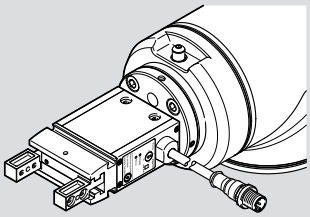
EHPS-...-A-RA1

Parallel gripper kit for robots



FESTO

Festo SE & Co. KG
Ruiter Straße 82
73734 Esslingen
Deutschland
+49 711 347-0

www.festo.com

Operating instructions

8156675
2021-05b
[8156677]

8156675

Translation of the original instructions

1 Applicable documents

All available documents for the product ➔ www.festo.com/sp.

Documents	Product	Table of contents
Operating instructions	Parallel gripper EHPS	–

Tab. 1: Applicable documents

2 Product labelling

Warning symbols on the product	
⚠	If the housing is damaged, protection against dangerous voltages is no longer guaranteed.

Tab. 2: Warning symbols on the product

3 Safety

3.1 Safety instructions

- Observe labelling on the product.
- Before working on the product: Switch off the power supply, ensure that it is off and secure it against being switched on again.
- The occurrence of a failure could lead to unforeseeable movements if the product is connected with the power supply. Only operate the product once protective measures have been taken against mechanical hazards to body parts.
- Observe tightening torques. Unless otherwise specified, the tolerance is ± 20 %.
- This product can generate high frequency malfunctions, which may make it necessary to implement interference suppression measures in residential areas.

3.2 Intended use

The product is used as intended for integration into the UR software and hardware connection for carrying out handling tasks of payloads. The customer designs and attaches customised gripper fingers for use on the parallel gripper.
Use the product only as follows:
- in perfect technical condition
- in its original condition, without unauthorised modifications
- within the limits of the product defined by the technical data
- in the industrial sector, in research laboratories, in assembly areas, in series and special machines
- permanently mounted

3.3 Foreseeable misuse

When not used as intended, the product-supported protection can be impaired.

3.4 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have skills and experience in dealing with electrical (open-loop) control technology.

4 Additional information

- Contact the regional Festo contact if you have technical problems ➔ www.festo.com.
- Accessories and spare parts ➔ www.festo.com/catalogue.

5 Structure

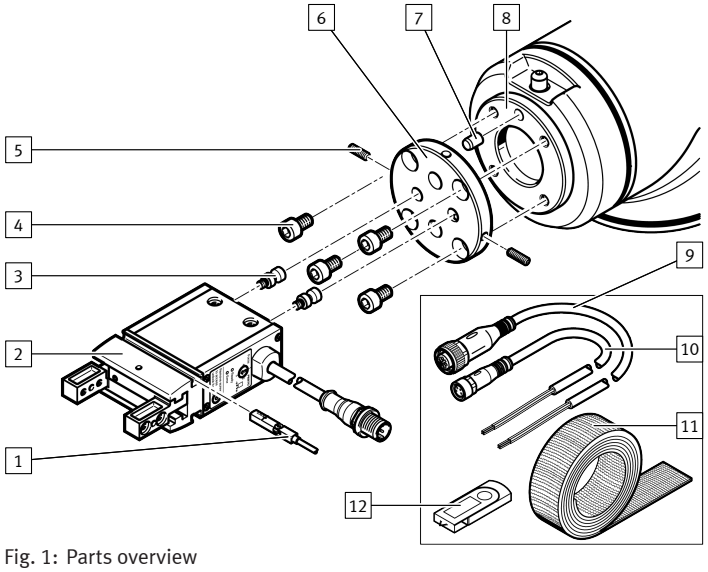


Fig. 1: Parts overview

1	Position transmitter	8	Robot flange
2	Parallel gripper	9	Connecting cable for parallel gripper
3	Threaded bolt (2x M4, 2x M6)	10	Connecting cable for position transmitter
4	Socket head screw (4x)	11	Velcro strap
5	Threaded pin (2x)	12	USB memory stick
6	Adapter plate		
7	Cylindrical pin		

6 Transport and storage

- Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short.

7 Mechanical assembly

1. Position the cylindrical pin [7] on the adapter plate [6] and press it into the stop.
2. Screw the threaded pins [5] into the threaded holes of the adapter plate [6].
3. Position the adapter plate [6] with the cylindrical pin [7] on the robot flange [8], press in and tighten with socket head screws [4]. Tightening torque: 8 Nm
4. Screw the threaded bolt [3] into the parallel gripper.

EHPS-...-A-RA1	Threaded bolt [3]	Tightening torque [Nm]
16/20	M4	3
25	M6	10

5. Insert the parallel grippers with the mounted threaded bolts into the adapter plate [6] . Tighten threaded pins [5]. Tightening torque: 3 Nm

Gripper finger
The gripper fingers are not in the scope of delivery. Specification of gripper fingers ➔ 1 Applicable documents.

8 Installation

8.1 Electrical installation

⚠ WARNING

Risk of Injury due to electric shock.
- For the electric power supply, use SELV or PELV circuits that guarantee a reinforced isolation from the mains network.

⚠ WARNING

Risk of injury due to electric shock or burns.
The gripper does not offer any additional protection against unintended high currents in the supply cables.
- The cross section of the supply cables should be designed to meet the maximum current value that could occur in the event of a failure.

⚠ WARNING

Danger of crushing.
The gripper fingers could move unintentionally and crush body parts.
- Do not reach into the movement range.

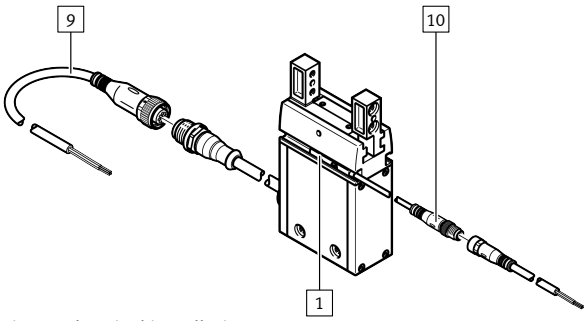


Fig. 2: Electrical installation

1	Position transmitter
9	Connecting cable for parallel gripper
10	Connecting cable for position transmitter

1. Push the position transmitter [1] into the groove of the parallel gripper and fasten it. The position transmitter is adjusted during the software configuration.
2. Connect the position transmitters to the accompanying connecting cable [10].
3. Connect the parallel grippers with the supplied connecting cable[9].

Installing connecting cables

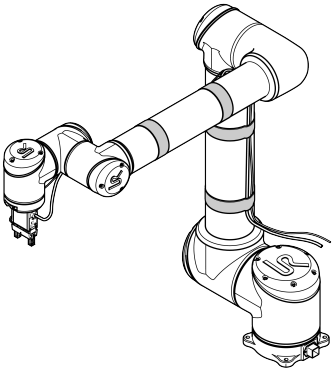


Fig. 3: Installing connecting cables

To avoid overloading the internal cables of the robot, the connecting cables must be attached to the outside of the robot arm using the supplied Velcro strips.

i

Observe the prescribed bending radii of the connecting cables.
The freedom of movement of the robot must not be restricted by the connecting cables.

1. Cut the Velcro straps to length.
2. Lay connecting cables along the robot arm.
3. Fasten the connecting cables with Velcro straps.

Connection to control cabinet

1. Guide both connecting cables neatly into the control cabinet.
2. Connect the connecting cables in accordance with the following table:

Insulated wire[1)]	Parallel gripper - control cabinet NEBU-M12G5-K-5-LE4	Position transmitter - control cabinet NEBU-M8G4-K-5-LE4
1 BN	Digital Inputs 24V	Digital Inputs 24V
2 WH	Digital Outputs DO0	Analog Inputs AG
3 BU	Digital Outputs 0V	Digital Outputs 0V
4 BK	Digital Outputs DO1	Analog Inputs AI0
5 GY	not assigned	not assigned

8.2 Software installation

The software must be installed manually from the included USB memory stick.
The USB memory stick has the following data:
– URCap
– User documentation

i

System requirements for hardware and software:
- Robot UR3/UR5/UR10: from software version PolyScope CB 3.8.0
- Robot UR3e/UR5e/UR10e/UR16e: from software version PolyScope SW 5.2.0

Always use the current software version ➔ ➔ www.festo.com/sp
Older software versions may have a different appearance from this user documentation.

1. When the system is started, insert the USB memory stick into the control unit.
2. Press the ‘Menu’ button at the top right of the header.
3. Select ‘Settings’ menu item.
4. Select the ‘URCaps’ button in the menu item ‘System’.
5. Press the ‘+’ button at the bottom left.
6. Select and open the ‘FestoGripperEHPSURCap-X.X.X.urcap’ file.
   X.X.X corresponds to the version number of the software e.g. 1.0.4
7. Press the ‘Restart’ button at the bottom right.
   The URCap is installed and can be used.

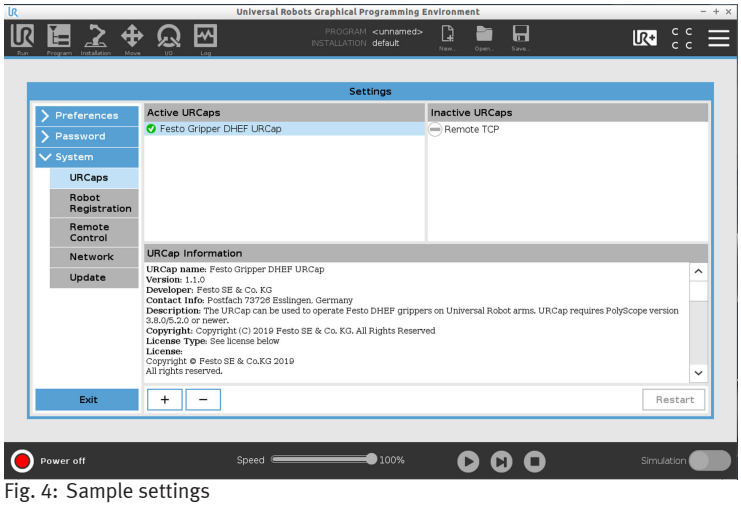


Fig. 4: Sample settings

9 Configuration of the software

Parallel gripper configuration

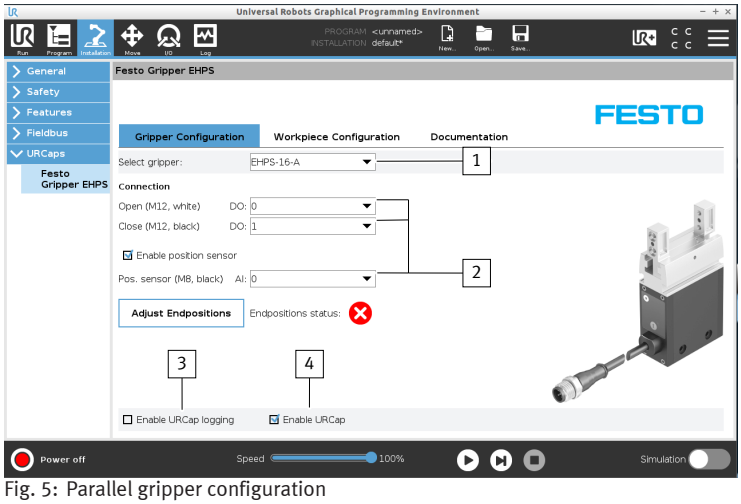


Fig. 5: Parallel gripper configuration

1	Selection of size
2	Default values
3	Activate/deactivate URCap logging
4	Activate/deactivate URCap

1. Select the size [1] of the parallel gripper.
2. Observe default values [2]. Adjustments are necessary if the components were wired differently.
3. Adjust the position transmitter. The LED must be on at both end positions. It is not necessary to initialise the position transmitter ➔, see enclosed documentation.
4. Press the ‘Adjust Endpositions’ button.
   The parallel gripper opens and closes once. The configuration of the parallel gripper is completed as soon as the green check mark appears.

Workpiece configuration

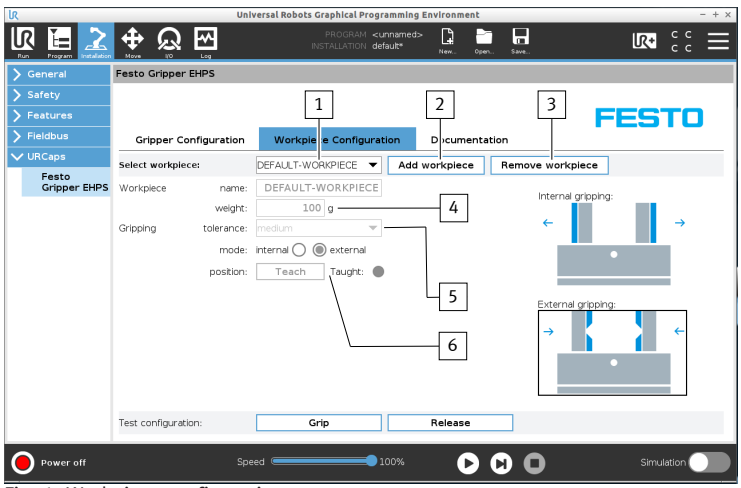


Fig. 6: Workpiece configuration

1. Selection of stored workpieces [1].

2. Create new workpieces in the list [2] or delete workpieces from the list [3].
3. Selection of the gripper tolerance [5] to evaluate the gripping result:
   - Workpiece width constant ➔ ‘small’
   - Workpiece width with low variance ➔ ‘medium’
   - Workpiece width with high variance ➔ ‘large’
4. Input workpiece weight [4].
5. When the [6] function is activated, the parallel gripper moves depending on the gripping mode
   - internal gripping: 1x open
   - external gripping: 1x closed

i

If the start position of the parallel gripper is wrong, the user is guided through the ‘Teach’ function by dialogue.

   The function is used to determine the correct gripping position. This requires gripping a reference object.
6. The preset values can be tested by the ‘Grip’ and ‘Release’ functions. The user is guided through the function via dialogue.

Documentation

Information on installation of the software and the technical data of the parallel gripper.

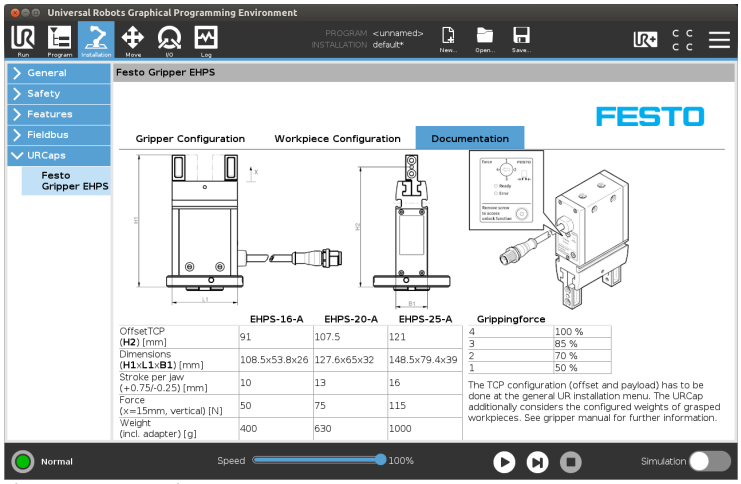


Fig. 7: Documentation

The weight Tool Center Point (TCP) and the weight settings are configured via the ‘General’ menu. The gripper fingers provided by the customer must be included in the weight settings.

Toolbar for manual control of the parallel gripper

After the electrical installation, the functions of the parallel gripper can be tested manually. Test the functions by pressing the ‘UR+’ button and execute the ‘Open’ and ‘Close’ commands.

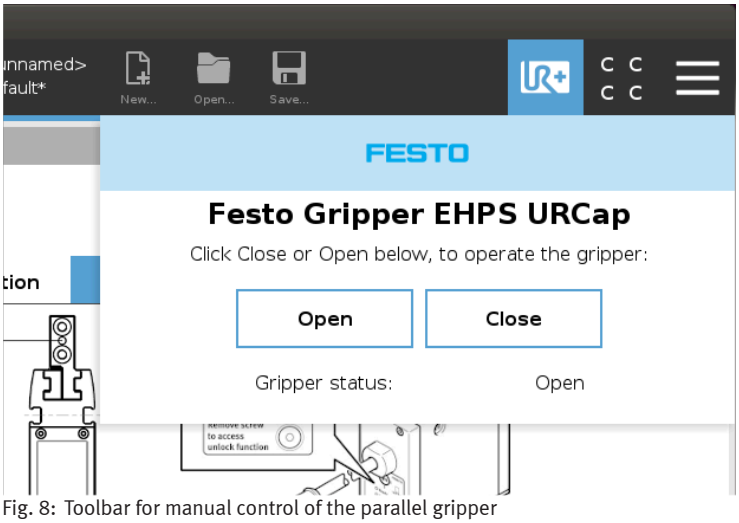


Fig. 8: Toolbar for manual control of the parallel gripper

Integration of ‘Grip’ and ‘Release’ program commands

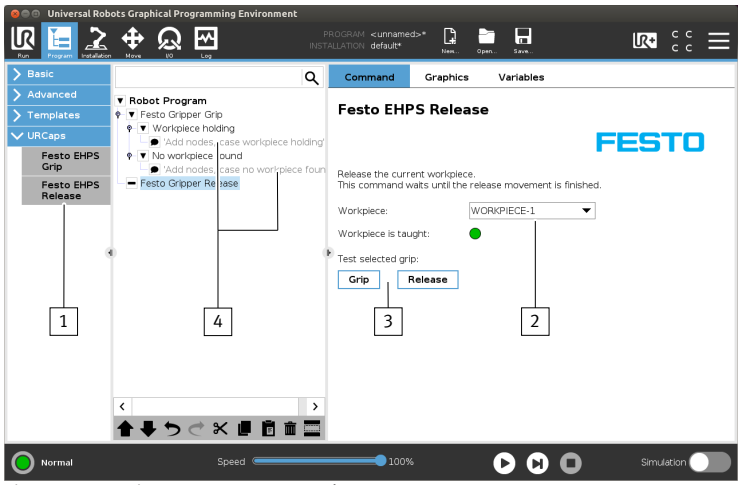


Fig. 9: Integrating program commands

1. Place the [1] ‘Grip’ and ‘Release’ program commands at any position in the program.
2. Workpiece selection [2].
3. The functions of the parallel gripper can be tested manually [3].
4. Gripping result successful/faulty [4]

   Option for inserting additional program commands.

10 Cleaning

Clean the product with a soft cloth. Do not use aggressive cleaning agents.
For use with reduced particle emission:
- Remove abrasion and contamination from the product on the following schedule:
  - Prior to initial commissioning.
  - Regularly during operation.

11 Disassembly

⚠ WARNING

Danger of crushing due to unexpectedly fast-moving loads and unintentional movements.

- Remove the payload.
- Switch off power to the product.
- Safeguard the power supply from being switched on again unintentionally.

12 Technical data

Size		16	20	25
Robot software version		Robot UR3/UR5/UR10: from software version PolyScope CB 3.8.0		
		Robot UR3e/UR5e/UR10e: from software version PolyScope SW 5.2.0		
Product weight (moving mass)	[g]	400	630	1000

Tab. 3: Technical data, general