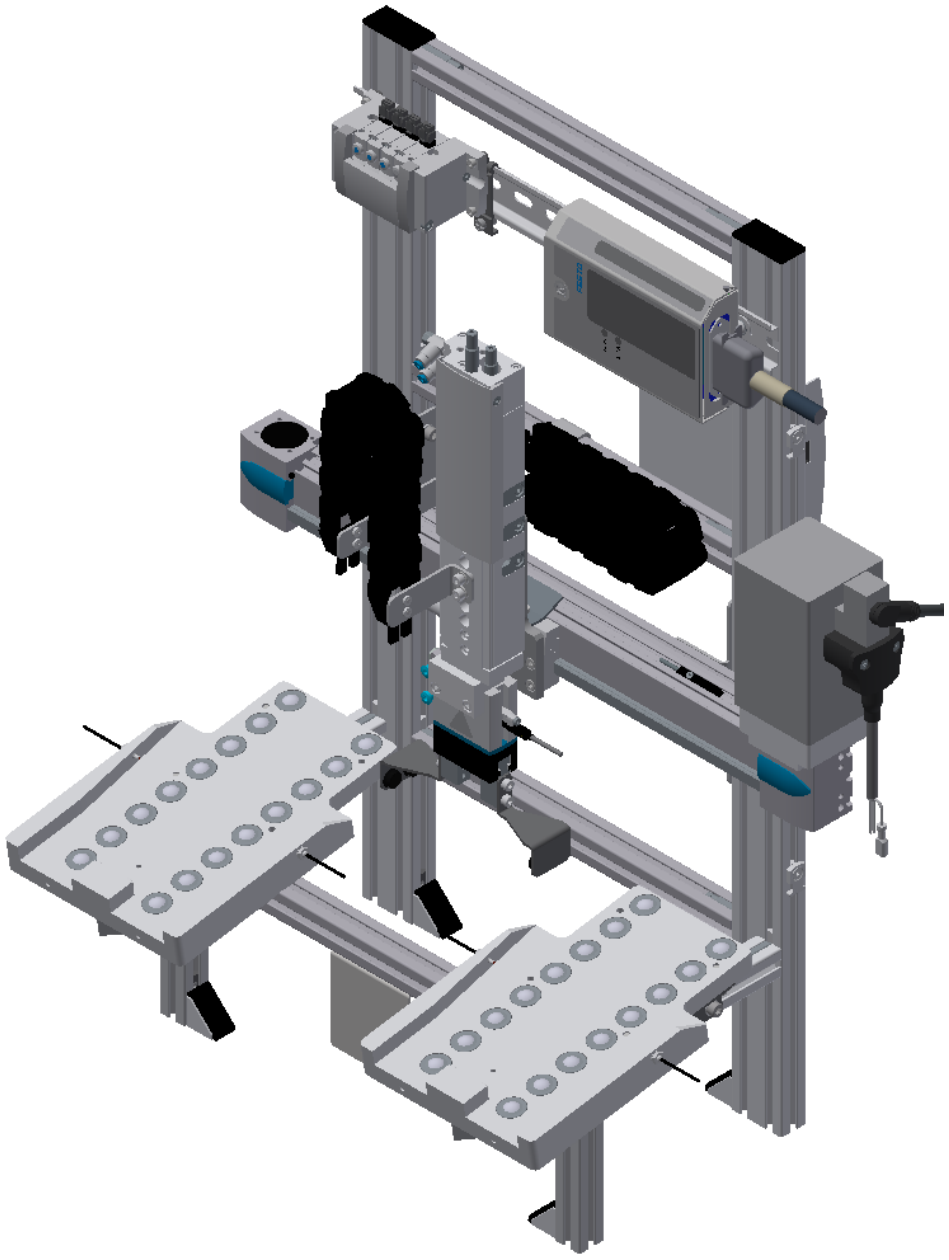
8061184

Output

FESTO

CP Factory/CP Lab

Original operating instructions



Festo Didactic
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05/2023

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Original operating instructions

Where only pronouns such as he and him are used in these operating instructions, these pronouns are of course intended to refer to both male and female persons. The use of a single gender (e.g. he, him) should not be construed as gender discrimination; it is intended solely to make the manual easier to read and the formulations easier to understand.

CAUTION

These operating instructions must be available to the user at all times.
The operating instructions must be read before commissioning.
The safety instructions must be observed.
Non-observance may result in severe personal injury or damage to property.

Main document
Associated documents attached:

Safety instructions concerning transport (print/electronic)
Component datasheets (print/electronic)
Circuit diagram (print/electronic)

Contents

1 Safety instructions

1.1 Warning notice system

These operating instructions contain notes that must be observed for your personal safety and in order to prevent property damage. The notes concerning your personal safety are indicated by a safety symbol. Notes that only concern property damage are not indicated by a safety symbol.
The notes below are listed in order of hazard level.

DANGER

... indicates an **imminently** hazardous situation that will result in fatal or severe personal injury if not avoided.

WARNING

... indicates a **potentially** hazardous situation which may result in fatal or severe personal injury if not avoided.

CAUTION

... indicates a **potentially** hazardous situation that may result in moderate or slight personal injury or severe property damage if not avoided.

NOTE

... indicates a **potentially** hazardous situation that may result in property damage or loss of function if not avoided.

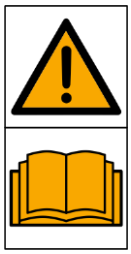
In cases where more than one hazard level applies, the safety note with the highest hazard level will be shown. A safety note may concern both personal injury and property damage.
Hazards that will only result in property damage are indicated with the word "Note".

1.2 Pictograms

This document and the hardware described in it include warnings concerning possible hazards which may arise if the system is used incorrectly.
The following pictograms are used:

Hazard warning

Warning - dangerous electric voltage



Read and observe the operating and safety instructions prior to commissioning.

Switch off the device and unplug the connection for power supply from the plug socket before commencing installation, repair, maintenance or cleaning work.

Warning – hand injuries

Warning – lifting heavy loads

Information and/or references to other documentation

1.3 General prerequisites for installing the product

- Festo Didactic products must only be used for the applications specified in their respective operating instructions. Products or components supplied by other manufacturers must only be used if recommended or approved by Festo.
- The products must be transported, stored, installed, assembled, commissioned, operated and maintained properly in order to ensure their safe operation.
- The approved ambient conditions must be observed. The specifications in the relevant operating instructions must be observed.
- The safety equipment must be tested every working day.
- Connecting cables must be checked for damage before each use. In case of damage, they must be replaced.

Connecting cables must correspond to the minimum specifications.

1.4 General prerequisites for operating the devices

General requirements for safe operation of the system:

- In industrial facilities, the national accident prevention regulations must be observed.
- The laboratory or classroom must be overseen by a supervisor.
  – A supervisor is a qualified electrician or a person who has been trained in electrical engineering, knows the respective safety requirements and safety regulations, and whose training has been documented accordingly.

The laboratory or the classroom must be equipped with the following devices:

- An emergency-off device must be provided.
  – At least one emergency-off device must be located inside the laboratory or the classroom, and at least one outside it.
- The laboratory or classroom must be secured so that the operating voltage and compressed air supply cannot be activated by any unauthorized persons, for example by means of:
  – e.g. a keyswitch
  – e.g. lockable shut off valves
- The laboratory or classroom must be protected by residual current devices (RCDs).
  – RCDs with a differential current of ≤ 30 mA, Type B. When operating machinery with unavoidable leakage current, suitable measures must be implemented and documented in the corresponding workplace risk assessment.
- The laboratory or classroom must be protected by overcurrent protection devices.
  – Fuses or circuit breakers
- Devices must not be used if they are damaged or defective.
  – Damaged devices must be barred from further use and removed from the laboratory or classroom.
  – Damaged connecting cables, pneumatic tubing and hydraulic hoses represent a safety risk and must be removed from the laboratory or classroom.
- Safety devices must be checked every working day to ensure that they are fully functional.
- Connecting cables and accessories must be checked for damage before each use.

2 Intended use

Festo Didactic systems and components must only be used:

- For their intended use in teaching and training applications
- When their safety functions are in perfect condition

The components and systems are designed in accordance with the latest technology and recognized safety rules. However, life and limb of the user and third parties may be endangered and the components may be impaired if they are used incorrectly.

The Festo Didactic learning system has been developed and produced exclusively for education and training in the field of automation technology. The training company and/or trainers must ensure that all trainees observe the safety precautions described in these operating instructions.

Training with complex machinery is a highly hazardous activity. The operating company must draw up and document a workplace risk assessment. The trainees must be briefed on all the relevant safety aspects before work commences.

Festo Didactic hereby excludes any and all liability for damages suffered by apprentices, the training company and/or any third parties, which occur during use of the device in situations which serve any purpose other than training and/or vocational education, unless such damages have been caused by Festo Didactic due to malicious intent or gross negligence.

All extensions and accessories must be approved by Festo Didactic, and are only permitted for use for their intended purpose.

The machine fulfils the requirements of the European directives that applied when it was commissioned. Any modification to the machine shall render the manufacturer's CE Declaration of Conformity null and void. The CE Declaration of Conformity must be renewed following each major modification.

3 For your safety

3.1 Important information

Knowledge of the basic safety instructions and safety regulations is a fundamental prerequisite for safe handling and trouble-free operation of Festo Didactic components and systems.

These operating instructions include the most important instructions for safe use of the components and systems. In particular, the safety instructions must be adhered to by all persons who work with these components and systems. Furthermore, all pertinent accident prevention rules and regulations that are applicable at the respective place of use must be adhered to.

WARNING

- **Malfunctions which could impair safety must be eliminated immediately!**

CAUTION

- **Improper repairs or modifications may result in unforeseeable operating statuses. Do not carry out any repair or alternation work on components or systems that is not described in these operating instructions.**

3.2 Qualified persons

- The product described in these operating instructions is only permitted for operation by persons who are qualified for the task in question in accordance with the operating instructions, especially the safety instructions.
- Qualified persons are defined as persons whose training and experience enables them to recognize risks and avoid potential dangers when working with this product.

3.3 Obligations of the operating company

It is the responsibility of the operating company to ensure that the station is operated safely.

The operating company undertakes to allow only those persons to work with the components and systems who:

- Are familiar with the basic regulations regarding occupational safety, with the safety instructions, and with the accident prevention regulations, and who have been instructed in the use of the components and systems
- Have read and understood the safety chapter and warnings in these operating instructions
- Are qualified to operate the components and systems in question
- Are governed by and trained in suitable organizational measures to ensure safe training

Personnel should be tested at regular intervals to ensure that they are safety-conscious in their work habits.

3.4 Obligations of the trainees

All persons who have been entrusted to work with the components and systems undertake to complete the following steps before beginning work:

- Read the chapter concerning safety and the warnings in these operating instructions
- Familiarize themselves with the basic regulations regarding occupational safety and accident prevention

4 Basic safety instructions

4.1 General information

CAUTION

- **Trainees must be supervised by an instructor at all times when working with the components and systems.**
- **Observe the specifications included in the technical data for the individual components, and in particular all the safety instructions!**
- **Wear your personal protective equipment (safety goggles, safety shoes).**
- **Never leave objects lying on the top of protective enclosures. Vibrations could cause such objects to fall off.**

4.2 Mechanical components

WARNING

- **Switch off the power supply!**
  - Switch off both the operating power and the control power before commencing work on the circuit.
  - Never reach into the setup unless it is at a complete standstill.
  - Be aware of potential overtravel times for the actuators.
- **Risk of injury during troubleshooting!**
  - Use a tool such as a screwdriver for actuating sensors.

CAUTION

- **Risk of burns due to hot surfaces**
  - Devices can reach high temperatures during operation, as a result of which they can cause burns if touched.
- **Measures to take when maintenance is required.**
  - Allow the device to cool off before commencing work.
  - Use suitable personal protective clothing, e.g. safety safety gloves.

4.3 Electrical components

WARNING

- **Disconnect from all sources of electrical power!**
  - Switch off the power supply before working on the circuit.
  - Please note that electrical energy may be stored in individual components. Further information on this issue is available in the datasheets and operating instructions included with the components.
  - **Warning!**
    Capacitors inside the device may still be charged even after being disconnected from all sources of voltage.
- **Danger due to malfunction**
  - Never place or leave liquids (e.g. drinks) on the station in open containers.
  - The machine must not be switched on if there is condensation (moisture) on its surface.
  - Never lay pipes/hoses designed to carry liquid media near the machine.
- **Electric shock due to connection to unsuitable power supply!**
  - When devices are connected to an unsuitable power supply, exposed components can cause dangerous electrical voltage that can lead to severe or fatal injury.
  - Always use power supplies that provide SELV (safety extra-low voltage) or PELV (protective extra-low voltage) output voltages for all the connections and terminals on the electronics modules.
- **Electric shock when there is no protective grounding in place**
  - If there is no protective grounding terminal in place for a Protection Class I device, or if the protective grounding terminal has not been installed correctly, exposed, conductive parts may carry high voltages, thus causing severe or fatal injury if touched.
  - Ground the device in accordance with the applicable regulations.

WARNING

- **Risk of fire due to use of unsuitable power supply**
  - If a device i connected to an unsuitable power supply, this can cause components to overheat, leading to a breakout of fire.
  - Always use limited power supplies (LPSs) for all the connections and terminals on the electronics modules.

⚠ CAUTION

- **Always ensure that your connecting cables are designed for use with the electrical connections in question.**
- **When laying connecting cables, make sure they are not kinked, sheared or pinched. Cables laid on the floor must be covered with a cable bridge to protect them.**
- **Do not lay cables over hot surfaces.**
  - Hot surfaces are identified with a corresponding warning symbol.
- **Make sure that connecting cables are not subjected to continuous tensile loads.**
- **Devices with a grounding terminal must always be grounded.**
  - If a ground connection (green-yellow laboratory socket) is available, it must always be connected to the protective grounding. The protective grounding must always be connected first (before voltage) and disconnected last (after disconnecting the voltage).
  - Some devices have high leakage current. These devices must be fitted with a grounding conductor for additional grounding.
- **When replacing fuses, always use specified fuses with the correct current rating and tripping characteristics.**
- **The device is not equipped with a built-in fuse unless otherwise specified in the technical data.**
- **Safe operation of the device is not possible in the event of any of the following circumstances:**
  - Visible damage
  - Malfunction
  - Inappropriate storage
  - Incorrect transport

  Switch off the power supply immediately.
- **Protect the device to prevent it from being restarted accidentally.**

4.4 Pneumatic components

⚠ WARNING

- **Depressurize the system!**
  - Switch off the compressed air supply before working on the circuit.
  - Check the system using pressure gauges to make sure that the entire circuit is fully depressurized.
  - Please note that energy may be stored in reservoirs. Further information on this issue is available in the datasheets and operating instructions included with the components.
- **Risk of injury when switching on compressed air!**
  Cylinders may advance and retract automatically.
- **Risk of accident due to advancing cylinders!**
  - Always position pneumatic cylinders so that the piston rod's working space is unobstructed along its entire stroke range.
  - Make sure that the piston rod cannot collide with any of the rigid components in the setup.
- **Risk of accident due to pneumatic tubing slipping off!**
  - Use shortest barbed tubing connectors possible.
  - If pneumatic tubing slips off, switch off the compressed air supply immediately.
- **Do not exceed the maximum permissible pressure of 600 kPa (6 bar).**
- **Do not switch on the compressed air until all the barbed tubing connectors have been connected and secured.**
- **Do not disconnect pneumatic tubing while it is under pressure.**
  - Do not attempt to seal or plug pneumatic tubing or plug connectors with your hands or fingers.
- **Check the condition of the condensate in the service unit regularly. If necessary, drain the condensate and dispose of it properly.**

CAUTION

- **Setting up pneumatic circuits**
  - Connect the devices with plastic tubing with an outside diameter of 4 or 6 mm.
  - Push the pneumatic tubing into the push-in connector as far as it will go.
- **Dismantling pneumatic circuits**
  - Switch off the compressed air supply before dismantling the circuit.
  - Press the blue release ring down so that the tubing can be pulled out.
- **Noise due to escaping compressed air**
  - Noise caused by escaping compressed air may damage your hearing. Reduce noise by using mufflers, or wear hearing protection if the noise cannot be avoided.
  - All of the exhaust ports on the components included in the equipment set are equipped with mufflers. Do not remove these mufflers.

4.5 Cyber security

Festo Didactic offers products with security functions that aid the safe operation of plants, systems, machines and networks. In order to protect plants, systems, machines and networks from cyber threats, a comprehensive security concept must be implemented and continuously updated. Festo's products and services only constitute one part of such a concept.
The customer is responsible for preventing unauthorized access to their plants, systems, machines and networks. Systems, machines and components should only be connected to a company's network or the Internet if and as necessary, and only when the suitable security measures (e.g., firewalls and network segmentation, defense-in-depth) are in place. Failure to ensure adequate security measures when connecting the product to the network can result in vulnerabilities which allow unauthorized, remote access to the network – even beyond the product's boundaries. This access could be abused to incur a loss of data or manipulate or sabotage systems. Typical forms of attack include but are not limited to: Denial-of-Service (rendering the system temporarily non-functional), remote execution of malicious code, privilege escalation (executing malicious code with higher system privileges than expected), ransomware (encryption of data and demanding payment for decryption). In the context of industrial systems and machines this can also lead to unsafe states, posing a danger to people and equipment.
Furthermore, Festo's guidelines on suitable security measures should be observed. Festo products and solutions are constantly being developed further in order to make them more secure. Festo strongly recommends that customers install product updates as soon as they become available and always use the latest versions of its products. Any use of product versions that are no longer supported or any failure to install the latest updates may render the customer vulnerable to cyber-attacks.

Support Festo in ensuring your continued safety. Please report any security findings to the Festo Product Security Incidence Response Team (PSIRT) in German or English language, by email to psirt@festo.com or online contact form at https://www.festo.com/psirt.

WARNING

- **Unsecure operating conditions due to software tampering**
  - Forms of software tampering (e.g. viruses, Trojans, malware and worms) can lead to unsecure operating conditions in your system, which may in turn lead to severe or fatal injury or property damage.
  - Keep your software up to date.
  - Integrate the automation and actuator components into an overarching and comprehensive industrial security concept for the installation or machine in question that is in line with the latest technological developments.
  - Make sure that all the products you have installed are incorporated into your overarching industrial security concept.
  - Use suitable measures, such as a virus scanner, to protect files save on exchangeable storage media from malware.

4.6 Additional safety instructions

General requirements for safe operation of the devices:

- Do not lay cables over hot surfaces.
  - Hot surfaces are identified with a corresponding warning symbol.
- Maximum permissible current loads for connector cables and devices must not be exceeded.
  - Always compare the current ratings of the device, the cable and the fuse to ensure that they match.
  - If they do not match, use a separate upstream fuse in order to provide appropriate overcurrent protection.
- Devices with a grounding terminal must always be grounded.
  - If a ground terminal (green-yellow laboratory socket) is available, it must always be connected to protective ground. The protective grounding must always be connected first (before voltage) and disconnected last (after disconnecting the voltage).
- The device is not equipped with a built-in circuit unless otherwise specified in the technical data.

WARNING

- **This product is designed for use in industrial environments, and may cause malfunctions if used in domestic or small commercial environments.**

4.7 Guarantee and liability

Our General Terms and Conditions of Sale and Delivery shall apply at all times. These shall be made available to the operating company no later than upon conclusion of the sales contract. Guarantee and liability claims resulting from personal injury and/or property damage are excluded if they can be traced back to one or more of the following causes:

- Use of the equipment for purposes other than its intended use
- Improper installation, commissioning, operation or maintenance of the system
- Operation of the system with defective safety equipment, or with improperly attached or non-functional safety equipment and protective guards
- Non-compliance with directions included in the operating instructions with regard to transport, storage, installation, commissioning, operation, maintenance and setup of the system
- Unauthorized modifications to the system
- Improperly executed repairs
- Disasters resulting from the influence of foreign bodies and acts of God
- Dust generated during construction work must be kept away from the system (use coverings).
  See the Environmental Requirements section (contamination level) for more details.

4.8 Guarantee and liability for application examples

The application examples are not legally binding, and we cannot guarantee their completeness in terms of their configuration, their equipment or any events that may occur. The application examples are not representations of any specific customer solution; they are merely intended to illustrate typical tasks for which the product in question could be used. You bear the responsibility for ensuring that the products described here are operated properly. These application examples do not in any way relieve you of your responsibility to ensure that the system is handled safely when it is being used, installed, operated or maintained.

4.9 Transport

WARNING

- **Danger due to tipping over**
  - Suitable packaging and transport equipment must be used when transporting the station. The station can be lifted from underneath using a forklift truck. Please note that eccentric centers of gravity can cause the station to tip over.
  - Stations with attachments at height will have a high center of gravity.
  - Take care to avoid tipping over during transportation.

NOTE

- **Station contains delicate components!**
  - Take care not to shake during transportation
- **The station is only permitted for installation on solid, non-vibrating surfaces.**
  - Make sure that the ground underneath the station has sufficient load-bearing capacity.

4.10 Name plates

Name plate example

Position	Description
1	Maximum pressure pneumatic (if available)
2	current consumption
3	Operating voltage
4	Serial number
5	Type number (Ordernumber) aaaaa-aa (canadian nomenclature) bbbbbbbb (german nomenclature)
6	CE idenification
7	WEEE identification
8	Country of origin
9	Production year
10	Weight
11	Data Matrix Code (Type-and serial number)

4.11 CE Declaration of Conformity

FESTO

(DE) Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller. Der beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union.

(EN) This declaration of conformity is issued under the sole responsibility of the manufacturer. The object of the declaration described is in conformity with the relevant Union harmonisation legislation.

(BG) Настоящата декларация за съответствие е издадена на отговорността на производителя. Предметът на описаната декларация отговаря на съответното законодателство на Съюза за хармонизация.

(CS) Toto prohlášení o shodě se vydává na výhradní odpovědnost výrobce. Popsaný předmět prohlášení je ve shodě s příslušnými harmonizačními právními před-pisy Unie.

(DA) Denne overensstemmelseserklæring udstedes på fabrikantens ansvar. Genstanden for erklæringen, som beskrevet, er i overensstemmelse med den relevante EU-harmoniseringslovgivning.

(EL) Η παρούσα δήλωση συμμόρφωσης εκδίδεται με αποκλειστική ευθύνη του κατασκευαστή. Ο περιγραφόμενος στόχος της δήλωσης είναι σύμφωνος με τη σχετική ενωσιακή νομοθεσία εναρμόνισης.

(ES) La presente declaración de conformidad se expide bajo la exclusiva responsabilidad del fabricante. El objeto de la declaración descrita es conforme con la legislación de armonización pertinente de la Unión.

(ET) Käesolev vastavusdeklaratsioon on välja antud tootja ainuvastutusel. Kirjeldatud deklareeritav toode on kooskõlas asjaomaste liidu ühtlustamisaktidega.

(FI) Tämä vaatimustenmukaisuusvakuutus on annettu valmistajan yksinomaisella vastuulla. Kuvattu vakuutuksen kohde on asiaa koskevan unionin yhdenmukaistamislainsäädännön vaatimusten mukainen.

(FR) La présente déclaration de conformité est établie sous la seule responsabilité du fabricant. L'objet décrit de la déclaration est conforme à la législation d'harmonisation de l'Union applicable.

(HU) Ezt a megfelelőségi nyilatkozatot a gyártó kizárólagos felelőssége mellett adják ki. Az ismertetett nyilatko-zat tárgya megfelel a vonatkozó uniós harmonizációs jogszabályoknak.

(IT) La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante. L'oggetto della dichiarazione descritto è conforme alla pertinente normativa di armonizzazione dell'Unione.

(LT) Ši atitikties deklaracija išduota tik gamintojo atsakomybe. Aprašytas deklaracijos objektas atitinka susijusius derinamuosius Sąjungos teisės aktus.

(LV) Šī atbilstības deklarācija ir izdota vienīgi uz ražotāja atbildību. Aprakstītais deklarācijas objekts atbilst attiecīgajam Savienības saskaņošanas tiesību aktam.

(NL) Deze conformiteitsverklaring wordt verstrekt onder volledige verantwoordelijkheid van de fabrikant. Het beschreven voorwerp is in overeenstemming de desbetreffende harmonisatiewetgeving van de Unie.

(PL) Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta. Wymieniony przedmiot niniejszej deklaracji jest zgodny z odnośnymi wymaganiami unijnego prawodawstwa harmonizacyjnego.

(PT) A presente declaração de conformidade é emitida sob a exclusiva responsabilidade do fabricante. O objeto da declaração descrito está em conformidade com a legislação aplicável de harmonização da União.

(RO) Prezenta declarație de conformitate este emisă pe răspunderea exclusivă a producătorului. Obiectul descris al declarației este în conformitate cu legislația relevantă de armonizare a Uniunii.

(SK) Toto vyhlásenie o zhode sa vydáva na vlastnú zodpovednosť výrobcu. Uvedený predmet vyhlásenia je v zhode s príslušnými harmonizačnými právnymi predpismi Únie.

(SL) Za izdajo te izjave o skladnosti je odgovoren izključno proizvajalec. Opisani predmet izjave je v skladu z ustrezno zakonodajo Unije o harmonizaciji.

(SV) Denna försäkran om överensstämmelse utfärdas på tillverkarens eget ansvar. Föremålet för försäkran överensstämmer med den relevanta harmoniserade unionslagstiftningen.

(TR) Bu Uygunluk Belgesi tamamen üreticinin sorumluluğu altındadır. Belgede açıklanan obje, Birliğin ilgili uyum mevzuatına uygundur.

EG-Konformitätserklärung
EU Declaration of Conformity
Декларация за съответствие на ЕС
Prohlášení o shodě ES
EF-overensstemmelseserklæring
Δήλωση ζσμμόρθωζης ΕΚ
Declaración de conformidad CE
EÜ vastavusdeklaratsioon
EY-vaatimustenmukaisuusvakuutus
Déclaration CE de conformité
EK megfelelőségi nyilatkozat
Dichiarazione di conformità EU
EB atitikties deklaracija
EK atbilstības deklarācija
EG-verklaring van overeenstemming
Deklaracja zgodności WE
Declaração de conformidade CE
Declarație de conformitate CE
Vyhlásenie o zhode ES
Izjava ES o skladnosti
EG-försäkran om Överensstämmelse

The installation instructions according to the manual have to be followed. The person authorized to compile the technical documents is Philippe Drolet, Product conformity, Festo Didactic Ltée/Ltd. Canada.

Festo Didactic Ltée/Ltd. · 675 rue du Carbone · Québec, QC G2N 2K7 · CANADA · www.festo-didactic.com 8101137 – DoC0039

FESTO

2022-03-02

8032510	CP-AM-DRILL
8032507	CP-AM-PRESS
8032508	CP-AM-MAG
8032509	CP-AM-TURNOVER
8032511	CP-AM-CAM
8038567	CP-AM-MPRESS
8043598	CP-AM-iDRILL-C21
8050101*	CP-L-LINEAR-C11-M0
8050102*	CP-L-LINEAR-C13-M0
8058667*	CP-L-BRANCH-C21
8061184	CP-AM-OUT
8068413	CP-AM-iPICK-C21
8088783	CP-AM-OVEN-230V
8091107	CP Lab HMI Panel
8092833*	SC CP LAB STD CFG 4
8092834*	SC CP LAB STD CFG 6
8092835*	SC CP LAB STD CFG 8
8092836*	SC CP LAB STD CFG 10
8108237*	CP-L-LINEAR-C11-M6
8129428	CP-Lab/MPS HMI Panel
8132970*	CP-L-LINEAR-C11-M0-V2
8146023*	CP-L-LINEAR-C13-M0-V2
8146024*	CP-L-LINEAR-C11-M6-V2
8152450	CP-AM-LABEL-V2
8154245	CP-AM-MEASURE-V2
8155207	CP-AM-CAM-V2
8167762*	CP-L-LINEAR-C11-M0 V2
8167762*	CP-L-LINEAR-C11-M0 V2
8167764*	CP-L-LINEAR-C11-M6 V2
8172797*	CP-L-LINEAR-NO-PLC-M0

2006/42/EC	EN 60204-1:2018
2014/30/EU	EN 61326-1:2013-01
2011/65/EU	EN 63000:2016-10
2014/53/EU*	See Appendix A for details

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Francis Larrivée, ing.
Engineering

Philippe Drolet, ing.
Product Compliance

Appendix A:
Extracted from: Siemens EU-Declaration of Conformity No. A5E50679864A; REV.: 001 /
CE-DoC_A5E50679864A_RF200R_RF300R_RED_RoHS_2020-12-11.pdf (siemens.com)

SIEMENS

Anhang RED & RoHS / *Annex RED & RoHS*
zur EU–Konformitätserklärung / *to EU-Declaration of Conformity*

Nr./*No.* A5E50679864A; REV.: 001

Produktgruppenbezeichnung/-modell SIMATIC RF200R / RF300R HF RFID READERS
Product group identification/-model (13.56 MHz)

Die Übereinstimmung der bezeichneten Produkte (unter Verwendung des Zubehörs) des oben genannten Gegenstandes mit den Vorschriften der angewandten Richtlinie(n) wird nachgewiesen durch die vollständige Einhaltung folgender Normen / Vorschriften (variantenabhängig, siehe Anhang Produkte - Tabelle 1. Angewandt Normen werden durch ein „x" gekennzeichnet, wohingegen nicht angewandte Normen durch ein „-" gekennzeichnet werden.):

The conformity of the designated products (using the accessory) of the object described above with the provisions of the applied Directive(s) is proved by full compliance with the following standards / regulations (depending on versions, see annex Products - Table 1. Applicable Standards are marked by a "x" whereas not applicable Standards are marked by a "-"):

Art. 3 (1) a) Schutz der Gesundheit und Sicherheit - Normen / *Health and Safety - standards:*

Referenznummer *Reference number*	Ausgabedatum *Date of issue*	Referenznummer *Reference number*	Ausgabedatum *Date of issue*
EN 62368-1 + A11	2014/2017	EN 50364	2018

Art. 3 (1) b) EMV Normen / *EMC standards:*

Referenznummer *Reference number*	Ausgabedatum *Date of issue*	Referenznummer *Reference number*	Ausgabedatum *Date of issue*
ETSI EN 301 489-1	V2.2.3	EN IEC 61000-6-1	2019
ETSI EN 301 489-3	V2.1.1	EN IEC 61000-6-2	2019
EN 55011 + A1 + A11	2016/2017/2020	EN 61000-6-3 + A1	2007/2011
EN 55032 + A11 Class A/B	2015/2020	EN IEC 61000-6-4	2019
EN 55035 + A11	2017/2020	EN IEC 61000-6-8	2020

Art. 3 (2) Effiziente Nutzung des Funkspektrums Harmonisierte Normen / *Efficient usage of spectrum Harmonized standards:*

Referenznummer *Reference number*	Ausgabedatum *Date of issue*	Referenznummer *Reference number*	Ausgabedatum *Date of issue*
ETSI EN 300 330	V2.1.1		

Art. 3 (3) a)-i) Delegierte Rechtsakte für Funkanlagen / *Delegated acts for Radio equipment*

Referenznummer *Reference number*	Ausgabedatum *Date of issue*	Referenznummer *Reference number*	Ausgabedatum *Date of issue*

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4.12 General product safety

WARNING

- **General product safety, CE conformity**
  - The product fulfills the requirements of all applicable EU directives. We confirm this with the CE mark.
  - As a consequence of
    Changes (hardware / software)
    Additions
    or improper use
  - Product safety can no longer be guaranteed by the operator.
  - In this case, the manufacturer's CE declaration of conformity expires. The operator must re-evaluate the safety and determine the CE conformity.

4.13 Protective devices

In order to reduce risks, this machine contains guards to prevent access to dangerous areas. These guards must not be removed or tampered with.

WARNING

- **Damage to the safety window**
  - Windows must not be cleaned using aggressive or alcoholic cleaning agents. Risk of brittleness and breakage!
  - This protective device must be replaced if it shows any signs of damage. Please contact our Service department to arrange this.

4.13.1 Emergency stop

If a station has an emergency stop button, the emergency stop signal switches off all actuators. An acknowledgment by the operator is required for a restart, there is no automatic restart.

4.13.2 Additional protective devices

The individual components, such as the power supplies and the controllers, possess built-in safety functions such as short-circuit protection, overcurrent protection, overvoltage protection and thermal monitoring. If necessary, consult the instruction manual for the device in question for more information.

5 Technical data

Parameter	Value
Electrics	
Power supply	24 V DC, 0,6 A protective extra low voltage (PELV)
Digital inputs	5
Digital outputs	4
Compressed air	
Supply pressure	6 bar, 90 psi
Supply rate	>= 40 l/min
Compressed air quality	EN ISO 8573-1
Pressure dew point (Class 4)	<= +3°C
Ambient conditions	
Operating environment	Use inside building only
Ambient temperature	5°C ... 40°C
Rel. air humidity	80% up to 31°C
Pollution degree	2, Dry, non-conductive contamination
Operating height	Up to 2000 m above NN (sea level)
Noise emission level	L_{pA} < 70 dB
Certification	
CE marking in accordance with:	Machinery Directive EMC Directive RoHS Directive
EMC environment	Industrial environment, Class A (in acc. with EN 55011)
Measurements	
Length	496 mm
Width	300 mm
Height	603 mm
Weight	Approx 9,5 kg
Subject to change	

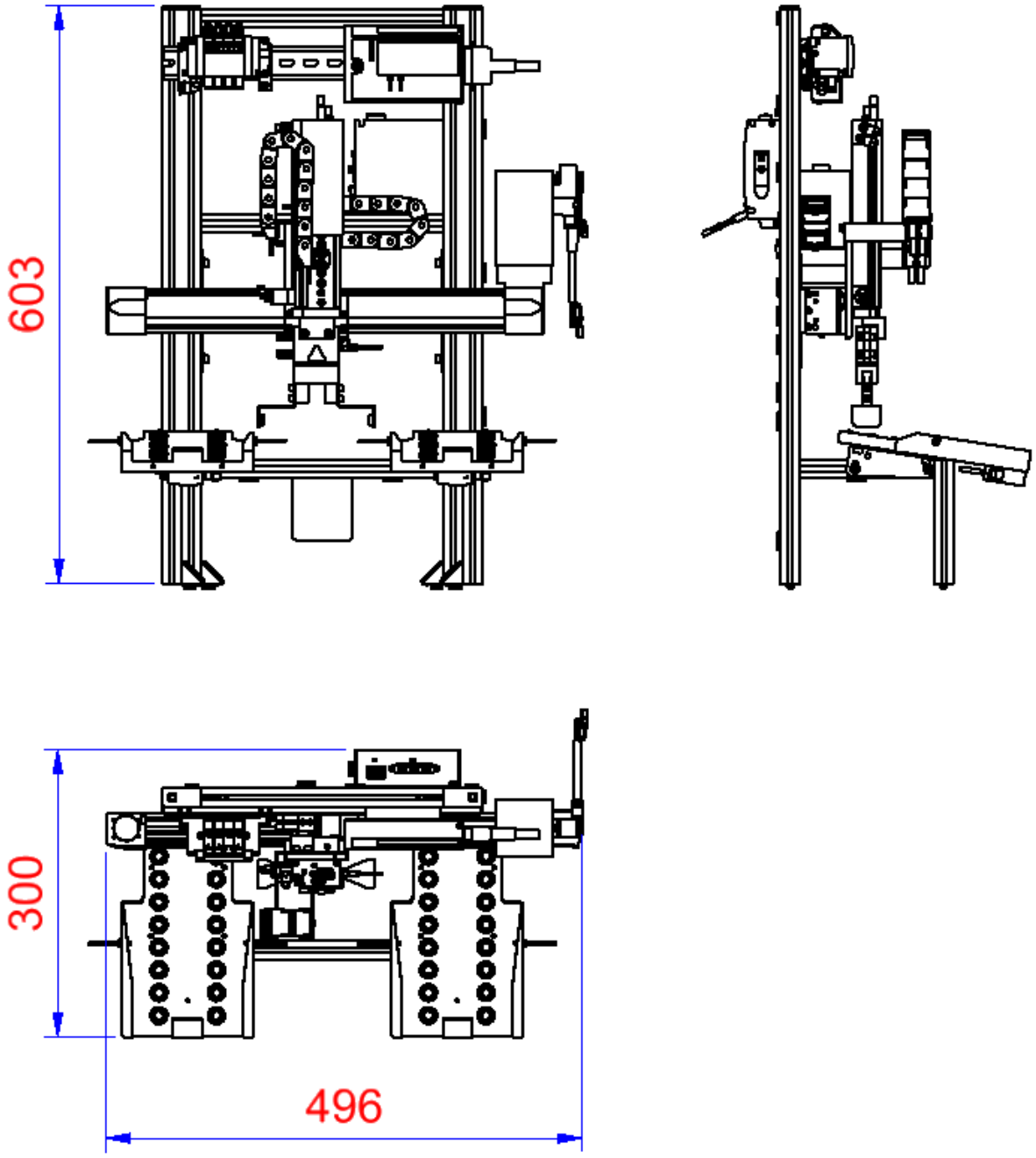


Illustration similar

6 Design and Function

6.1 Transport

WARNING

- **Damage to transport equipment when moving heavy machines/machine sections**
  - When the stations are shipped out, extra care must be taken to ensure that heavy machines/machine sections are always transported using a suitable fork-lift truck. A single station can weigh up to 50 kg.
  - Always use suitable transport equipment.
  - Always use the lifting points provided to move the machine/machine sections.
  - Always use the designated load take-up point.

WARNING

- **Securing transit routes**
  - The supply routes must be cleared prior to transport, and must be suitable for the forklift truck to pass through. If necessary, warning signs or barrier tape must be set up to keep the routes clear.
- **Caution**
  - When opening transport boxes, care must be taken to ensure that any additional components delivered in the same box, such as computers, do not fall out.

WARNING

- **Danger of crushing for hands/feet**
  - It is not permitted to grip onto or under the feet when handling the machine, as there is an increased risk of hands or feet getting crushed or trapped in these areas.
  - When setting down the station, make sure no persons have their feet under the machine's feet.

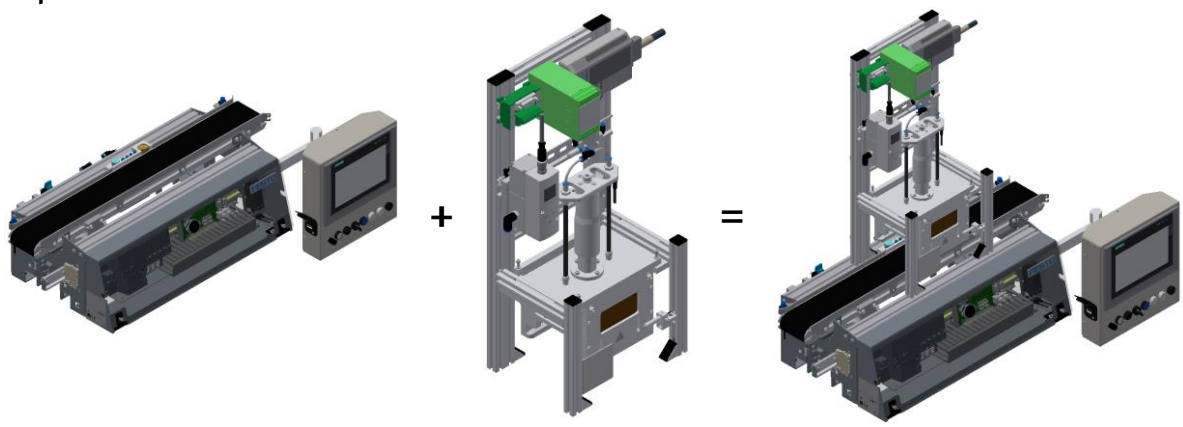
NOTE

- When opening the transport box, any additional components must be secured to prevent them from falling out, and removed first.
- Once this is done, the transport box can be removed/opened up fully, and the station can be taken out and moved to its intended location.
- Care must be taken with all components projecting from the machine, as sensors and similar small parts can easily be damaged if the machine is not transported correctly.
- Check that all the profile connectors are seated correctly using a size 4 – 6 Allen key. Unavoidable vibrations can loosen the connectors during transport.

6.2 Overview of the System

CP Lab Conveyor, CP Factory Linear, CP Factory Shunt and CP Factory Bypass are called basic modules. If an application module, e.g. the CP Application Module muscle press is attached to a basic module, it becomes a station.

Example



basic module, e.g. CP Lab Conveyor

application module, e.g. muscle press

station muscle press

If several stations are put in a row one behind the other, this will form a production line.

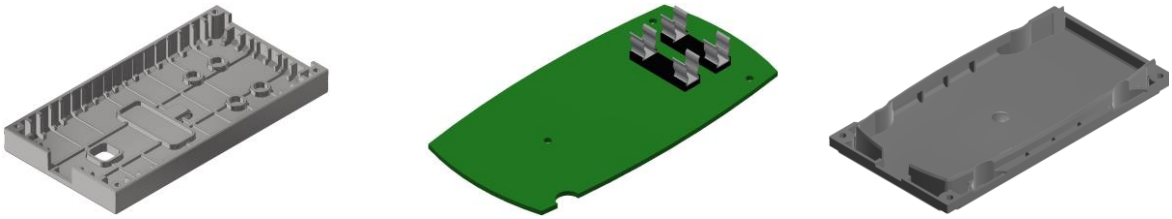
carrier

pallet

workpiece

Carriers are transported on the conveyors of the basic modules. And on the carriers, there are pallets with a fixed workpiece reception placed. The workpieces are placed on the workpiece reception or taken from it. Pallets can also be placed on a carrier in some stations or gripped from there.

The typical workpiece of a CP Factory/Lab System is the roughly simplified version of a mobile phone. The workpiece consists of a front cover, of a back cover, of a board and of a maximum of two fuses.



front cover

board

back cover

6.3 The application module output

The application module output is designed for

- Using an electro-pneumatic, two-axis handling device, the good / bad parts must be dispensed on two ramps.

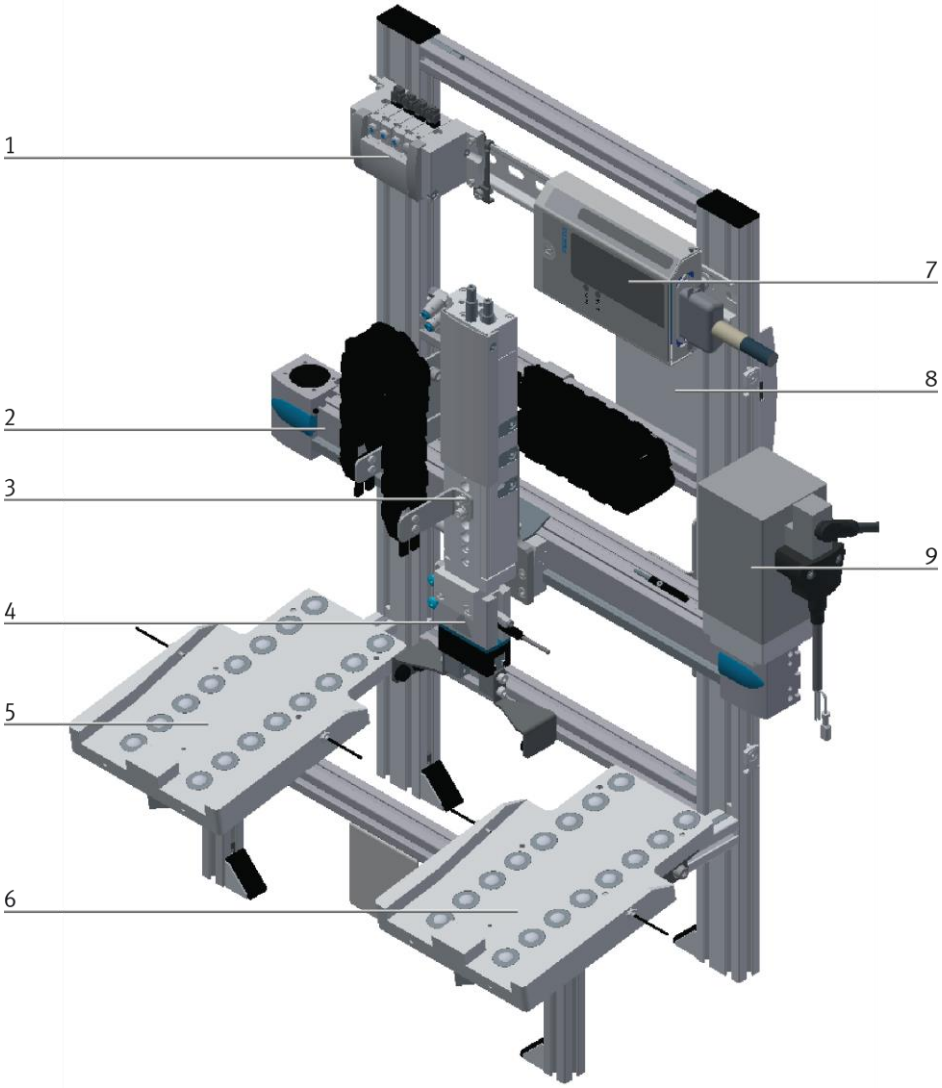


Illustration similar

Position	Description
1	Valve terminal
2	X-axis
3	Z-axis
4	Gripper
5	Storage position left
6	Storage position right
7	I/O module
8	Motor controller
9	Motor X-axis

6.3.1 Electrics

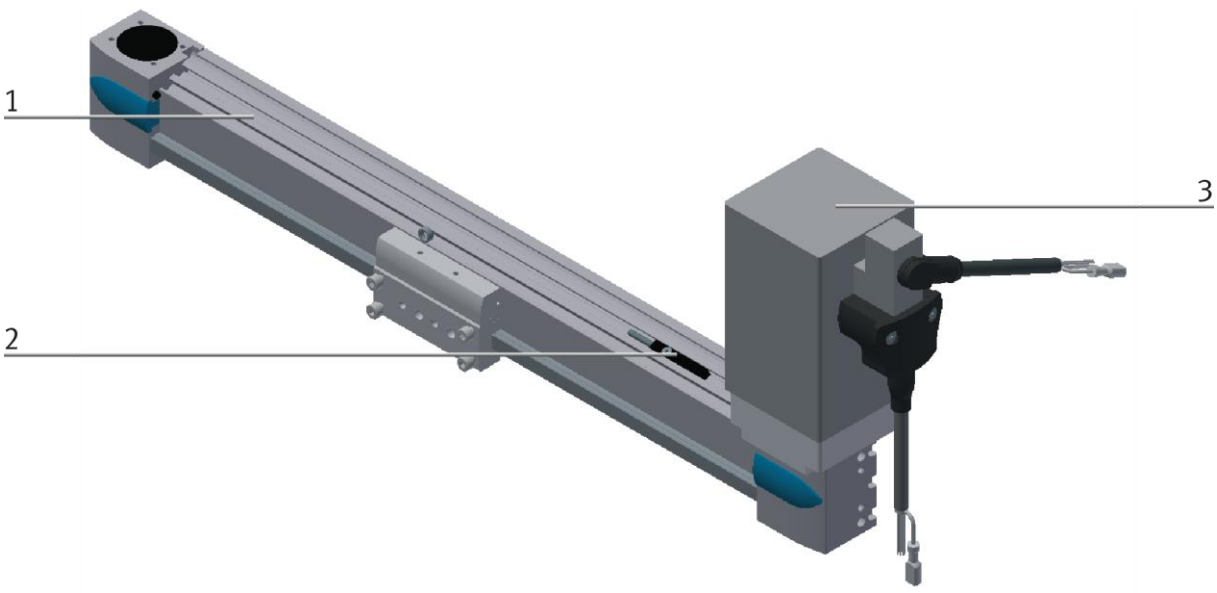
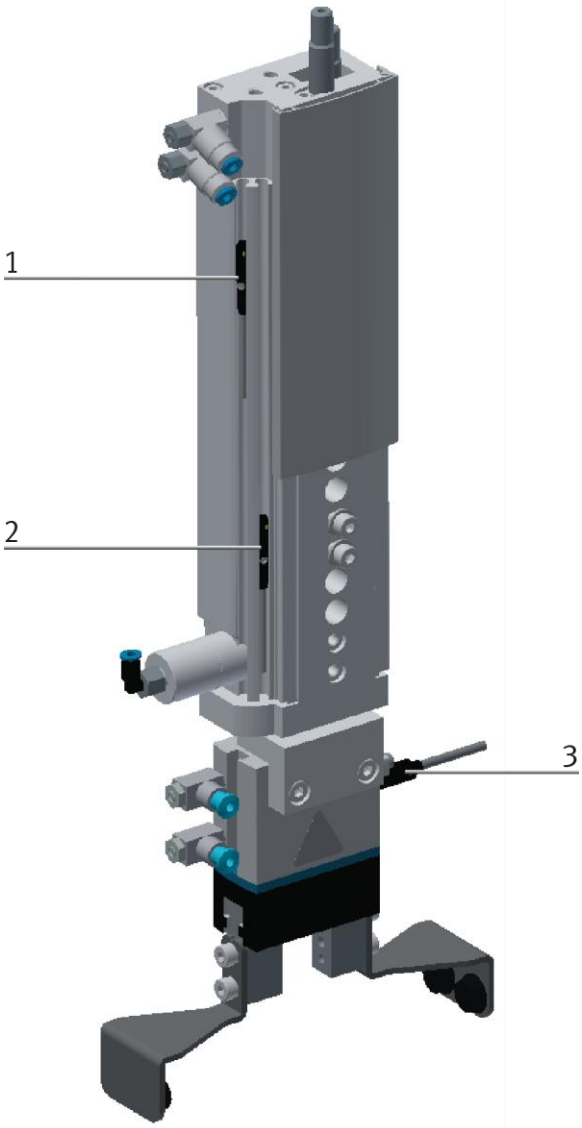


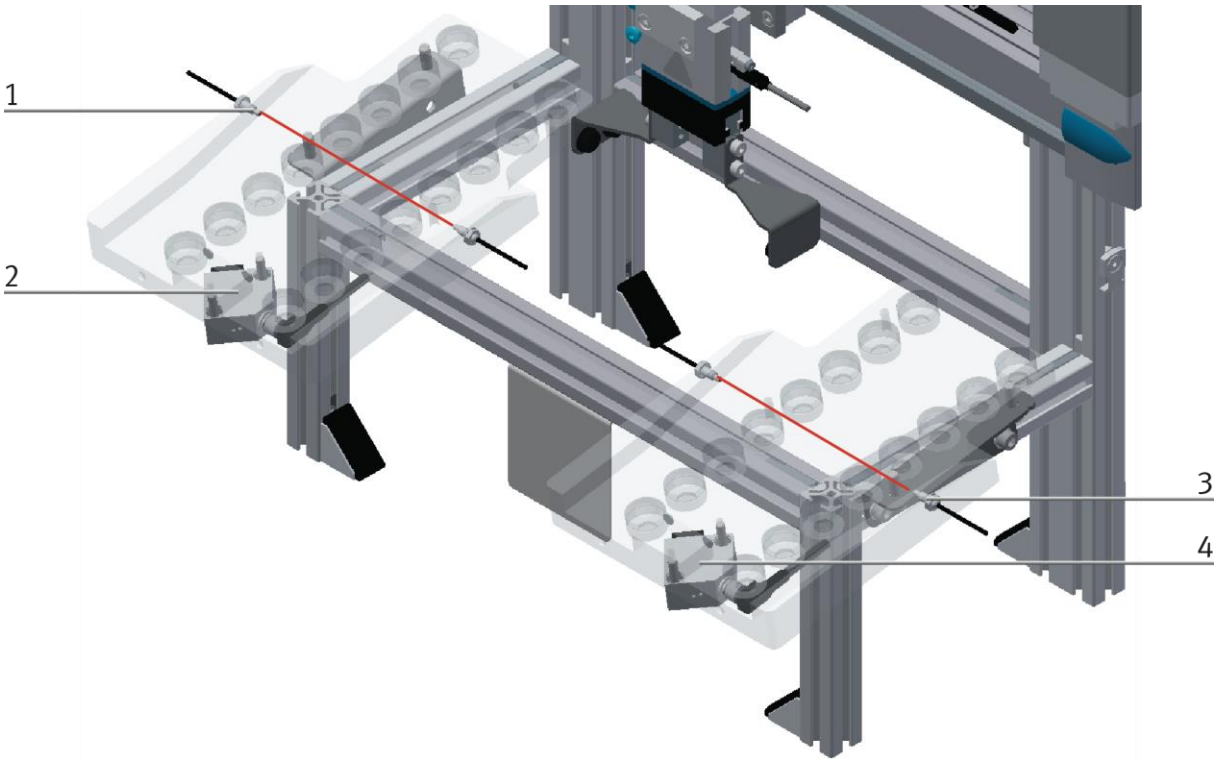
Illustration similar

Position	Description	Part number	Res.Ident	Use
1	X-axis EGC-50-300-TB-KF-0H-GK	556812		
2	Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG10	Reference sensor X-axis
3	Motor X-axis EMMS-ST-57-S-SE-G2	1370475	MA1	Motor x-axis



Sensors lifting cylinder – illustration similar

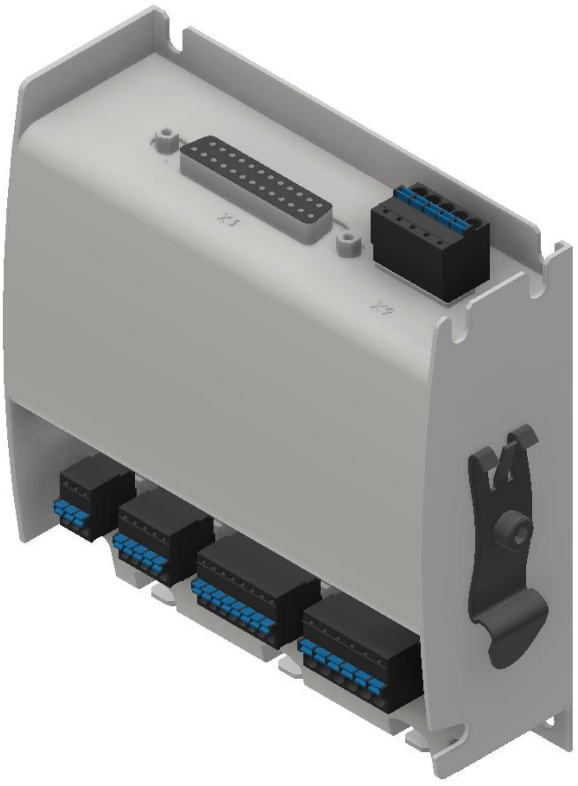
Position	Description	Part number	Res.Ident	Use
1	Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG1	Lifting cylinder upper position
2	Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG2	Lifting cylinder lower position
3	Proximity sensor	547859	BG3	Gripper opened



Light guides – illustration similar

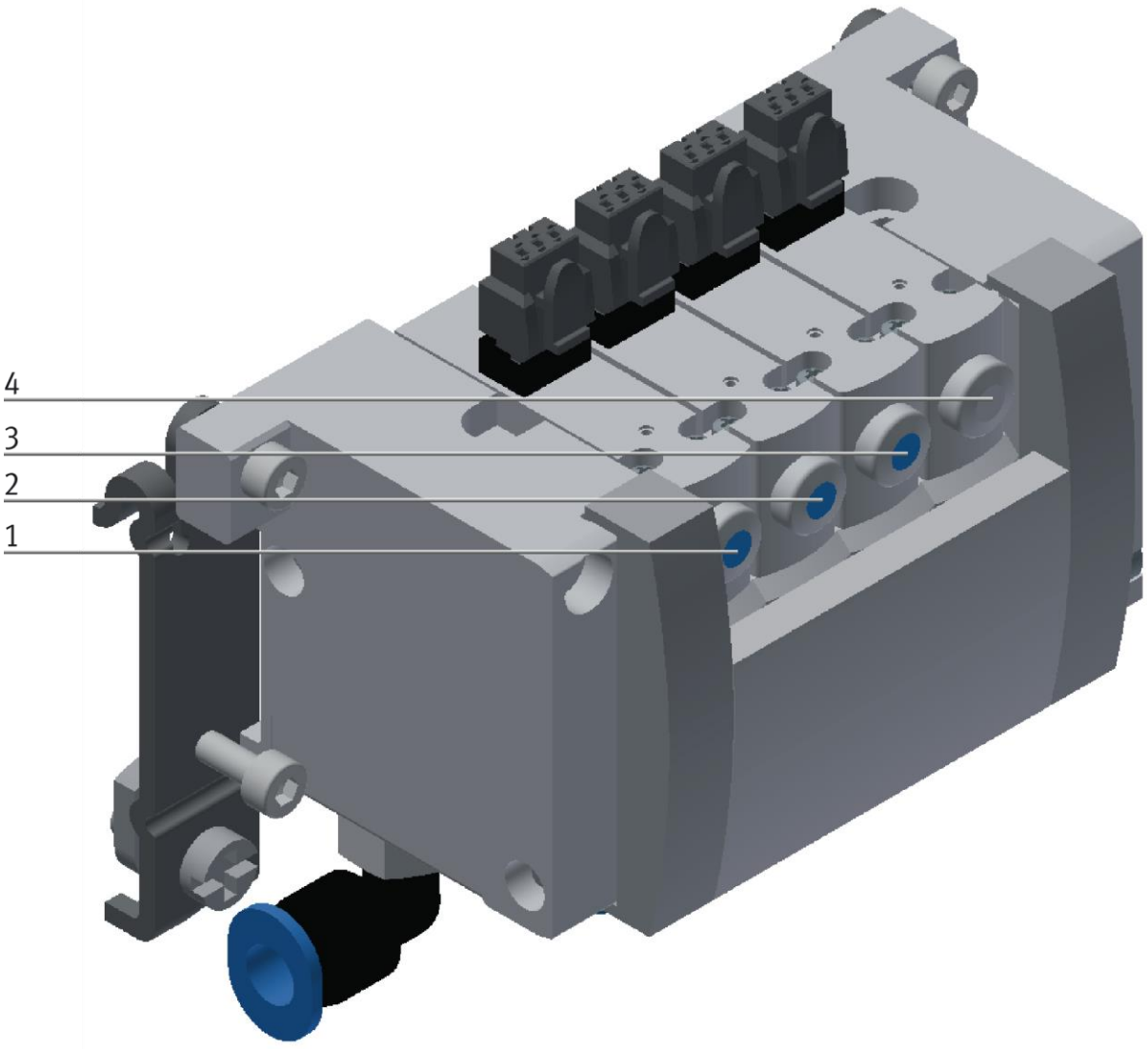
Position	Description	Part number	Res.Ident	Use
1	Light guide SOOC-TB-M4-2-R25	552812	BG4	depositing place left occupied
2	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG4	depositing place left occupied
3	Light guide SOOC-TB-M4-2-R25	552812	BG5	depositing place right occupied
4	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG5	depositing place right occupied

I/O module XD1 part number 8027412 – illustration similar



Motor controller CMMO-ST-C5-1-DIOP / KF1 part number 1512316 – illustration similar

6.3.2 Pneumatics



Valve terminal CPVSC1 / part number 525675 – illustration similar

Description valves from left to right

Position	Description	Part number	Res.Ident	Use
1	Valve CPVSC1-K-M5C	548899	MB 1	Z-axis upward
2	Valve CPVSC1-K-M5C	548899	MB 2	Z-axis downward
3	Valve CPVSC1-K-M5C	548899	MB 3	Open cylinder clamp unit
4	Valve CPVSC1-M-M5	548901	MB 4	Open gripper

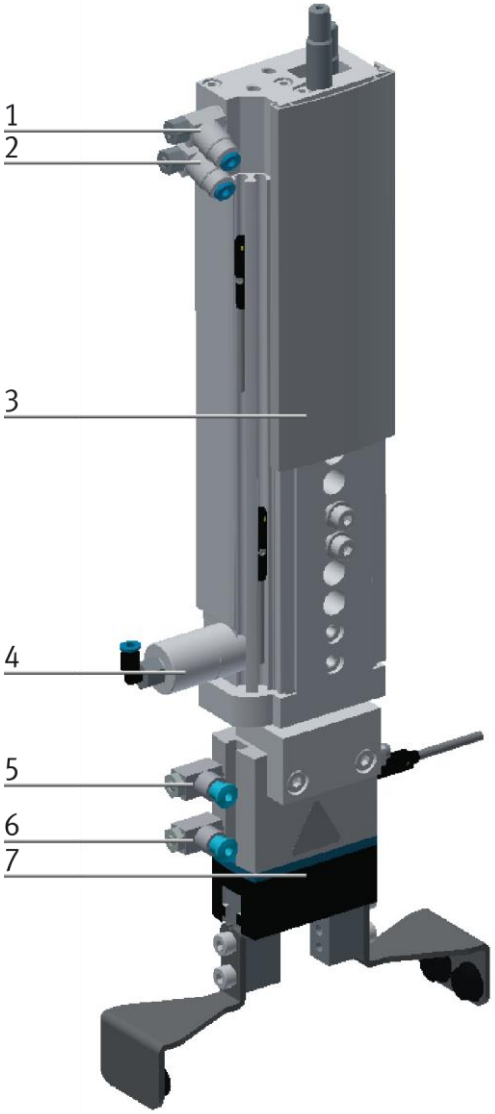


Illustration similar

Position	Description	Part number
1	One-way flow control valve GRLA-M5-QS-3-LF-C	175053
2	One-way flow control valve GRLA-M5-QS-3-LF-C	175053
3	Z-axis DGSL-10-100-E3-Y3A	543905
4	Cylinder clamp unit	
5	One-way flow control valve GRLZ-M3-QS-3	175043
6	One-way flow control valve GRLZ-M3-QS-3	175043
7	Gripper DHPS-16-A	1254043

6.4 Function

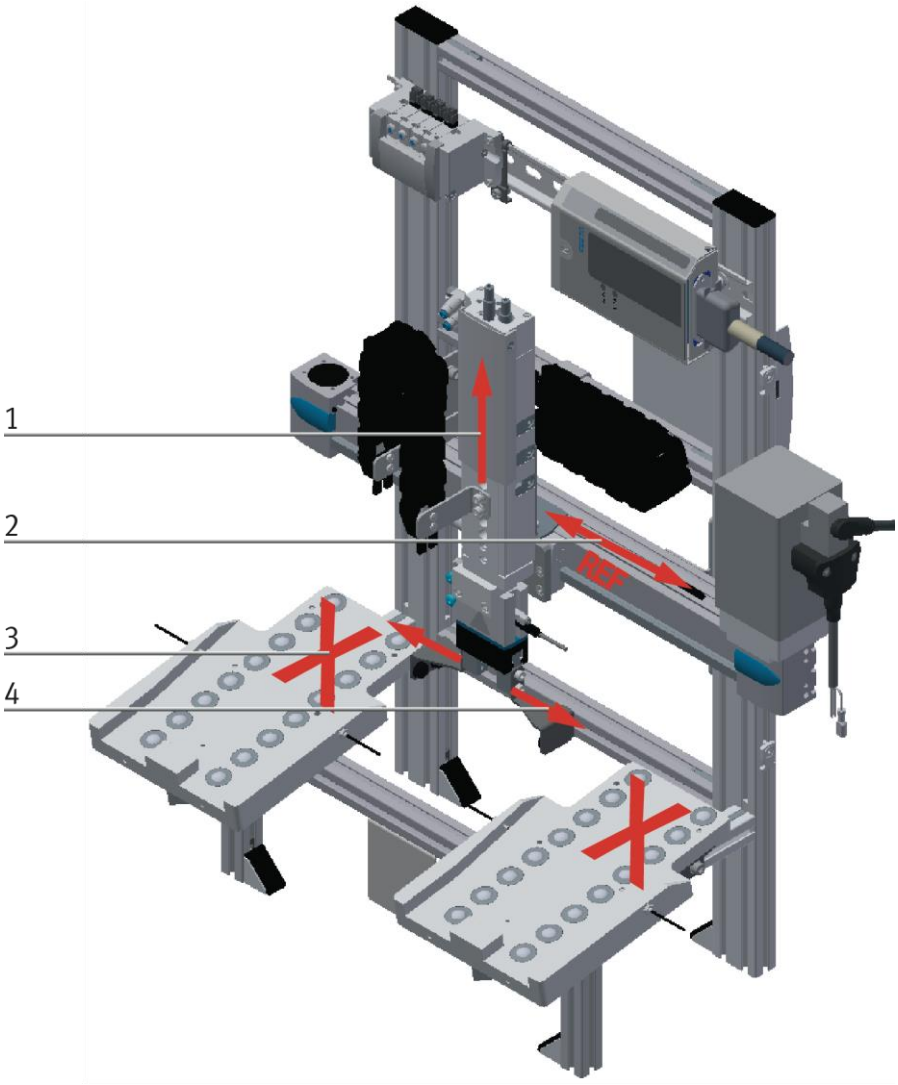
The carrier is detected by a light barrier when it is fed into the application module and then stopped. The application module removes a good/bad part from a carrier and places it on one of the two ramps. The selection of the good/bad ramp can be freely defined in MES. A maximum of two parts can be stored on each ramp. The X-axis must not return to the center position until the part has slipped downwards on the ramp. The Z axis has only an upper and a lower position.

6.5 Process description

Start Conditions

- All connections have been made properly

Starting position



1. The Z axis must be in the upper position
2. The X axis must be referenced
3. At least 1 space must be available on the ramps
4. The gripper must be opened

Procedure

5. If a carrier is transported through the light barrier of the application module output, the carrier is stopped and an automatic sequence is started.
6. The X-axis moves over the center position
7. The Z axis is moved downwards and the gripper is closed
8. The Z-axis moves upwards
9. Depending on the condition (good or bad part), the X axis moves to one of the ramps
10. The gripper is opened to place the workpiece on the ramp
11. If the workpiece has slipped downwards (detection by the sensors), the X axis moves to the center position.

Note: When you place the part, the Z-axis does not move.

6.6 Electrical Connections

6.6.1 I/O connections

The application module is connected to the electrical board of the module via I/O. The I/O box (1) of the application module is connected to the I/O terminal (2) on the module's electrical board.
The example refers to the connection to a basic module linear, it is possible that the terminal names of the I/O terminal differ when connected to another module.

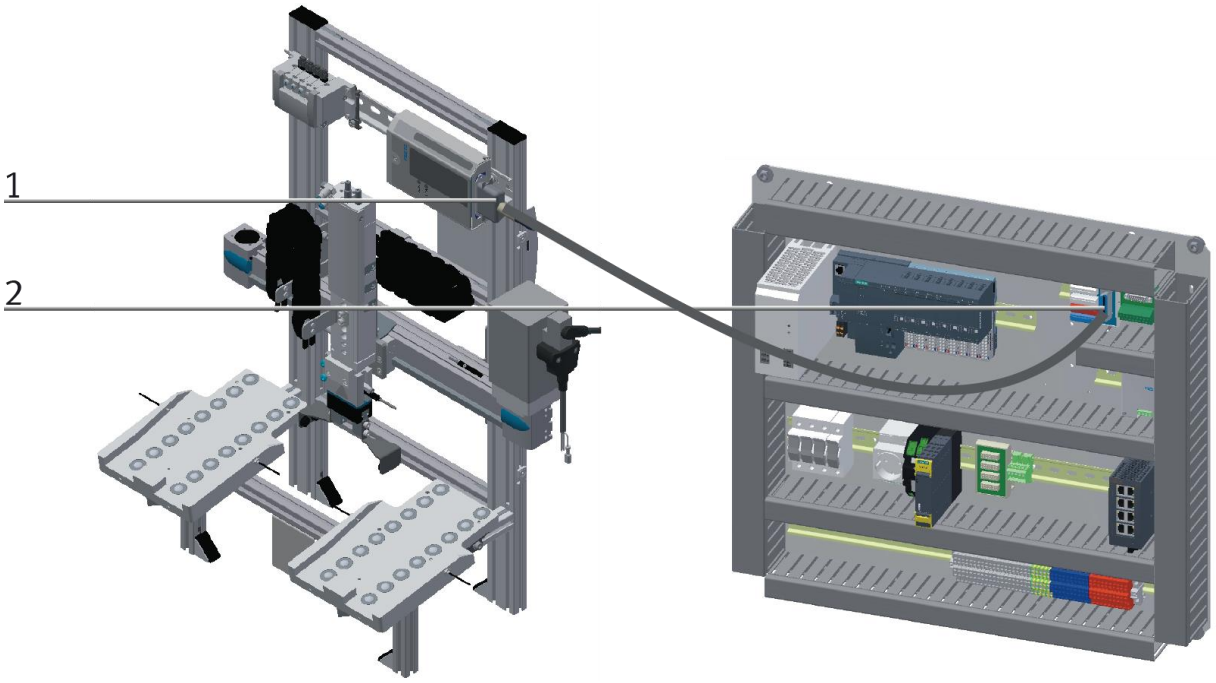


Illustration similar

Electrical connection by I/O example

6.6.2 I/O module XD1

Illustration similar

Inputs

Designation	Equipment identifier	Application	Application SysLink
Lifting cylinder upper position	BG1	XD1 / XK:I0	XD1:XS13
Lifting cylinder lower position	BG2	XD1 / XK:I1	XD1:XS14
Gripper opened	BG3	XD1 / XK:I2	XD1:XS15
Depositing place left occupied	BG4	XD1 / XK:I3	XD1:XS16
Depositing place right occupied	GB5	XD1 / XK:I4	XD1:XS17
Referenced	KF1 / X1:20	XD1 / XK:I5	XD1:XS18
Motion complete	KF1 / X1:12	XD1 / XK:I6	XD1:XS19
Ready	KF1 / X1:21	XD1 / XK:I7	XD1:XS20

Outputs

Designation	Equipment identifier	Application	Application SysLink
Z-axis upward	MB1	XD1 / XK:O0	XD1:XS1
Z-axis downward	MB2	XD1 / XK:O1	XD1:XS2
Open cylinder clamp unit	MB3	XD1 / XK:O2	XD1:XS3
Open gripper	MB4	XD1 / XK:O3	XD1:XS4
Controller enable	KF1 / X1:10	XD1 / XK:O4	XD1:XS5
Traversing selection	KF1 / X1:1	XD1 / XK:O5	XD1:XS6
Bit 1	KF1 / X1:2	XD1 / XK:O6	XD1:XS7
Start positioning	KF1 / X1:6	XD1 / XK:O7	XD1:XS8

7 Commissioning

NOTE

– The following applies to the start-up as well as to the restart.

- The CP Application Module is delivered pre-assembled.
- All attachment parts are individually packaged.
- All components, tubings and cablings have been clearly marked in order to guarantee a problem-free retrieving of all connections.
- For the operation within a CP Factory/Lab System, the CP Application Module has to be put on and attached to a basic module.

NOTE

– You can read the general installation instructions in the manual of your basic module. The following instructions apply particularly to the CP Application Module.

7.1 Workplace

The commissioning of the CP Application Module requires:

- a CP Application Module
- a basic module CP Factory or a basic module CP Lab Conveyor for the installation of the CP Application Module
- a SysLink cable for the connection between the I/O terminal of the CP Application Module and the basic module CP Factory
- an Ethernet cable for the connection of the motor controller (option)
- an on-site electrical connection in the room, see data sheet basic module
- an on-site pneumatically connection in the room, see data sheet basic module

7.2 Visual Inspection

WARNING

- **Any damages must always be repaired instantly.**

Visual inspection has to be carried out prior to every commissioning!
Before you start the CP Application Module, you must always inspect the following parts regarding visual damages and function:

- Electrical connections
- Mechanical components and connections
- Emergency Stop devices

7.3 Safety Regulations

WARNING

- **Any damages must always be repaired instantly.**

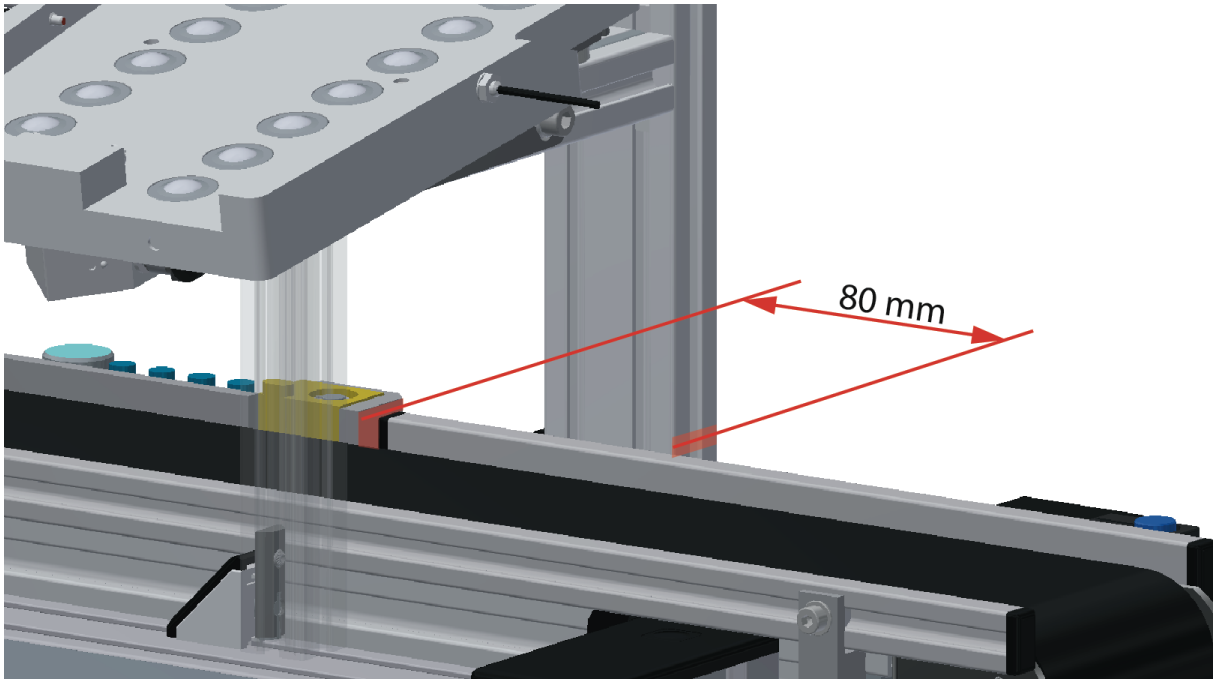
The CP Application Module may only be operated on the following conditions:

- The technical condition – mechanically and electrically – of the CP Application Module is perfect.
- The CP Application Module is used in accordance with the regulations.
- The operating instructions have been read and understood.
- All safety devices are available and active.

7.4 Assembly

The application module is mounted on the basic module with the following distance (see picture): the distance between the stopper edge and the profile edge is the same with a CP-Lab conveyor as with a CP-Factory basic module.

The assembly process is explained in the following chapter as an example. The displayed dimension is an approximation, it is possible that a fine adjustment is necessary for error-free processing.



Example distance between application module and stopper / illustration similar

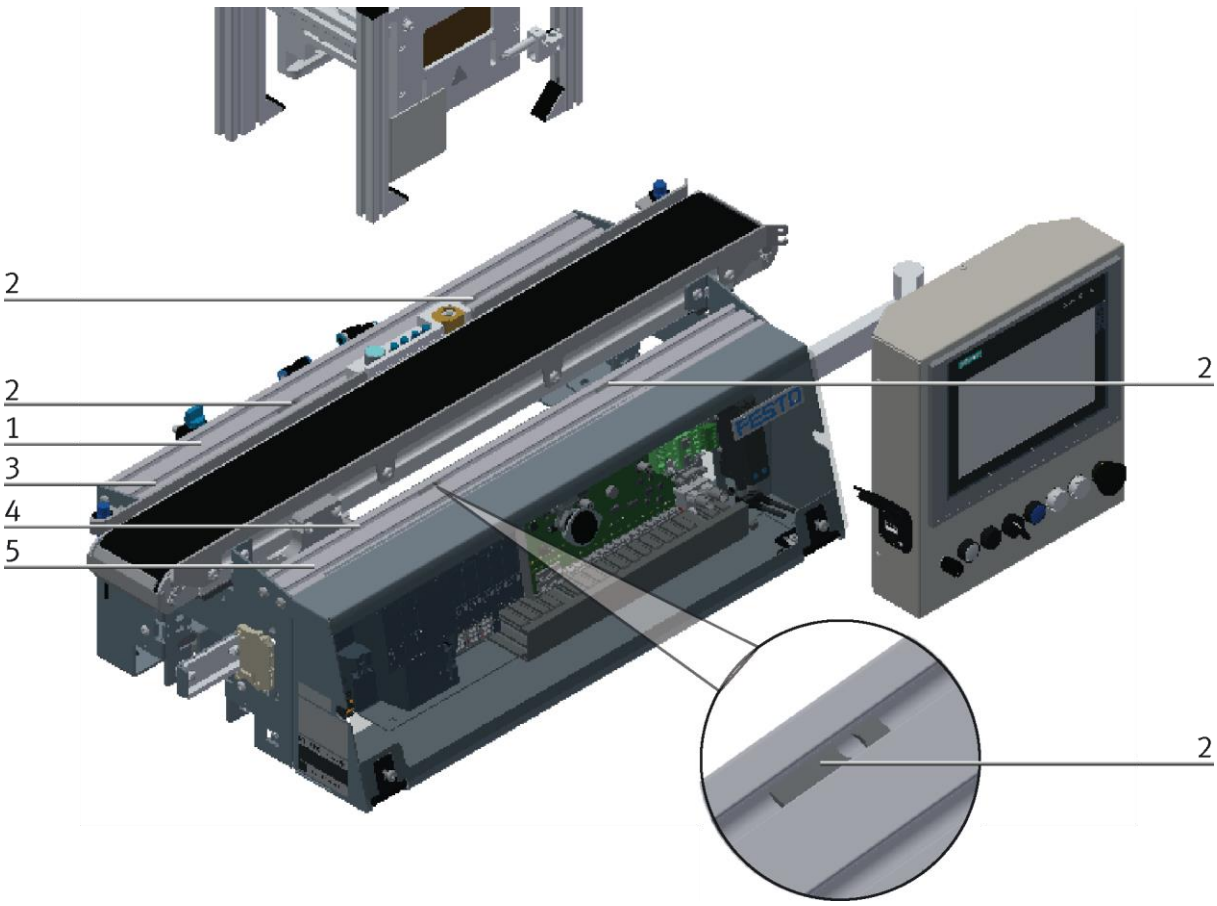
7.4.1 Assembly of an CP application module

	NOTE
	The procedure of attaching the CP application module to a basic module is the same as with all basic modules. The following description for the attachment to a basic module. CP Lab Conveyor is an example for all basic modules and all application modules.

Positioning slot nuts in the cross profiles of the basic module CP Lab Conveyor

Mounting the CP application module is very easy:

- Two M5-slot nuts (2) have to be put into the inner front slot of the cross profile (4) of the basic module CP Lab Conveyor.
- Then put two additional M5-slot nuts (2) into the inner back slot of the cross profile (3) of the basic module CP Lab conveyor.
- Then you have to position the slot nuts (2) approximately to the distance of the vertical cross profiles of the CP application module.



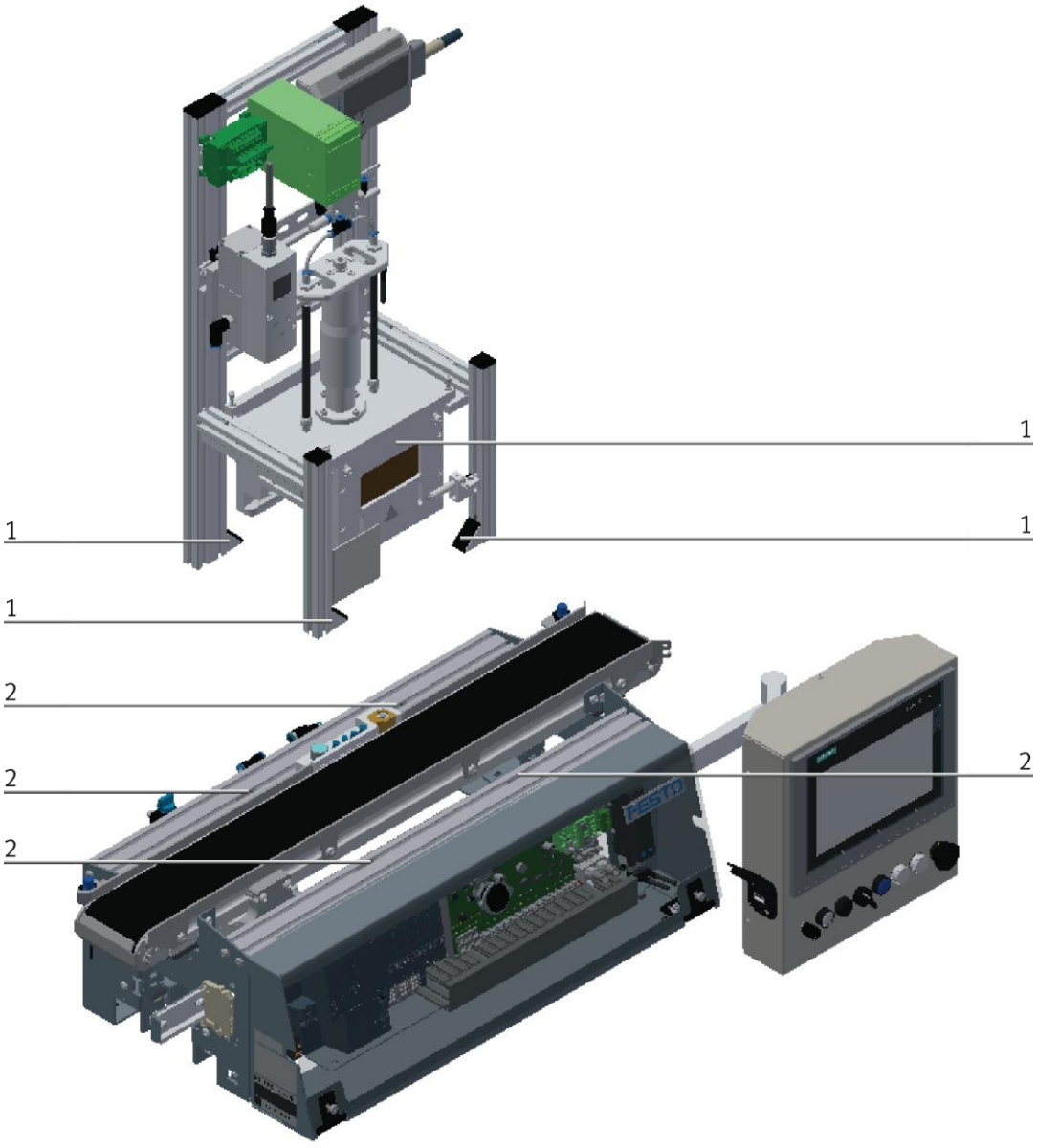
Positioning slot nuts / illustration similar

Position	Description
1	back cross profile
2	slot nut
3	Inner slot (back cross profile)
4	Inner slot (front cross profile)
5	front cross profile

Attaching the application module to the basic module CP Lab Conveyor

- Put the CP application module on the basic module CP Lab Conveyor.
- Position the slot nuts (2) underneath the mounting brackets (1) of the CP application module so that the internal threads of the slot nuts are visible underneath the elongated holes of the mounting brackets.

	***NOTE*** Use Allen keys for lateral adjustment of the slot nuts.

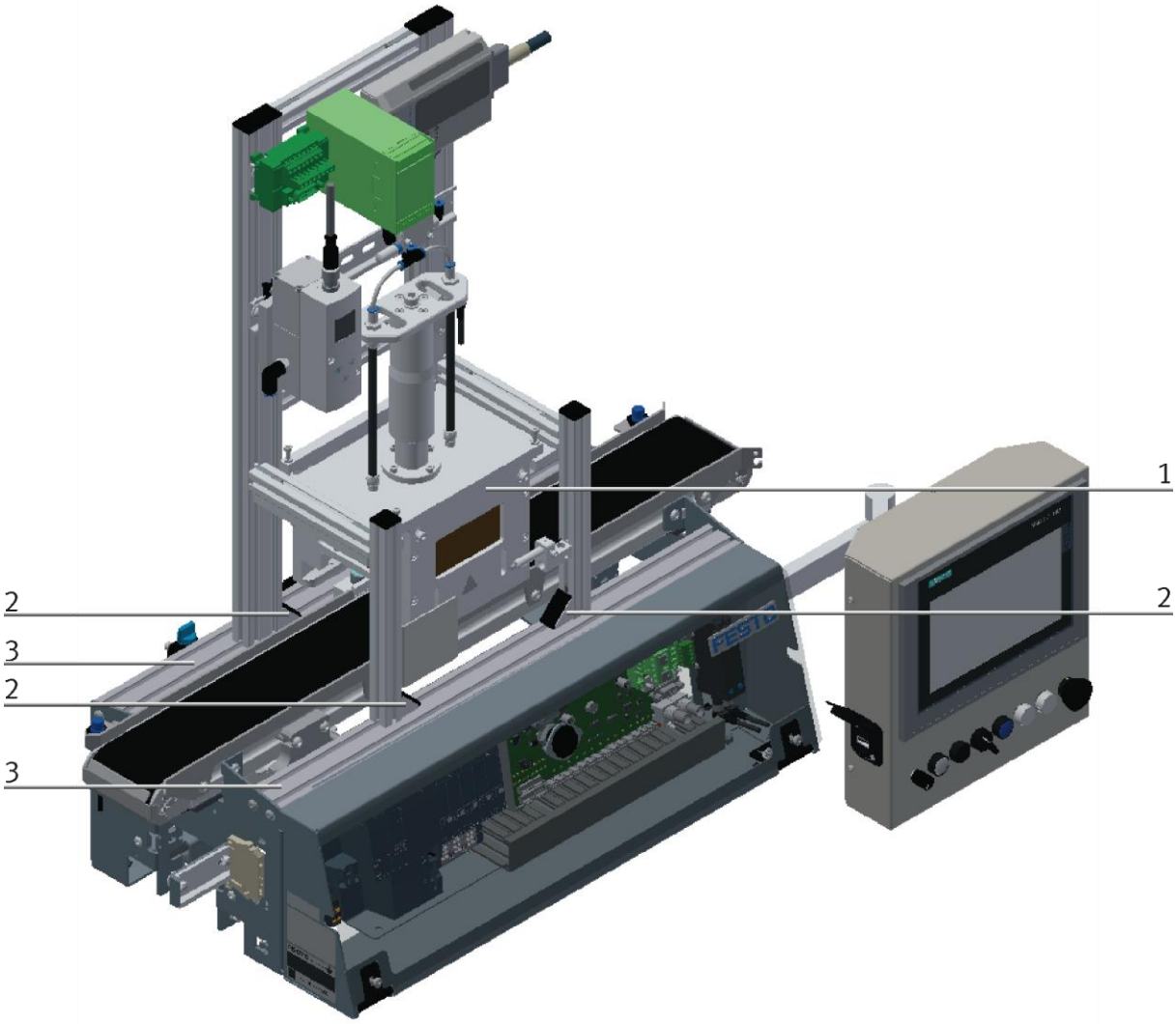


How to put on the CP application module / illustration similar

Position	Description
1	CP application module: mounting bracket
2	slot nut

Adjusting the CP application module and fixing it on the basic module CP Lab Conveyor

- Use raised head screws M5x8, in order to connect the mounting brackets (1) of the CP application module Measuring, at first loosely, with the cross profiles (2) of the basic module CP Lab Conveyor.
- After setting all raised head screws, you can still move the CP application module to the position required.
- Push a carrier with pallet and front cover to the stopper position. The front cover points with its inside upwards. The drilled hole of the front cover is on the left side.
- Have a visual inspection to make sure that the two distance sensors are capable of registering the front cover more or less in medium range.
- Now tighten the raised head screws.
- Then put the black covers onto the mounting brackets.



Tightening the CP application module / illustration similar

Position	Description
1	CP application module: mounting bracket with cover
2	basic module CP Lab Conveyor: cross profile

7.4.2 Connecting the CP application module electrically to basic module CP Lab Conveyor

SysLink-interface for digital signals

NOTE

With special variants of the basic module CP Lab Conveyor, you absolutely have to observe the corresponding operation instructions of the basic module CP Lab Conveyor!

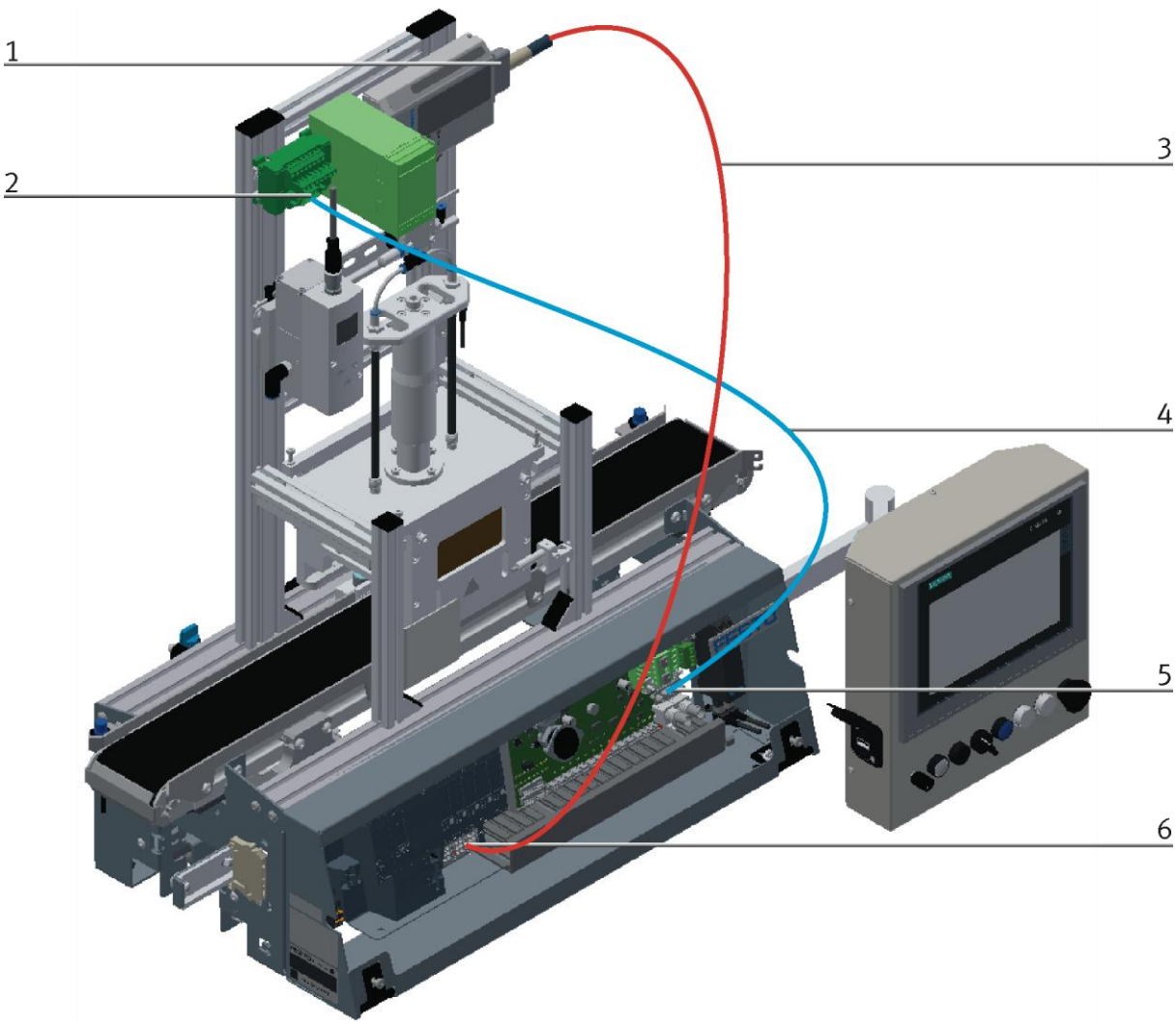
The CP application module exchanges digital input and output signals with the basic module via the SysLink interface:

- Connect the I/O terminal (1) of the CP application module with the control (6) of the basic module CP Lab Conveyor. Therefore use the connecting cable with SysLink plugs (3) which has already been attached to the control and is led out on the back side of the basic module CP Lab Conveyor.

D-Sub-interface for analogue signals (option – not available at all application modules)

The CP application module muscle press provides an analog output signal. This must be applied to the analog terminal (2) and connected to the analog inputs of the basic module:

- Connect the analog terminal (2) of the CP application module to the D-Sub interface for analog signals (5) on the XZ1 board of the CP Lab Band basic module. For this purpose, use the supplied connection cable (4) with standard D-Sub connectors: 15-pin, double row.

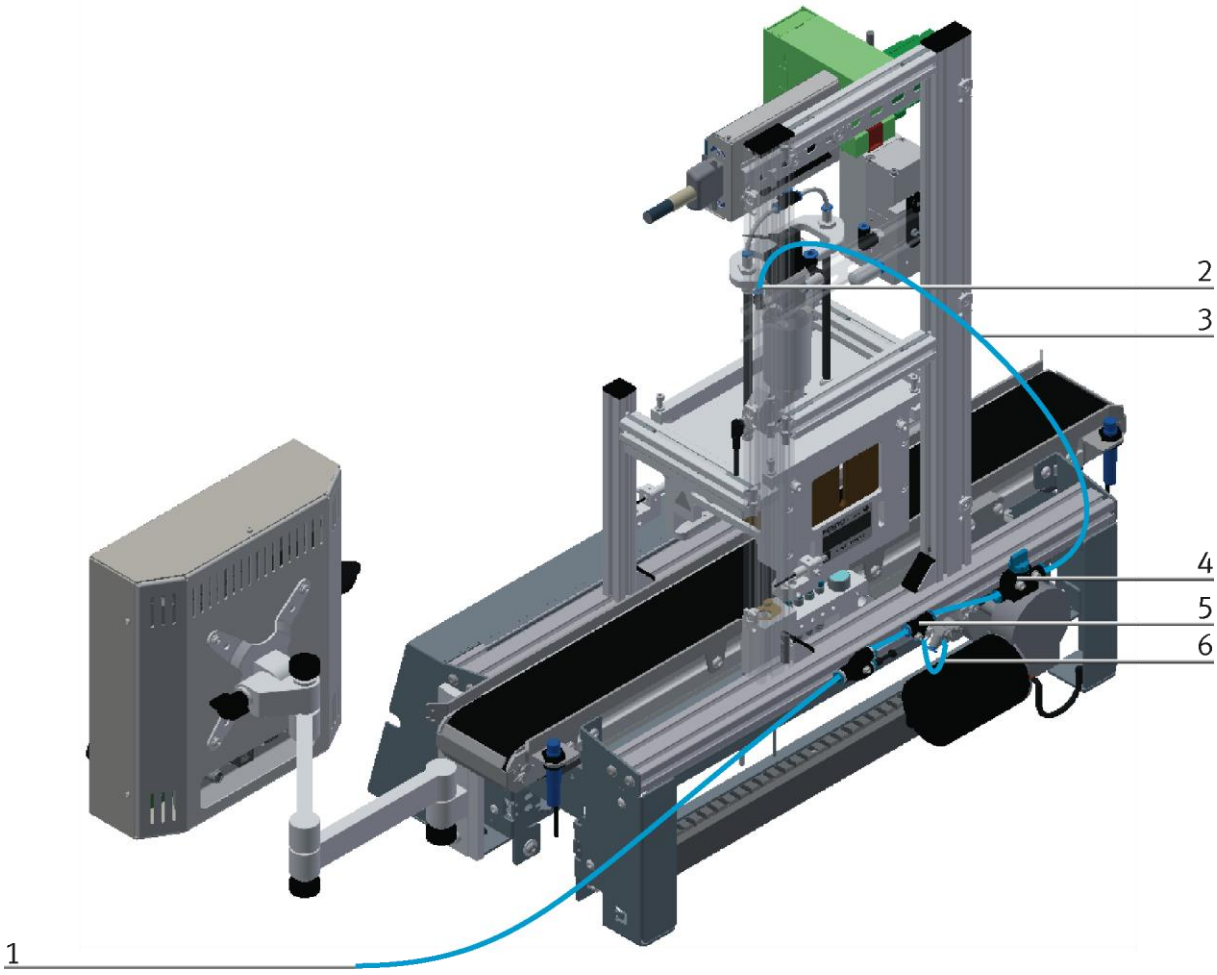


Electrical connections / illustration similar

Position	Description
1	CP application module: I/O terminal (+BG-XD1)
2	CP application module: analogue terminal (+BG-XD2A)
3	connecting cable with a SysLink-plug (SysLink-cable)
4	connecting cable with15-pin standard D-Sub-plugs
5	basic module CP Lab Conveyor: board (XZ1 / X5)
6	Basic module CP Lab Band: PLC (-inputs / KF2; outputs / KF4)

7.4.3 Pneumatic connection from application modules (option – not available at all application modules)

The pneumatic connection is made according to the principle of the following sketch. The application module is connected from the valve terminal/valve (2) to the shut-off valve (4) on the conveyor belt. The hose (3) (nominal diameter 4) is simply plugged into the QS connector. The supply line (1) is plugged into the T-connector (5); the CP Lab conveyor is also supplied from this T-connector (6).



Pneumatically connect application module / illustration similar

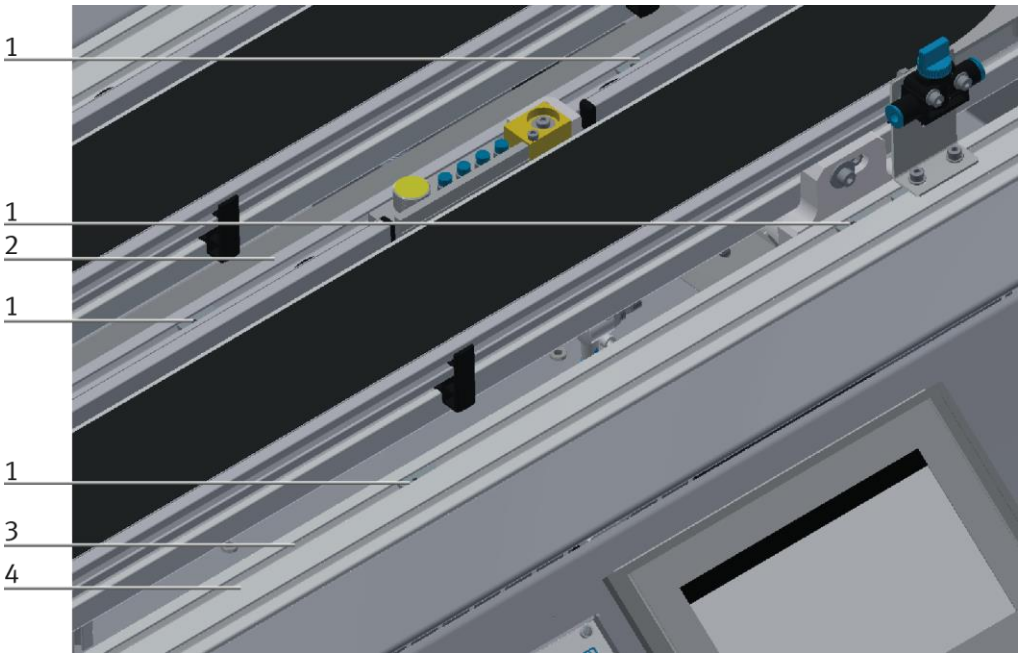
7.4.4 Assembly of an CP application module to a CP Factory basic module

	**NOTE** The procedure for installing a CP application module on a basic module is identical for all basic modules. The following example is an example for all basic modules and applications.

Positioning slot nuts in the cross profiles of the CP Factory basic module

Mounting the CP application module is very easy:

- Two M5-slot nuts (1) have to be put into the inner front slot of the cross profile (4) of the CP Factory basic module.
- Then put two additional M5-slot nuts (1) into the inner back slot of the cross profile (2) of the basic module.
- Then you have to position the slot nuts (1) approximately to the distance of the vertical cross profiles of the CP application module.



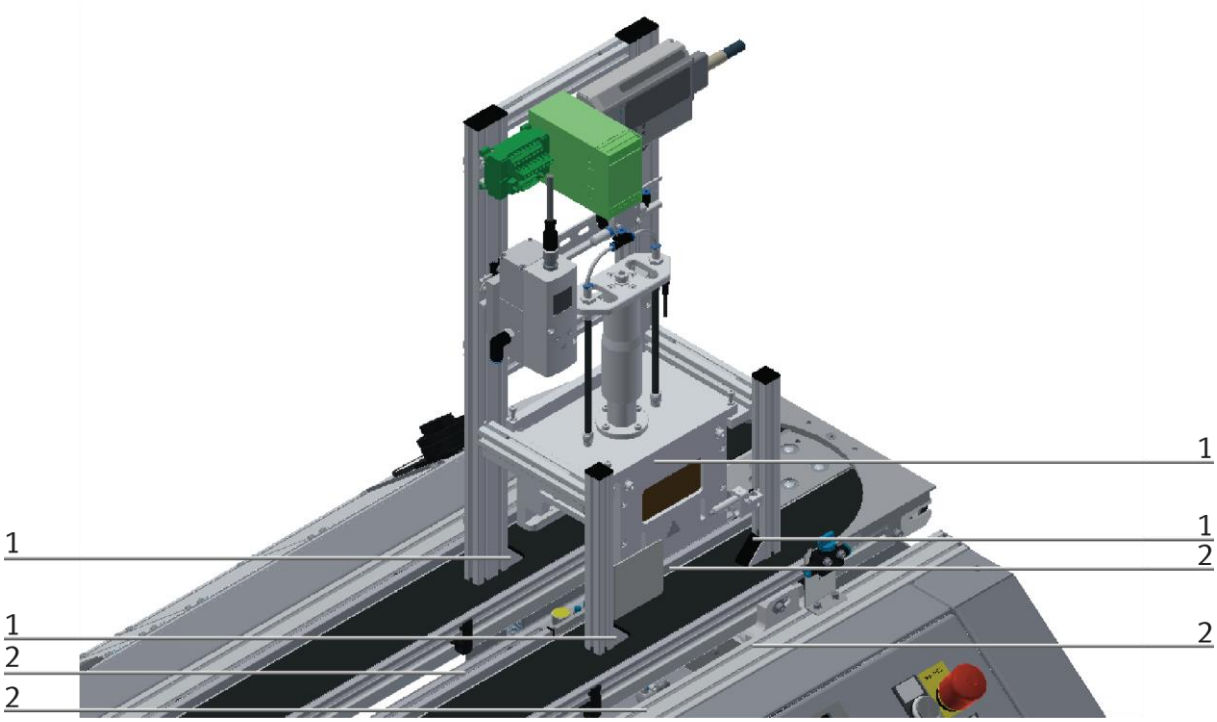
Positioning slot nuts / illustration similar

Position	Description
1	slot nut
2	back cross profile
3	Inner slot (front cross profile)
4	front cross profile

Attaching the application module to the CP Factory basic module

- Put the CP application module on the CP Factory basic module.
- Position the slot nuts (2) underneath the mounting brackets (1) of the CP application module so that the internal threads of the slot nuts are visible underneath the elongated holes of the mounting brackets.

	***NOTE*** Use Allen keys for lateral adjustment of the slot nuts.

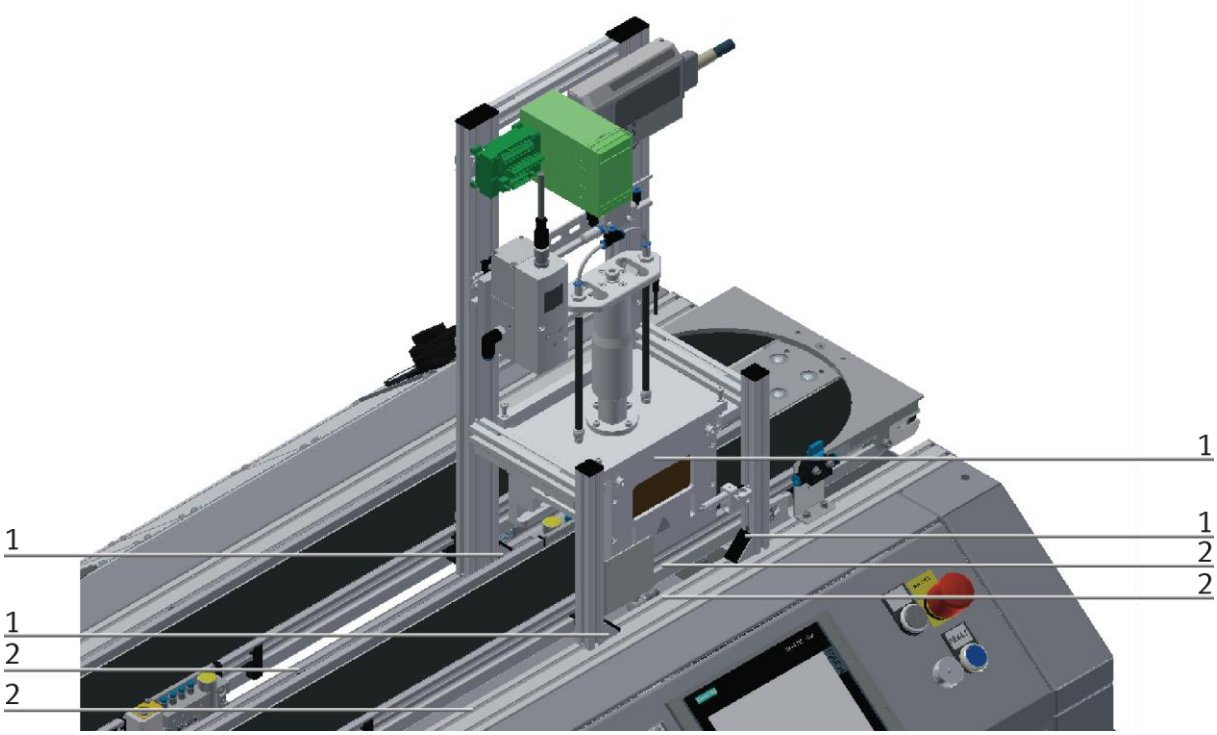


How to put on the CP application module / illustration similar

Position	Description
1	CP application module: mounting bracket
2	slot nut

Adjusting the CP application module and fixing it on the CP Factor basic module

- Use raised head screws M5x8, in order to connect the mounting brackets (1) of the CP application module Measuring, at first loosely, with the cross profiles (2) of the CP Factory basic module.
- After setting all raised head screws, you can still move the CP application module to the position required.
- Push a carrier with pallet and front cover to the stopper position. The front cover points with its inside upwards. The drilled hole of the front cover is on the left side.
- Have a visual inspection to make sure that the two distance sensors are capable of registering the front cover more or less in medium range.
- Now tighten the raised head screws.
- Then put the black covers onto the mounting brackets.



Tightening the CP application module / illustration similar

Position	Description
1	CP application module: mounting bracket with cover
2	CP Factory basic module: cross profile

7.4.5 Connecting the CP application module electrically to the CP Factory basic module

SysLink-interface for digital signals

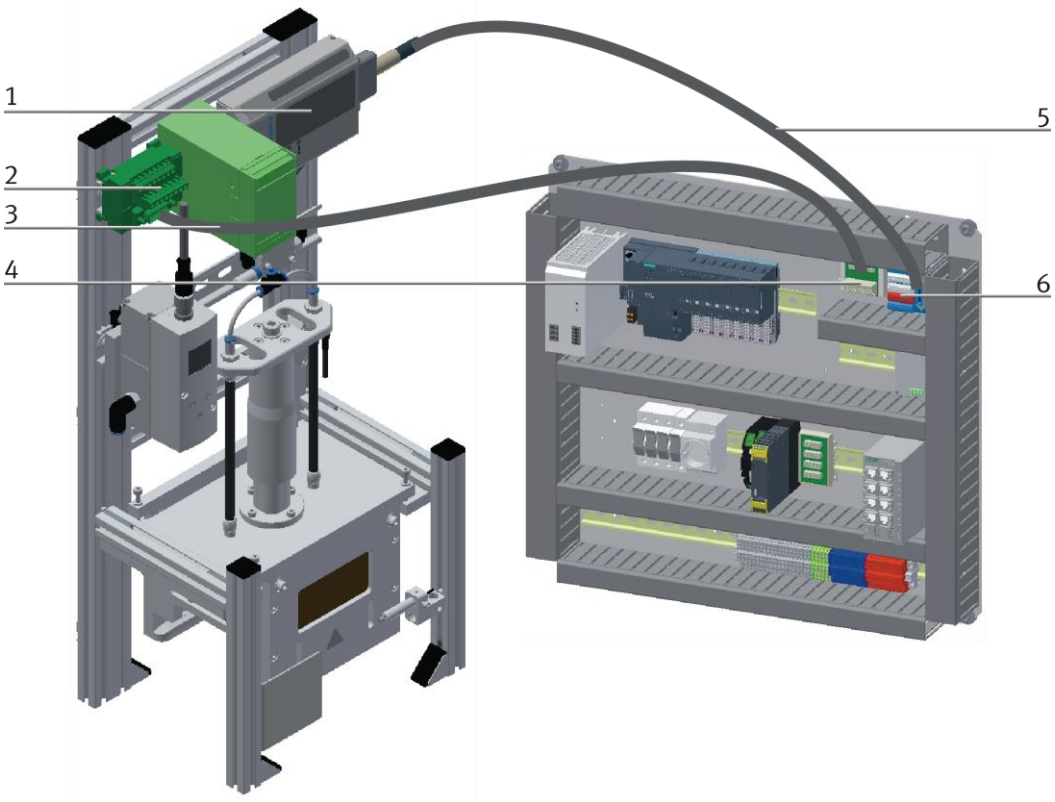
The CP application module exchanges digital input and output signals with the basic module via the SysLink interface:

- Connect the I/O terminal (1) of the CP application module with the I/O terminal (6) on the electric board of the CP Factory basic module. Therefore use the provided connecting cable with SysLink plugs (5).

D-Sub-interface for analogue signals (option – not available at all CP application modules)

The CP application module produces two analogue output signals with the distance sensors. These are set on the analogue terminal and have to be connected with the analogue inputs of the CP Factory basic module:

- Connect the analogue terminal (2) of the CP application module with the analogue terminal (4) on the electric board of the CP Factory basic module. Therefore use the provided connecting cable (3) with standard D-Sub plugs: 15-pin, two-rowed.

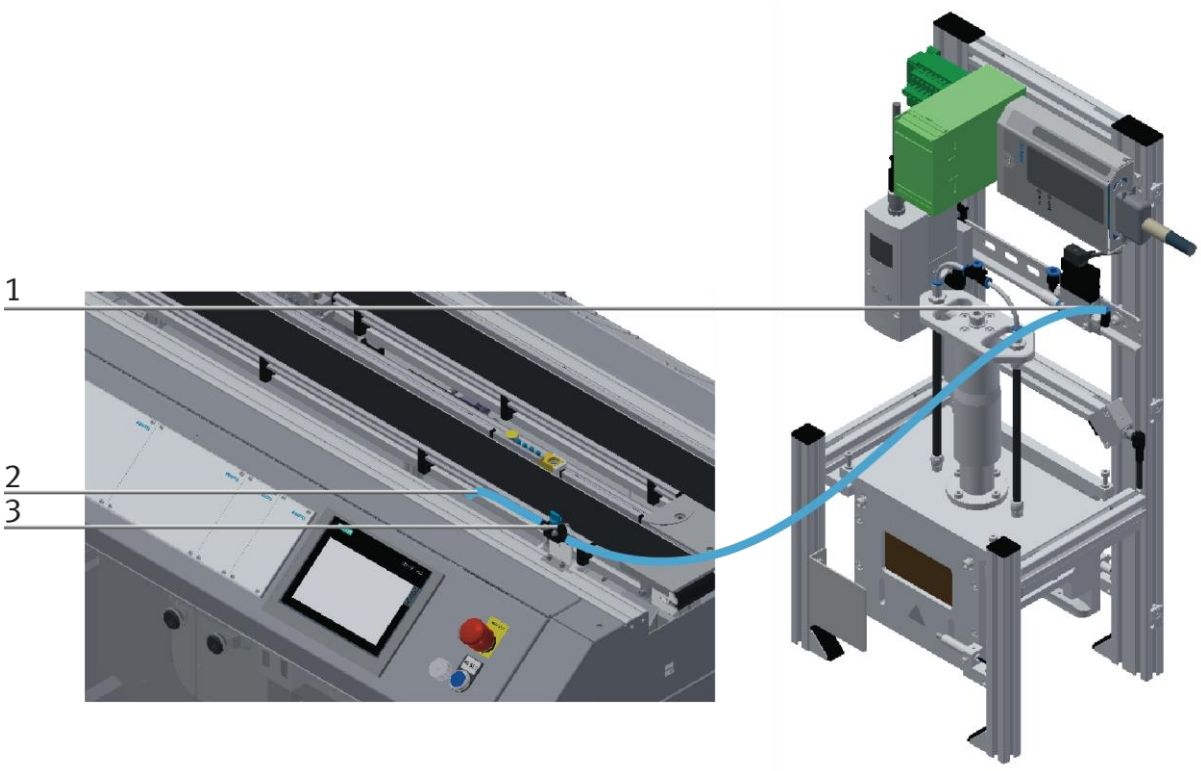


Electrical connections / illustration similar

Position	Description
1	CP application module: I/O terminal (+BG-XD1)
2	CP application module: analogue terminal (+BG-XD2A)
3	connecting cable with 15-pin D-Sub-plugs
4	electric board CP Factory basic module: analogue terminal (+K1-XD16A)
5	connecting cable with SysLink-plugs (SysLink-cable)
6	electric board CP Factory basic module: I/O terminal (+K1-XD15)

7.4.6 Pneumatic connection from application modules to CP Factory basic module

The pneumatic connection is based on the principle of the following sketch. The application module is connected from the valve (terminal) to the shut-off valve (3) on the conveyor belt.
The hose (nominal width 4) is simply inserted into the QS connector.
The supply line (2) is plugged into the shut off-valve (3).



Pneumatically connect application module / illustration similar

7.5 Adjusting the sensors

7.5.1 Light guide (Workpiece detection)

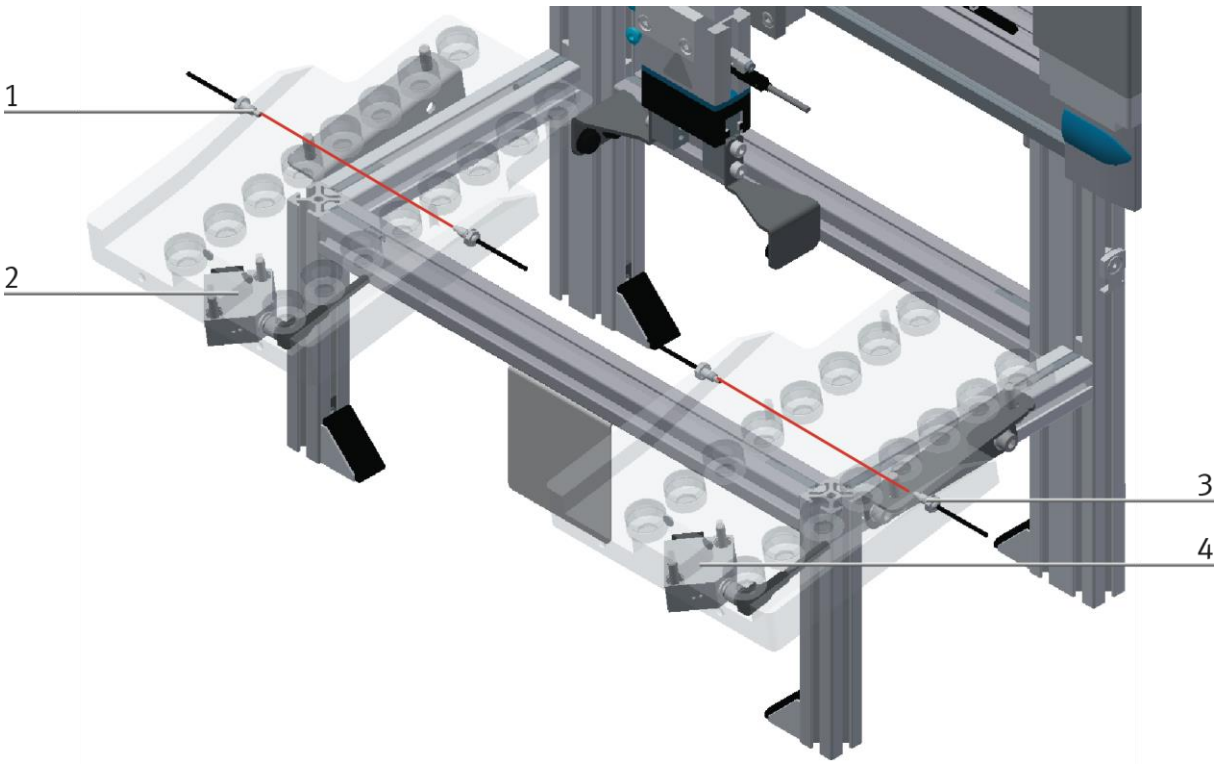


Illustration similar

Position	Designation
1	Light guide / 552812 (SOOC-TB-M4-2-R25)
2	Light guide unit / 8127556 (D: SOEG-L-Q30-P-A-S-2L)
3	Light guide / 552812 (SOOC-TB-M4-2-R25)
4	Light guide unit / 8127556 (D: SOEG-L-Q30-P-A-S-2L)

The light guide is used for detecting workpieces. Flexible fibre-optics are connected to a light guide unit. The light guide unit works with visible infrared. The workpiece interrupts the light barrier.

Requirements

– Light guide unit has been attached.
– Electrical connection of the light guide unit has been made.
– Power supply is available.

Procedure

Please attach the light guide heads towards each other to the application module.
Align the transmitter- and receiver light guide.
Attach the light guide to the light guide unit.
You might have to turn the adjusting screw with a small screwdriver until the switching status display (LED) appears.

Remark

The maximum permissible number of turns of the adjusting screw is 12.

Please put a workpiece into the sensing range of the light barrier. The switching status display will disappear.

Documents

- Data sheets / Operating instructions
  Light guide unit D: SOEG_L (8127556) and light guide SOOC-TB-M4-2-R25 (552812)

7.5.2 Proximity Switch (Z-axis & gripper)

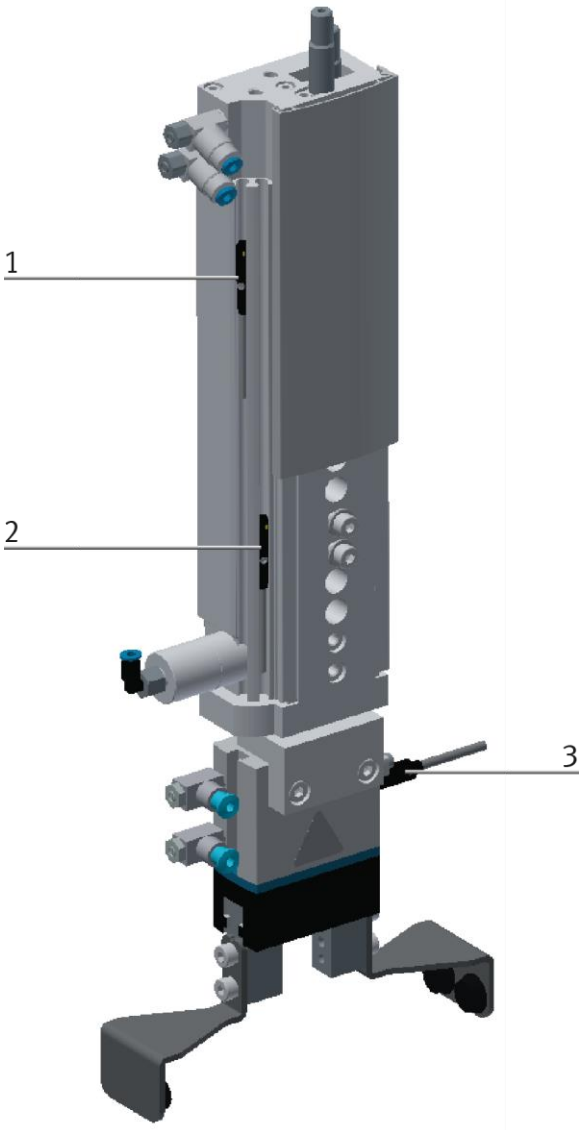


Illustration similar

Position	Designation
1	Proximity sensor z-axis upper position / 551373 (SMT-10M-PS-24V-E-25-L-OE)
2	Proximity sensor Z-axis lower position / 551373 (SMT-10M-PS-24V-E-25-L-OE)
3	Proximity sensor gripper opened / 547859 (SMT-8G-PS-24V-E-2,5Q-OE)

The proximity sensors are used for checking the end position of the cylinder for the Z-axis and the gripper. The proximity sensors react to a permanent magnet on the piston of the cylinder.

Z-axis

Requirements

– Cylinder for Z-axis has been attached.
– Pneumatic port of the cylinder has been made.
– Compressed air supply is switched on.
– Electrical connection of the proximity sensors has been made.
– Power supply is available.

Procedure

1. The cylinder is in the position to be queried.
2. Move the proximity sensor as far as the switching status display (LED) appears.
3. Move the proximity sensor into the same direction by a few millimeters as far as the switching status display disappears.
4. Move the proximity sensor halfway between the switch on and the switch off position.
5. Tighten the locking screw of the proximity sensor with an Allen key SW1.3.
6. Please check the position of the proximity sensor by repeated test runs of the cylinder.

Documents

- Data sheets / operating instructions
  Proximity sensor SMT-10M (551373)

Gripper

Requirements

– Gripper is mounted
– Pneumatic port of the gripper has been made.
– Compressed air supply is switched on.
– Electrical connection of the proximity sensor has been made.
– Power supply is available.

Procedure

1. The gripper is in the position to be queried.
2. Move the proximity sensor as far as the switching status display (LED) appears.
3. Move the proximity sensor into the same direction by a few millimeters as far as the switching status display disappears.
4. Move the proximity sensor halfway between the switch on and the switch off position.
5. Tighten the locking screw of the proximity sensor with an Allen key SW1.3.
6. Please check the position of the proximity sensor by repeated test runs of the gripper.

Documents

- Data sheets / operating instructions
  Proximity sensor 547859 / SMT-8G-PS-24V-E-2,5Q-OE

7.5.3 Proximity sensor (reference sensor X-axis)

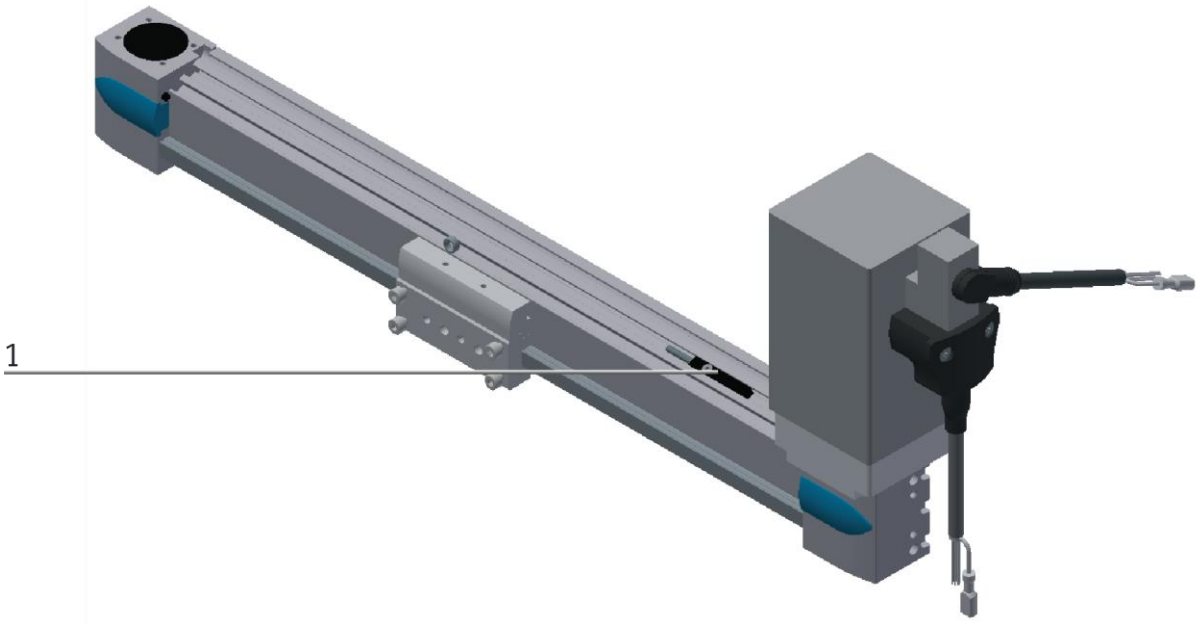


Illustration similar

Position	Designation
1	Reference sensor X-axis / 551386 (SIES-8M-PS-24V-K-7,5-OE)

The proximity sensor is used to refer to the X axis. The proximity sensor reacts to the switching flag on the driver of the axle.

Requirements

– X-axis has been attached.
– Electrical connection of the proximity sensor has been made.
– Power supply unit is switched on.

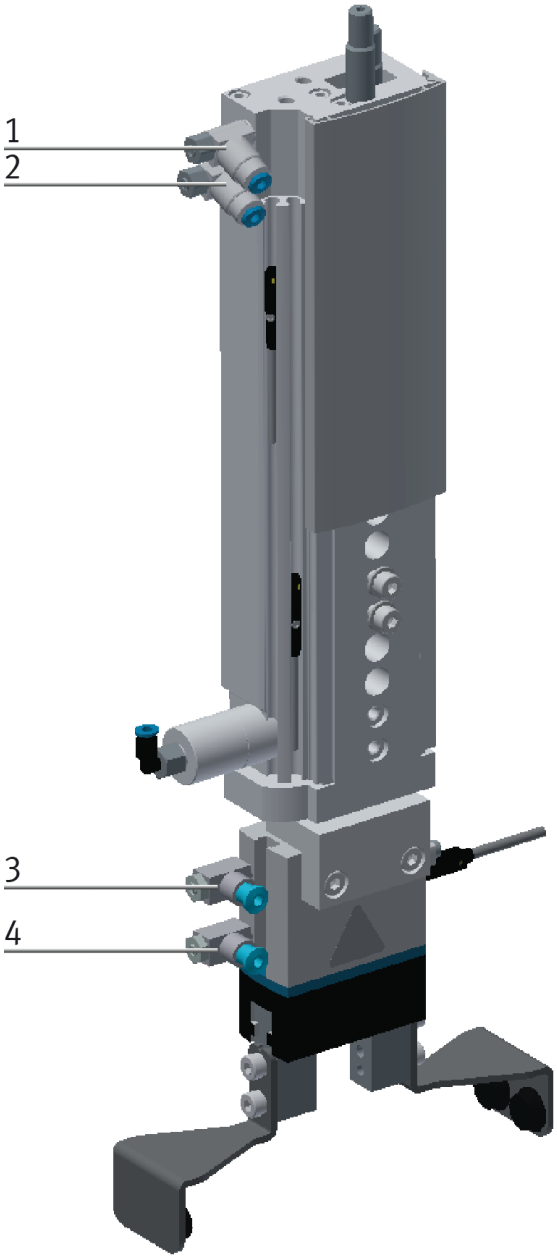
Procedure

1. The axis is in the reference position to be queried.
2. Move the proximity sensor as far as the switching status display (LED) appears.
3. Move the proximity sensor into the same direction by a few millimeters as far as the switching status display disappears.
4. Move the proximity sensor halfway between the switch on and the switch off position.
5. Tighten the locking screw of the proximity sensor with an Allen key SW1.3.
6. Please check the position of the proximity sensor by repeated test runs of the axis.

Documents

- Data sheets / operating instructions
  Proximity sensor 551386 / SIES-8M-PS-24V-K-7,5-OE

7.6 Adjusting the one-way flow control valves



One way flow control valves / illustration similar

Position	Designation	Part number
1	One-way flow control valves GRLA-M5-QS-3-LF-C	175053
2	One-way flow control valve GRLA-M5-QS-3-LF-C	175053
3	One-way flow control valves GRLZ-M3-QS-3	175043
4	One-way flow control valves GRLZ-M3-QS-3	175043

One-way flow control valves are used for regulating the exhaust air volume of double-acting drive units. In the opposite direction, the air flows through the flow control valve having a full cross-sectional flow.
The piston is clamped between air cushions by free supply air and throttled exhaust air (improvement of the operating behavior even if the load changes).

Requirements

– Pneumatic port of the cylinders has been made.
– Compressed air supply is switched on.

Procedure

1. At first, turn off the two one-way control valves completely. Then turn them on again by about one rotation.
2. Start a test run.
3. Turn on the one-way flow control valves slowly until the required piston speed has been reached.

Documents

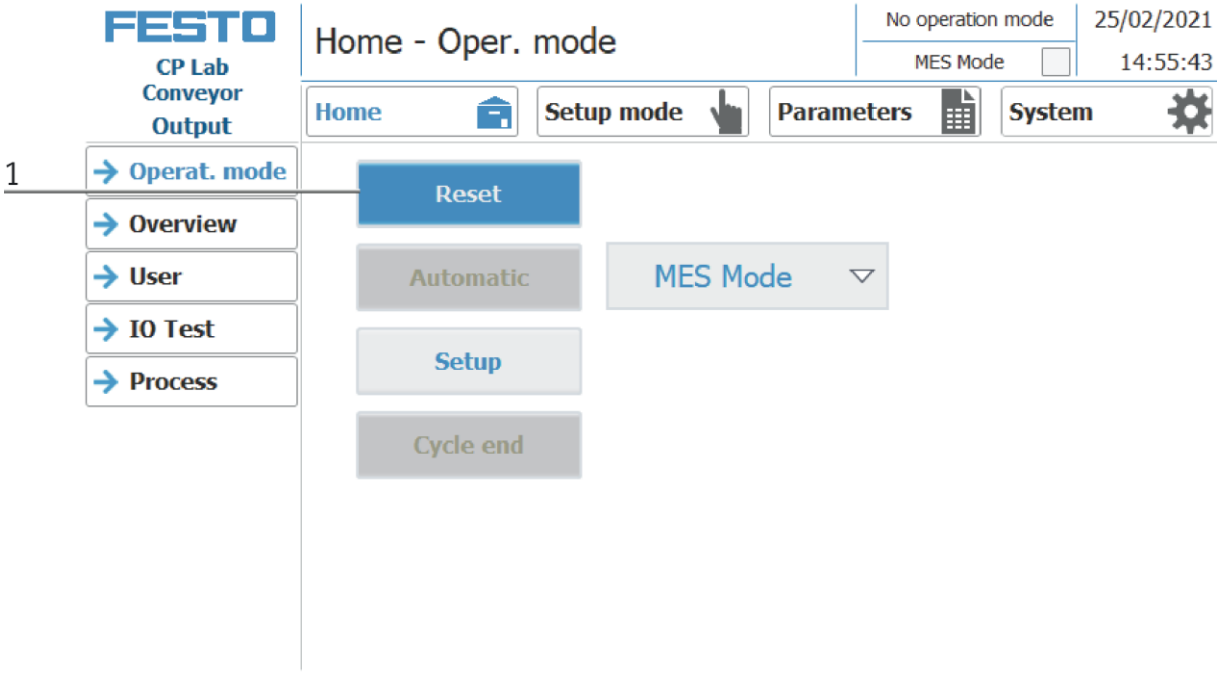
- Data sheets
  One-way flow control valve (175053/175043)

8 Operation

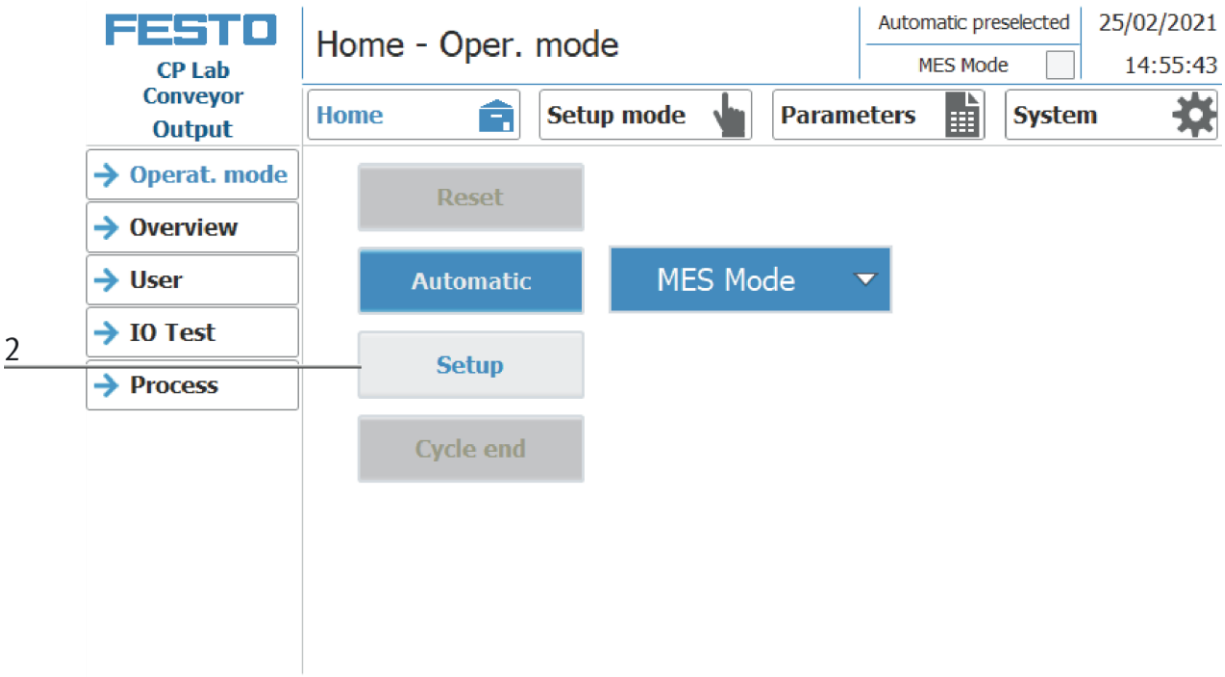
An application module has no control elements. Operation of the application module is only possible when it is mounted on a basic module of the CP-Lab or CP-Factory system.
The operation of the application module can be realized by every customer according to his wishes, the supplied programs are only an operating suggestion with which the application module is on CP-Lab or CP-Factory System can be operated. Own operating concepts or external controls are also possible.
If the application module is mounted on a CP Lab or a CP Factory basic module, the general operation for this is described in the manuals of the CP Lab or CP Factory system. All application-specific information is described in this manual for the application module.

8.1 Setting the application module output at HMI

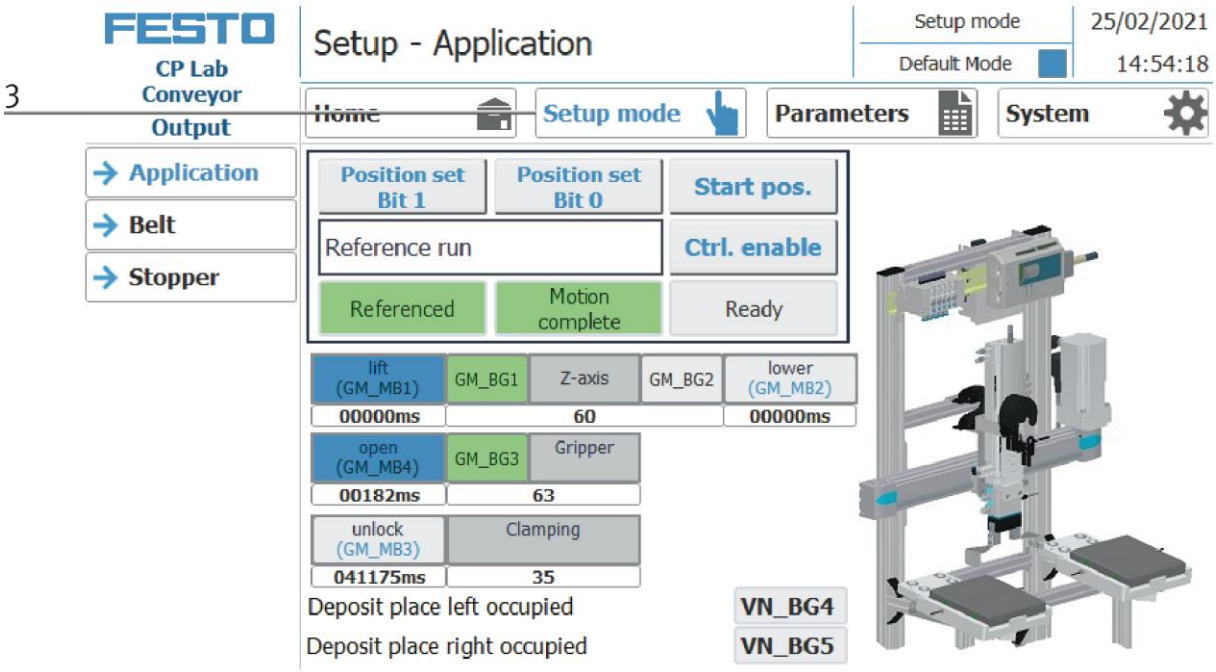
1. If the application module has not yet started, click on the Setup button under Operating mode on the home screen. The application module moves into its basic position



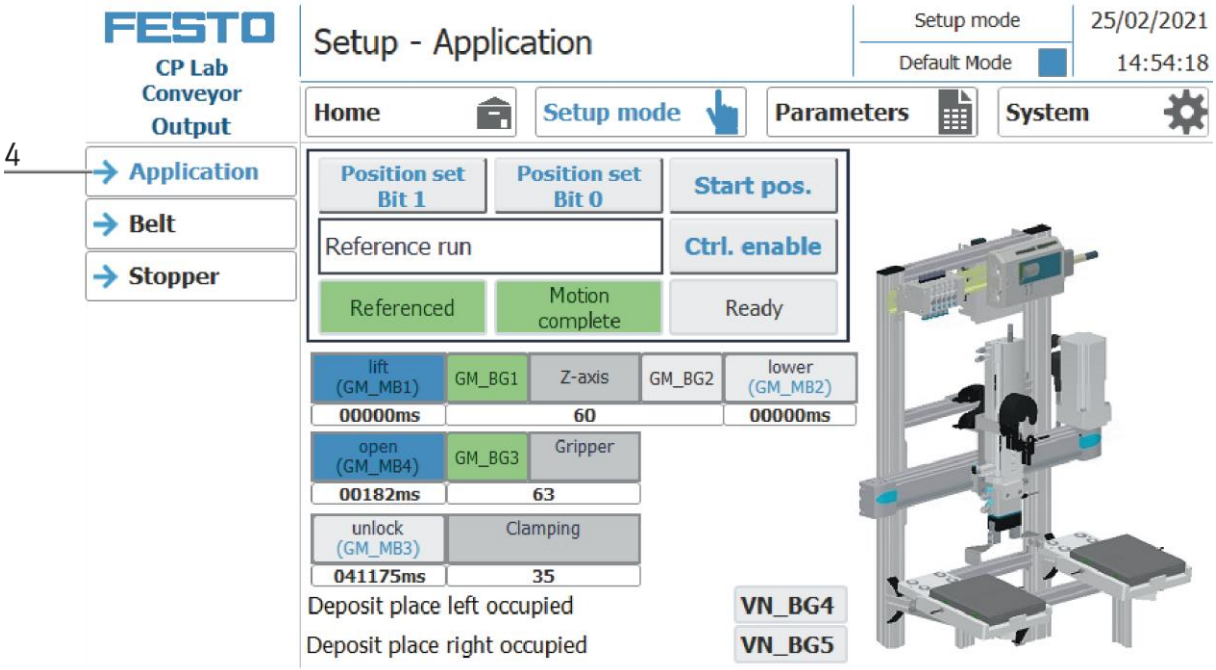
2. Then click on Setup, setup mode is active.



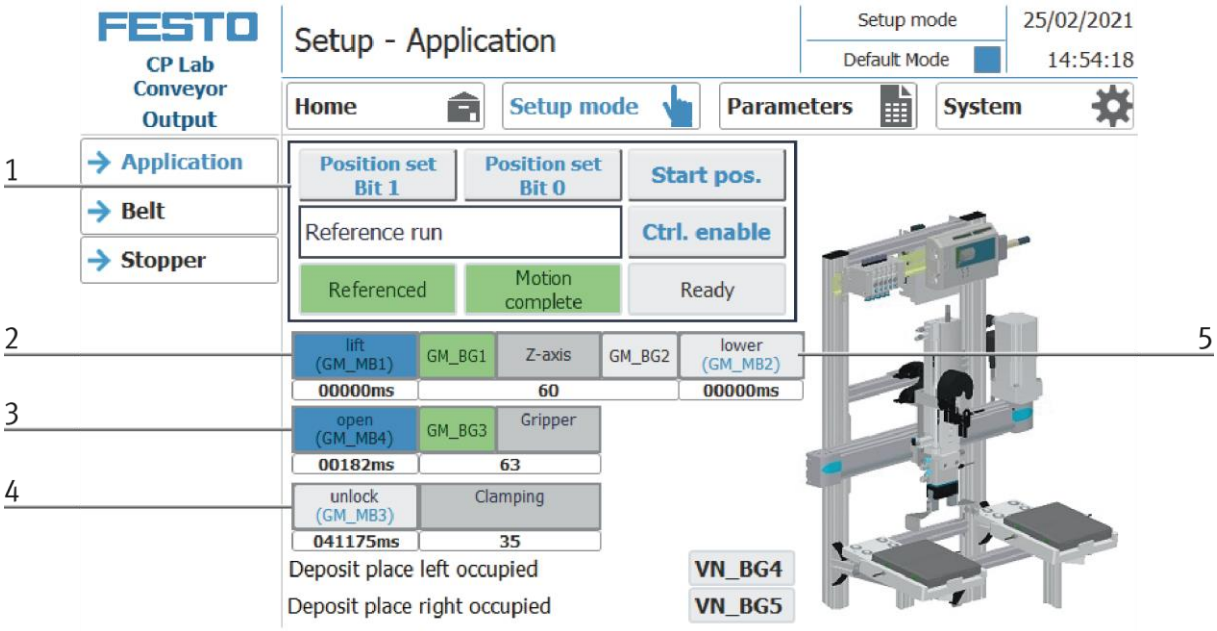
3. Change to Setup mode page.



4. Choose application



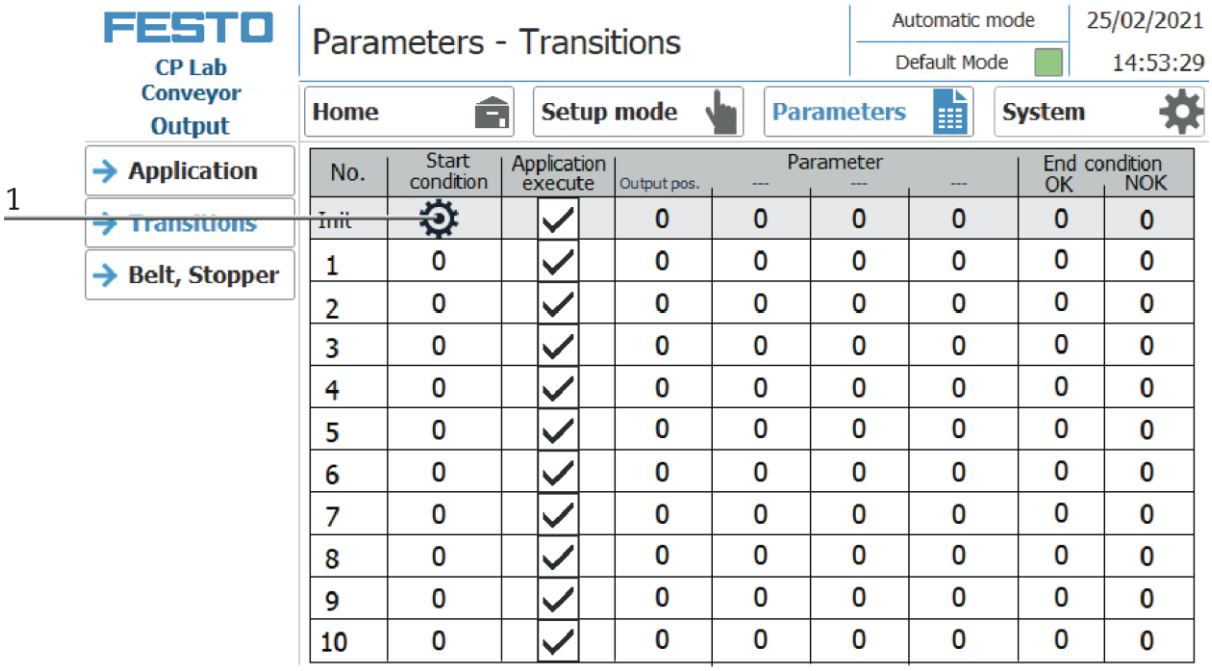
5. Application is selected to set up the application module



Position number	Description
1	Move to position Position set Bit 1: Move to storage position 2 right (lights up blue if preselected) Position set Bit 0: Move to storage position 1 left (lights up blue if preselected) Position set Bit 0 and Bit1: Move to the conveyor position (both light up blue if preselected) Start pos .: move to the selected position (controller enable must be enabled / lit blue when active) Control enable: the controllers are enabled and a move to one of the preselected positions is possible (lights up blue when active) Referenced: lights up green when reference move is done Motion complete: lights up green when desired position has been approached Ready: lights up green when controller enable is issued and handling is ready
2	Move z axis lift button: move Z axis upwards (actuator GN_MB1 is activated, lights up blue when active) GM_BG1: Sensor GM_BG1 Display (lights up green when Z axis is up)
3	Open the gripper open button: Open gripper (actuator GN_MB4 is activated, lights up blue when active) GM_BG3: Sensor GM_BG3 Display (lights up green when gripper is opened)
4	Open the clamping unit unlock button: Open the clamping unit (actuator GM_MB3 is activated, lights up blue when active) GM_MB3: Indicator (lights up green when clamp is open)
5	Move z axis Lower button: Move the Z axis downwards (actuator GN_MB2 is activated, lights up blue when active) GM_BG2: Sensor GM_BG2 Display (lights up green when Z axis is down)

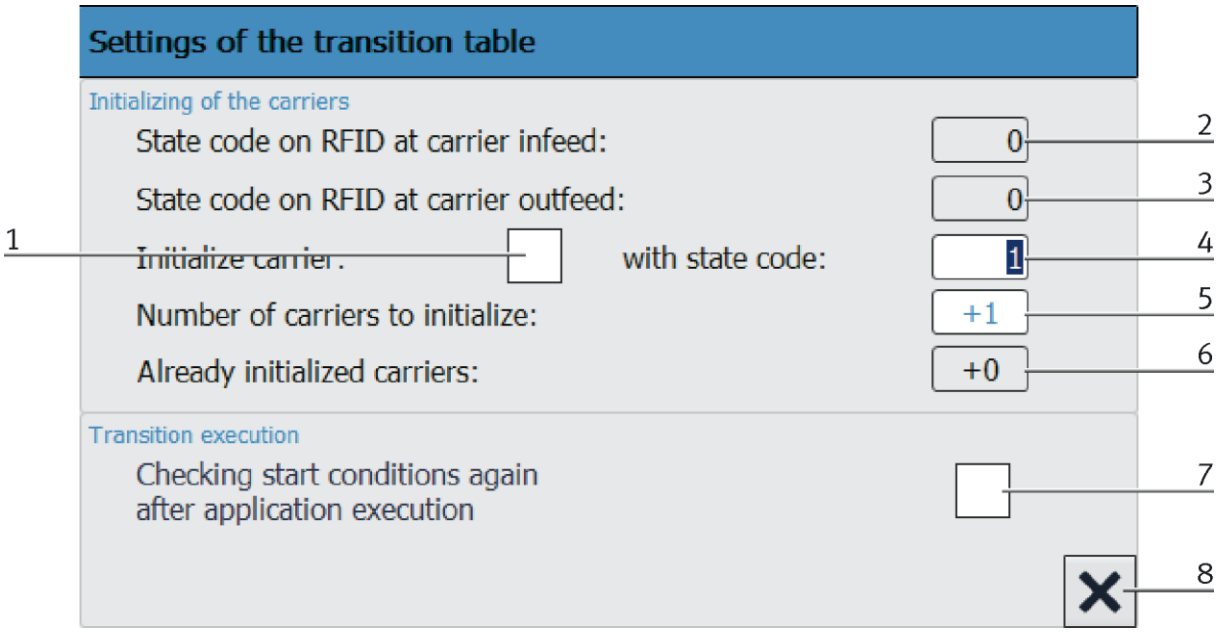
8.2 Transitions of the application module

The transitions are located in the Parameters submenu



If the transitions submenu is selected, the transitions of the mounted application module are displayed. The transitions of all other application modules can be found in the corresponding manuals of the application modules.

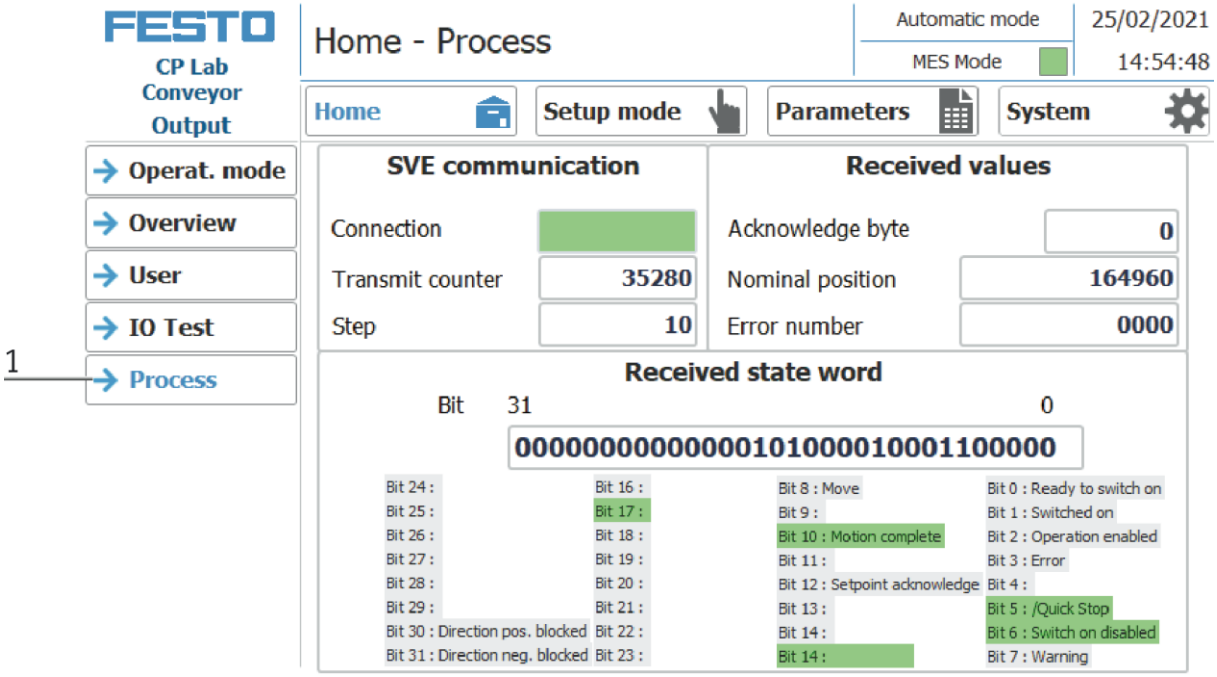
1. Click on the gear wheel to access the settings for the transitions. (see the following picture)

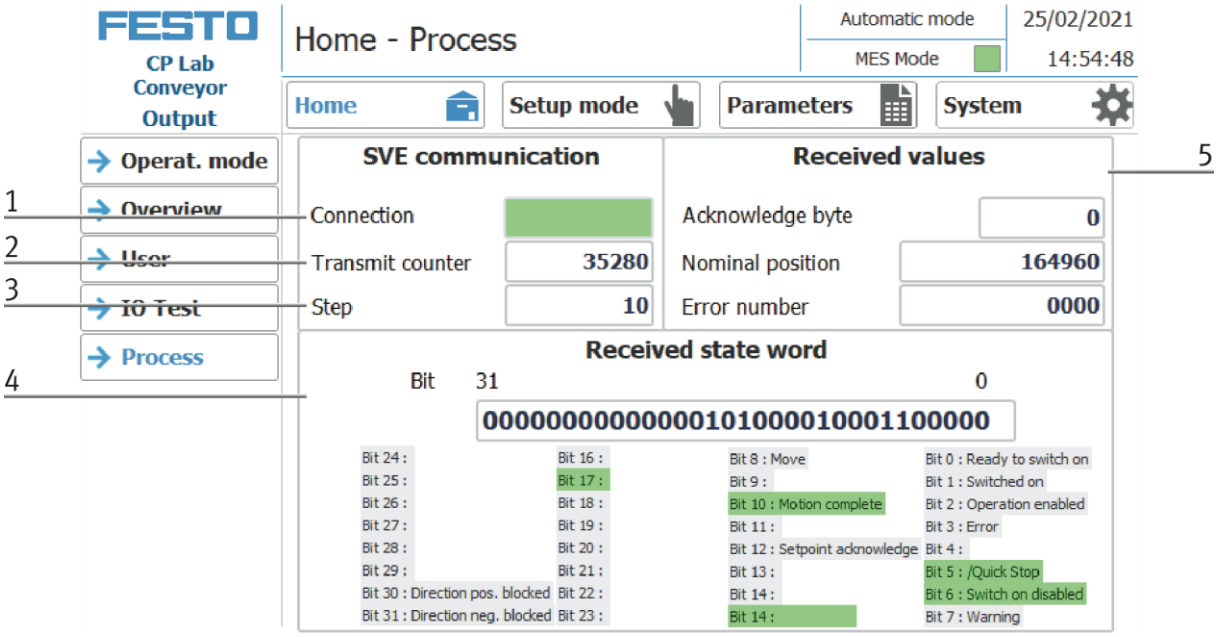


Position number	Description
1	Initialize workpiece carrier: The next carrier arriving at the stopper position is initialized with the end state (state code can be entered under item 4) of the first line of the transition table.
2	Status code on the RFID at carrier infeed: Display of the start condition for application processing
3	Status code on the RFID at carrier outfeed: Display of the start condition after application processing
4	With state code: During initialization (Pos. 1 / Initialize carrier), the carrier is initialized with the state code entered here.
5	Number of carriers to be initialized: Editable, the number of workpiece carriers to be initialized can be entered here.
6	Already initialized carriers: Display of the already initialized workpiece carriers
7	Checking start conditions again after application execution: If this function is activated, the start conditions are checked again after a transition condition has been processed. In this way it is possible to execute an application several times without the carrier leaving the working position.
8	Exit settings

8.3 Process of application module

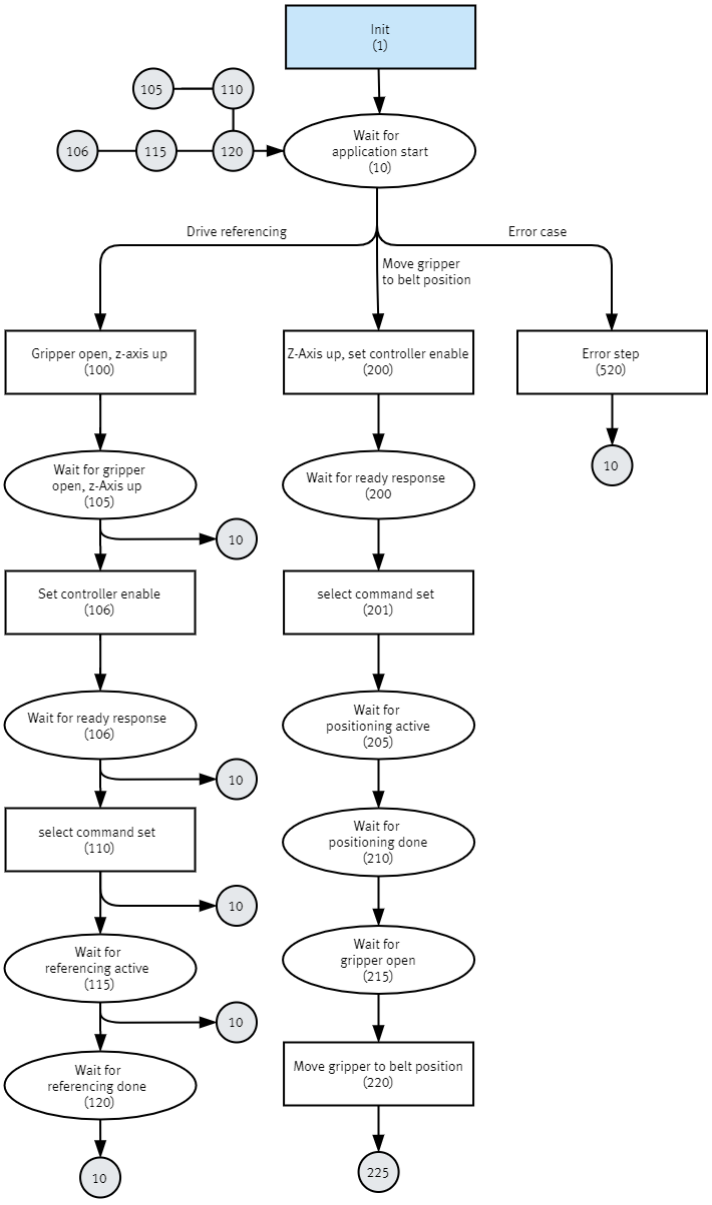
1. The SVE connection (control via Ethernet) between the axis controller and the PLC is displayed using the "Process" button. This connection is used to evaluate errors on the axis controller and to acknowledge them. (see following screen)

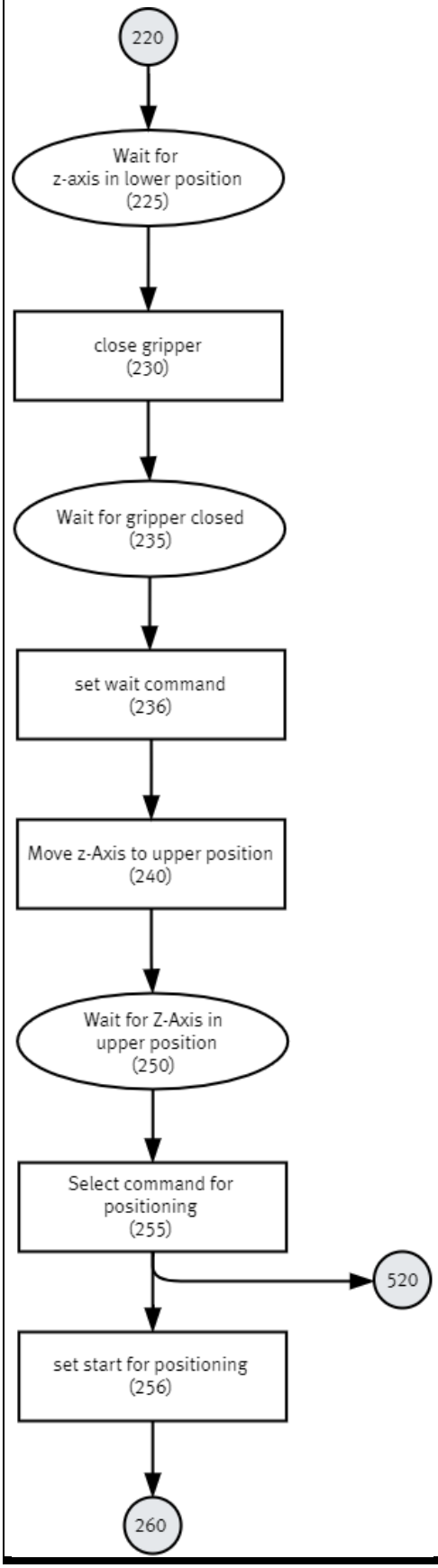


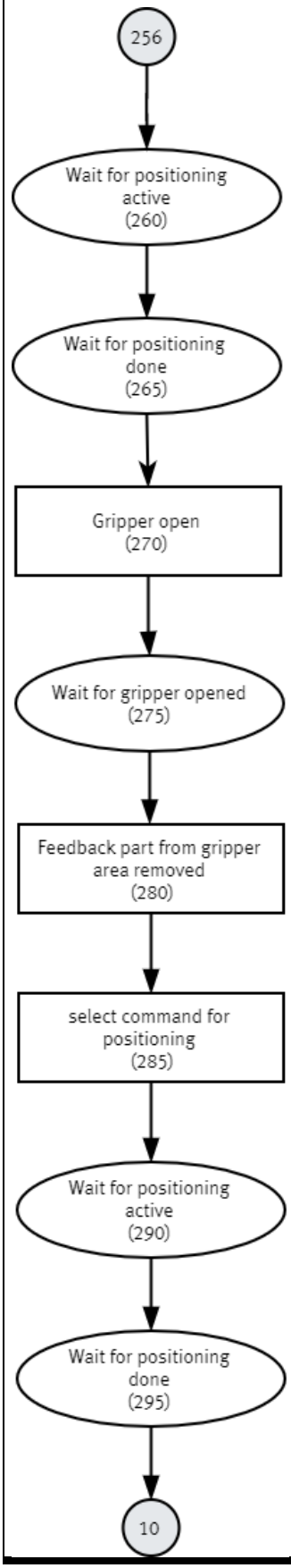


Position	Description
1	If there is a connection to the controller, this button has a green background.
2	Counter for cyclical connection evaluation
3	Representation of the state machine of the link module in the PLC.
4	Status bits of the controller.
5	Received values via SVE of the controller.

8.4 Flow chart

CP-AM-OUT	1
	**1: Init** Initialization start conditions, reset Outputs
	10: Wait for Application start reset command start and reset command enable If Auto or reset, set z-Axis up and open gripper
	Drive Referencing Wait for not referenced and start conditions
	100: Gripper open, z-Axis up set gripper open, set z-Axis up, open clamp
	105: Wait for gripper open, z-Axis wait for gripper open and z-axis in upper position
	106: Set controller enable set command enable, set wait command
	106: Wait for ready response wait for ready response after controller enable
	110: select command set set "Ref run" command, set command start
	115: Wait for referencing active Wait for not motion complete
	120: Wait for referencing done Wait for motion complete, reset start
	S10: Jump back to step 10
	Move gripper to belt position Wait for referenced and start conditions and no errors
	200: Z-Axis up, set controller enable
	200: Wait for ready response Wait for ready feedback
	201: select command set select and start the command set for positioning
	205: Wait for positioning active Wait for feedback positioning active
	210: Wait for positioning done Wait for feeback positioining done, open gripper
	215: Wait for gripper open Wait for grippen open signal
	220: Move gripper to belt position set Move Z-Axis to lower position,set Z-Axis clamp

CP-AM-OUT	2
	**225: Wait for z-axis in lower position** wait for BG2
	230: Close gripper Reset MB4
	235: Wait for gripper closed Wait for not BG3
	236: set wait command set wait command, wait for 200ms
	240: Move z-axis to upper position set Z-Axis to upper position
	250: Wait for z-axis in upper position wait for BG1
	Move gripper to output position **255: Select command for positioning** 1: Position 1 Left 2: Position 2 right set contoller release Wait for ready feedback In error case, go to step 520
	256: set start for positioning set Command start and set wait command

CP-AM-OUT	3
	**260: Wait for positioning active** Wait for positioning active feedback **265: Wait for positioning done** Wait for positioning done feedback **270: Gripper open** set gripper open MB4 **275: Wait for gripper opened** wait for MB3 **280: Feedback part from gripper area removed** set piece supervision **Move gripper back to belt position** **285: select command for positioning** select command for positioning and set start command **290: Wait for positioning active** Wait for not motion complete signal **295: Wait for positioning done** Wait for motion complete signal and reset start signal **S10:** Jump back to step 10

8.4.1 MES Parameter (OUT)

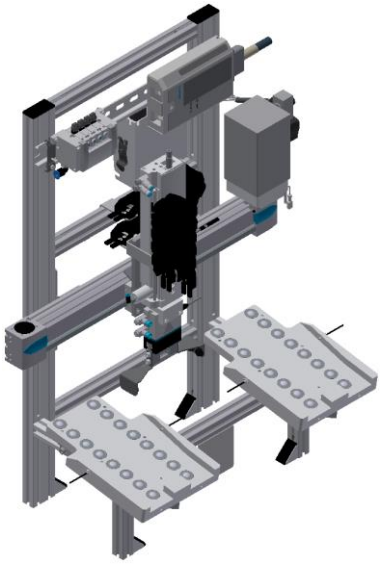
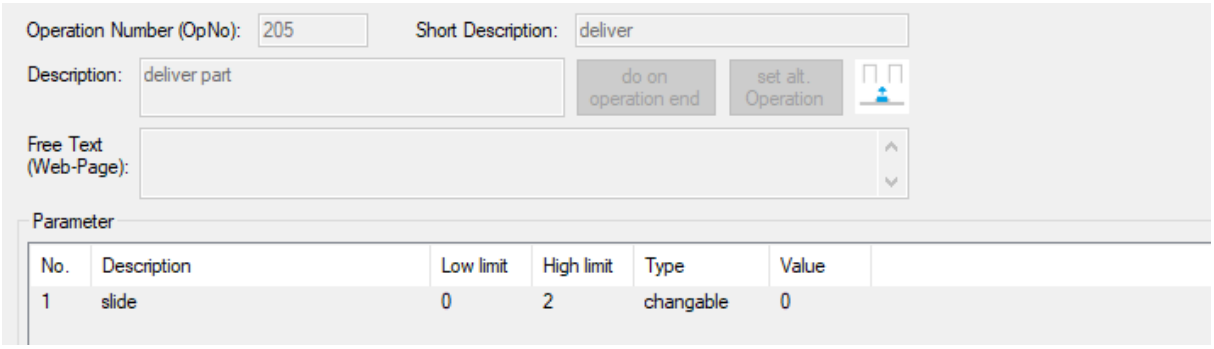


Illustration similar

The following MES-operations are available for the AM OUT.

Operation number	Description
205	Deliver / deliver part



8.4.2 Default Parameter (OUT)

Parameter number	Description
1	**Storing place** 1: slide left (line of sight to front view from CP Lab conveyor, CP Factory basic module) 2: slide right (line of sight to front view from CP Lab conveyor, CP Factory basic module) Limitation: No limit to the value in the transition table

9 Message texts and interactive error messages at the HMI

In general, there are three different reporting classes. These are designed as follows

- Message class 0 (displayed red in the message line)
  - the program is immediately stopped and the automatic mode is terminated
  - the cause of the error has to be fixed
  - Then acknowledge the fault and restart the station
- Message class 1 (displayed red in the message line)
  - the program and the automatic mode are stopped at the end of the cycle
  - the cause of the error has to be fixed
  - Then acknowledge the fault and restart the station
- Message class 2 (displayed yellow in the message line)
  - the program and the automatic mode are executed further
  - If the cause of the fault is fixed, the error is automatically acknowledged
- Note
  - Displayed on the HMI but not processed in MES

9.1 Message texts

9.1.1 Message texts of the application module output

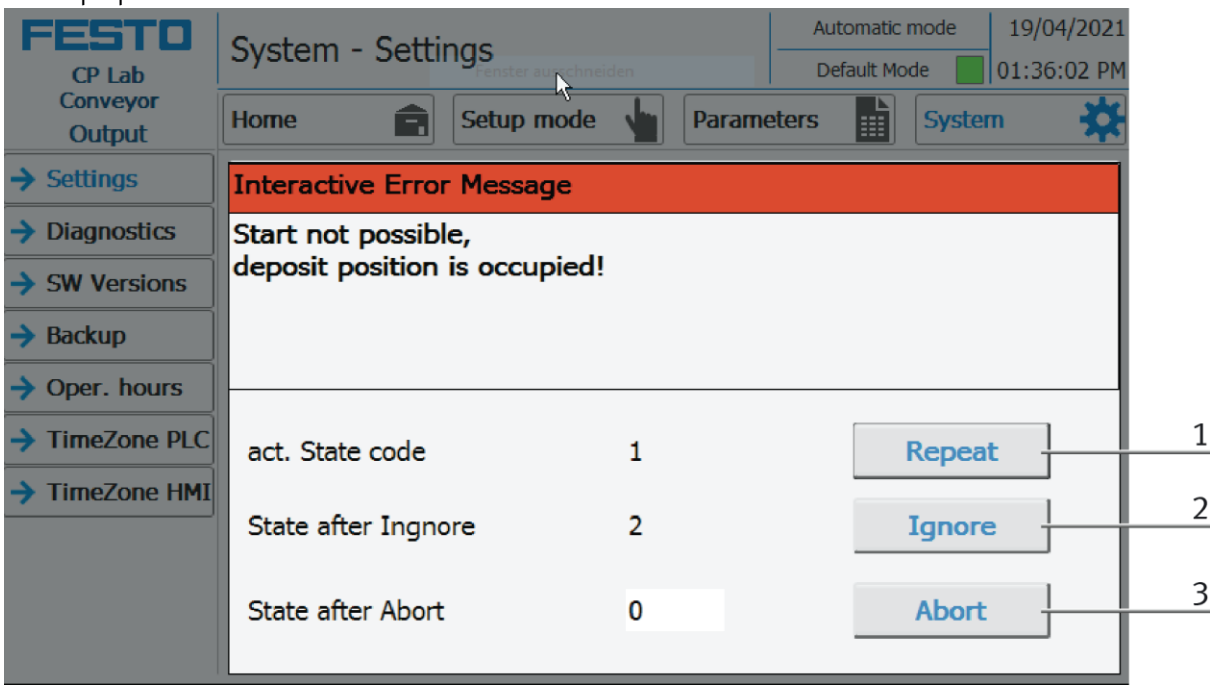
Class	Location	Alarm name	
0	ActuatorCntrApp	Z-axis	Timeout: Final position sensor GM_BG1 not reached/left! Final position / check sensor Instanz: Z-axis.
0	ActuatorCntrApp	Z-axis	Timeout: Final position sensor GM_BG2 not reached/left! Final position / check sensor. Instanz: Z-axis.
0	ActuatorCntrApp	Z-axis	Timeout: both final position sensors GM_BG1/GM_BG2 have same signal! Sensors / check final position. Instanz: Z-axis;
0	ActuatorCntrApp	Gripper	Timeout: Final position sensor GM_BG3 not reached/left! Final position / check sensor Instanz: Gripper.
0	ActuatorCntrApp	DriveSetBit0	Timeout (1000 ms) activate actor KF1_DI1! Instanz: DriveSetBit0.
0	ActuatorCntrApp	DriveSetBit1	Timeout (1000 ms) activate actor KF1_DI2! Instanz: DriveSetBit1.
0	ActuatorCntrApp	CntrEnab	Timeout (1000 ms) activate actor KF1_DI10! Instanz: CntrEnab.
0	ActuatorCntrApp	StartPos	Timeout (1000 ms) activate actor KF1_DI6! Instanz: StartPos.
0	ErrorApp	ErrCtrlRel	No "Ready" response when controller enable is issued for the X-axis; PLC: plcOut; Check releases and ensure that the Z-axis is in the upper end position!
2	ErrorApp	WarnSlide1	Slide 1 (left) occupied; Initiator GM_BG4; PLC: plcOut; Please remove workpiece!
2	ErrorApp	WarnSlide2	Slide 2 (right) occupied; Initiator GM_BG5; PLC: plcOut; Please remove workpiece!
0	Application	ErrRefRun	Referencing not possible, slide occupied; Initiator GM_BG4/GM_BG5 PLC: plcOut; Please remove workpiece!
0	Application	ErrTimeoutRef	Time monitoring for the drive movement X-axis; PLC: plcOut; Instanz: please check drive/controller!

9.2 Interactive error messages

9.2.1 Default operation

Interactive messages are displayed via a pop-up window at HMI

The Pop Up has three buttons.



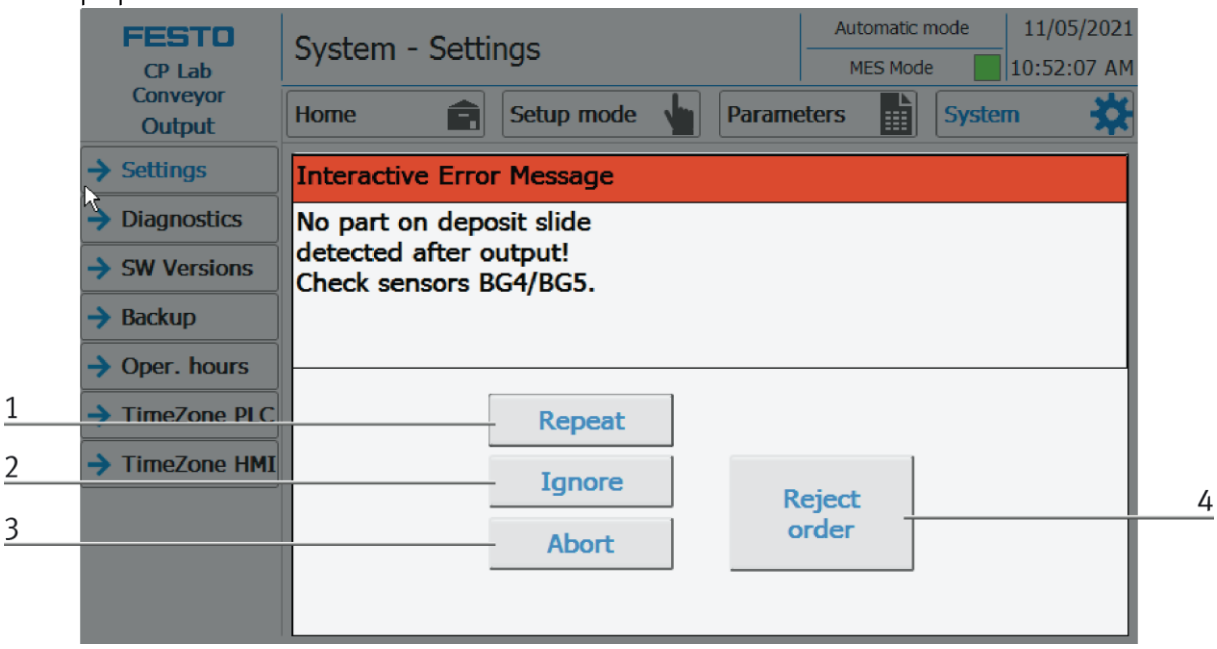
Example application module output - interactive error message in default mode

Position	Note
1	Repeat - An attempt is made to run the application again.
2	Ignore – The error status is ignored; the workpiece carrier receives the status code as indicated in the transition table in the "Initial status" column. The application is no longer executed.
3	Abort – The error status is ignored; the workpiece carrier receives the status code as shown in the input / output field next to the value displayed. This can be changed in this interactive error message window.

9.2.2 MES Operation

Interactive messages are displayed via a pop-up window at HMI

The Pop Up has four buttons.



Example application module output - interactive error message in default mode

Position	Note
1	Repeat - An attempt is made to run the application again with the same parameters.
2	Ignore – The application is not executed, but is treated in the MES as if the order step had been executed without errors.
3	Abort – The application is no longer executed. In the MES, this order position is terminated with an error and canceled, depending on whether an error step has been defined or not.
4	Reject order - the application will not be executed. In the MES, the step of this order position is reset and restarted the next time the workpiece carrier arrives.

9.2.3 General

Value	Text	Fix error
100	Order aborted with errors!	Start order again

9.2.4 Application module output

Value	Text	Fix error
1070	Referencing did not finish!	Start referencing again
1071	Positioning did not finish!	Start positioning again
1072	No part on deposit slide detected after output!	Check sensors BG4/BG5.
1073	Wrong parameter for deposit position!	Check parameter
5074	Start not possible, deposit position is occupied!	Remove part from slide

10 Spare part list

10.1 Electric parts

Description	Part number	Res.Ident	Use
X-axis EGC-50-300-TB-KF-0H-GK	556812		
Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG10	Reference sensor X-axis
Motor X-axis EMMS-ST-57-S-SE-G2	1370475	MA1	Motor x-axis
Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG1	Lifting cylinder upper position
Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG2	Lifting cylinder lower position
Proximity sensor	547859	BG3	Gripper opened
Light guide SOOC-TB-M4-2-R25	552812	BG4	depositing place left occupied
Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG4	depositing place left occupied
Light guide SOOC-TB-M4-2-R25	552812	BG5	depositing place right occupied
Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG5	depositing place right occupied
Motor Controller CMMO-ST-C5-1-DIOP	1512316	KF1	
E/A Modul	8027412	XD1	

10.2 Pneumatic parts

Description	Part number	Res.Ident	Use
Valve CPVSC1-K-M5C	548899	MB 1	Z-axis upward
Valve CPVSC1-K-M5C	548899	MB 2	Z-axis downward
Valve CPVSC1-K-M5C	548899	MB 3	Open cylinder clamp unit
Valve CPVSC1-M-M5	548901	MB 4	Open gripper
One-way flow control valve GRLA-M5-QS-3-LF-C	175053		
One-way flow control valve GRLA-M5-QS-3-LF-C	175053		
Z-axis DGSL-10-100-E3-Y3A	543905		
Cylinder clamp unit			
One-way flow control valve GRLZ-M3-QS-3	175043		
One-way flow control valve GRLZ-M3-QS-3	175043		
Gripper DHPS-16-A	1254043		

11 Service and cleaning

The components and systems from Festo Didactic are maintenance-free.
At regular intervals you should have checked:

- the lenses of the optical sensors, fibre optics and reflectors
- the active surface of the proximity switch
- the entire station

can be cleaned with a soft, lint-free cloth or brush.

NOTE

Do not use aggressive or abrasive cleaners.

Protective covers must not be cleaned with alcoholic cleaning agents, there is a risk of embrittlement.

12 Further information and updating

Further information and updates on the technical documentation of Festo Didactic components and systems can be found on the Internet at:
www.ip.festo-didactic.com

13 Disposal

NOTE

Electronic waste contains recyclable materials and must not be disposed of with the domestic waste. Bring electronic waste to a designated municipal collection point.

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