



OPERATING INSTRUCTIONS

MATCH Comfort App

for ABB robots

DDOC01290

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 *FlexPendant* of the *OmniCore* robot control system provided.

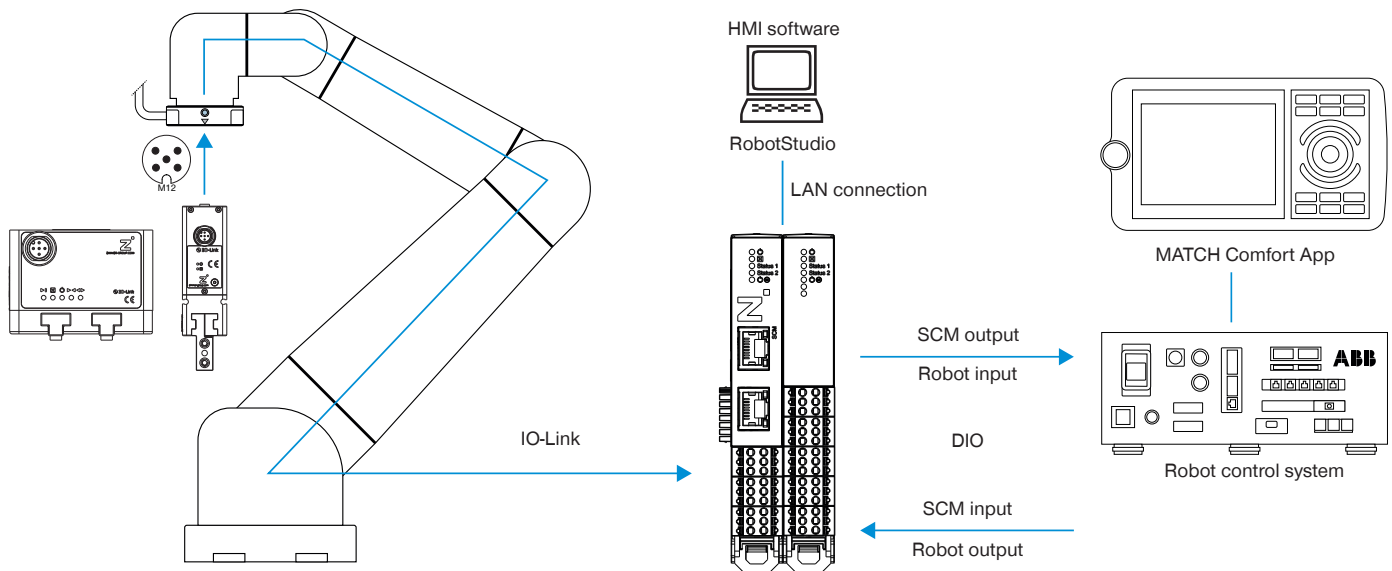
3 Personnel qualification

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 Smart Communication Module (SCM) is a gateway between the grippers and the robot control system. The SCM can be configured via the HMI software or MATCH Comfort App. The grippers can be controlled using the MATCH Comfort App on the robot control panel.

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 Setting up the Ethernet connection

The MATCH Comfort App is installed via *RobotStudio*.

INFORMATION



RobotStudio must be installed on a Windows PC. The Ethernet port of this Windows PC must have the same subnet mask as that of the robot.

- ▶ Connect the robot to the Windows PC via an Ethernet cable.
- ▶ Establish communication of *RobotStudio* with the robot.

7.2 Saving the parameters

The process of installing the MATCH Comfort app creates 8 input signals and 8 output signals and assigns them to the I/O device.

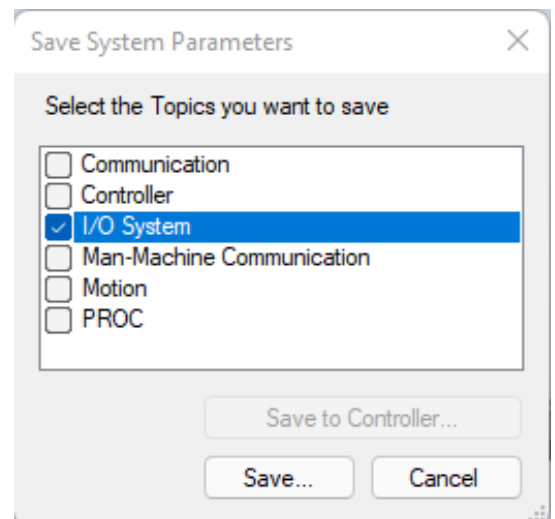
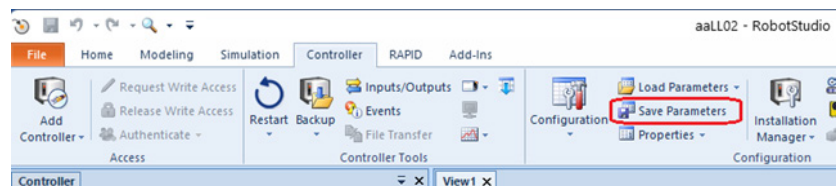
NOTICE



If your robot already has the I/O device *ABB_Scalable_IO* and its inputs or outputs are already assigned to another use, installing the MATCH Comfort App overwrites the assignment of these inputs and outputs.

You can use a backup copy to reload these parameters.

- ▶ Start *RobotStudio*.
- ▶ In the *Controller* tab, click the *Save Parameters* button.
- ⇒ The *Save System Parameters* window opens.
- ▶ Enable the *I/O System* checkbox.
- ▶ Click the *Save* button.
- ⇒ The window for saving files opens.
- ▶ Specify the path under which you want to save the backup copy *EIO.cfg*.



7.3 Installing the MATCH Comfort App

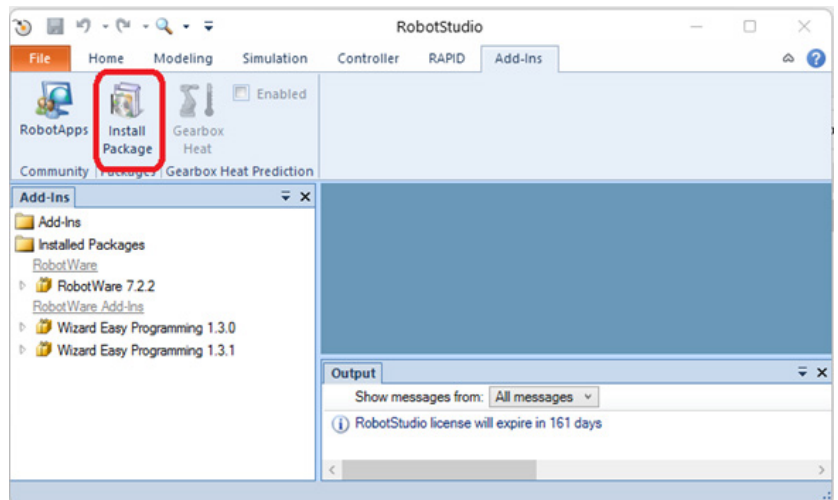
The MATCH Comfort app is installed as an add-in via *RobotStudio* on the Windows PC and can then be operated on the robot control panel.

INFORMATION

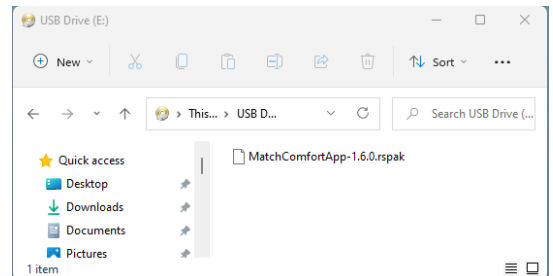


The USB memory stick with the data is included in the scope of delivery.

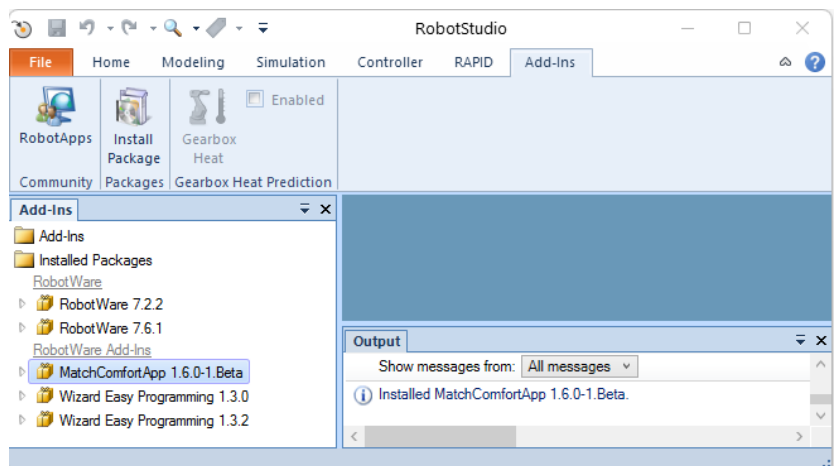
- ▶ Plug the USB memory stick into the Windows PC.
- ▶ Copy the folder with the installation file onto the Windows PC.
- ▶ Start *RobotStudio*.
- ▶ In the *Add-Ins* tab, click the *Install Package* button.



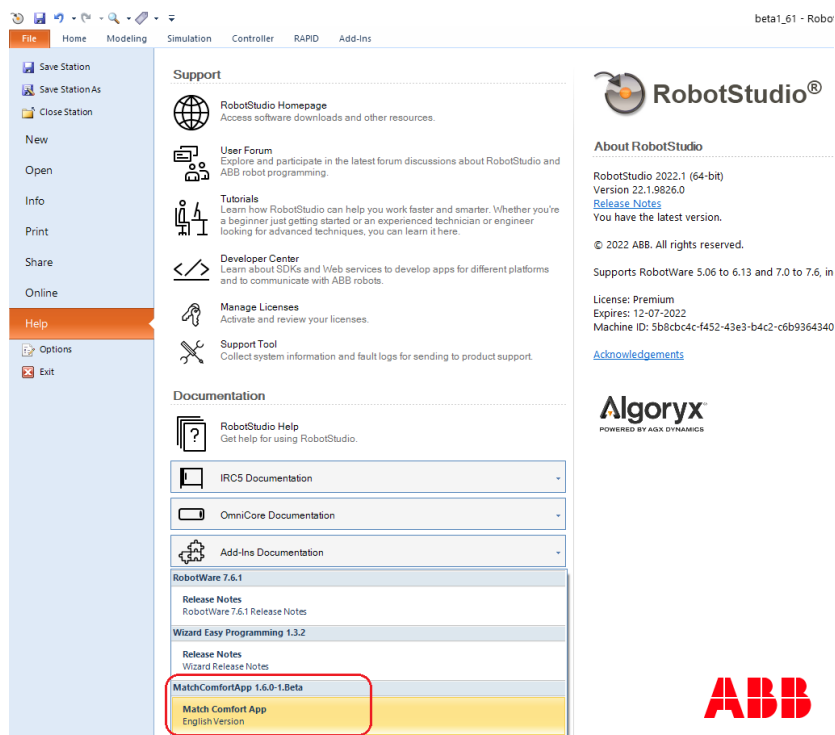
- ▶ Open the installation file.



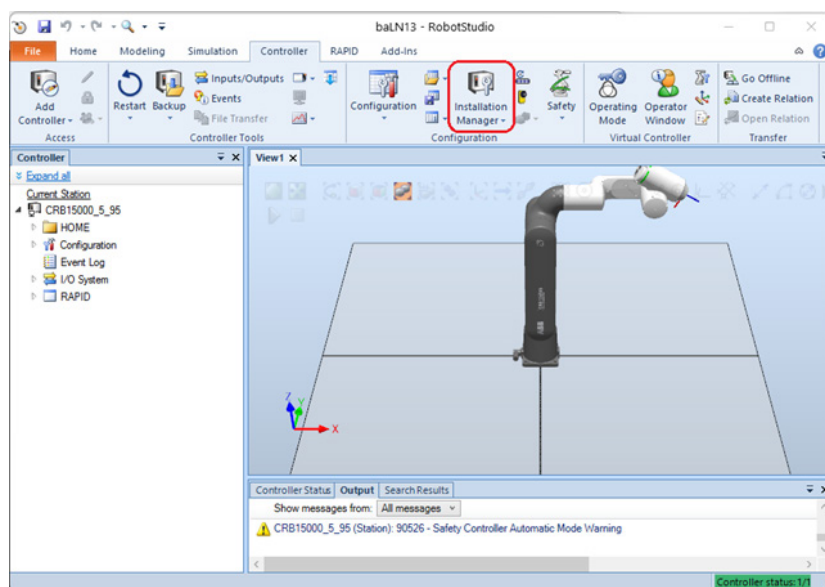
- ⇒ The MATCH Comfort App has been installed as an add-in.



⇒ The operating instructions of the MATCH Comfort App have been installed in *RobotStudio*.

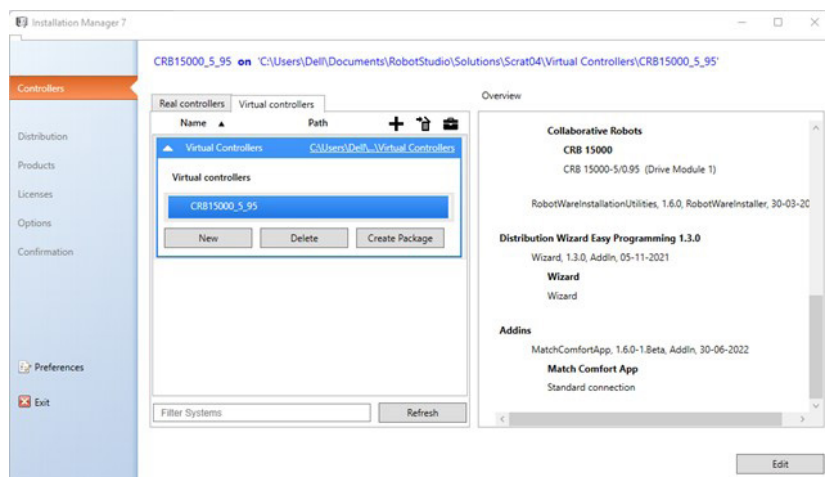


► In the *Controller* tab, click the *Installation Manager* button.



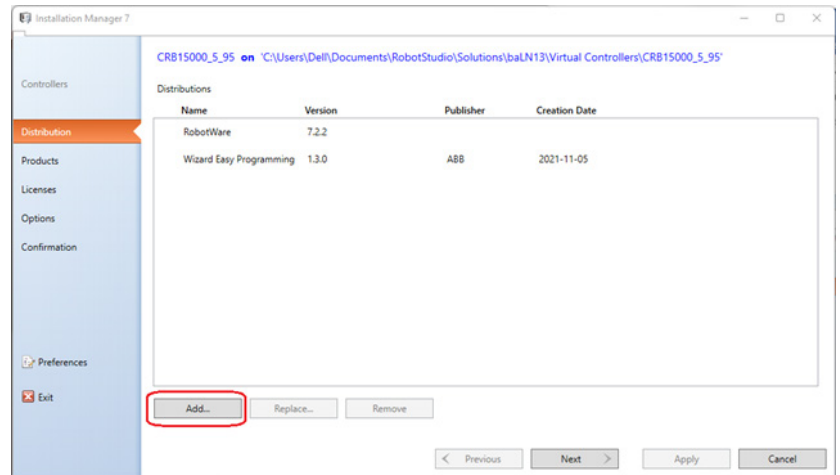
⇒ The *Installation Manager* window opens.

- In the *Controllers* menu, select the control system.
- Click the *Edit* button.



⇒ The *Distribution* menu is displayed.

► Click the *Add* button.



⇒ The *Select Distribution* window opens.

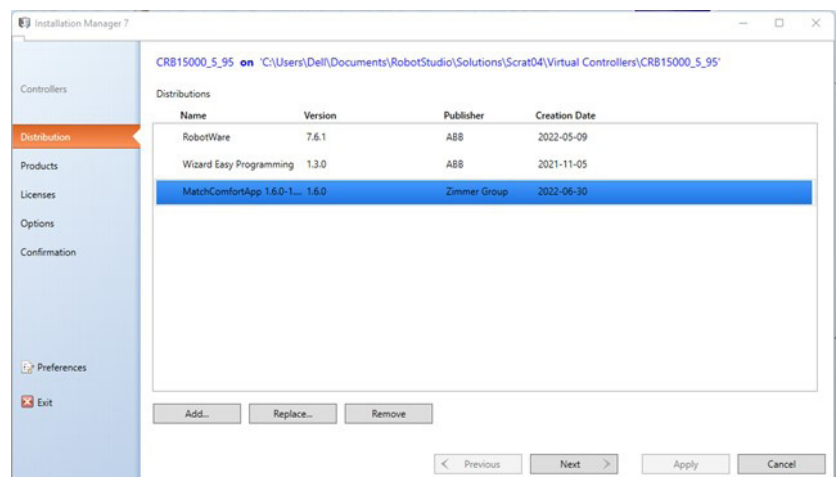
► Select the MATCH Comfort App.

► Click the *OK* button.



⇒ The MATCH Comfort App is installed as an add-in in the *Distribution* menu.

► Click the *Next* button several times.

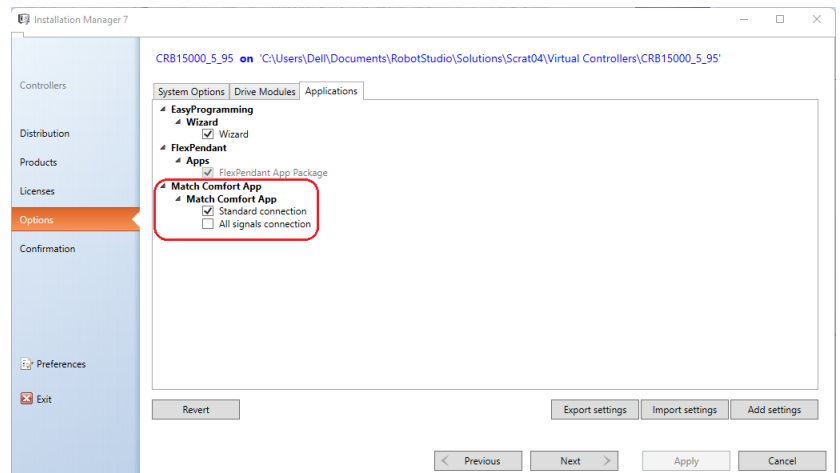


► In the *Options* menu, click the *Applications* tab.

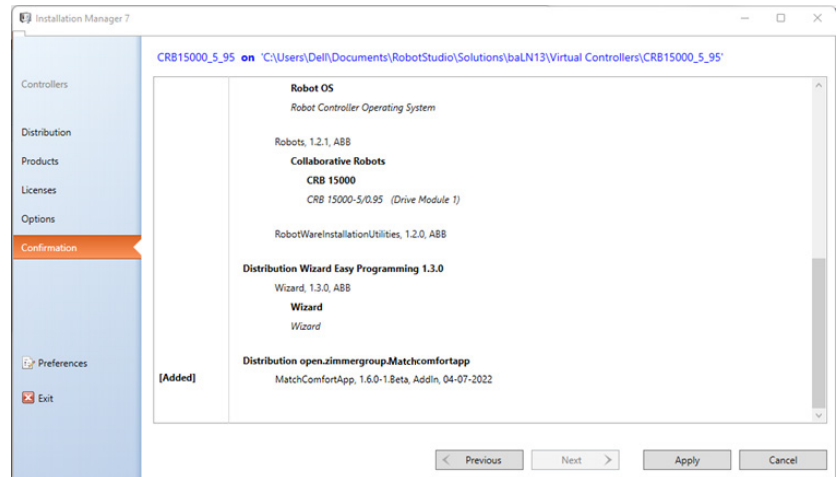
► Activate the *Standard connection* option field to assign 8 inputs and 8 outputs.

► Activate the *All signals connection* option field to assign all 12 inputs and 12 outputs.

► Click the *Next* button several times.

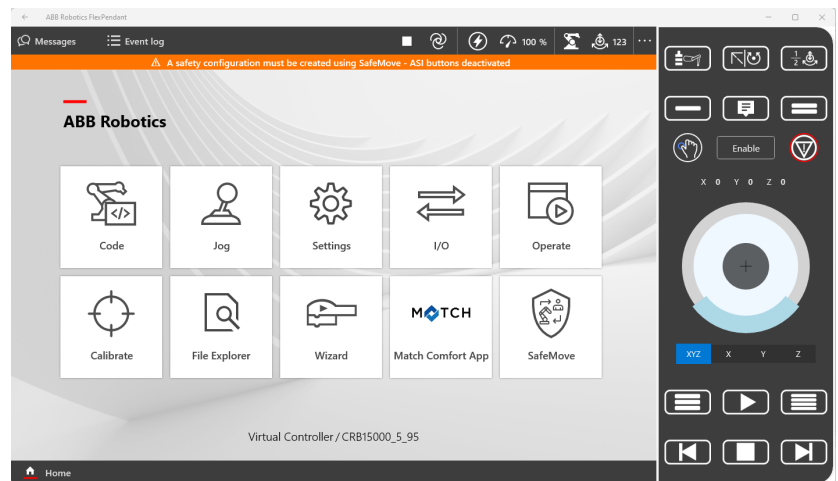


- ▶ Click the *Apply* button.
- ⇒ The installation is complete.
- ▶ Close the *Installation Manager* window.



- ▶ Switch off the power supply of the robot control system and robot control panel.
- ▶ After a few seconds, switch on the power supply of the robot control system and robot control panel again.
- ▶ Switch on the robot control system and robot control panel.

- ⇒ The robot control panel displays the *MATCH Comfort App* button.



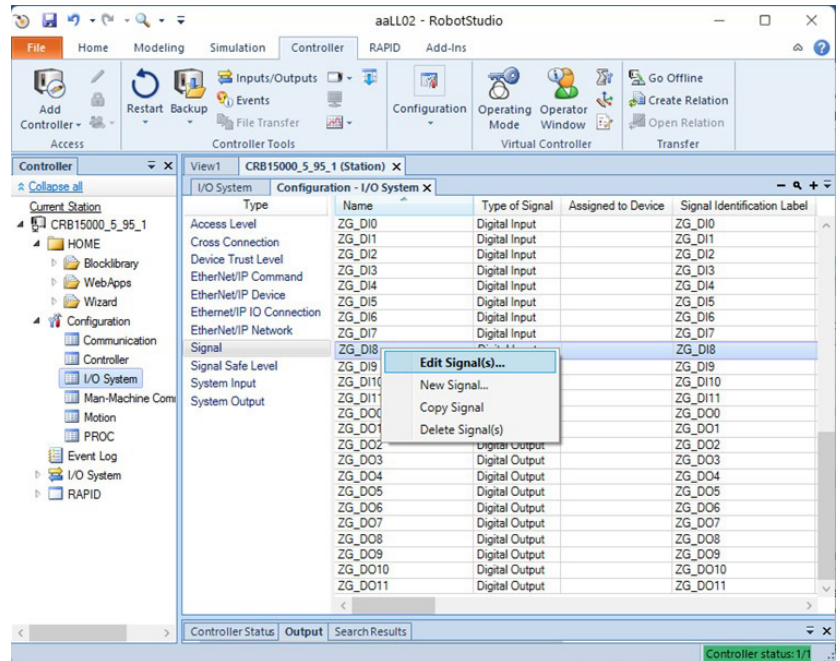
8 Assigning additional input signals and output signals

After installing the MATCH Comfort App with the *Standard connection* option, 8 digital inputs and 8 digital outputs are configured.

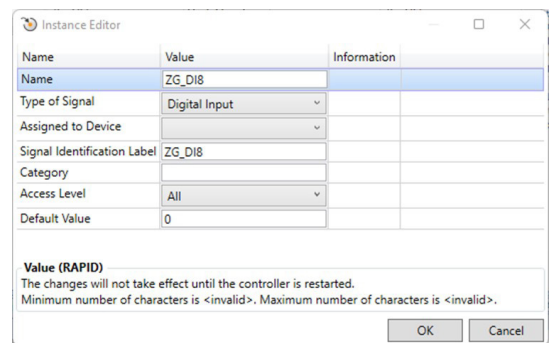
The signals of the standard configuration are assigned to the *ABB_Scalable_IO* I/O device. Because the I/O device can have more than eight digital inputs and outputs, the rest of the inputs and outputs can be used for other purposes.

After installing the MATCH Comfort App with the *All signals connection* option, 12 digital inputs and 12 digital outputs are configured.

- ▶ Right-click the signal you want to assign.
 - e.g. ZG_DI8
- ▶ In the context menu, click *Edit Signal*.
- ⇒ The *Instance Editor* window opens.



- ▶ Select the desired values in the drop-down menus.
- ▶ In the *Assigned to Device* drop-down menu, select the option *ABB_Scalable_IO*.
- ▶ Click the *OK* button.
- ▶ Configure the rest of the signals.
- ▶ Switch off the power supply of the robot control system and robot control panel.
- ▶ After a few seconds, switch on the power supply of the robot control system and robot control panel again.
- ▶ Switch on the robot control system and robot control panel.
- ⇒ The additional signals are displayed in the MATCH Comfort App.



9 Commissioning

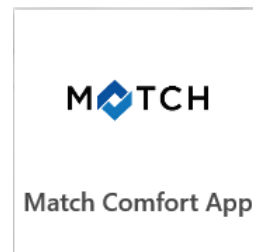
NOTICE



- Switch on the robot so that you can use the MATCH comfort App.

The *MATCH Comfort App* button is displayed on the robot control panel.

- Click the *MATCH Comfort App* button to start the MATCH Comfort App.

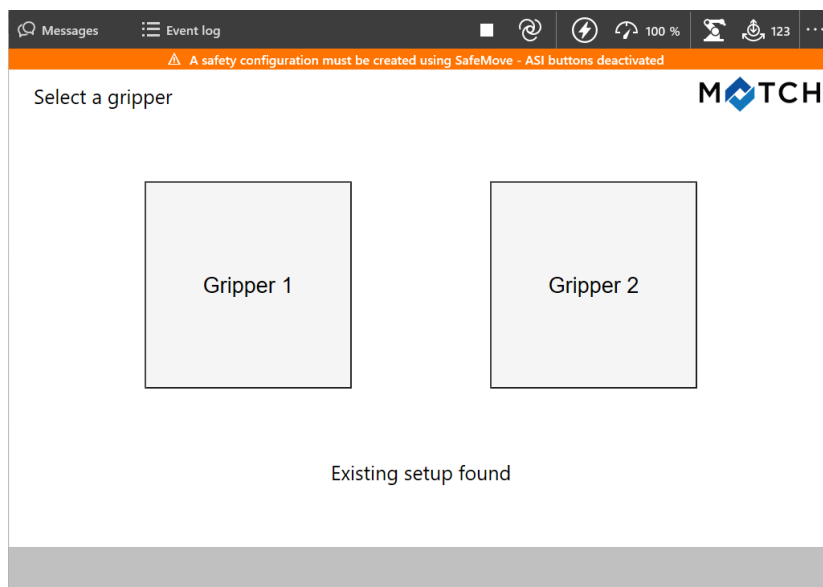


9.1 Existing setup found

The following screen is displayed only if an existing setup is found for two grippers.

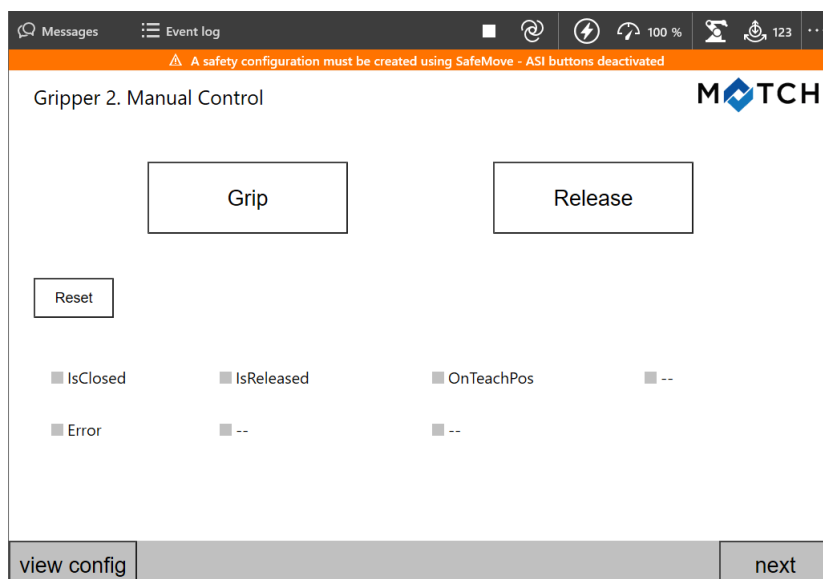
This screen does not appear if the available setup is only found for one gripper. In this case, the next screen is shown right away.

- Click the button of the desired gripper.
- ⇒ The *Manual control* screen for the manual control is displayed.

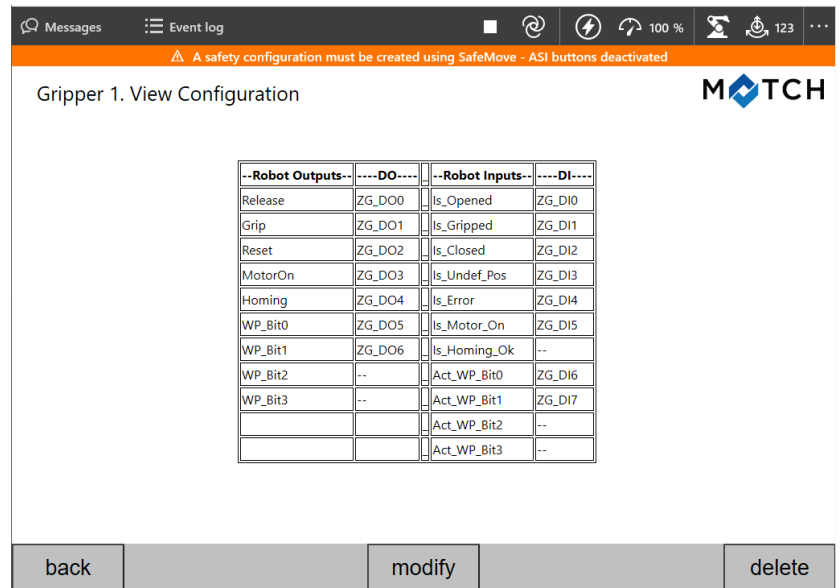


In the *Manual control* screen, you can operate the gripper manually and display the status.

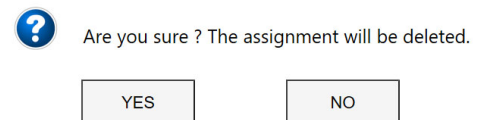
- Click the *view config* button.



- ⇒ The *View Configuration* screen for editing the gripper configuration is displayed.
- Click the *delete* button.



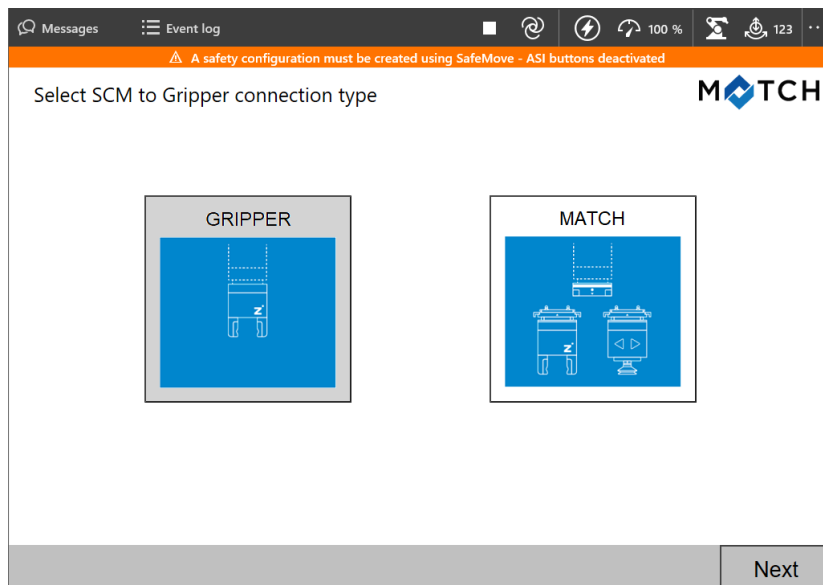
- In the prompt, click the *YES* button.
- ⇒ The existing setup is deleted.
- ⇒ The screen sequence for configuring new grippers is displayed.



9.2 Creating a gripper configuration

9.2.1 Selecting the connection type

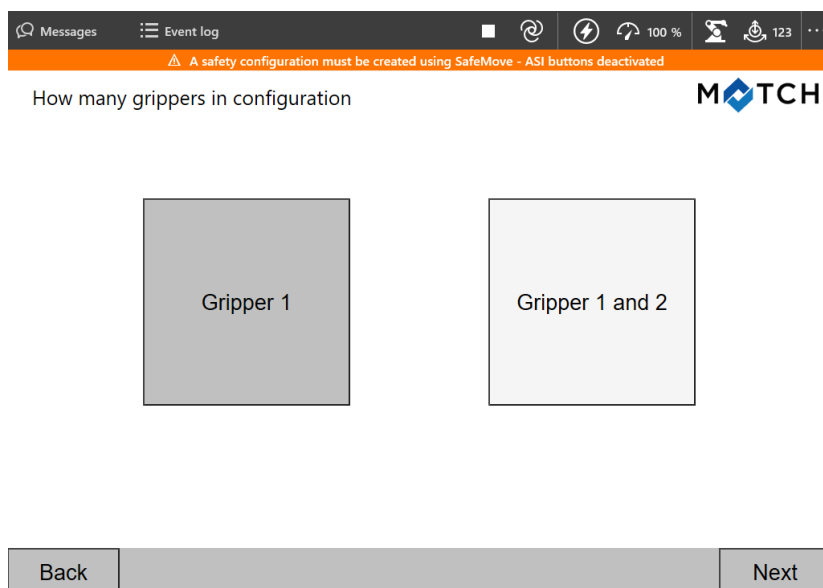
- ▶ Click *Gripper* if you have connected a gripper.
- ▶ Click *MATCH* if you have connected a MATCH gripper.
- ▶ Click the *next* button.



9.2.2 Gripper connection type

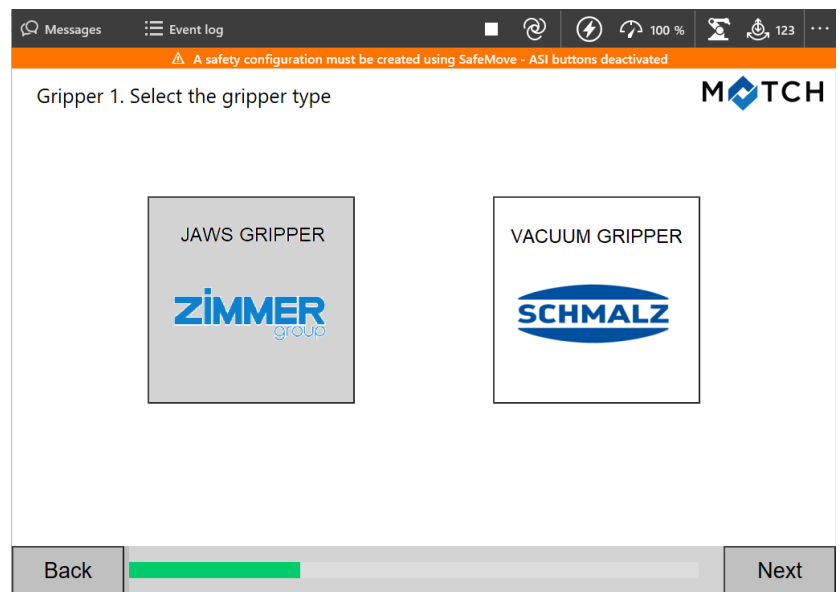
9.2.2.1 Selecting the number of grippers

- ▶ Click the desired number of grippers you want to have in your robot application.
- ▶ Click the *next* button.



9.2.2.2 Selecting the gripper type

- ▶ Click the desired gripper type.
- ▶ Click the *next* button.



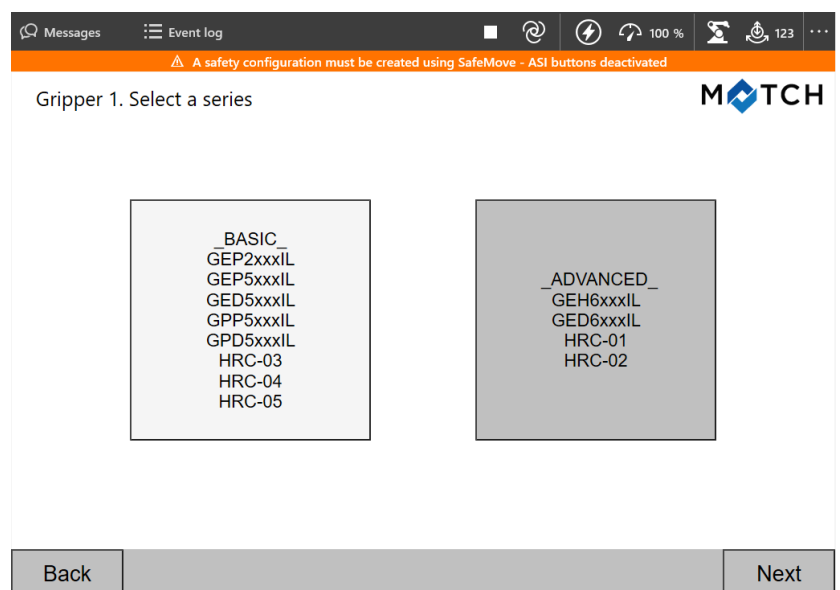
9.2.2.3 Selecting the gripper series

INFORMATION



Basic and Advanced designate different classes of grippers from Zimmer GmbH.

- ▶ Click the class of your gripper.
- ▶ Click the *next* button.



9.2.2.4 Manual control

NOTICE

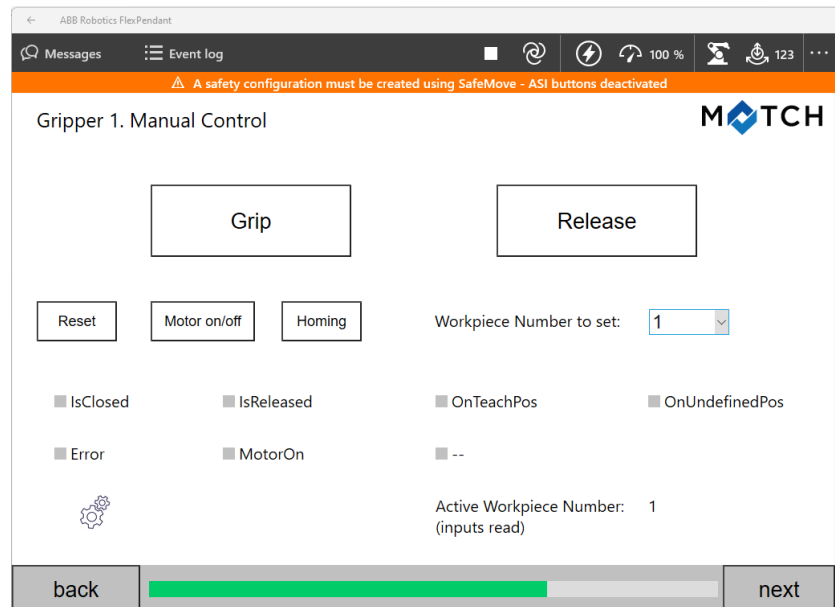


The prerequisite for the function test is that the wiring between the robot and SCM is present and that the robot, SCM and gripper are switched on.

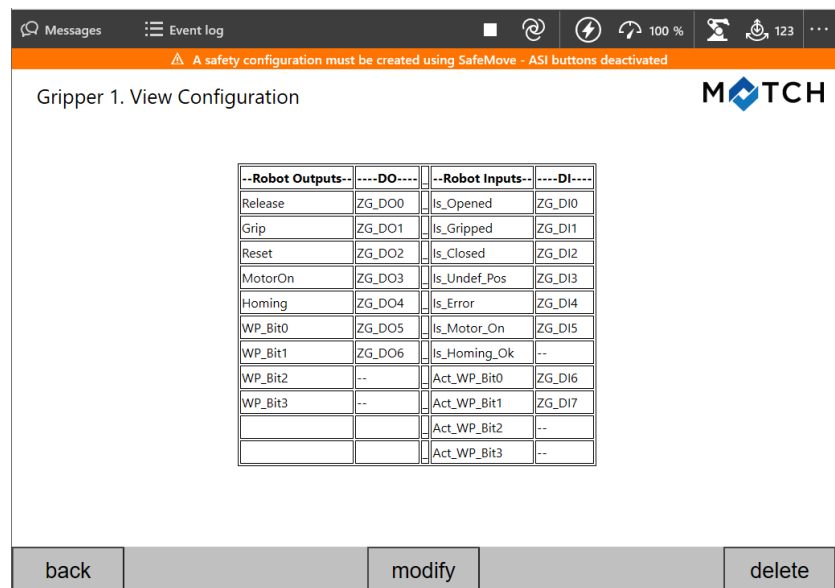
You can test and operate the function of the gripper and view its status in the lower area of the screen.

You can accept the default assignment or change it.

- Click the *next* button if you want to keep the default assignment.
- Click the button to modify the default assignment.
- ⇒ The *View Configuration* screen for editing the gripper configuration is displayed.



- Click the *modify* button to modify the default assignment.
- ⇒ The *Select command connection* screen for selecting the command connections is displayed.



9.2.2.5 Selecting the command connections

NOTICE



The gripper wiring must match the gripper configuration done in the MATCH Comfort App.

NOTICE



If this screen is displayed for the first time, a standard assignment is displayed.

► Complete the wiring precisely as shown on this screen.

To reset the values to the defaults, edit the values or return to the selection of the number of grippers (see the section "Selecting the number of grippers").

► Establish the correspondence of the robot output number with the digital input function of the SCM.

You can accept the default assignment or change it.

► Click the *next* button if you want to keep the default assignment.

Editing the command connection

► Click the button of the desired signal.

- e.g. Release

► Click the desired output.

- e.g. ZG_DO7

⇒ The output has been assigned to the signal.

⇒ The button of the signal is expanded by adding the output.

- e.g. Release (ZG_DO7)

► Click the *Next* button.

Signal	WP_Bit	Output	Output
Release (ZG_DO0)	WP_Bit0 (ZG_DO5)	ZG_DO0	ZG_DO6
Grip (ZG_DO1)	WP_Bit1 (ZG_DO6)	ZG_DO1	ZG_DO7
Reset (ZG_DO2)	WP_Bit2 (--)	ZG_DO2	ZG_DO8
MotorOn (ZG_DO3)	WP_Bit3 (--)	ZG_DO3	ZG_DO9
Homing (ZG_DO4)		ZG_DO4	ZG_DO10
		ZG_DO5	ZG_DO11

9.2.2.6 Selecting the status connections

- Establish the correspondence of the robot input number with the digital input function of the SCM.

NOTICE



If this screen is displayed for the first time, a standard assignment is displayed.

- Complete the wiring precisely as shown on this screen.

You can accept the default assignment or change it.

- Click the *next* button if you want to keep the default assignment.

Editing the status connections

- Click the button of the desired signal.
 - e.g. Is_Opened
- Click the desired input.
 - e.g. ZG_DI7
- ⇒ The input has been assigned to the signal.
- ⇒ The button of the signal is expanded by adding the input.
 - e.g. Is_Opened (ZG_DI7)
- Click the *Next* button.

Messages Event log 100 % 123

A safety configuration must be created using SafeMove - ASI buttons deactivated

MATCH

Gripper 1. Select Status Connections

Is_Opened (ZG_DI0)	Is_Homing_Ok (--)	ZG_DI0	ZG_DI6
Is_Gripped (ZG_DI1)	Act_WP_Bit0 (ZG_DI6)	ZG_DI1	ZG_DI7
Is_Closed (ZG_DI2)	Act_WP_Bit1 (ZG_DI7)	ZG_DI2	ZG_DI8
Is_Undef_Pos (ZG_DI3)	Act_WP_Bit2 (--)	ZG_DI3	ZG_DI9
Is_Error (ZG_DI4)	Act_WP_Bit3 (--)	ZG_DI4	ZG_DI10
Is_Motor_On (ZG_DI5)		ZG_DI5	ZG_DI11

Back Next

- In the prompt, click the *YES* button.



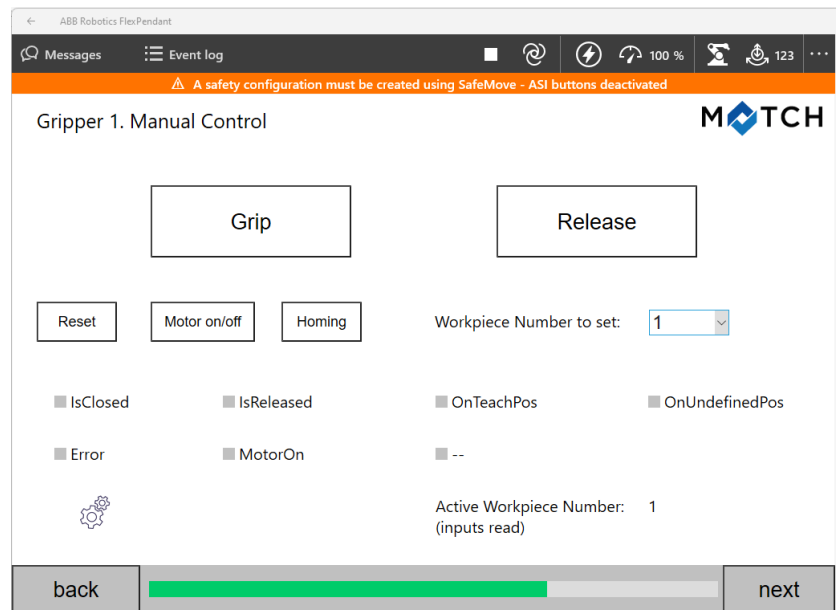
Are you sure ? The assignment will be modified.

YES

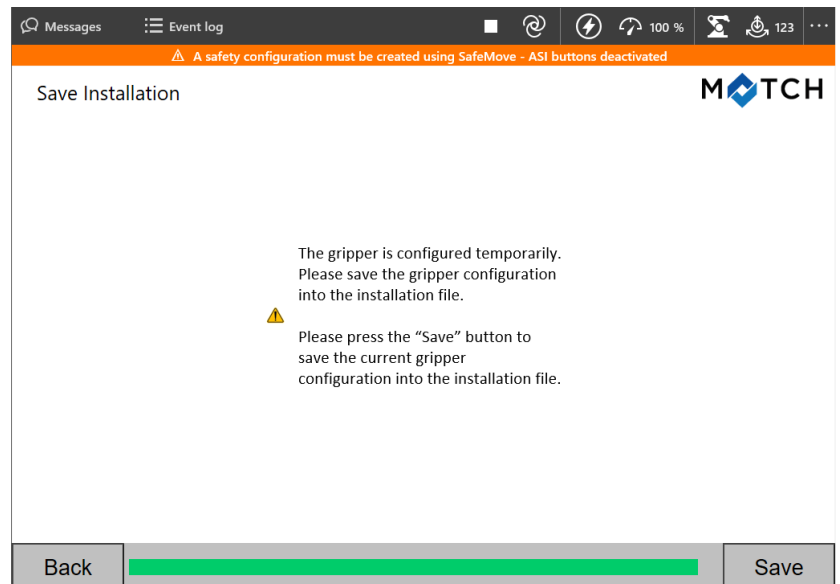
NO

9.2.2.7 Storing gripper configuration

- ⇒ The *Manual control* screen for the manual control is displayed.
- For more information, refer to the section "Manual control".
- Click the *next* button.



- In the prompt, click the *Save* 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.

Gripper Configuration Saved !

OK

9.2.3 MATCH connection type

9.2.3.1 Manual control


NOTICE

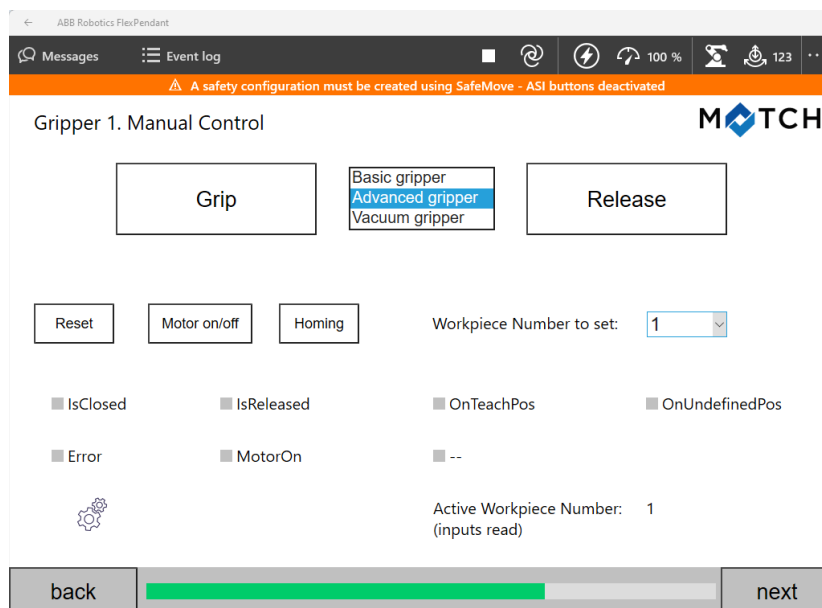


The prerequisite for the function test is that the wiring between the robot and SCM is present and that the robot, SCM and gripper are switched on.

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

You can choose between the grippers in the drop-down menu.

- Click the  button to modify the default assignment.
- ⇒ The *Select command connection* screen for selecting the command connections is displayed.



9.2.3.2 Selecting the command connections

NOTICE



If this screen is displayed for the first time, a standard assignment is displayed.

► Complete the wiring precisely as shown on this screen.

To reset the values to the defaults, edit the values or return to the selection of the number of grippers (see the section "Selecting the number of grippers").

► Establish the correspondence of the robot output number with the digital input function of the SCM.

You can accept the default assignment or change it.

► Click the *next* button if you want to keep the default assignment.

Editing the command connection

► Click the button of the desired signal.

- e.g. Release

► Click the desired output.

- e.g. ZG_DO7

⇒ The output has been assigned to the signal.

⇒ The button of the signal is expanded by adding the output.

- e.g. Release (ZG_DO7)

► Click the *Next* button.

Gripper 1. Select Command Connections		MATCH	
Release (ZG_DO0)	WP_Bit0 (ZG_DO5)	ZG_DO0	ZG_DO6
Grip (ZG_DO1)	WP_Bit1 (ZG_DO6)	ZG_DO1	ZG_DO7
Reset (ZG_DO2)	WP_Bit2 (→)	ZG_DO2	ZG_DO8
MotorOn (ZG_DO3)	WP_Bit3 (→)	ZG_DO3	ZG_DO9
Homings (ZG_DO4)		ZG_DO4	ZG_DO10
		ZG_DO5	ZG_DO11

Back Next

9.2.3.3 Selecting the status connections

- Establish the correspondence of the robot input number with the digital input function of the SCM.

NOTICE



If this screen is displayed for the first time, a standard assignment is displayed.

- Complete the wiring precisely as shown on this screen.

You can accept the default assignment or change it.

- Click the *next* button if you want to keep the default assignment.

Editing the status connections

- Click the button of the desired signal.
 - e.g. Is_Opened
- Click the desired input.
 - e.g. ZG_DI7
- ⇒ The input has been assigned to the signal.
- ⇒ The button of the signal is expanded by adding the input.
 - e.g. Is_Opened (ZG_DI7)
- Click the *Next* button.

Messages Event log 100 % 123

A safety configuration must be created using SafeMove - ASI buttons deactivated

Gripper 1. Select Status Connections

Is_Opened (ZG_DI0)	Is_Homing_Ok (--)	ZG_DI0	ZG_DI6
Is_Gripped (ZG_DI1)	Act_WP_Bit0 (ZG_DI6)	ZG_DI1	ZG_DI7
Is_Closed (ZG_DI2)	Act_WP_Bit1 (ZG_DI7)	ZG_DI2	ZG_DI8
Is_Undef_Pos (ZG_DI3)	Act_WP_Bit2 (--)	ZG_DI3	ZG_DI9
Is_Error (ZG_DI4)	Act_WP_Bit3 (--)	ZG_DI4	ZG_DI10
Is_Motor_On (ZG_DI5)		ZG_DI5	ZG_DI11

Back Next

- In the prompt, click the *YES* button.



Are you sure ? The assignment will be modified.

YES

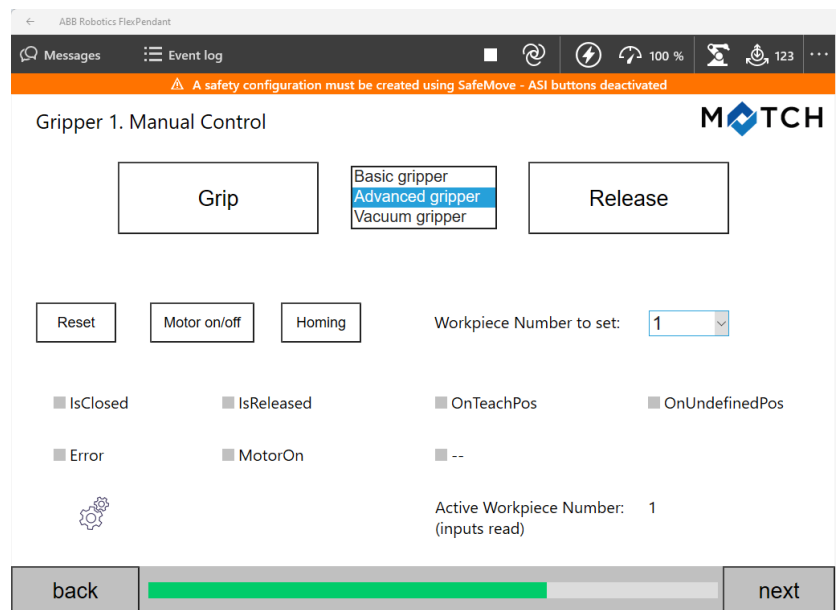
NO

9.2.3.4 Storing gripper configuration

⇒ The *Manual control* screen for the manual control is displayed.

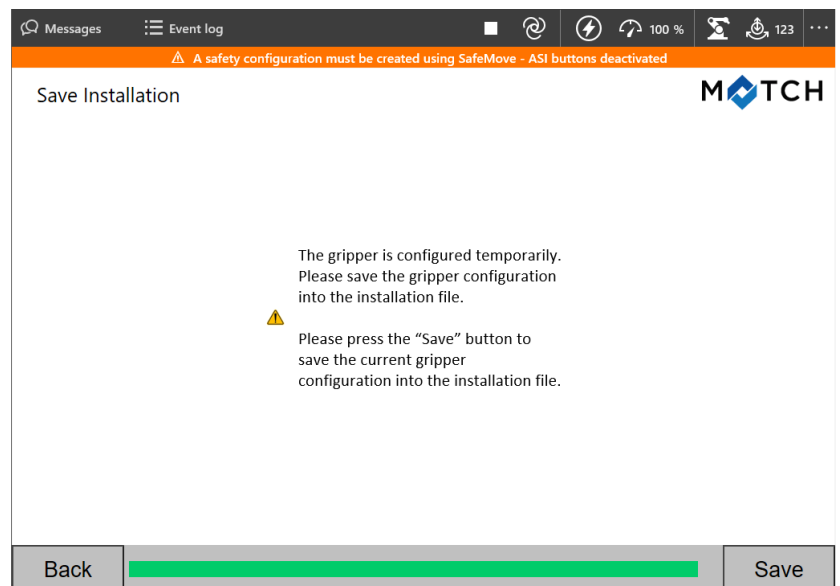
► For more information, refer to the section "Manual control".

► Click the *next* button.



► In the prompt, click the *Save* button.

⇒ The gripper configuration has been stored.



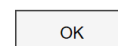
► In the prompt, click the *Ok* button.

⇒ The gripper configuration is complete.

⇒ The function blocks/subprograms have been created and are available for programming.



Gripper Configuration Saved !



10 Operation

10.1 Control principle of the gripper

- ▶ Prepare *Advanced* grippers for the control system:
 - ▶ If necessary, do a reference run (ZHOMING).
 - ▶ Check if the reference run was done (ZISHOMINGOK or ZISHOMINGSUCCESS).
 - ▶ Switch on the motor (ZMOTORON).
 - ▶ Check whether the motor is switched on (ZISMOTORON).
- ⇒ The gripper is prepared for the control system if no error is present (ZISERROR).
- ▶ Set a workpiece configured with the HMI software ZG_IO_LINK_HMI (ZCHANGEWP(number)) if more than one workpiece is used.
- ▶ Check whether a workpiece has changed (Z_ISWPCHANGED(number)).
- ▶ Grip (ZGRIP) or release (ZRELEASE) the workpiece.
- ▶ Check the position of the gripper jaw (ZISONTEACHPOS, ZISOPENED, ZISCLOSED or ZISONUNDEFPOS).

10.2 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).

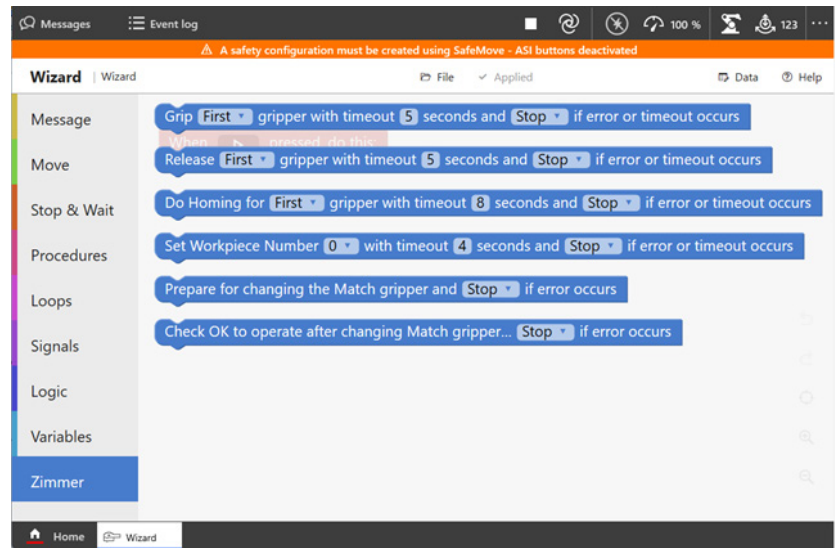
Generated robot job name	Parameter In	Parameter Out	Function
ZGRIP	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	bCmdFail = TRUE, if command fails = FALSE, if command was successful	Gripping
ZRELEASE	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	bCmdFail = TRUE, if command fails = FALSE, if command was successful	Release
ZMOTORON	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	bCmdFail = TRUE, if command fails = FALSE, if command was successful	Switch on motor for <i>Advanced</i> grippers.
ZMOTOROFF	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	bCmdFail = TRUE, if command fails = FALSE, if command was successful	Switch off motor if gripper is present.
ZHOMING	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	bCmdFail = TRUE, if command fails = FALSE, if command was successful	Perform reference run for <i>Advanced</i> grippers.
ZRESET	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	bCmdFail = TRUE, if command fails = FALSE, if command was successful	Reset if gripper is present.
ZCHANGEWP	WpNumber = workpiece number (1 to 15)	bCmdFail = TRUE, if command fails = FALSE, if command was successful	Set workpiece number (n) for use with SCM.
ZISWPCHANGED	WpNumber = workpiece number (1 to 15)	bWpchanged = TRUE, if workpiece is active = FALSE, if workpiece is not active bCmdFail = TRUE, if command fails = FALSE, if command was successful	Outputs TRUE if workpiece number (n) is activated.

Generated robot job name	Parameter In	Parameter Out	Function
ZISOPENED	grpNumber = 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.
ZISCLOSED	grpNumber = 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.
ZISONTEACHPOS	grpNumber = 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>TeachPosition</i> .
ZISONUNDEFPOS	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bUndefPos</i> = <i>TRUE</i> , if gripper is set to UndefinedPosition = <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> .
ZISERROR	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bError</i> = <i>TRUE</i> , if gripper is in error state = <i>FALSE</i> , if gripper is not in error state <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the gripper is in an error state.
ZISMOTORON	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bMotorOn</i> = <i>TRUE</i> , if motor is on = <i>FALSE</i> , if motor is off <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the motor of the gripper is switched on.
ZISHOMINGOK	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bHomeOk</i> = <i>TRUE</i> , if homing is OK = <i>FALSE</i> , if homing is not OK <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the referencing of the gripper is OK.

Generated robot job name	Parameter In	Parameter Out	Function
ZISHOMINGSUCCESS	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bHomeSuccess</i> = <i>TRUE</i> , if ZHOMING command was successful = <i>FALSE</i> , if gripper is not in error state at ZHOMING command <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Outputs <i>TRUE</i> if the referencing of the gripper is successful.
ZERRORWARNINGON	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Enables Error/Warning for robot if gripper is present.
ZERRORWARNINGOFF	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Disables Error/Warning for robot if gripper present.
ZISPARTDETACHED	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bPartDetached</i> = <i>TRUE</i> , if part is detached = <i>FALSE</i> , if part is not detached <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	B[n] = 1, if gripper of gripper type <i>Vacuum</i> signals <i>Part detached</i> . B[n] = 0, if part is not detached.
ZISPARTPRESENT	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bPartPresent</i> = <i>TRUE</i> , if part is present = <i>FALSE</i> , if part is not present <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	B[n] = 1, if gripper of gripper type <i>Vacuum</i> signals <i>Part present</i> . B[n] = 0 if part is not present.
ZISREADY	grpNumber = 1: Address gripper 1 = 2: Address gripper 2	<i>bReady</i> = <i>TRUE</i> , if input is switched on = <i>FALSE</i> , if input is not switched on <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	B[n] = 1 if gripper of gripper type <i>Vacuum</i> signals <i>Ready</i> . B[n] = 0 if gripper is not ready.
ZMATCHSTARTCHANGE	-	<i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	Is output before the gripper is changed for <i>MATCH</i> .
ZISMATCHCHANGEDONE	-	<i>bMatchChangeDone</i> = <i>TRUE</i> , if match was changed = <i>FALSE</i> , if match was not changed <i>bCmdFail</i> = <i>TRUE</i> , if command fails = <i>FALSE</i> , if command was successful	For <i>MATCH</i> B[n] = 1 if gripper is connected successfully. B[n] = 0, if gripper is not connected successfully.

10.3 Wizard function blocks

Using the *Wizard function blocks*, the grippers can be programmed easily. The parameters can be configured using drop-down combo boxes.



All *function blocks* use predefined global variables that are returned after running.

Global variables	Function
z_Success	Outputs <i>TRUE</i> if the <i>function block</i> was run successfully. Outputs <i>FALSE</i> if the <i>function block</i> was not run successfully.
z_Error	Outputs <i>TRUE</i> if errors occur when running the <i>function block</i> . Outputs <i>FALSE</i> if no errors occur when running the <i>function block</i> . Errors are logged in the event log.
z_Timeout	Outputs <i>TRUE</i> if the confirmation time was exceeded when running the <i>function block</i> . Outputs <i>FALSE</i> if the confirmation time was not exceeded when running the <i>function block</i> . If the confirmation time is exceeded, the <i>function block</i> is ended. Occurrences of the confirmation time being exceeded are logged in the event log.

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► For more information about *Wizard function blocks* , refer to the manufacturer documentation.

10.3.1 Grip

Grip **First** gripper with timeout **5** seconds and **Stop** if error or timeout occurs

In this *function block*, you can configure whether you want to address the *first* or *second* gripper.

You can configure which action is to be taken in case of an error or if the confirmation time is exceeded.

- *Stop*: Running of the application is stopped.
- *Continue*: Running of the application is resumed.

Sequence of the *function block* for *MATCH* and *Advanced* grippers:

- Checks whether the motor in the gripper is switched on and switches it on if necessary: *Motor on*
- Close gripper: *Gripper closed*
- *Function block* exited.

Sequence of the *function block* for all other grippers:

- Close gripper: *Gripper closed*
- *Function block* exited.

10.3.2 Release

Release **First** gripper with timeout **5** seconds and **Stop** if error or timeout occurs

In this *function block*, you can configure whether you want to address the *first* or *second* gripper.

You can configure which action is to be taken in case of an error or if the confirmation time is exceeded.

- *Stop*: Running of the application is stopped.
- *Continue*: Running of the application is resumed.

Sequence of the *function block* for *MATCH* and *Advanced* grippers:

- Checks whether the motor in the gripper is switched on and switches it on if necessary: *Motor on*
- Open gripper: *Gripper open*
- *Function block* exited.

Sequence of the *function block* for all other grippers:

- Open gripper: *Gripper open*
- *Function block* exited.

10.3.3 Do Homing

Do Homing for **First** gripper with timeout **8** seconds and **Stop** if error or timeout occurs

In this *function block*, you can configure whether you want to address the *first* or *second* gripper.

You can configure which action is to be taken in case of an error or if the confirmation time is exceeded.

- *Stop*: Running of the application is stopped.
- *Continue*: Running of the application is resumed.

Sequence of the *function block* for *MATCH* and *Advanced* grippers:

- Checks whether the motor in the gripper is switched on and switches it on if necessary: *Motor on*
- A reference run is performed.
- *Function block* exited.

10.3.4 Set Workpiece Number

Set Workpiece Number **1** with timeout **4** seconds and **Stop** if error or timeout occurs

This *function block* can be used if you have configured only one gripper. It cannot be used if you have configured two grippers in your application.

The workpiece number must be configured according to the number of bits configured in the MATCH Comfort App.

If you keep the default settings of the MATCH Comfort App, only two bits for the workpiece number are provided. In this case, you have to select either 1, 2 or 3 as the setting for the workpiece number.

You can configure which action is to be taken in case of an error or if the confirmation time is exceeded.

- *Stop*: Running of the application is stopped.
- *Continue*: Running of the application is resumed.

Sequence of the *function block*:

- Outputs for the workpiece number are assigned according to the setting.
- Workpiece numbers *set successfully*
- *Function block* exited.

10.3.5 Prepare for changing the MATCH gripper (ZMATCHSTARTCHANGE)

Prepare for changing the Match gripper and **Stop** if error occurs

This *function block* can be used only for *MATCH* grippers.

All configured robot outputs for *MATCH* grippers are switched off. This *function block* does not wait for confirmation. The global variables *z_Success* and *z_Error* are set or reset depending on the result.

10.3.6 Check OK to operate after changing Match gripper (ZISMATCHCHANGEDONE)

Check OK to operate after changing Match gripper... **Stop** if error occurs

This *function block* can be used only for *MATCH* grippers.

The check of whether operation is possible after changing the *MATCH* gripper is run.

Sequence of the *function block*:

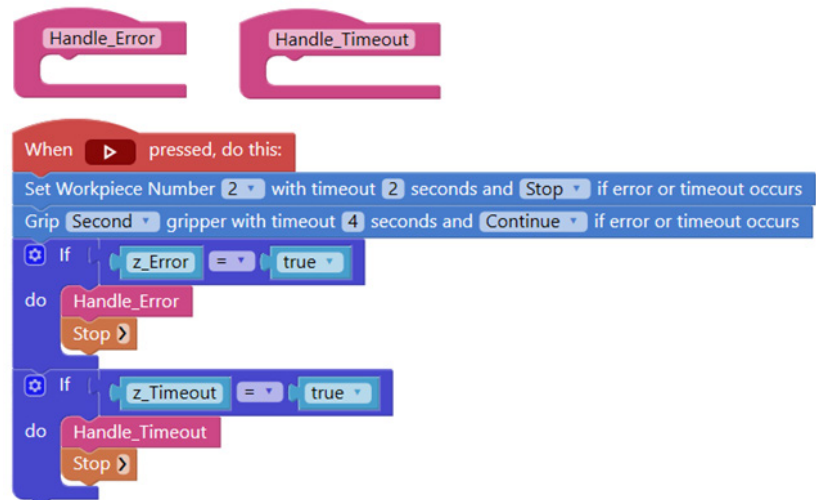
- Check of whether at least one of the input signals is set:
 - *Is_Opened*
 - *Is_Gripped*
 - *Is_Closed*
 - *Is_Undef_Pos*
- At least one input signal is set: *z_Return_Value* = *TRUE*
- *Function block* exited.

10.3.7 Example of Wizard function blocks

The sequences *Handle_Error* and *Handle_Timeout* are written according to the requirements of the application.

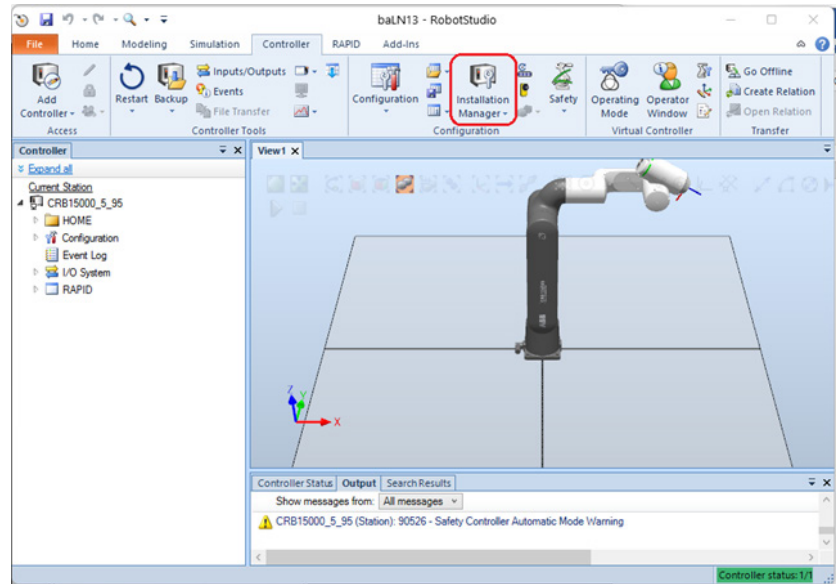
Set Workpiece Number sets workpiece number 2. If the confirmation time of 2 seconds is exceeded or an error occurs, the sequence is ended *Stop*.

Grip closes the second gripper. If the confirmation time of 4 seconds is exceeded or an error occurs, the sequence continues running *Continue*.



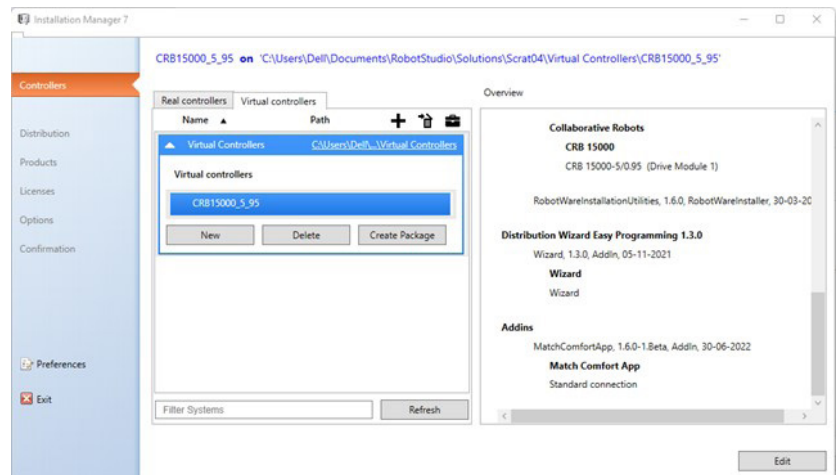
11 Uninstalling the MATCH Comfort app

- ▶ Start *RobotStudio*.
- ▶ In the *Controller* tab, click the *Installation Manager* button.



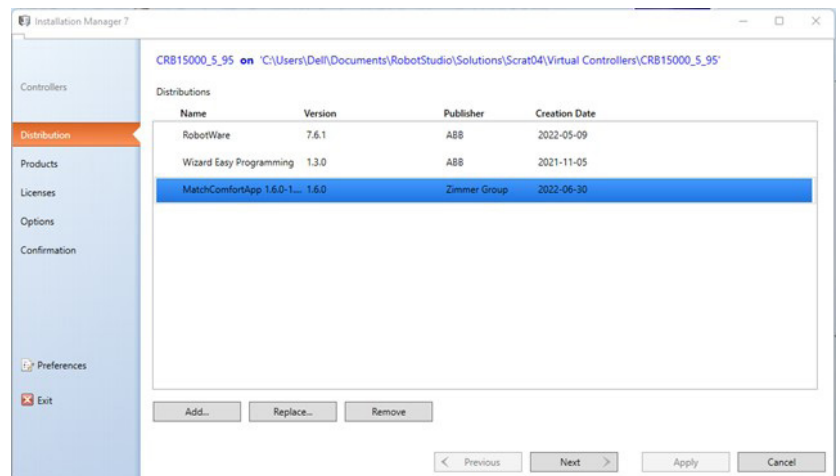
⇒ The *Installation Manager* window opens.

- ▶ In the *Controllers* menu, select the control system.
- ▶ Click the *Edit* button.



⇒ The *Distribution* menu is displayed.

- ▶ Select the MATCH Comfort App.
- ▶ Click the *Remove* button.
- ▶ Click the *Next* button several times.
- ▶ Click the *Apply* button.
- ▶ Wait until the uninstallation is complete.



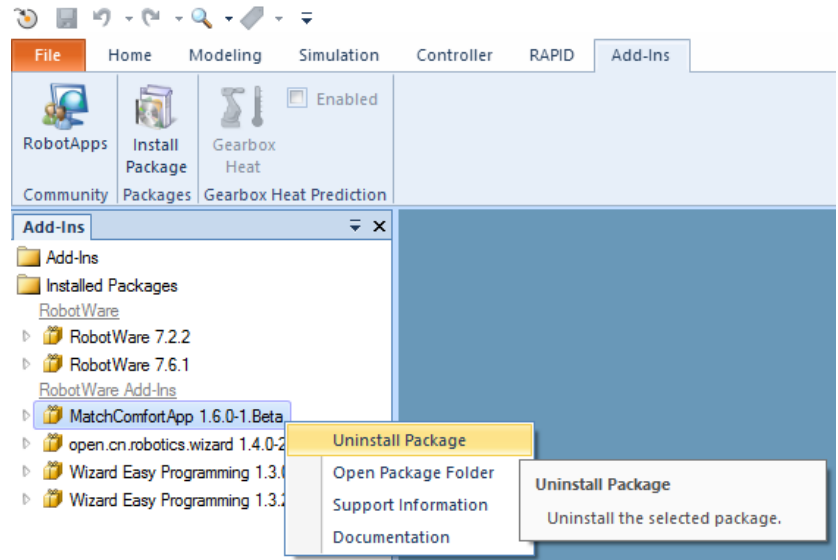
11.1 Uninstall add-in

INFORMATION



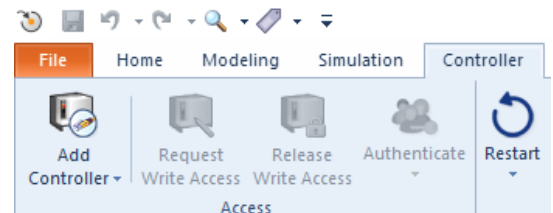
To update the MATCH Comfort App to a higher version, the add-in in *RobotStudio* must be uninstalled.

- ▶ Click the *Add-In* tab.
- ▶ In the *Add-Ins* menu, right-click the add-in of the MATCH Comfort App.
- ⇒ The context menu is opened.
- ▶ Click *Uninstall package*.
- ⇒ The add-in has been uninstalled.



11.2 Uninstall the rest of the files

- ▶ Connect the robot control system with *RobotStudio*.
- ▶ Request write access by clicking the *Request Write Access* button.
- ▶ Remove the file */HOME/Blocklibrary/Match.coblox*.
- ▶ Remove the folder */HOME/WebApps/MatchComfortApp*.



12 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.