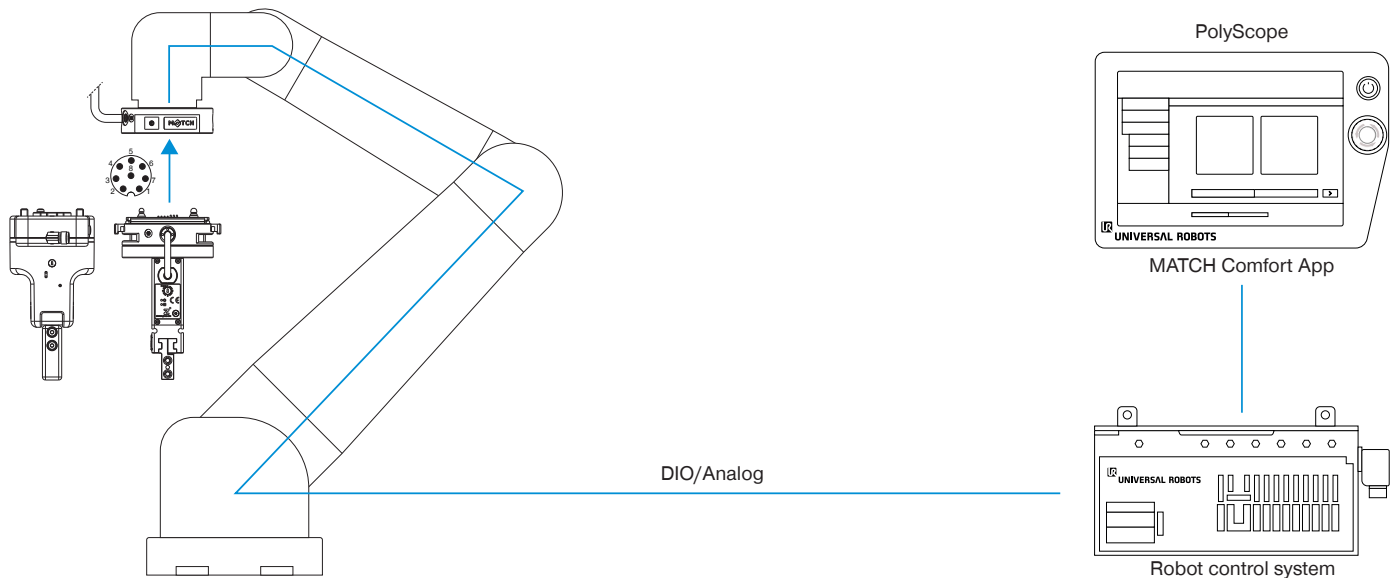
3 Personnel qualification

Installation, commissioning and maintenance may only be performed by trained specialists. These persons must have read and understood the installation and operating instructions in full.

4 Product description

The MATCH Comfort App enables you to control digital IO grippers connected at the tool connection using predefined program nodes. It also gives you the option of manual operation and teaching the workpiece position.

The image shows a simplified view of the structure of the overall system. All parts for the electrical connection of a gripper with the robot are included or are available from Zimmer GmbH as optional accessories.



5 Functional description

The MATCH Comfort App is used on the robot control panel to control grippers.

Depending on the configuration and the connection used, various robot jobs are available for interacting between robot inputs and robot outputs with the gripper.

The names of the dynamically generated robot jobs remain unchanged. The basic program does not have to be modified for configuration changes or redistribution of the robot inputs and robot outputs.

6 Accessories/scope of delivery

INFORMATION



If any accessories not sold or authorized by Zimmer GmbH are used, the function of the product cannot be guaranteed. Zimmer GmbH accessories are specifically tailored to the individual products.

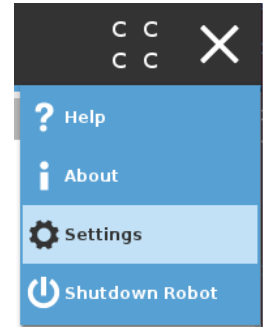
► For optional accessories and those included in the scope of delivery, refer to our website.

7 Installation

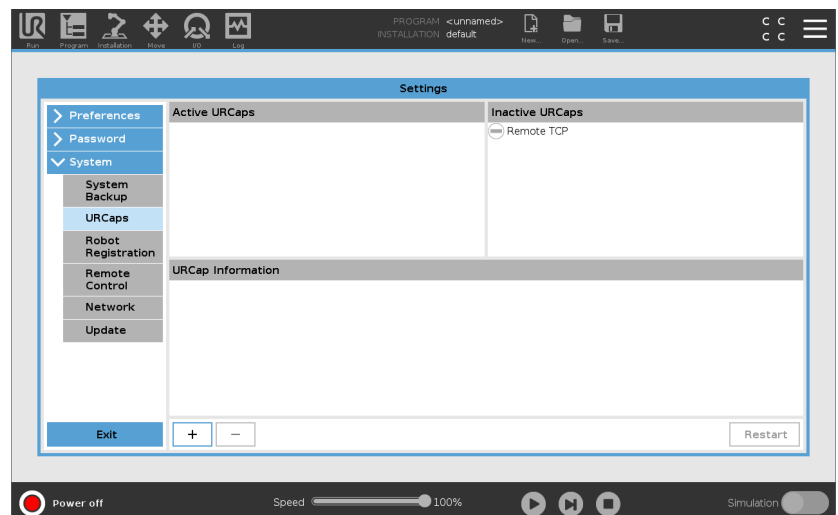
7.1 Installing the MATCH Comfort App

The MATCH Comfort App is installed to the robot control panel to enable direct control of the grippers.

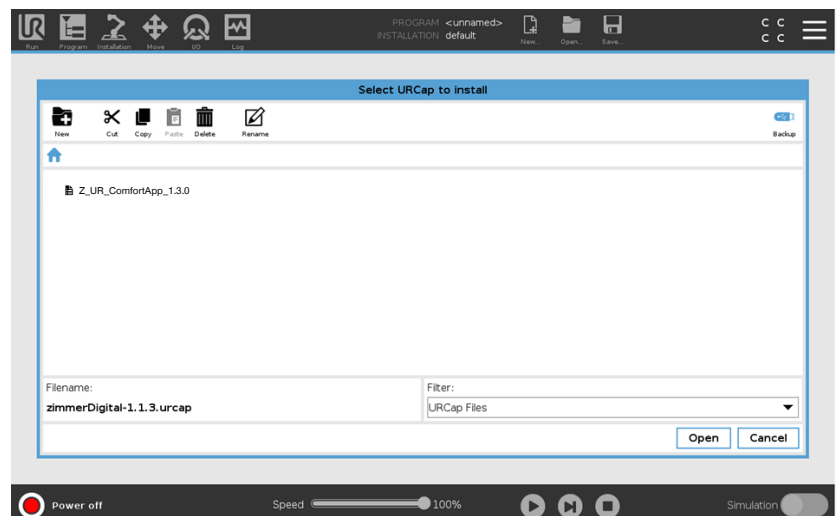
- ▶ Download the *zimmerDigital-urcap* file in the *UR_Comfort_App* folder via the reference link listed in the digitalZ document or via the QR code.
- ▶ Copy the *zimmerDigital-urcap* file to a USB memory stick.
- ▶ Make sure that the robot control panel is already connected to the robot control system.
- ▶ Switch off the voltage supply on the robot tool I/O via the emergency stop button.
- ▶ Plug the USB memory stick with the installation files for the MATCH Comfort App into the robot control panel.
- ▶ Press the button in the header.
- ▶ Press *Settings*.



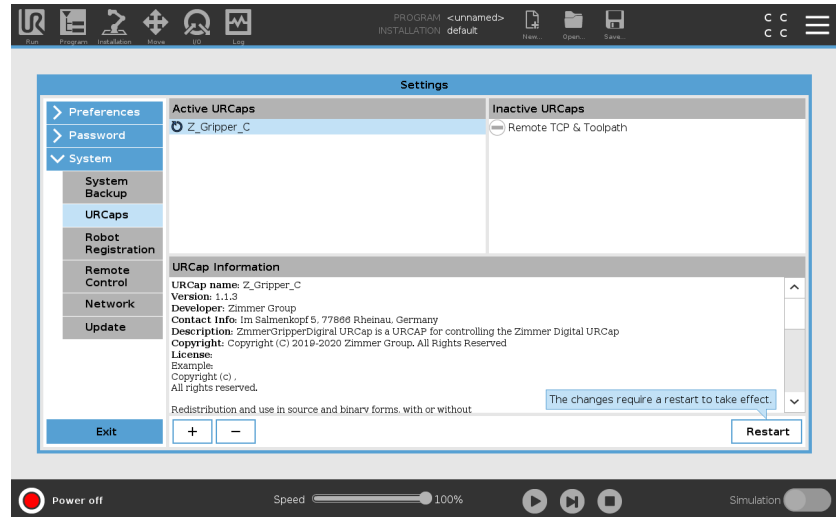
- ▶ In the menu, press *System*.
- ▶ In the *System* menu item, press *URCaps*.
- ▶ Press the + Button.



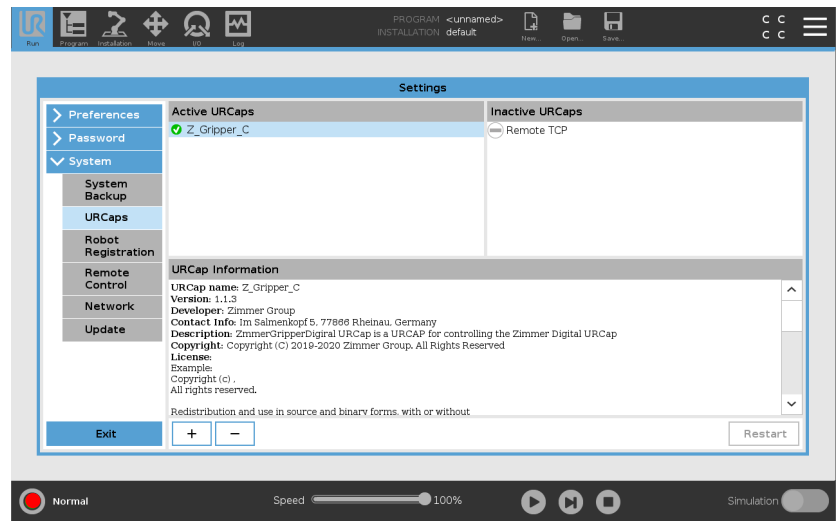
- ▶ Navigate to the file *zimmerDigital-urcap*.
- ▶ Select the file *Z_UR_ComfortApp_X.X.X*.
- ▶ Press the *Open* button.



- Press the *Restart* button to activate the firmware.
- ⇒ The robot control panel performs a restart.

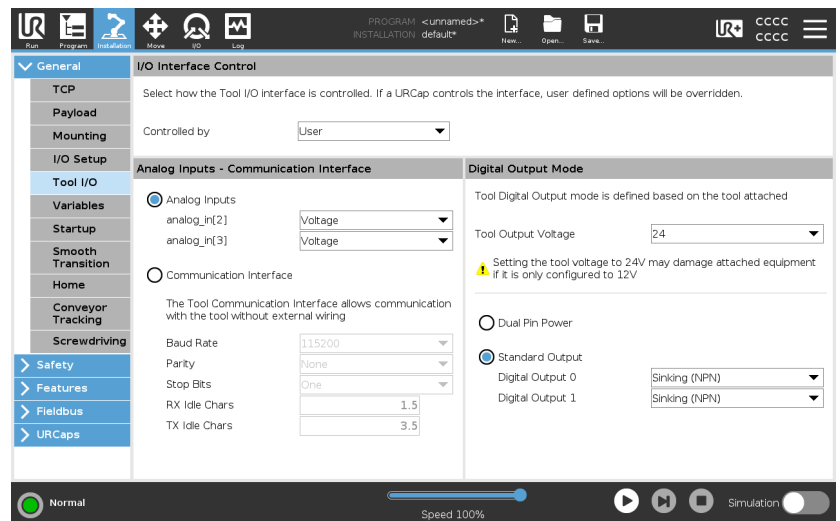


- After the restart, check whether the MATCH Comfort App has been installed correctly.
- ⇒ The MATCH Comfort App has been installed correctly if the green checkmark is displayed in the *Active URCaps* area.



8 Commissioning

- ▶ Press *Installation* in the menu bar.
 - ▶ In the *General* menu, press *Tool I/O*.
 - ▶ In the *Controlled by* drop-down menu, select the *User* option.
 - ▶ Activate the *Analog Inputs* option field.
 - ▶ Select *Voltage* in the drop-down menu.
 - ▶ Activate the *Analog Inputs* option field.
 - ▶ Select *Sinking (PNP)* in the drop-down menu for all Match grippers.
 - ▶ Select *Sinking (NPN)* in the drop-down menu for the HRC series.
- ⇒ Settings can only be made via the MATCH Comfort App.
- ▶ Install the gripper to the robot.
 - ▶ Switch the robot on.

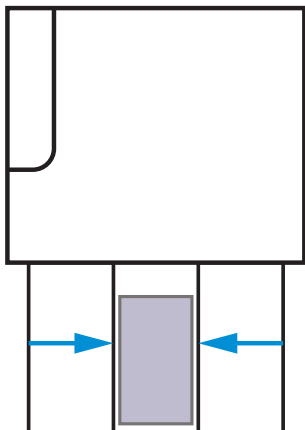


8.1 Creating a gripper configuration

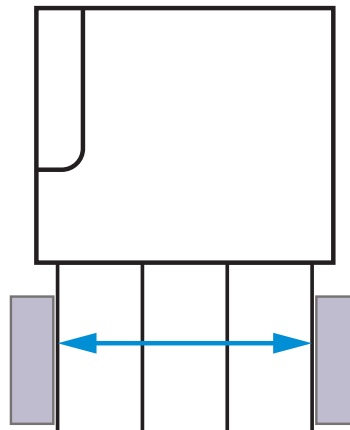
- ▶ Press *Installation* in the menu bar.
- ▶ In the *URCaps* menu, press *Zimmer*.

8.1.1 Selecting the gripping direction

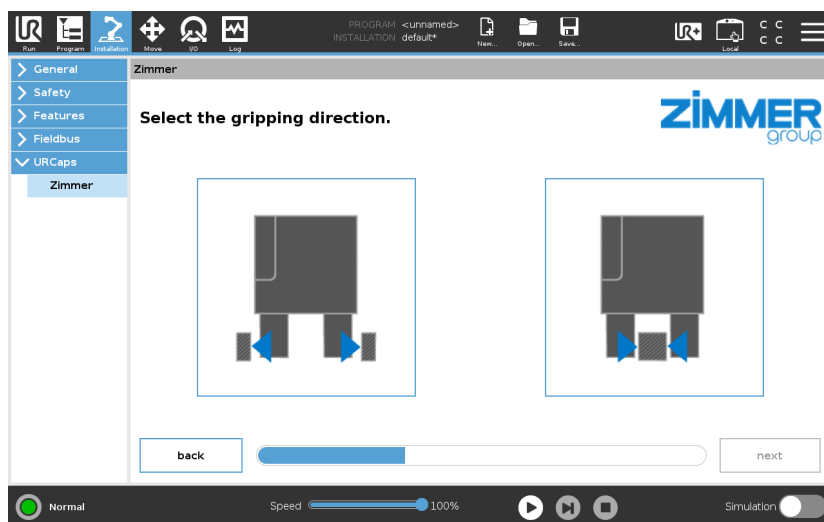
Outside gripping



Inside gripping



► Select the gripping direction.



8.1.2 Manual control

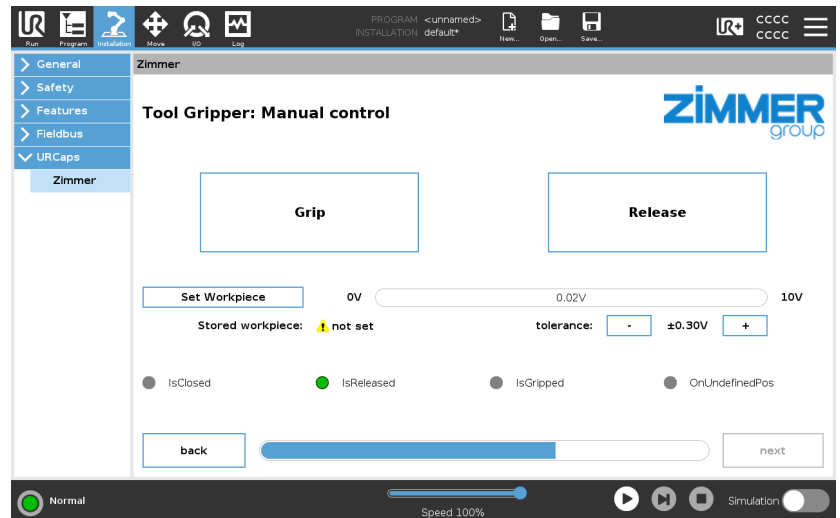
NOTICE



The prerequisite for the function test is that the wiring between the robot and SCM is present and that the robot, SCM and gripper are switched on.

You can test and operate the function of the gripper and view its status in the lower area of the screen.

- ▶ Press the *Grip* button to set the voltage for gripping the workpiece.
- ▶ Press the *Release* button to set the voltage for releasing the workpiece.
- ▶ Move the bar to the desired value to set the voltage in V.
- ▶ Press the - and + buttons to set the tolerance.
- ▶ Press the *Set Workpiece* button to save the settings.



- ▶ Click the *next* button.

8.1.3 Saving the gripper configuration

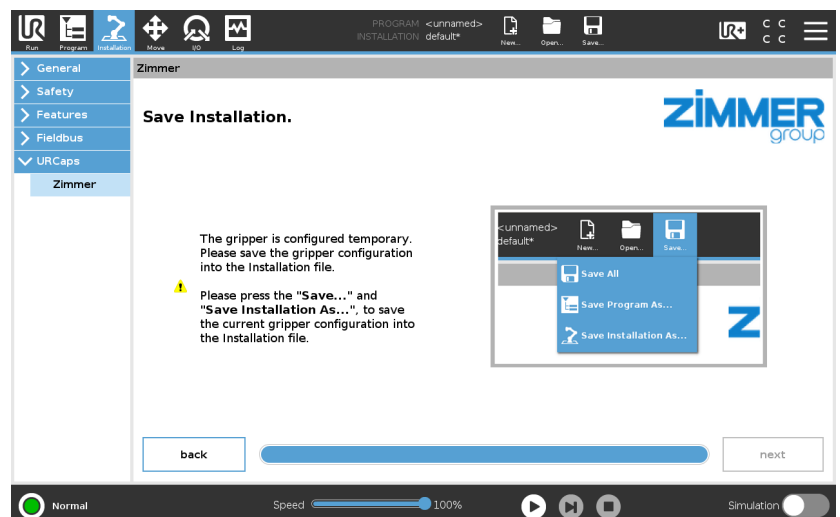
NOTICE



The settings are temporary.

- ▶ Save the settings to the installation file.

- ▶ In the prompt, press the *Save All* or *Save Installation As* button.
- ⇒ The gripper configuration has been stored.
- ▶ In the prompt, click the *Ok* button.
- ⇒ The gripper configuration is complete.
- ⇒ The function blocks/subprograms have been created and are available for programming.



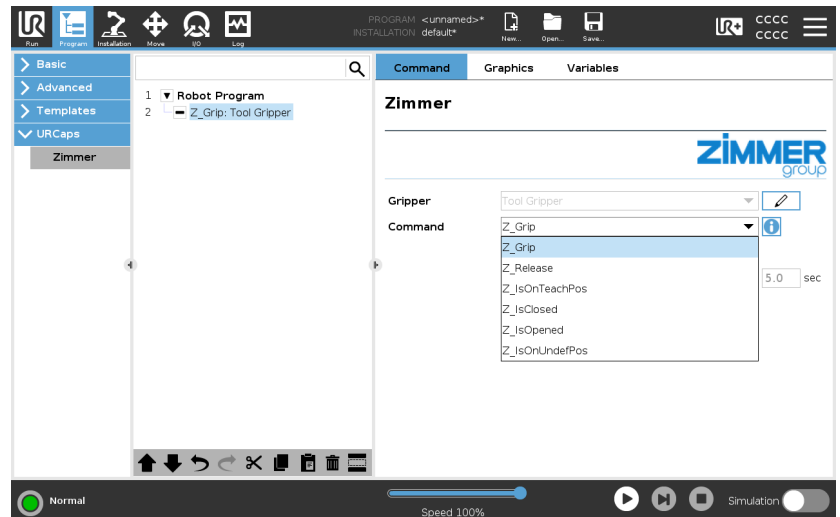
8.2 URCaps

Program nodes can be set in the *URCaps* menu item.

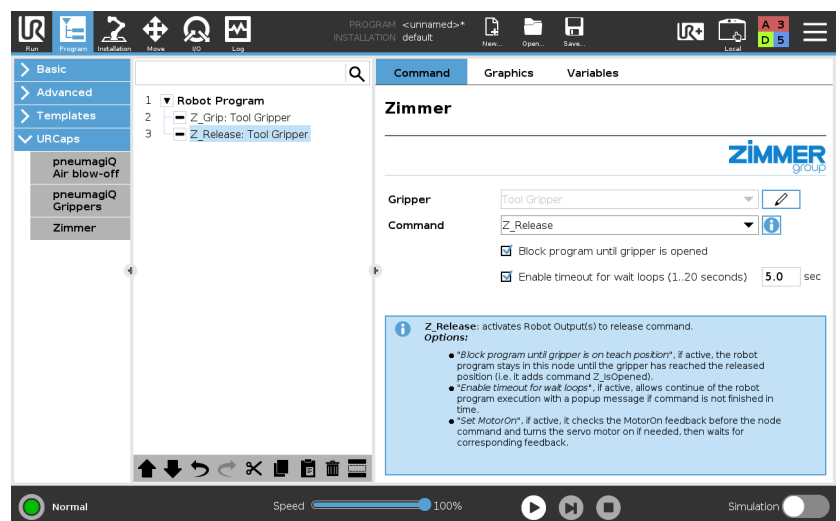
- Press *Program* in the menu bar.
- In the *URCaps* menu, press *Zimmer*.

8.2.1 URCaps Zimmer

- In the *Command* drop-down menu, select the robot job that you want to define for the gripper.



- Activate the desired checkboxes.



9 Operation

9.1 Control principle of the gripper

- ▶ Grip (Z_Grip) or release (Z_Release) the workpiece.
- ▶ Check the position of the gripper jaw (Z_IsOnTeachPos, Z_IsOpened, Z_IsClosed or Z_IsOnUndefPos).


9.2 Overview of generated robot jobs

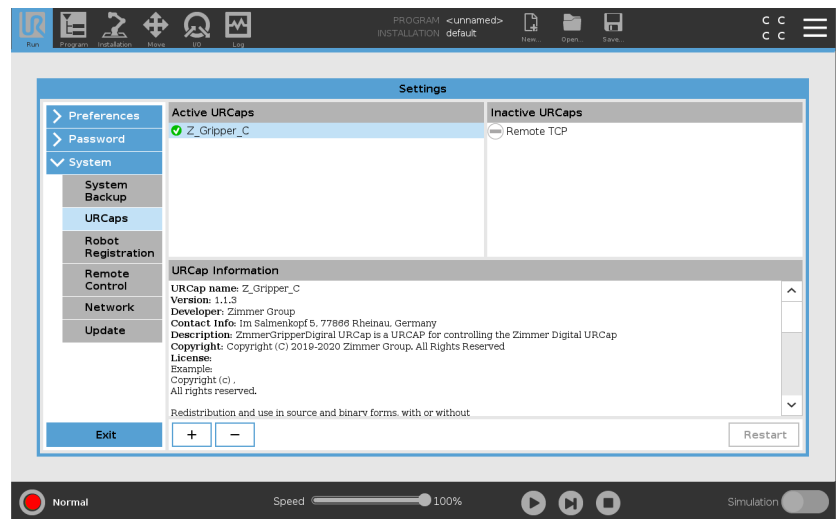
After successful configuration of the grippers using the HMI software *ZG_IO_LINK_HMI*, robot jobs for various functions are generated in the robot control panel. The robot jobs can be called up from user jobs. The following robot jobs can be created using the MATCH Comfort App.

Not all robot jobs are generated after successful configuration of the grippers. The job is created only if the corresponding command or status is wired and used by the equipped gripper(s).

Generated robot job name	Parameter In	Parameter Out	Function
Z_Grip1 Z_Grip2	1: Address gripper 1 2: Address gripper 2	<i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Gripping
Z_Release1 Z_Release2	1: Address gripper 1 2: Address gripper 2	<i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Release
Z_IsOpened1 Z_IsOpened2	1: Address gripper 1 2: Address gripper 2	<i>bOpened</i> = <i>TRUE</i> , if gripper is open = <i>FALSE</i> , if gripper is closed <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the gripper is open.
Z_IsClosed1 Z_IsClosed2	1: Address gripper 1 2: Address gripper 2	<i>bClosed</i> = <i>TRUE</i> , if gripper is open = <i>FALSE</i> , if gripper is closed <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the gripper is closed.
Z_IsOnTeachPos1 Z_IsOnTeachPos2	1: Address gripper 1 2: Address gripper 2	<i>bIsOnTeachPos</i> = <i>TRUE</i> , if gripper is set to TeachPosition = <i>FALSE</i> , if gripper is not set to TeachPosition <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the gripper is set to <i>Teach-Position</i> .
Z_IsOnUndefPos1 Z_IsOnUndefPos2	1: Address gripper 1 2: Address gripper 2	<i>bUndefPos</i> = <i>TRUE</i> , if gripper is set to Undefined-Position = <i>FALSE</i> , if gripper is not set to UndefinedPosition <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the gripper is set to <i>OnUndefinedPos</i> .

10 Uninstalling the MATCH Comfort app

- ▶ Press the  button in the header.
- ▶ Press *Settings*.
- ▶ In the menu, press *System*.
- ▶ In the *System* menu item, press *URCaps*.
- ▶ In the *Active URCaps* area, press *Z_Gripper_C*.
- ▶ Press the - Button.
- ⇒ Uninstallation is complete.
- ▶ Press the *Restart* button to activate the firmware.
- ⇒ The robot control panel performs a restart.



11 Error diagnosis

INFORMATION



- ▶ More information can be found in the installation and operating instructions of the gripper.
- ▶ Please contact Zimmer Customer Service if you have any questions.