8032510

Drilling

FESTO

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 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.

4.6 Cyber security

Note

Festo Didactic offers products with industrial 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 industrial 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) are in place. 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.

	⚠ **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.

4.7 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.**

4.8 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.

4.9 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	Type code
2	Material number
3	Production code
4	Technical data
5	Technical data
6	Technical data
7	Safety note
8	Manufacturer address
9	UK importer address
10	Country of origin
11	Internet address service portal
12	CE Mark
13	UKCA mark
14	Warning mark
15	Symbol read manual
16	WEEE Marking
17	QR Code (Type-and serial number)

4.11 CE Declaration of Conformity

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(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 vakuu-tuksen kohde on asiaa koskevan unionin yhdenmukais-tamislainsäädännön 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 har-monizációs 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 desbe-treffende 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 ζσμμόρφωσης 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.

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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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FESTO

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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 this 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 + 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 61000-4-1	2019
ETSI EN 301 489-3	V2.1.1	EN IEC 61000-4-2	2018
EN 55011 + A1 + A11	2016/2017/2020	EN 61000-4-3 + A1	2007/2011
EN 55032 + A11 Class A/B	2015/2020	EN IEC 61000-4-4	2019
EN 55035 + A11	2017/2020	EN IEC 61000-4-6	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*

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

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, 0,35 A protective extra low voltage (PELV)
Digital inputs	7
Digital outputs	7
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)	<= +3ºC
Ambient conditions	
Operating environment	Use inside building only
Ambient temperature	5ºC ... 40ºC
Rel. air humidity	80% up to 31ºC
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	379 mm
Width	217 mm
Height	523 mm
Weight	Approx 7,2 kg
Subject to change	
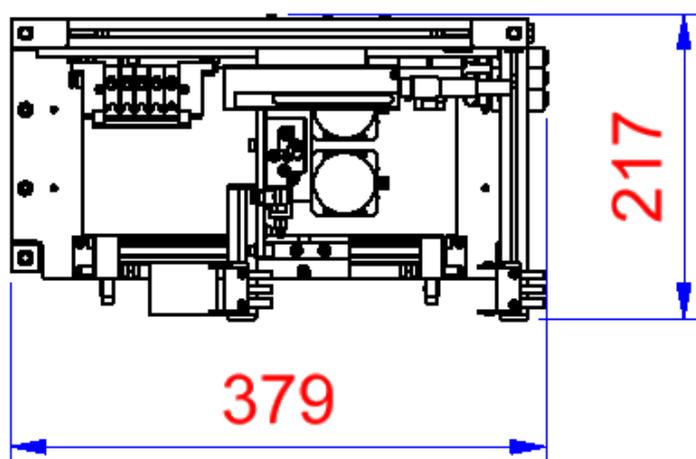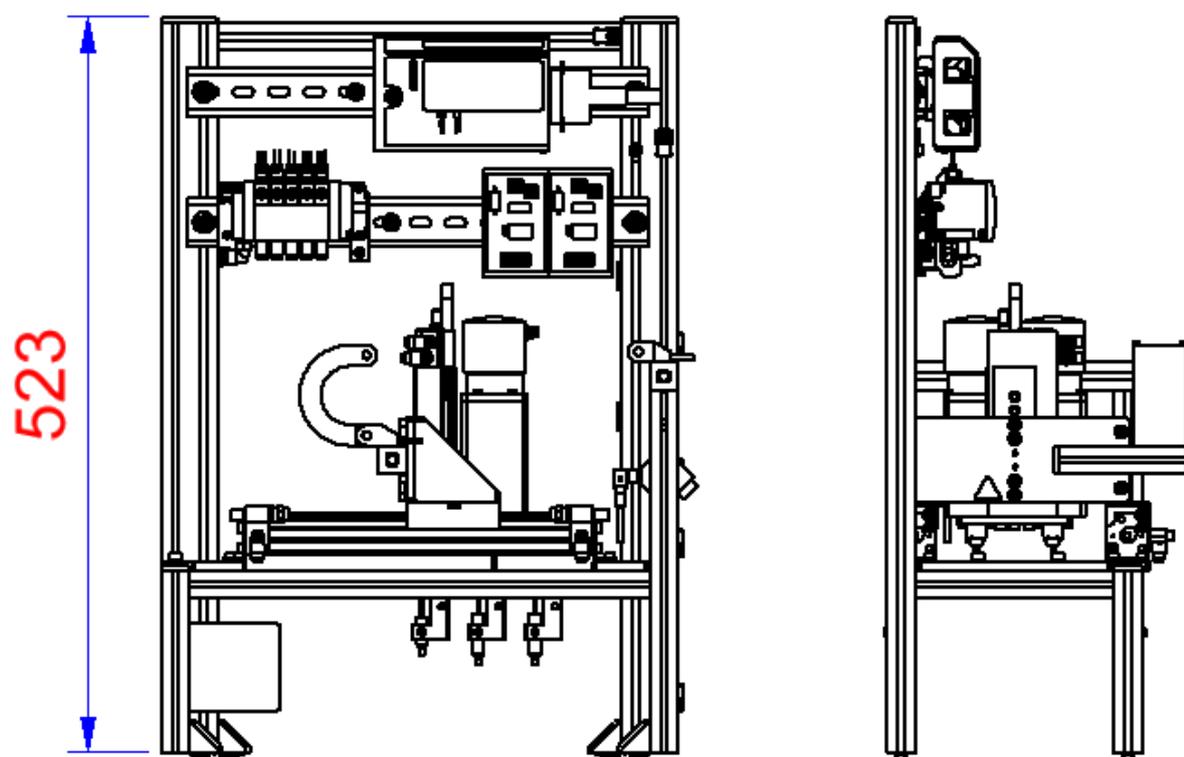
Measurements / illustration similar

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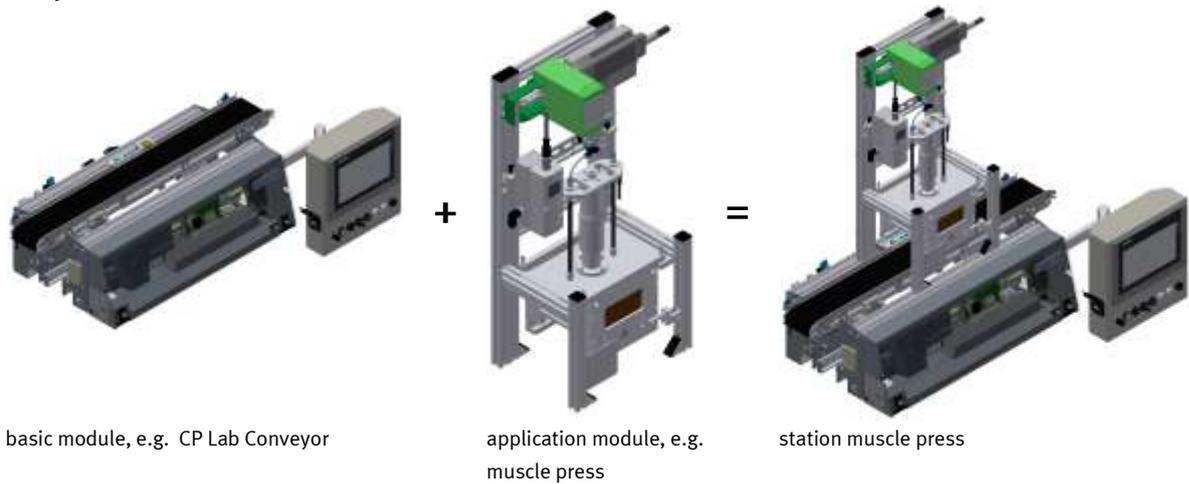
If several stations are put in a row one behind the other, this will form a production line.

| 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 |
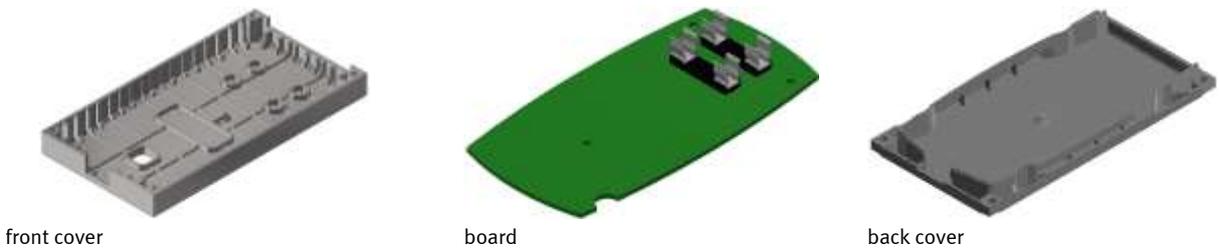
6.3 The application module drilling

The application module drilling is designed for

- Providing a housing lower part with 4 drilled holes. During this, it is queried whether it is placed correctly without cover. The drilling unit will make 2 drilled holes into the left part of the housing lower part. Then the drilling unit will be moved to the right by an X-axis, and the additional 2 holes will be drilled.
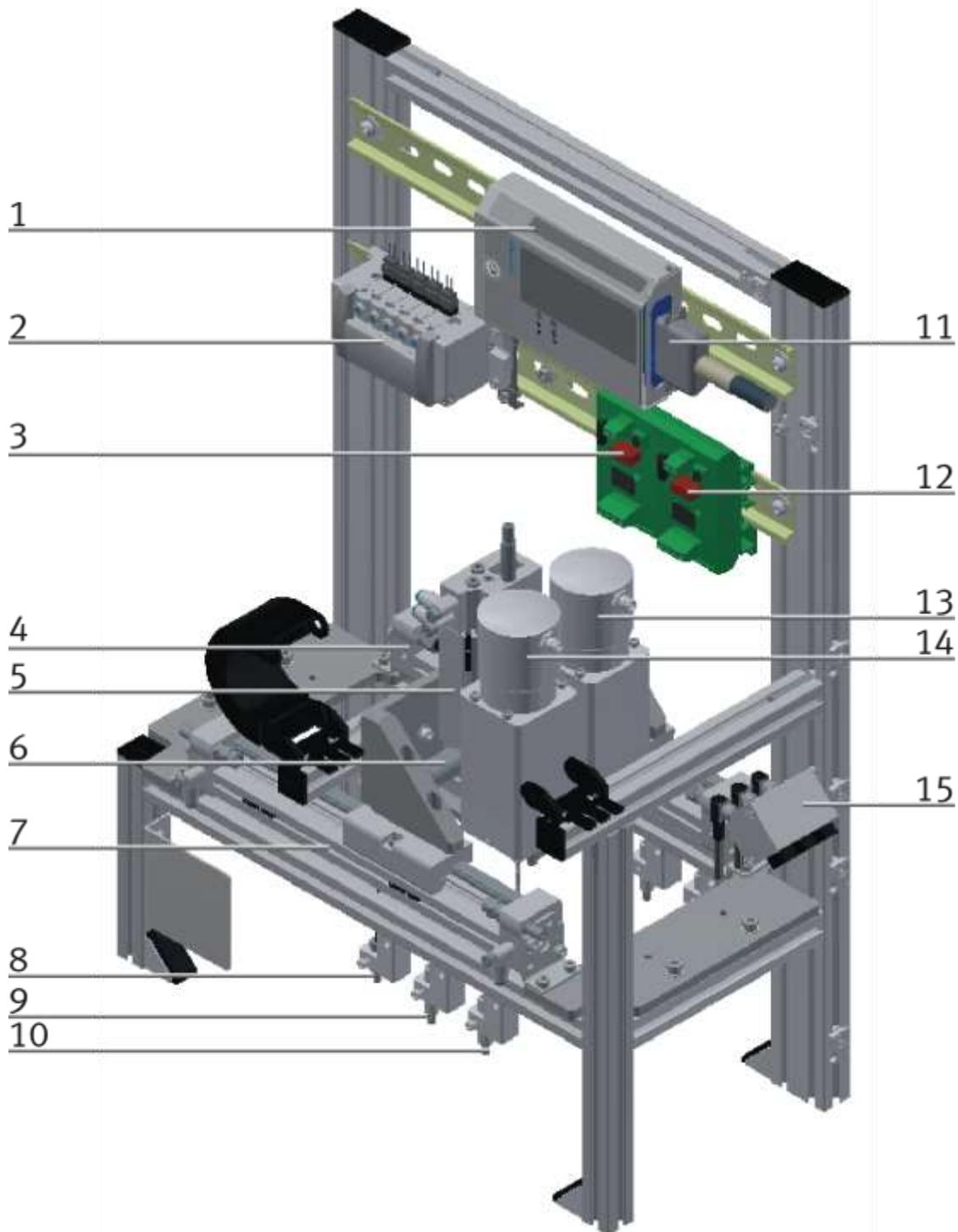
Illustration similar

Position	Description
1	I/O module
2	Valve terminal
3	Start-up current limiter 1
4	guiding X-axis
5	Z-axis
6	Z-axis clamping
7	X-axis driven
8	Workpiece request (lower part in correct position)
9	Workpiece request (no upper part available)
10	Workpiece request (workpiece available)
11	Start-up current limiter 2
12	Drill 2
13	Drill 1

6.3.1 Electric
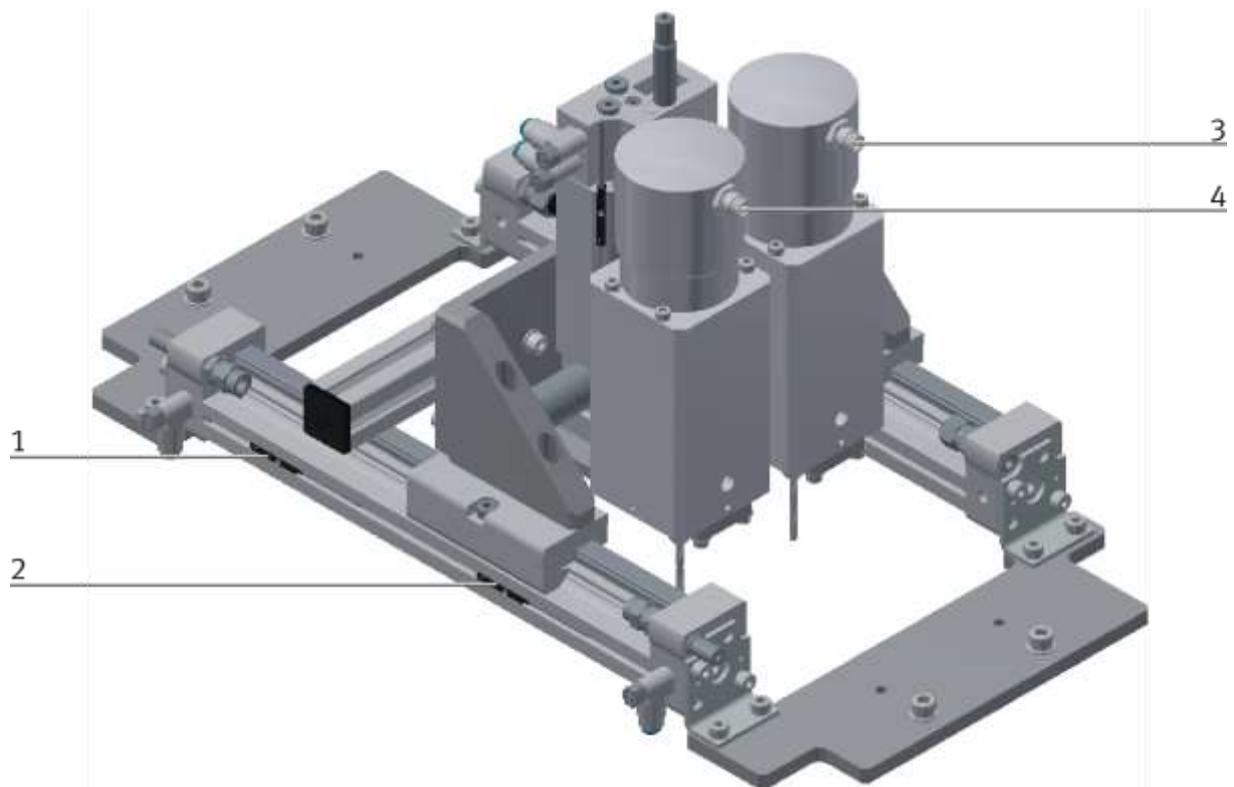
Sensors x-axis / drilling machines / illustration similar

Position	Description	Part number	Resource identifier	Use
1	Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG1	X-axis in left end position
2	Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG2	X-axis in right end position
3	Drilling machine 1	656874	MA1	Switch on drill 1
4	Drilling machine 2	656874	MA2	Switch on drill 2
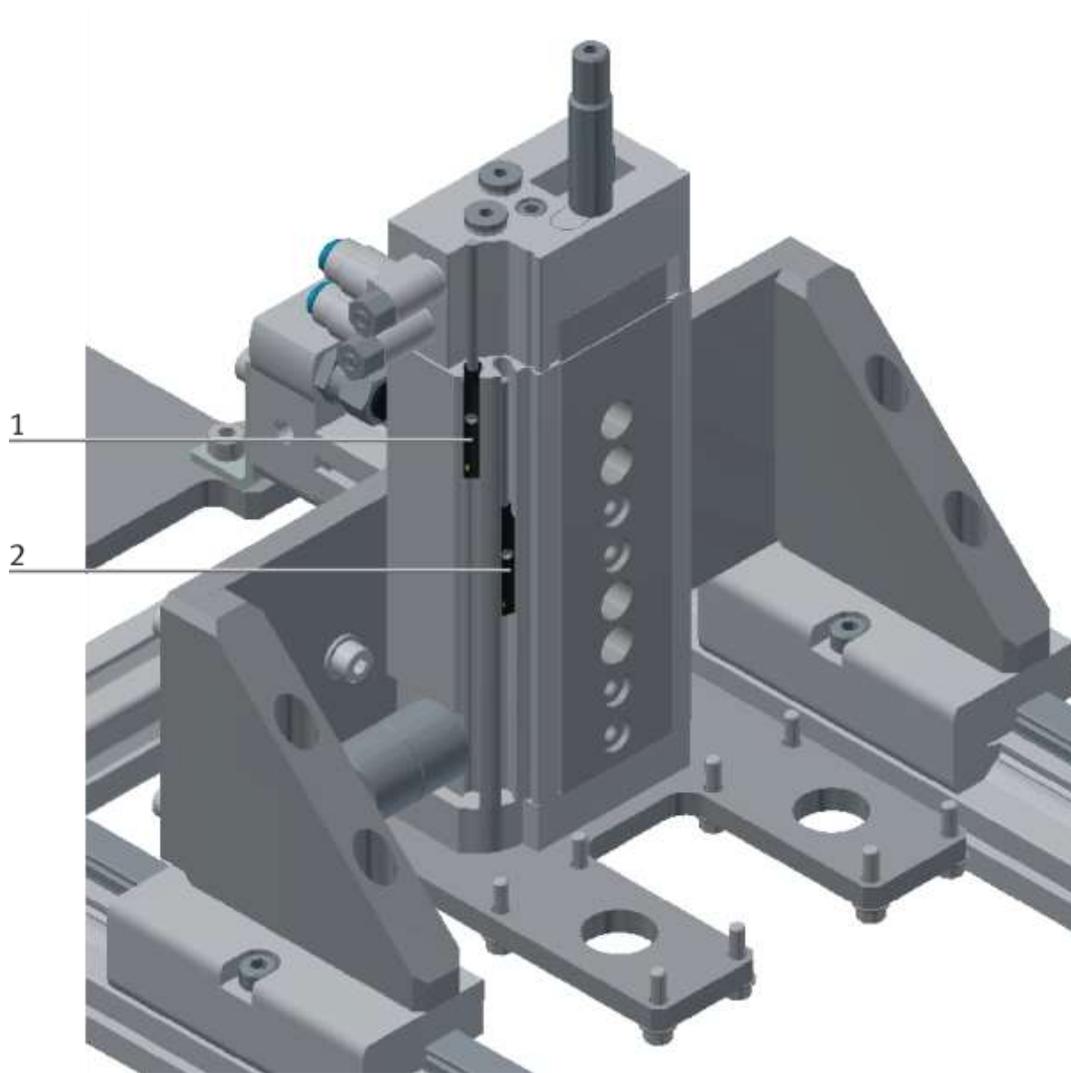
Sensors z-axis – illustration similar

Position	Description	Part number	Resource identifier	Use
1	Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	571373	BG5	Z-axis in upper end position
2	Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	571373	BG6	Z-axis in lower end position
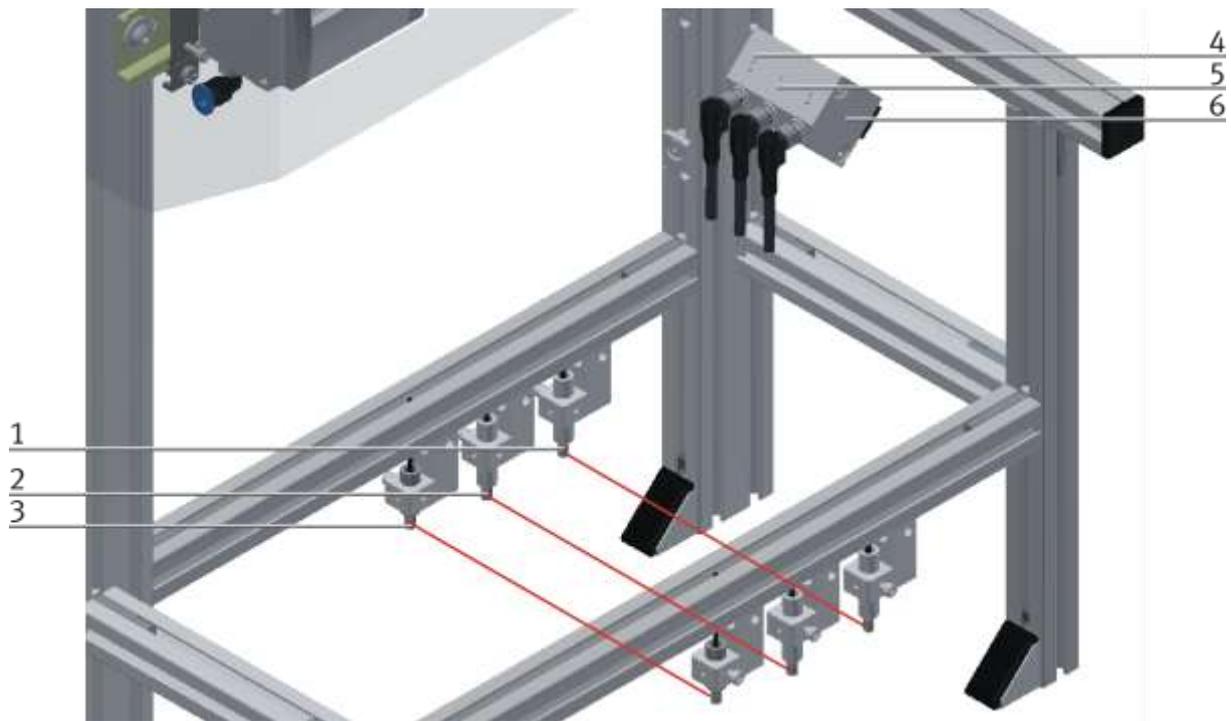
Light guide – illustration similar

Position	Description	Part number	Resource identifier	Use
1	Light guide SOOC-TB-M4-2-R25	552812	BG3	0 = front cover orientation correct
2	Light guide SOOC-TB-M4-2-R25	552812	BG4	1 = front cover present
3	Light guide SOOC-TB-M4-2-R25	552812	BG8	1 = back cover already present
4	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG8	1 = back cover already present
5	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG4	1 = front cover present
6	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG3	0 = front cover orientation correct
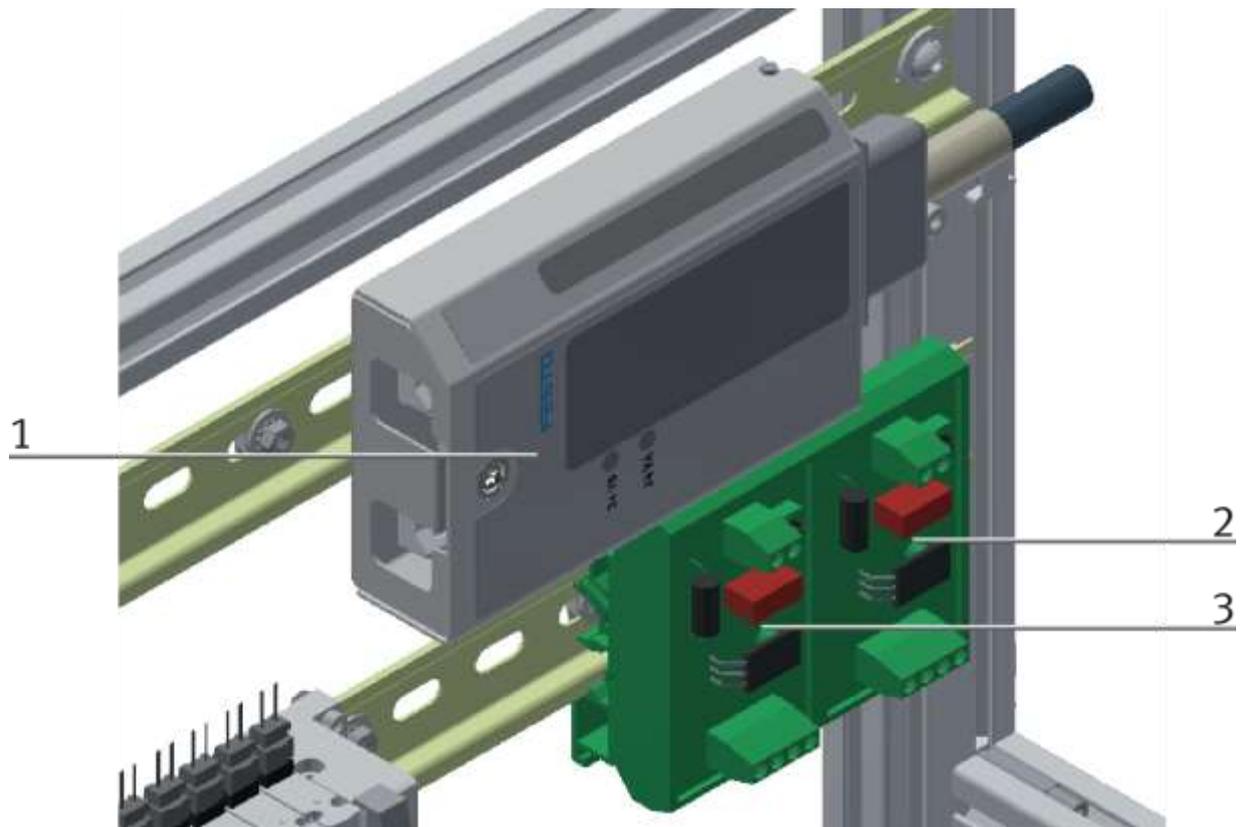
Illustration similar

Position	Description	Part number	Resource identifier	Use
1	I/O module	8027412	XD1	
2	Inrush current limiter	150768	QA4	Drill 2
3	Inrush current limiter	150768	QA5	Drill 1
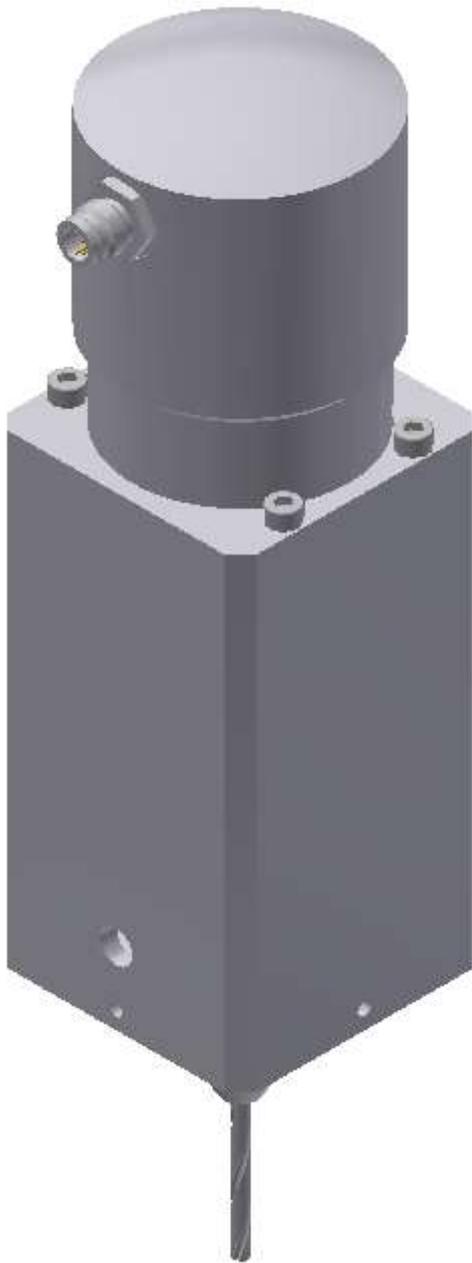
Drilling machine 656874 / illustration similar

6.3.2 Pneumatic
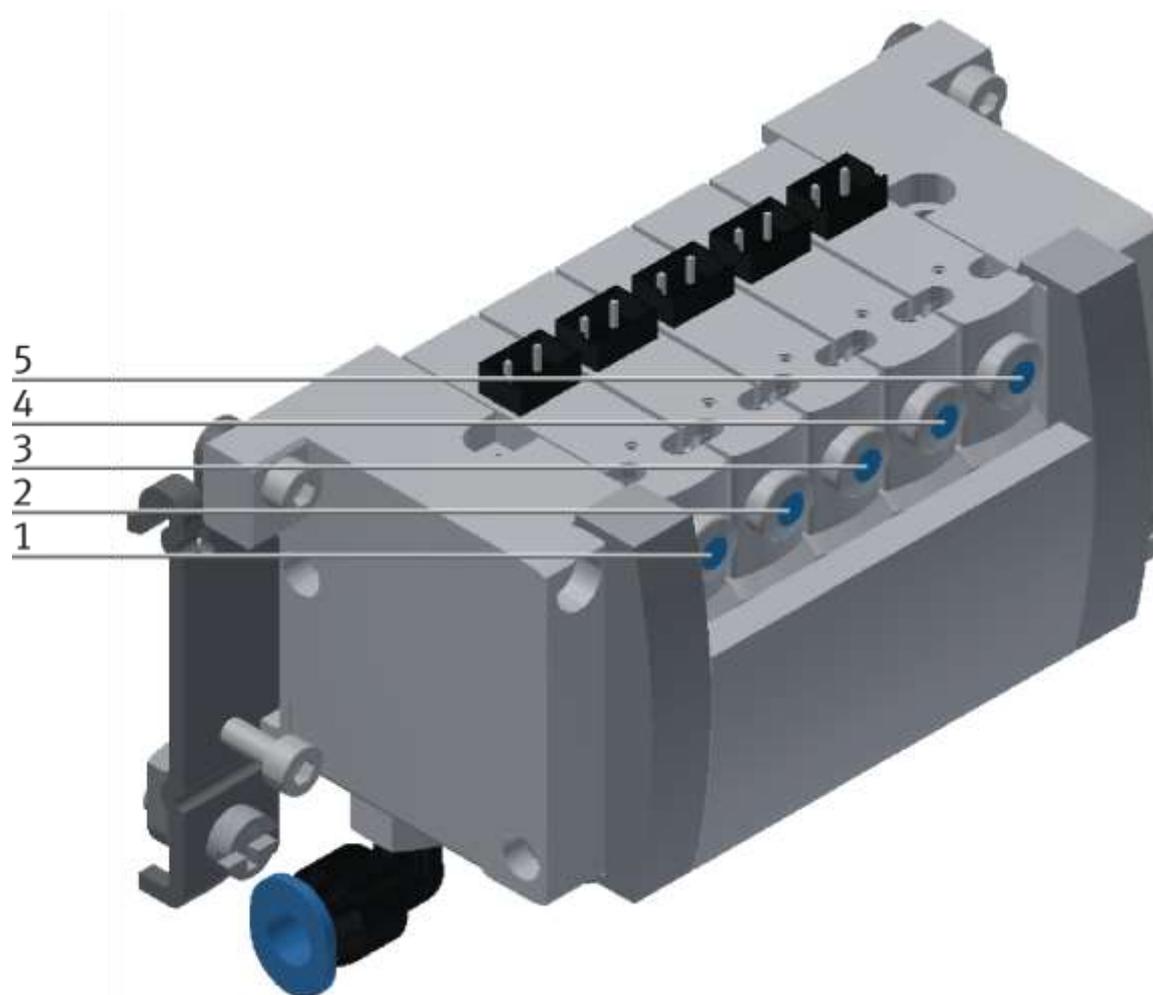
Valve terminal CPVSC1 / part number 525675 – illustration similar

Description valves from left to right

Position	Description	Part number	Resource identifier	Use
1	Valve CPVSC1-K-M5C	548899	MB 1	Move X-axis to the left
2	Valve CPVSC1-K-M5C	548899	MB 2	Move X-axis to the right
3	Valve CPVSC1-K-M5C	548899	MB 5	Move Z-axis upwards
4	Valve CPVSC1-K-M5C	548899	MB 6	Move Z-axis downwards
5	Valve CPVSC1-K-M5C	548899	MB 7	Open clamping unit Z-axis
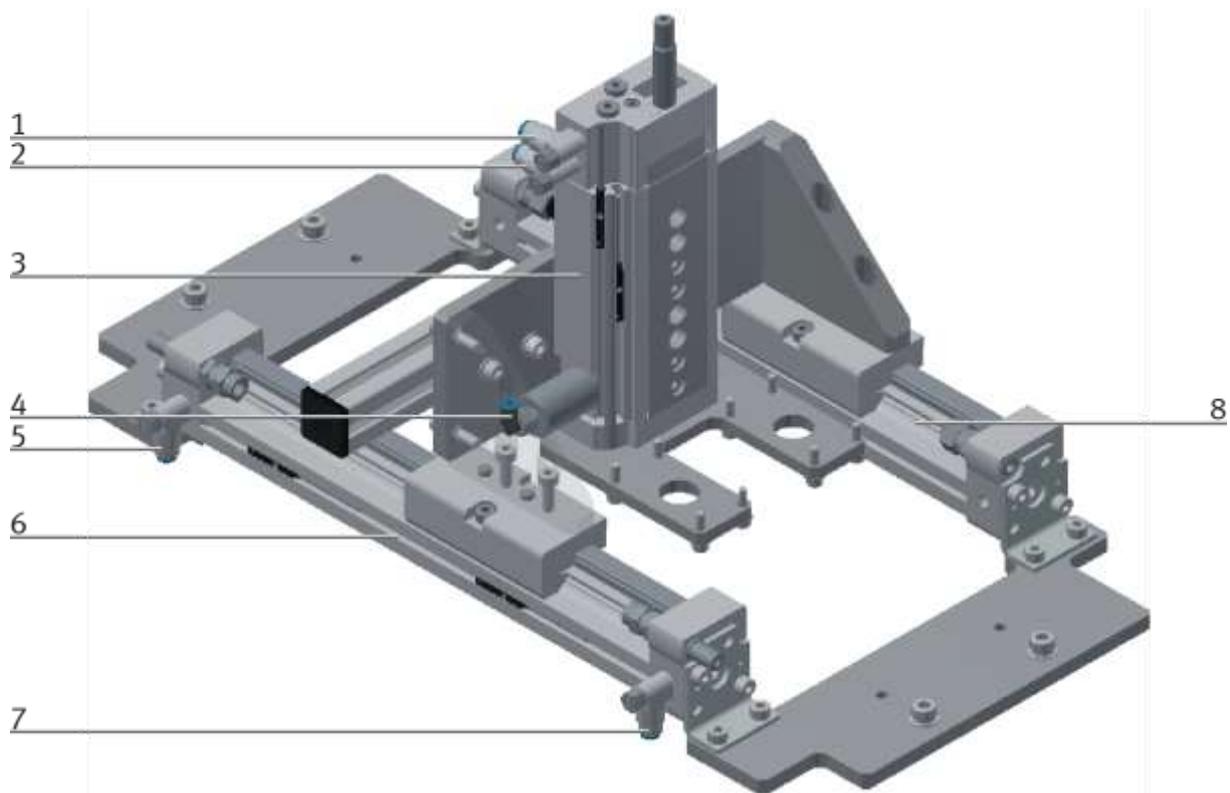
Axes / illustration similar

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 mini slide DGSL-10-40-E3-Y3A	543905
4	Clamping unit	
5	One-way flow control valve GRLA-M5-QS-3-LF-C	175053
6	X-axis linear drive DGC-12-120-KF-YSR-A	530907 – M608
7	One-way flow control valve GRLA-M5-QS-3-LF-C	175053
8	X-axis guided linear drive DGC-12-120-FA-P	530907 – M708

6.4 Function

The application module drilling drills 4 drilling holes into the lower part of the housing. The workpieces are recognized by the first light barrier when moving into the application module drilling and the carrier will be stopped. When the carrier has been stopped, the workpiece will be checked. The workpiece request (3) checks if there is a front cover on the carrier.

The workpiece request in the middle (2) checks if there is a back cover on the lower part. The left request (1) checks if the front cover is in its correct position on the carrier. When the front cover is in its correct position and there is no back cover on it, the first two drilling holes are drilled into the left side of the front cover. Then the X-axis moves to the right position and the two right drilling holes are drilled. After that, the carrier leaves the application module drilling.

1
2
3
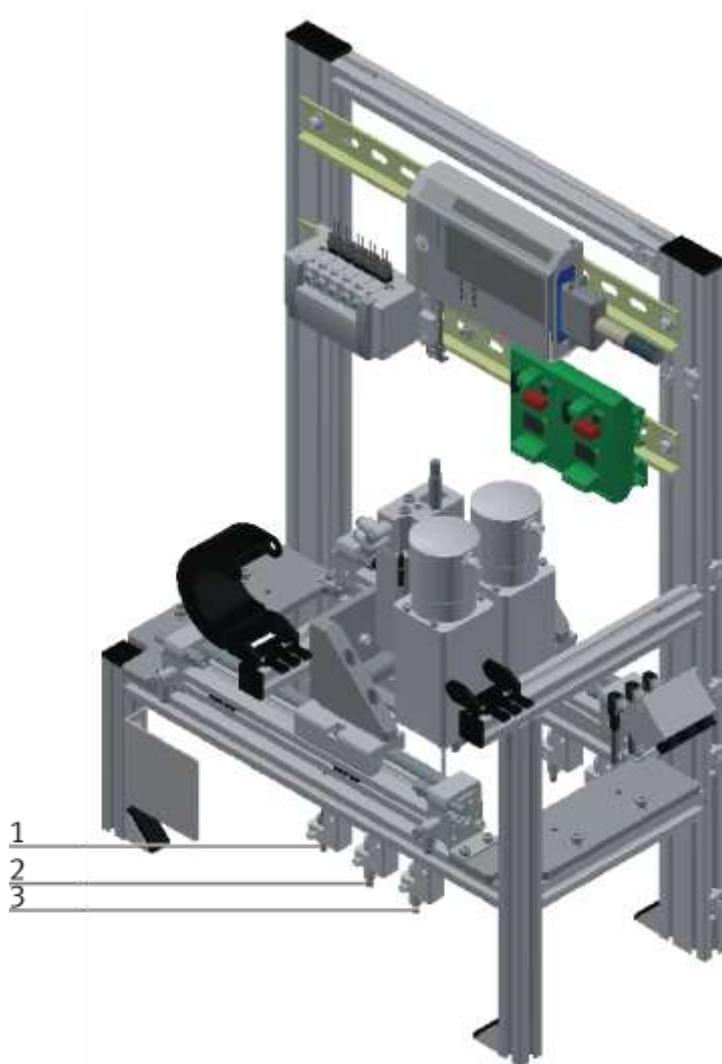
Illustration similar

6.5 Process description

Start Conditions

* All connections have been made properly

Starting position
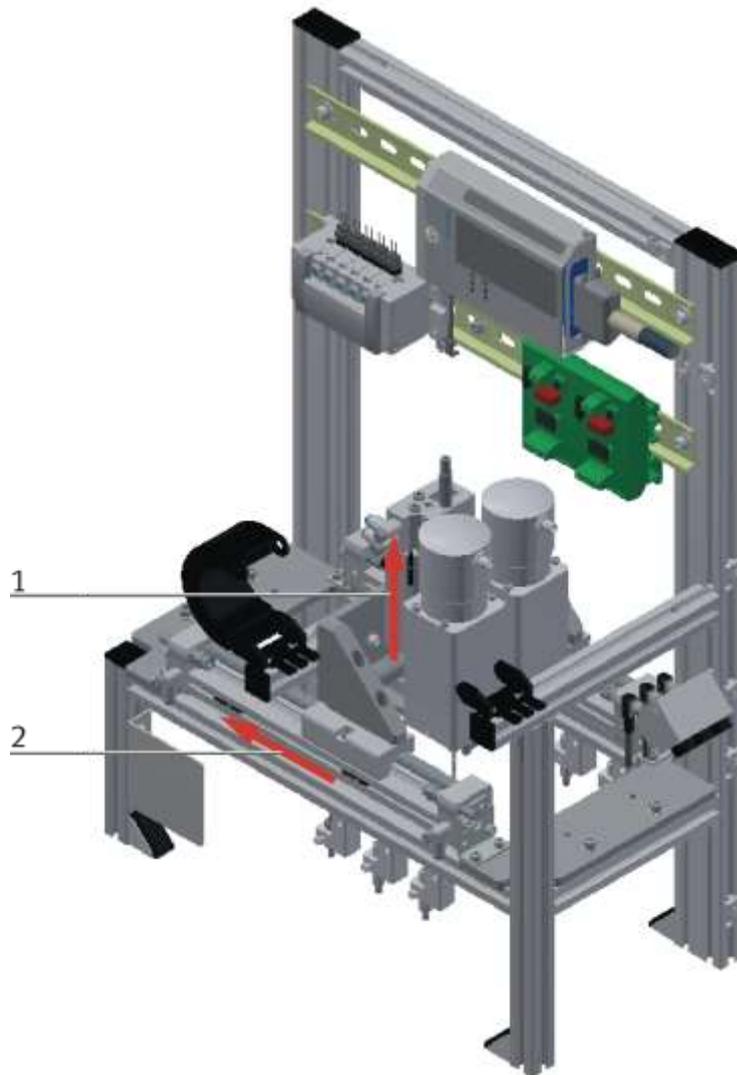
Illustration similar

1. The cylinder of the drilling unit must be in its upper end position
2. The cylinder of the sliding unit must be in the left end position

Procedure

3. If a carrier with a workpiece is transported up to the stopper when the application is activated, the carrier is stopped and an automatic sequence is started

4. The workpiece is interrogated, there must be a front cover on the carrier, there must be no back cover on the front cover, the position of the front cover must be correct on the carrier

5. The drilling machines are switched on. Depending on the drill program, the X axis moves to the left.

6. The drilling unit moves downwards and drills two holes into the part

7. The drilling unit moves up again

8. The X axis moves to the right position, depending on the drill program.

9. The drilling unit moves downwards and drills the holes 3 and 4 into the part

10. The drilling unit moves up again and the drilling machines are switched off

11. Depending on the drill program, the X axis returns to its initial position

12. The program is finished, the stopper switches downwards and the carrier leaves the station.

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.
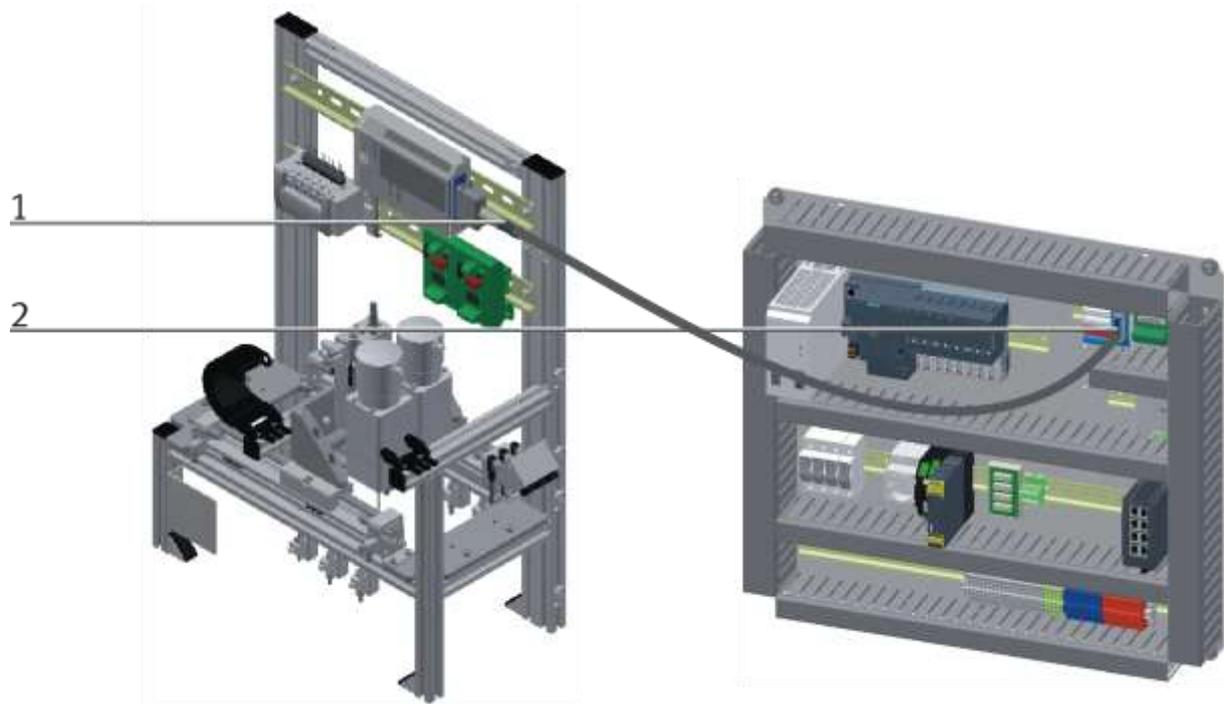
Electrical connection by I/O example / Illustration similar

6.6.2 I/O module XD1

Illustration similar

Inputs

Designation	Equipment identifier	Application	Application SysLink
X-axis left	BG1	XD1 / XK:I0	XD1:XS13
X-axis right	BG2	XD1 / XK:I1	XD1:XS14
0= Front cover right orientation	BG3	XD1 / XK:I2	XD1:XS15
0= Front cover available	BG4	XD1 / XK:I3	XD1:XS16
Z-axis top	BG5	XD1 / XK:I4	XD1:XS17
Z-axis down	BG6	XD1 / XK:I5	XD1:XS18
Reserve		XD1 / XK:I6	XD1:XS19
0= Back cover already available	BG7	XD1 / XK:I7	XD1:XS20

Outputs

Designation	Equipment identifier	Application	Application SysLink
X-axis to left	MB1	XD1 / XK:O0	XD1:XS1
X-axis to right	MB2	XD1 / XK:O1	XD1:XS2
Drill 1 via start-up current limiter 52Q1	MB3	XD1 / XK:O2	XD1:XS3
Drill 2 via start-up current limiter 52Q2	MB4	XD1 / XK:O3	XD1:XS4
Z-axis upward	MB5	XD1 / XK:O4	XD1:XS5
Z-axis downward	MB6	XD1 / XK:O5	XD1:XS6
Z-axis clamping open	MB7	XD1 / XK:O6	XD1:XS7
Reserve		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.
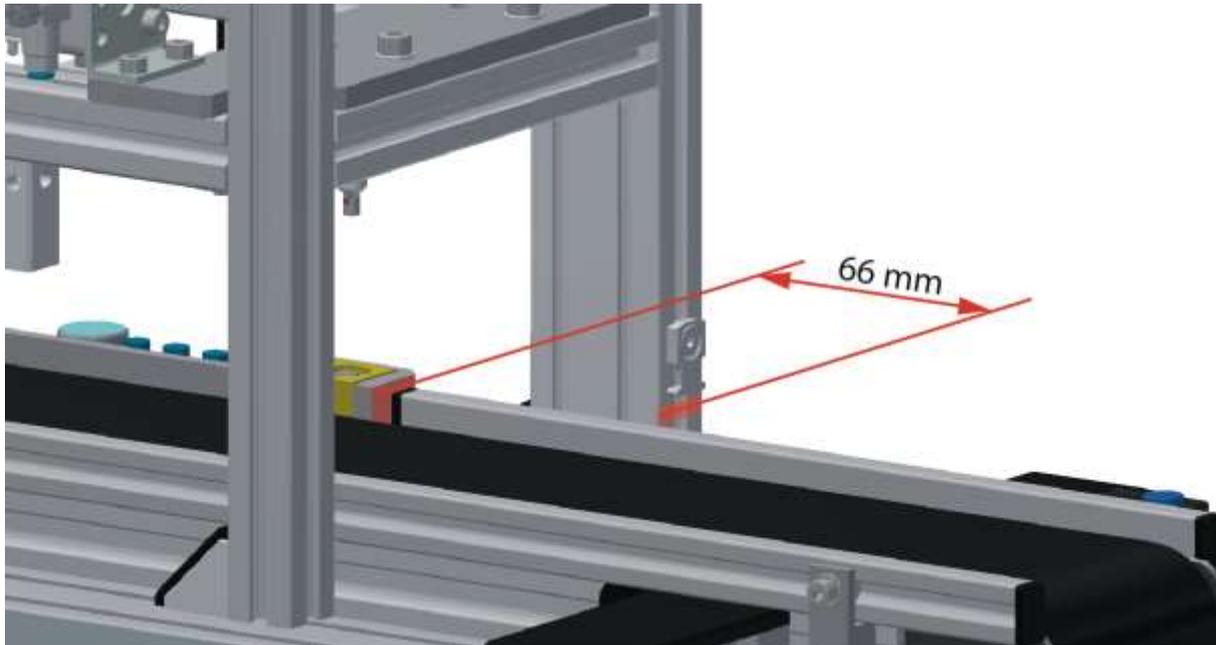
Example distance between application module and stopper / illustration similar

7.4.1 Assembly of an CP application module to basic module CP Lab Conveyor

⚠️	**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.

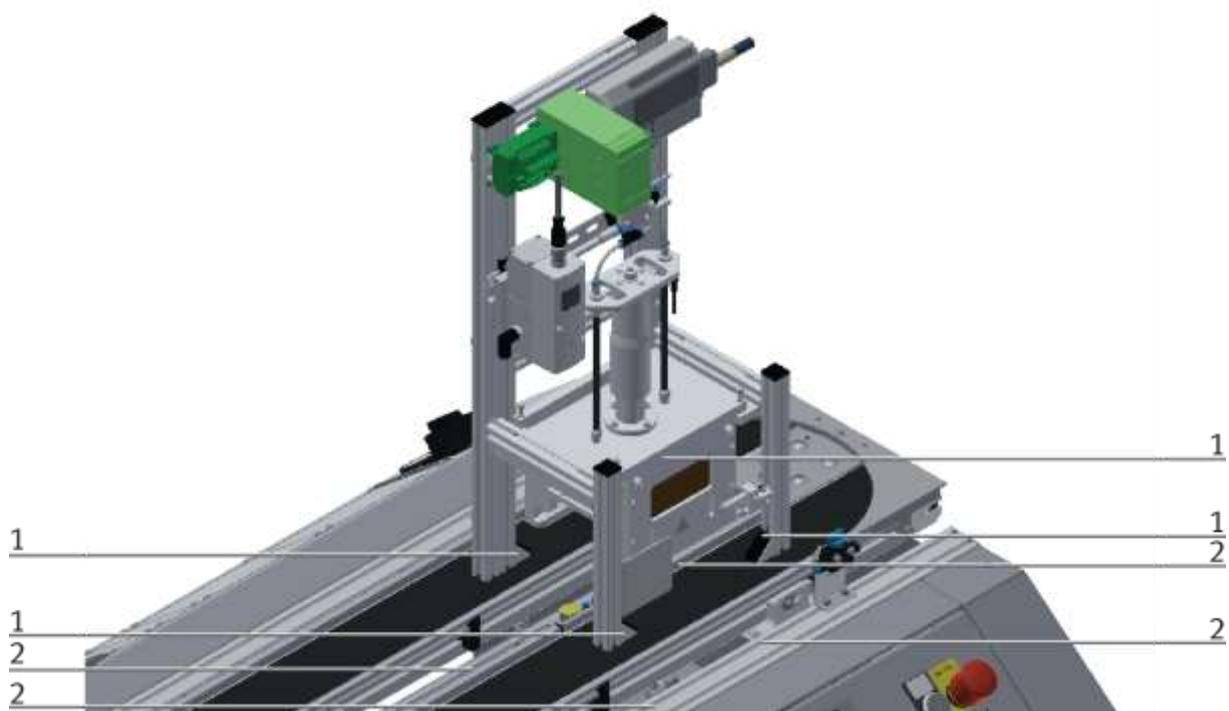Positioning slot nuts / illustration similar

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.

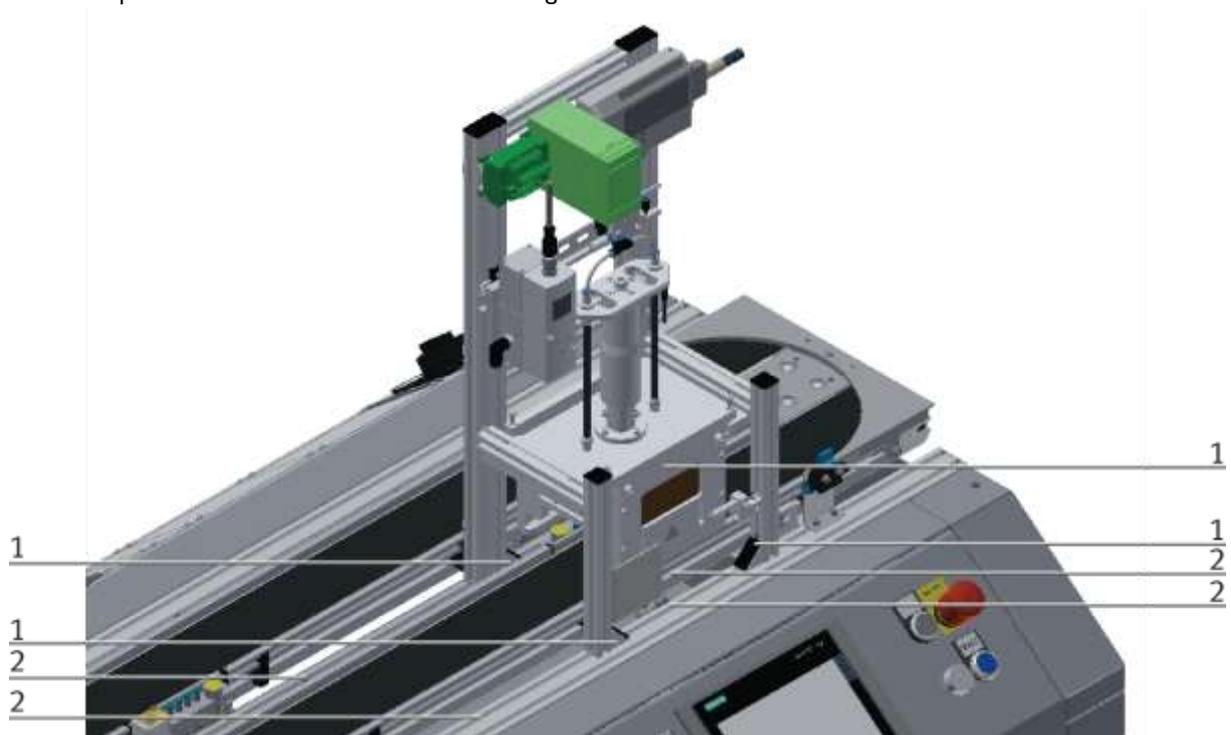| ⚠	*NOTE*
	Use Allen keys for lateral adjustment of the slot nuts.
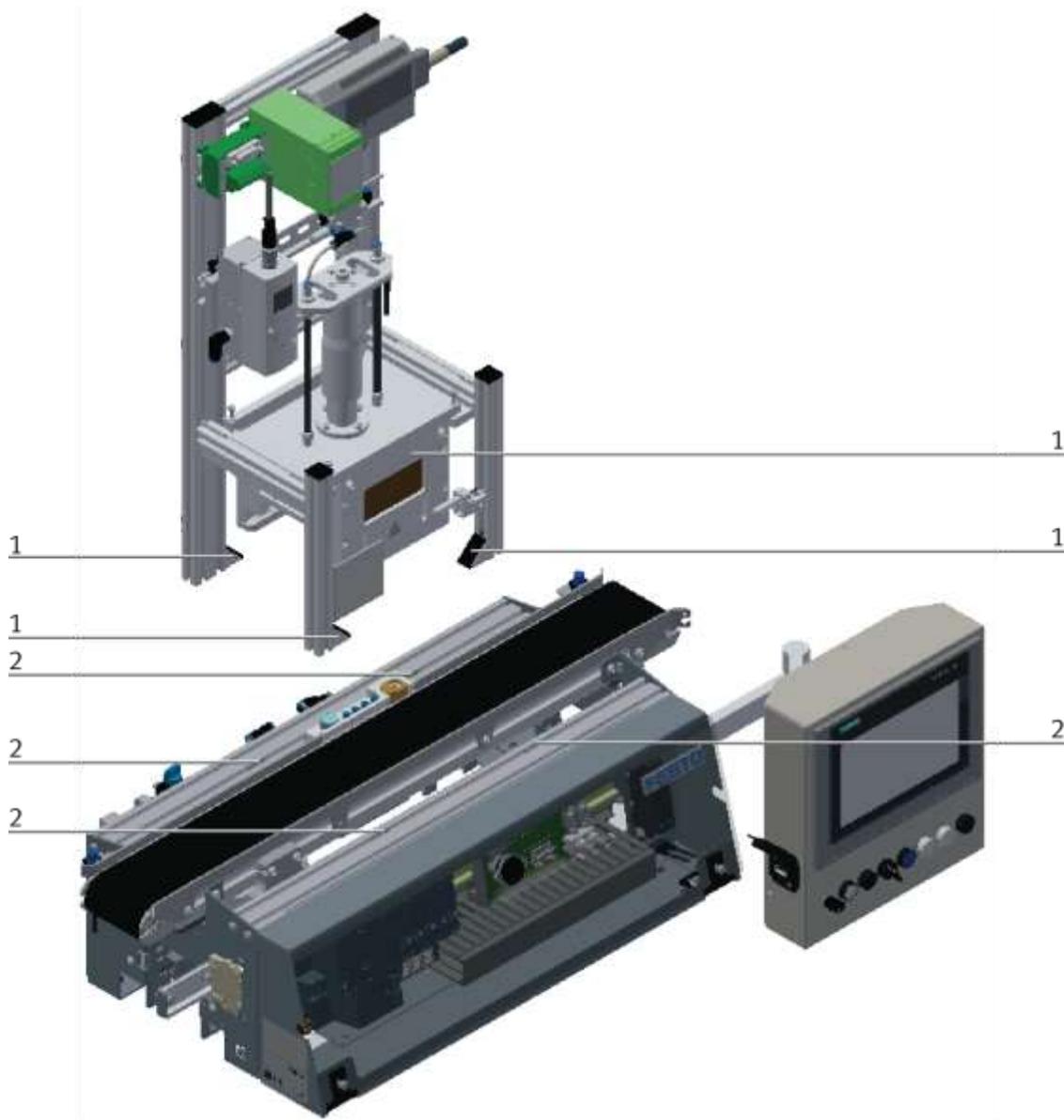
How to put on the CP application module / illustration similar

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 (3) of the CP application module with the control (1) of the basic module CP Lab Conveyor. Therefore use the connecting cable with SysLink plugs (5) which has already been attached to the control and is led out on the back side of the basic module CP Lab Conveyor.
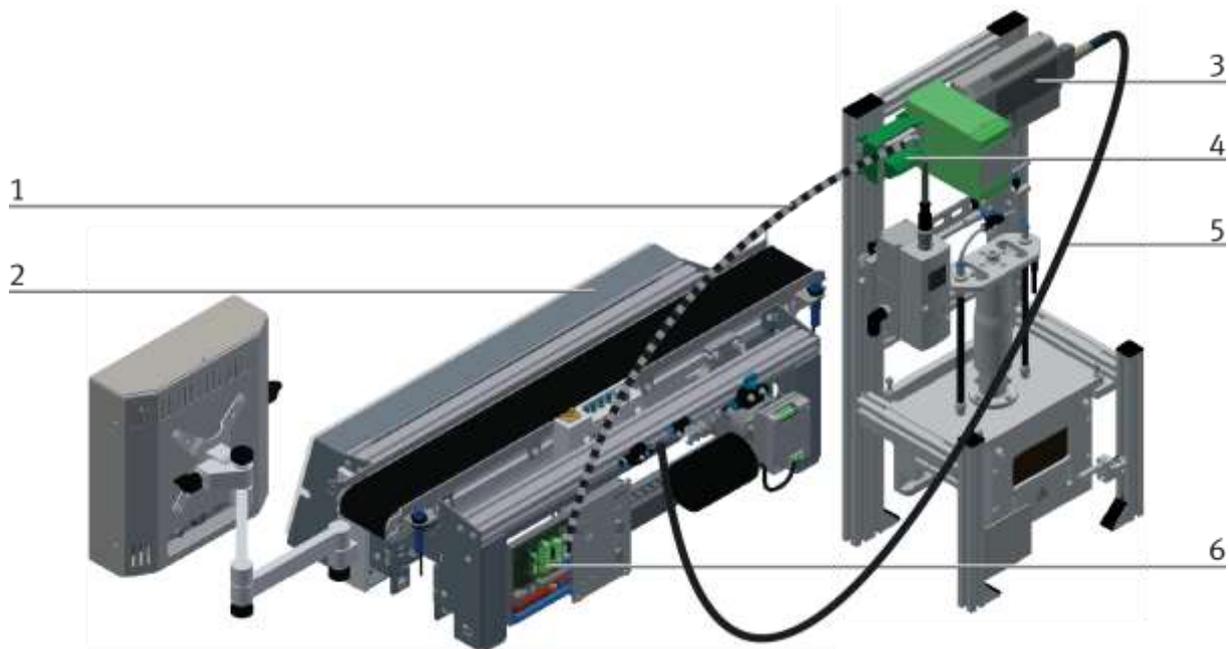
Electrical connections / illustration similar

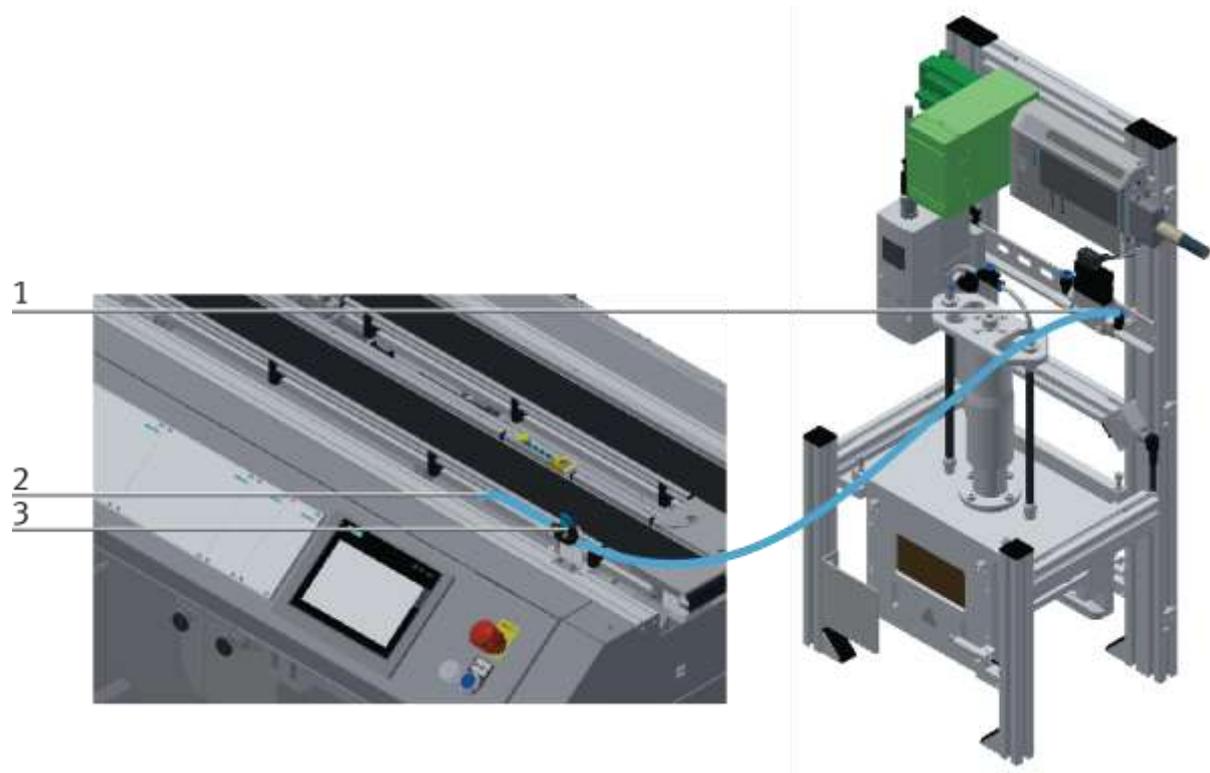| Position	Description
1	connecting cable with15-pin standard D-Sub-plugs
2	basic module CP Lab Conveyor: control or decentralized periphery
3	CP application module: I/O terminal (+BG-XD1)
4	CP application module: analogue terminal (+BG-XD2A)
5	connecting cable with a SysLink-plug (SysLink-cable)
6	basic module CP Lab Conveyor: board at the back (+G1-XZ2)

D-Sub-interface for analogue signals (option – not available at all application modules)
The CP application module produces a analogue output signal. These is put on the analogue terminal (4) and must be connected with the analogue inputs of the basic module:

- Connect the analogue terminal (4) of the CP application module with the D-Sub-interface for analogue signals (6) on the rear board of the basic module CP Lab Conveyor. Therefore use the provided connecting cable (1) with standard D-Sub plugs: 15-pin, two-rowed.

Electrical connections / illustration similar

Position	Description
1	connecting cable with15-pin standard D-Sub-plugs
2	basic module CP Lab Conveyor: control or decentralized periphery
3	CP application module: I/O terminal (+BG-XD1)
4	CP application module: analogue terminal (+BG-XD2A)
5	connecting cable with a SysLink-plug (SysLink-cable)
6	basic module CP Lab Conveyor: board at the back (+G1-XZ2)

7.4.3 Pneumatic connection from application modules to basic module CP Lab Conveyor
(option – not available at all application modules)

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 (2) on the conveyor belt. The hose (1) (nominal width 4) is simply inserted into the QS connector. The supply line (5) is plugged into the T-plug (3)

The CP Lab Band is also supplied with a T-connector (4).
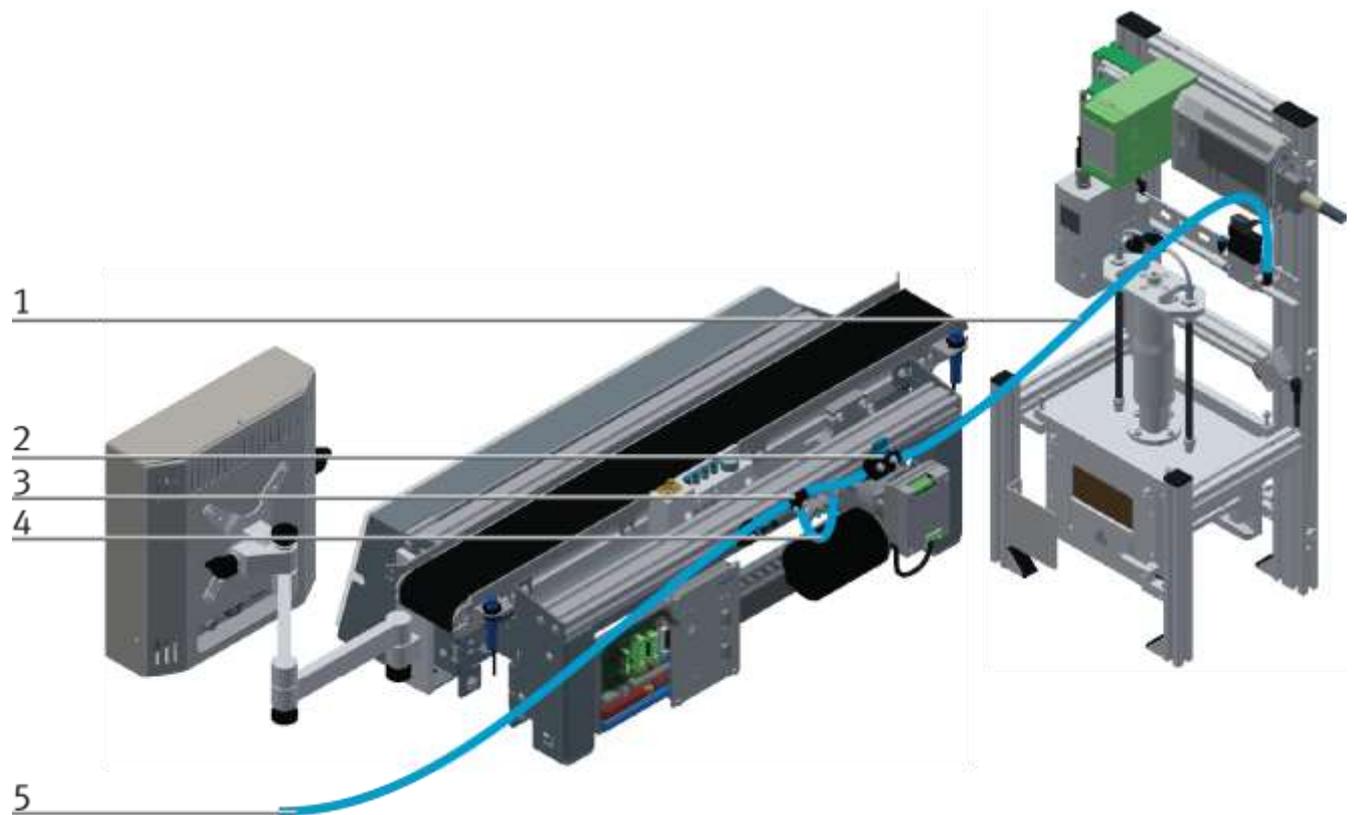
Pneumatically connect application module / illustration similar

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.
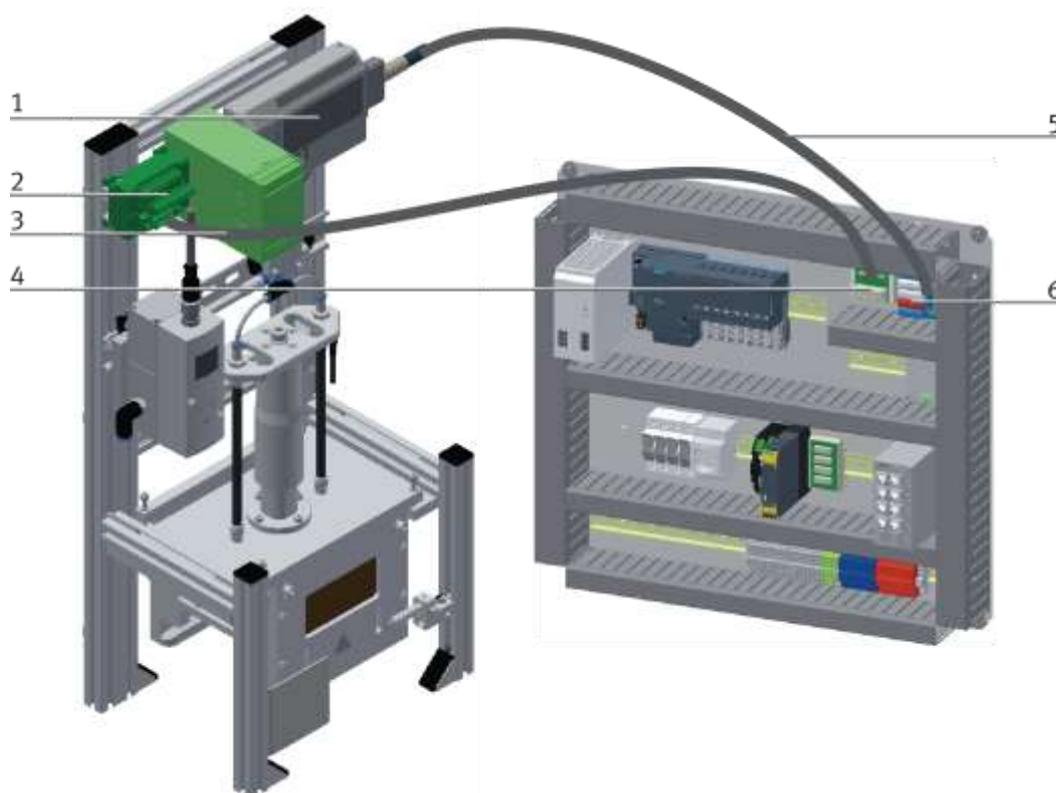
Electrical connections / illustration similar

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)
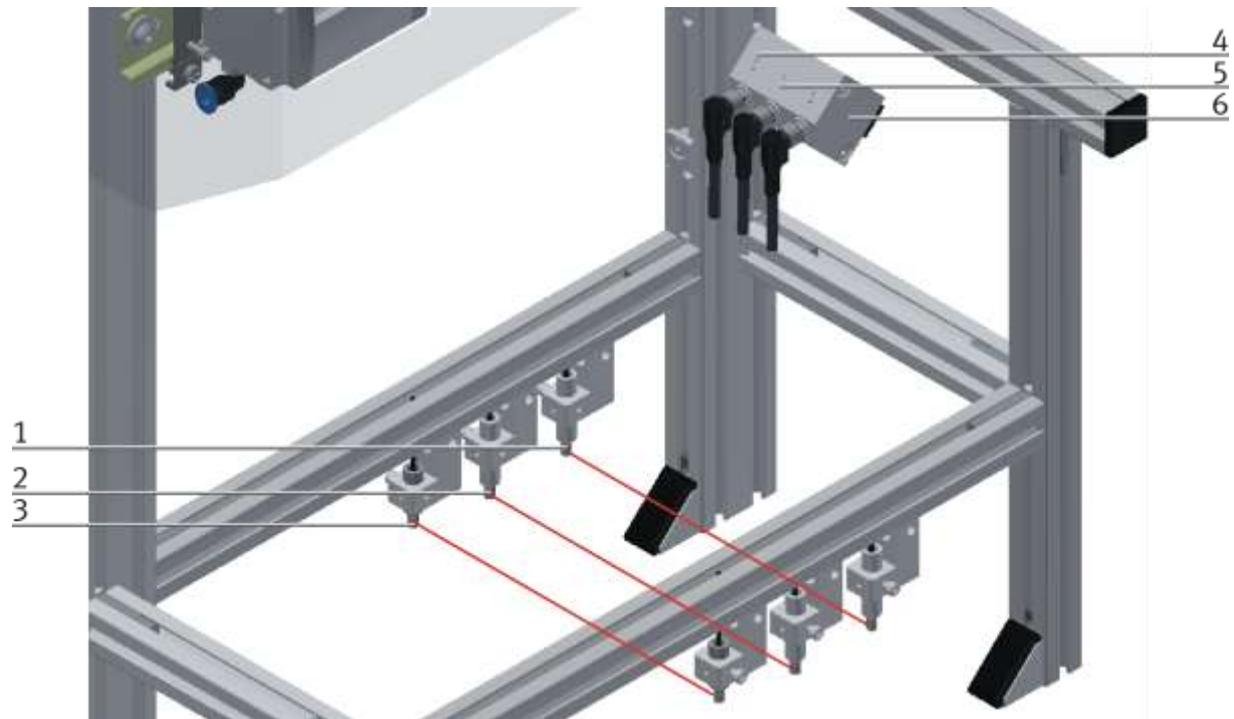
Illustration similar

Position	Description	Part number	Resource identifier	Use
1	Light guide SOOC-TB-M4-2-R25	552812	BG3	0 = front cover orientation correct
2	Light guide SOOC-TB-M4-2-R25	552812	BG4	1 = front cover present
3	Light guide SOOC-TB-M4-2-R25	552812	BG8	1 = back cover present
4	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG8	1 = back cover present
5	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG4	1 = front cover present
6	Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG3	0 = front cover orientation correct

The light guide is used for detecting workpieces. Flexible light guides 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 guides.
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. You have to do this with all 3 light barriers. Please pay special attention to the corresponding function.

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 sensor (X-axis cylinder)
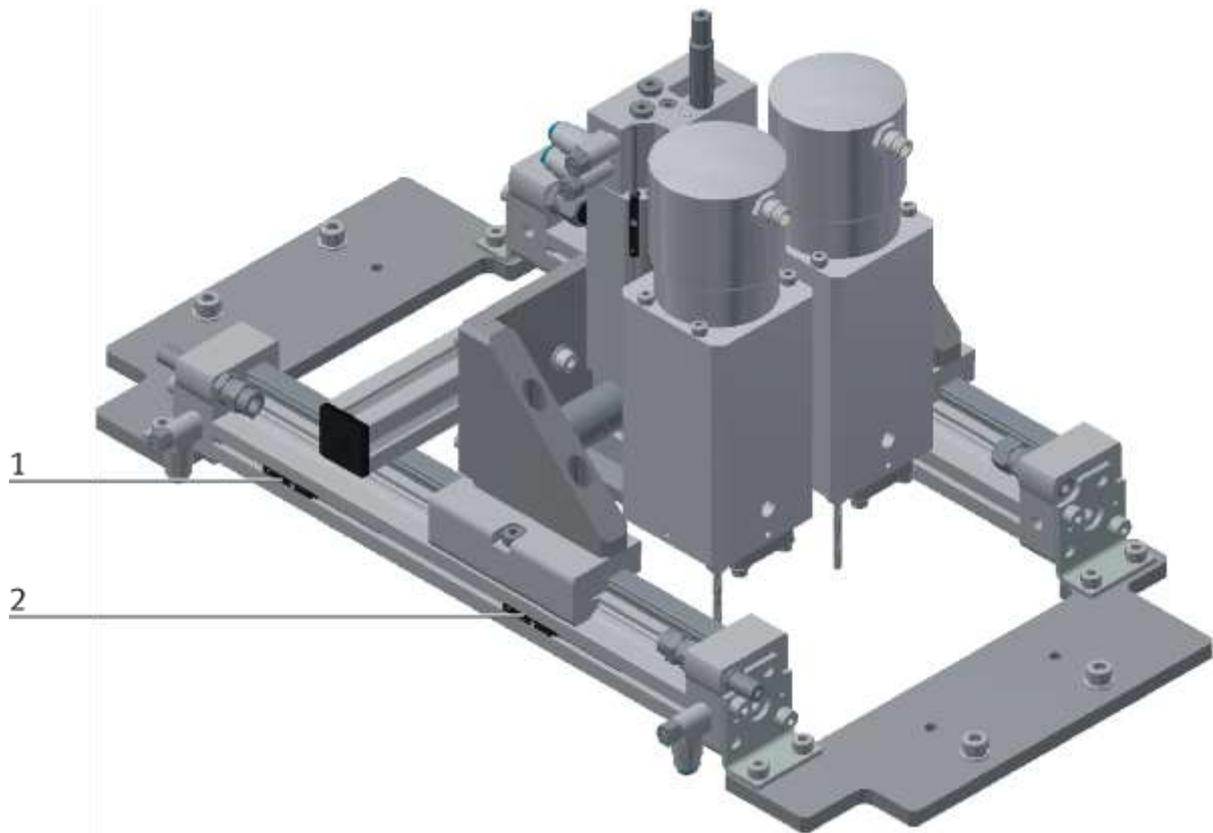
Illustration similar

Position	Designation
1	X-axis in left end position / 551373 (SMT-10M-PS-24V-E-2,5-L-OE)
2	X-axis in right end position / 551373 (SMT-10M-PS-24V-E-2,5-L-OE)

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

Requirements

– Cylinder for X-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)

7.5.3 Proximity sensor (Z-axis)
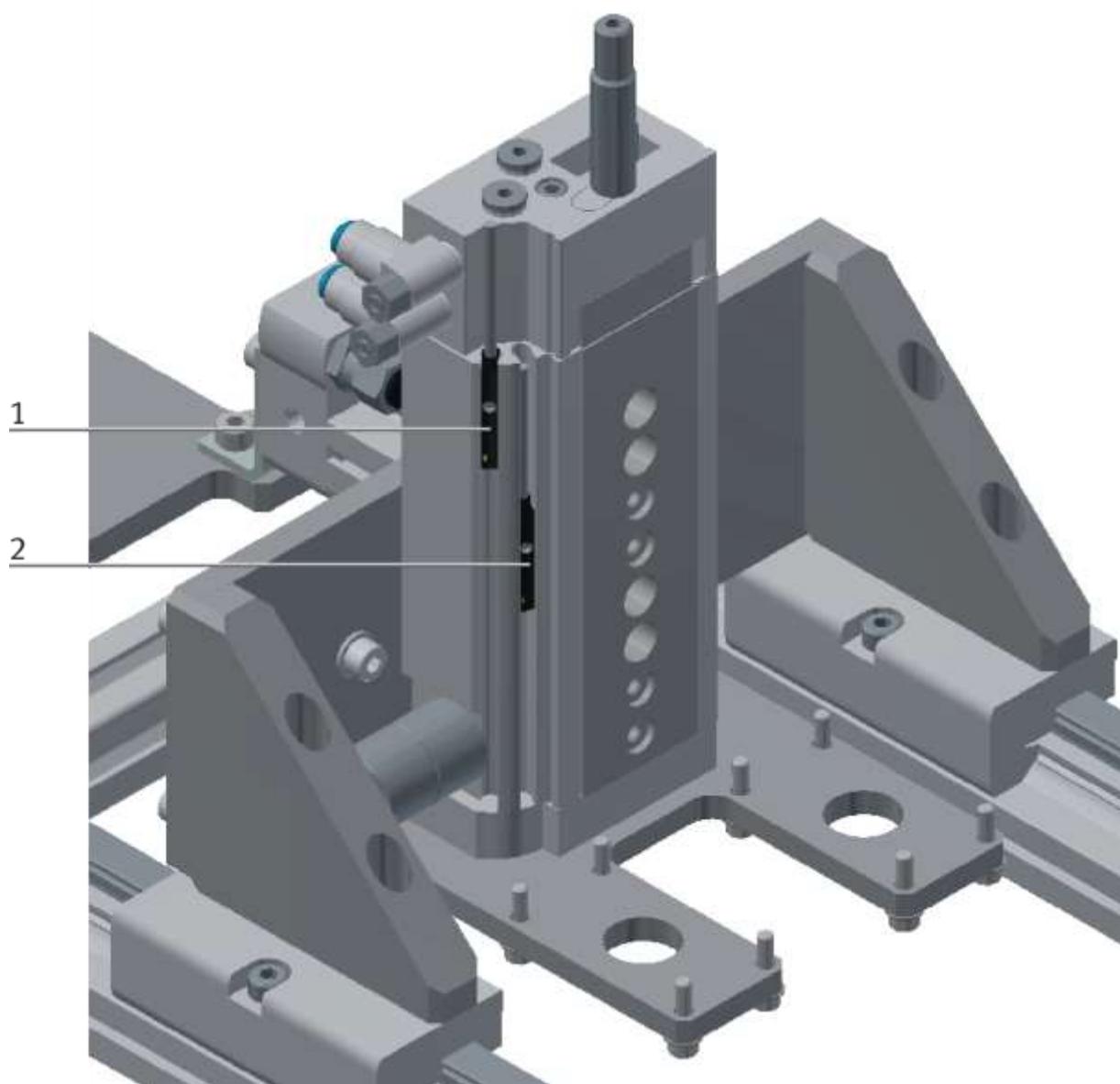
Illustration similar

Position	Designation
1	Z-axis in upper end position / 551373 (SMT-10M-PS-24V-E-2,5-L-OE)
2	Z-axis in lower end position / 551373 (SMT-10M-PS-24V-E-2,5-L-OE)

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

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)

7.6 Adjusting the one-way flow control valves
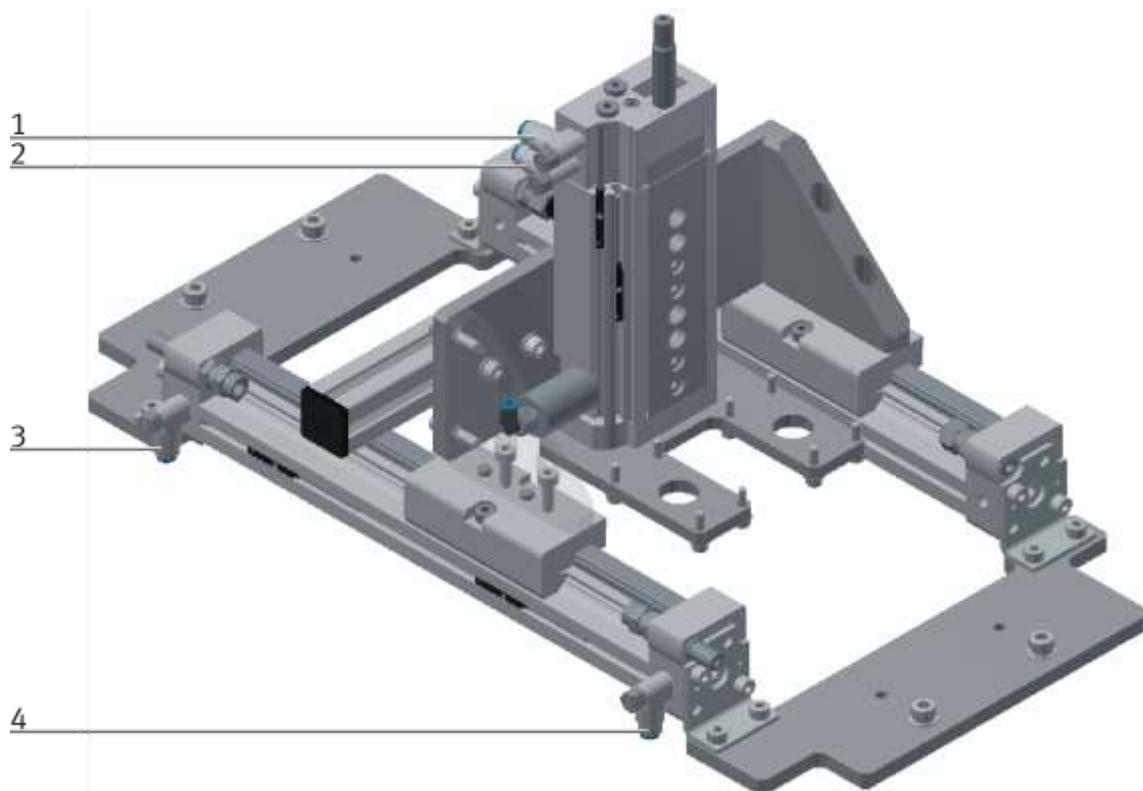
One-way flow control valves / illustration similar

Position	Designation
1	One-way flow control valves GRLA for Z-axis cylinder
2	One-way flow control valve GRLA for Z-axis cylinder
3	One-way flow control valves GRLA for X-axis cylinder
4	One-way flow control valves GRLA for X-axis cylinder

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 (193138)

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 drilling 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
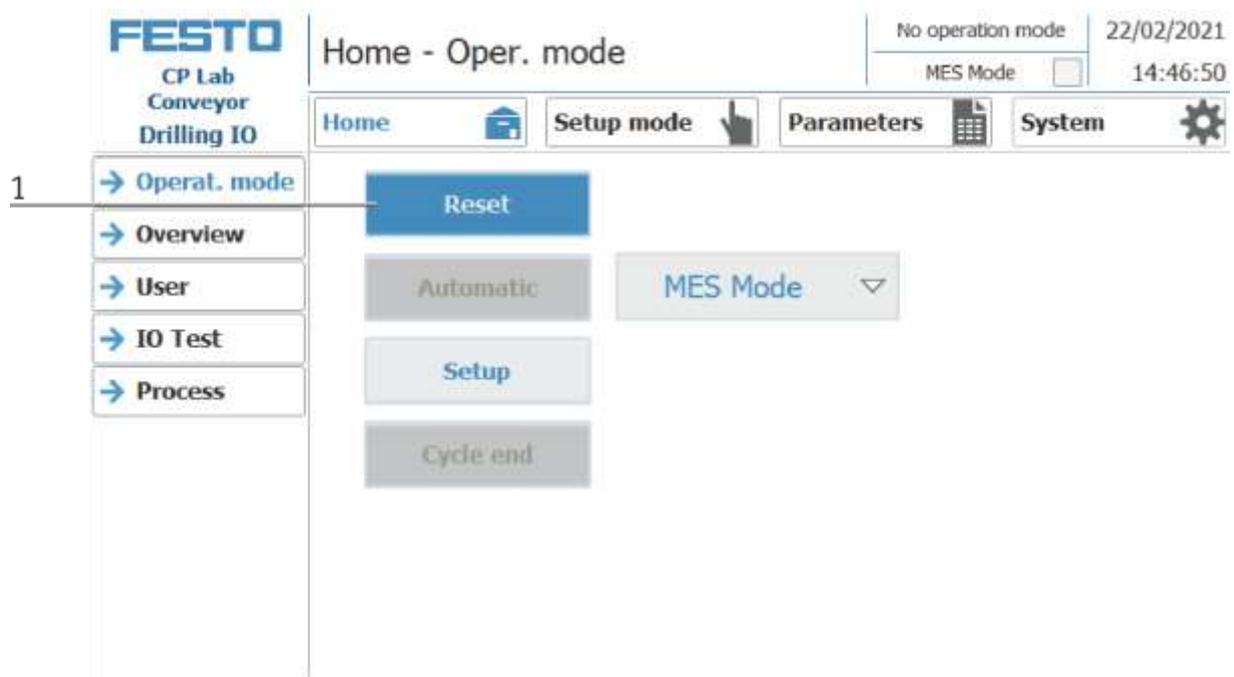
2. Then click on Setup, setup mode is active.
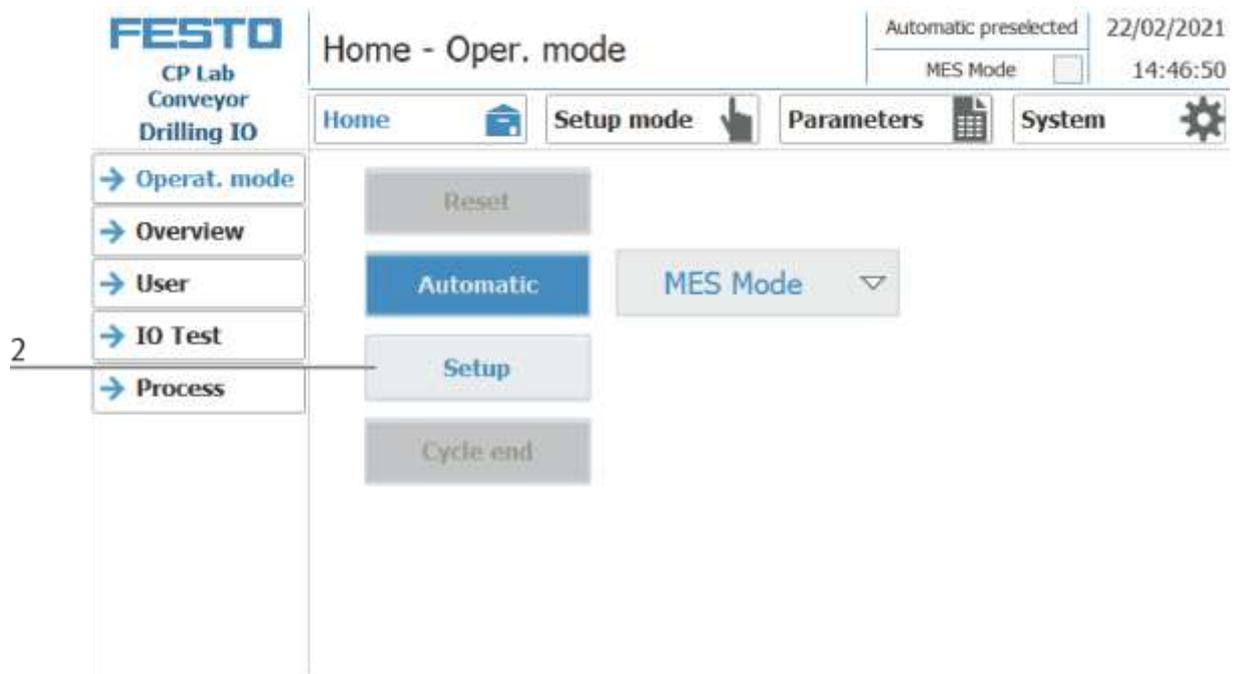
3. Change to Setup mode page.

4. Choose application

5. Application is selected to set up the application module. The corresponding actuators can be started by pressing the buttons. All other areas are for display purposes and cannot be influenced.
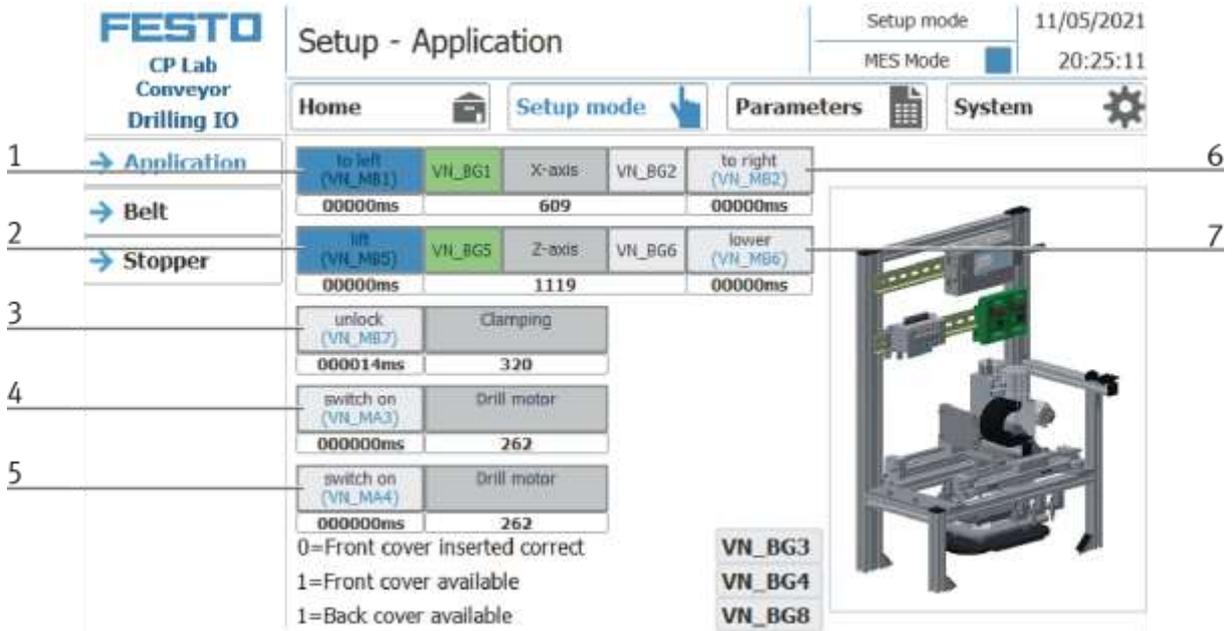
Position number	Description
1	Move X-axis To left button: move X-axis to the left (actuator VN_MB1 is activated, lights up blue when active) VN_BG1: Sensor VN_BG1 Display (lights up green when X-axis is in left end position)
2	Move Z-axis lift button: move Z-axis upwards (actuator VN_MB5 is activated, lights up blue when active) VN_BG5: Sensor VN_BG5 Display (lights up green when lifting cylinder is in upper position)
3	Open the clamping unit Unlock button: Open the clamping unit (actuator VN_MB5 is activated, lights up blue when active)
4	Switch on drilling machine 1 Switch on Button: drilling machine 1 is switched on (actuator VN_MA3 is activated, lights up blue when active)
5	Switch on drilling machine 2 Switch on Button: drilling machine 2 is switched on (actuator VN_MA4 is activated, lights up blue when active)
6	Move X-axis To right button: move X-axis to the right (actuator VN_MB2 is activated, lights up blue when active) VN_BG2: Sensor VN_BG2 Display (lights up green when X-axis is in right end position)
7	Move Z-axis Lower button: move Z-axis downwards (actuator VN_MB6 is activated, lights up blue when active) VN_BG6: Sensor VN_BG6 Display (lights up green when lifting cylinder is in lower position)

8.2 Transitions of the application module

The transitions are located in the Parameters submenu

| FESTO CP Lab Conveyor Drilling IO | Parameters - Transitions | | | Setup mode MES Mode ■ | 11/05/2021 20:24:05 |

| Home 🗂 | Setup mode 👆 | Parameters 🔛 | System ⚙ |

No.	Start condition	Application execute	Parameter				End condition	
			Prog. no.	---	---	---	OK	NOK
Init	none		0	0	0	0	1	0
1	1	✓	1	0	0	0	2	0
2	2	✓	2	0	0	0	3	0
3	3	✓	3	0	0	0	1	0
4	0		0	0	0	0	0	0
5	0		0	0	0	0	0	0
6	0		0	0	0	0	0	0
7	0		0	0	0	0	0	0
8	0		0	0	0	0	0	0
9	0		0	0	0	0	0	0
10	0		0	0	0	0	0	0

Application
Transitions
Belt, Stopper

The transitions can be displayed or changed here. The transitions are used in the default mode, see also the following chapter.

8.3 Process of application module

For this application module there is no page available at the HMI.

8.4 Flow chart

CP-AM-DRILL	1
	S1-S_Init Initialization start conditions
	T1-T_InitDone Wait for initialization done
	S2-S_StpIndx Prepare start conditions, reset all application outputs
	AUTO **T2-T_Auto** Wait for application start Wait for auto mode trigger and start condition valid (auto mode active and initial position
	S3-S_SetBusy Set module to busy state, reset ready signal
	S4-S_SensChk Check start condition via sensor and activate fault pattern in case of error Call FC301 "SensorCheckDrillingIO"
	Sensor check ok **T4-T_SensCheckOk** Wait sensor check ok, wait for response "ok"
	S6-S_CheckInputPara Wait step check input parameter
	Sensor check not ok **T27-T_SensChkNok** Wait sensor check failed, wait for response "not ok"
	T27-T_SensChkNok Wait sensor check failed, wait for response "not ok"
	S26-S_SensFail Transfer error from sensor check to return value
	T28-T_SensFailDn Wait error number was transmitted
	S22 Jump to step 22

CP-AM-DRILL	2
	Input drill parameter is 2
	T31-T_ChkParP2
	Wait for drill parameter is 2
	S15
	Jump back to step 15
	Input drill parameter is not 1 and not 3
	T29-T_ChkParNotP13
	Wait for drill parameter is not 1 and not 3
	S27-S_RetVal
	Return Value error code
	T30-T_RetValDn
	Wait return value 100ms
	S2
	Jump back to step 2
	Input drill parameter is 1 or 3
	T6-T_ChkParP13
	Wait for drill parameter is 1 or 3
	S7-S_P13XmoveLeft
	Move X-Axis to the left, set MB1, reset MB2

CP-AM-DRILL	3
	T7-T_XmoveLeftDn Wait for X-Axis is in left end position, wait for BG1
	S8-S_P13DrillOn Activate drills, open clamp, set MA3+Ma4, set MB7
	T8-T_DrillOnDn Wait for drill on, wait for 500ms
	S9-S_P13ZmoveDown Move Z-Axis to lower position, set MB6, reset MB5
	T9-T_ZmovedwnDn Wait for Z-Axis in lower end position, wait for BG6
	S10-S_P13DrillTime Wait step drill time
	T10-T_DrillDn Wait for drill time 1s
	S11-S_P13ZmoveUp Move Z-Axis to upper position, set MB5, rset MB6
	T11-T_ZmoveUpDn Wait for Z-Axis in upper end position, wait for BG5
	S12-S_ZUpWait Wait step ZUp
	T12-T_ZUpWait Wait for 1s Zup
	S13-S_CheckInputPara2 wait step check Input Parameter
	Input drill parameter is not 3 **T32-T_NoP3** Check if Prog No ◇ 3
	S20 Jump back to step 20
	Input drill parameter is 3 **T13-T_P3** Check if Prog No = 3

CP-AM-DRILL	4
	S14-S_P3Dmy Wait step
	T14-T_P3DmyDn Wait step 100ms
	S15-S_P3XmoveRight Move X-Axis to the right, set MB2, reset MB1
	T15-T_P3XrgtDn Wait for X-Axis is in right end position, wait for BG2
	S16-S_P3DrillOn Activate drills, open clamp, set MA3+MA4, set MB7
	T16-T_P3DrillOnDn Wait for drill on, wait 500ms
	S17-S_P3Zdwn Move Z-Axis to lower position, set MB6, reset MB5
	T17-T_P3ZdwnDn Wait for Z-Axis in lower end position, wait for BG6
	S18-S_P3DrillTime Wait step drill time
	T18-T_P3DrillTimeDn Wait drilling time 1s
	S19-S_P3Zup Move Z-Axis to upper position, set MB5, reset MB6
	T19-T_P3ZupDn Wait for Z-Axis in upper end position, wait for BG5
	S20-S_Xleft Move X-Axis to the left, set MB1, reset MB7 MB2 Ma3 MA4

CP-AM-DRILL	5
	T20-T_XleftDn
	Wait for X-Axis is in left end position, wait fro BG1
	S22-S_OpnIndx
	Open Clamp index, reset ClampIndex , reset ConvStop, reset MB7
	T22-T_OpnIndxDn
	Open Clamp index done, weait for 1s
	S2
	Jump back to step 2

S20

T20-T_XleftDn

T28

S22-S_OpnIndx

T22-T_OpnIndxDn

S2

CP-AM-DRILL	6
	Reset
	S23-S_ResZ
	Reset: Move Z-Axis to upper position and open clamp
	T24-T_ResZDn
	Wait Z-Axis in upper end position, wait for BG5
	S29-S_WhereX
	Wait step where is x
	X-Axis is left
	T33-T_XIsLeft
	Wait for X-Axis is in left end position, wait for BG1
	S24-S_ResXLeft
	Reset: Move X-Axis to the left position, reset MB7+MB2, set MB1
	T25-T_ResXDn
	Wait for X-Axis is in left end position, wait for BG1
	S25-S_ResDone
	T26-T_ResFlagDn
	Wait for reset is done 100ms
	S2
	Jump back to step 2
	X-Axis is right
	T34-T_XIsRight
	Wait for X-Axis is in right end position, wait for BG2
	S30-S_ResXRight
	Reset: Move X-Axis to the right, set MB2, reset MB1
	T35-T_WaitRight
	Wait for X-Axis is in right end position BG2 and for 300ms
	S24
	Jump back to step 24

CP-AM-DRILL	7
	X-Axis is in the middle
	T36-T_XIsBetween
	Wait for X-Axis is not in left BG1 and not right BG2 end position
	S31-S_ResXBetween
	Move X-Axis to the left, Move X-Axis to the right, set MB1, set MB2
	T37-T_WaitXBetween
	Wait for 500ms
	S24
	Jump back to step 24

8.4.1 Parameter (DRILL)
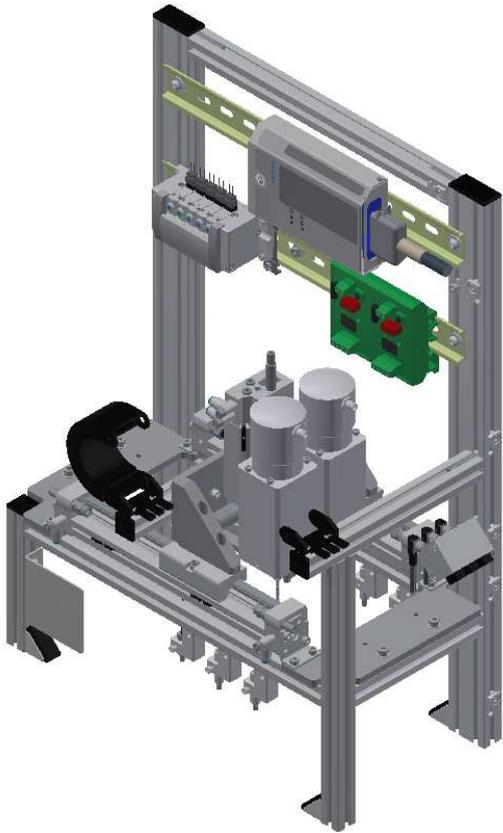
Illustration similar

Default:

Parameter-No.	Description
1	**Drill position** Possible values: 1. Left side 2. Right side 3. Both sides
2	Not used
3	Not used
4	Not used

MES:

Operation		Parameter	Description
120	Drilling right	1	**Drilling position** Low Limit: 1 High Limit:-3 Value: 2 (ride side) Type: constant
121	Drilling left	1	**Drilling position** Low Limit: 1 High Limit:-3 Value: 1 (left side) Type: constant
122	Drilling both	1	**Drilling parameter** Low Limit: 1 High Limit:-3 Value: 3 (both sides) Type: constant
123	Drilling custom	1	**Parameter (1=left; 2=right; 3=both)** Low Limit: 1 High Limit:-3 Value: 3 Type: changeable

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 drilling

Class	Location	Alarm name	
0	ActuatorCntrApp	X-axis	Timeout: Sensor end position VN_BG1 not reached/leaved! Check sensor end position. Instanz: X-axis.
0	ActuatorCntrApp	X-axis	Timeout: Sensor end position VN_BG2 not reached/leaved! Check sensor end position. Instanz: X-axis.
0	ActuatorCntrApp	X-axis	Timeout: Both sensors end positions VN_BG1/VN_BG2 have same signal! Check sensor end position. Instanz: X-axis
0	ActuatorCntrApp	Z-axis	Timeout: Sensor end position VN_BG5 not reached/leaved! Check sensor end position. Instanz: Z-axis.
0	ActuatorCntrApp	Z-axis	Timeout: Sensor end position VN_BG6 not reached/leaved! Check sensor end position. Instanz: Z-axis.
0	ActuatorCntrApp	Z-axis	Timeout: Both sensors end positions VN_BG5/VN_BG5 have same signal! Check sensor end position. Instanz: Z-axis
0	ActuatorCntrApp	DrillDrive1	Timeout (20000 ms) activation actor VN_MA3 Instanz: DrillDrive1.
0	ActuatorCntrApp	DrillDrive2	Timeout (20000 ms) activation actor VN_MA4 Instanz: DrillDrive2.
0	ActuatorCntrApp	Clamp	Timeout (20000 ms) activation actor VN_MB7 Instanz: Clamp.

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
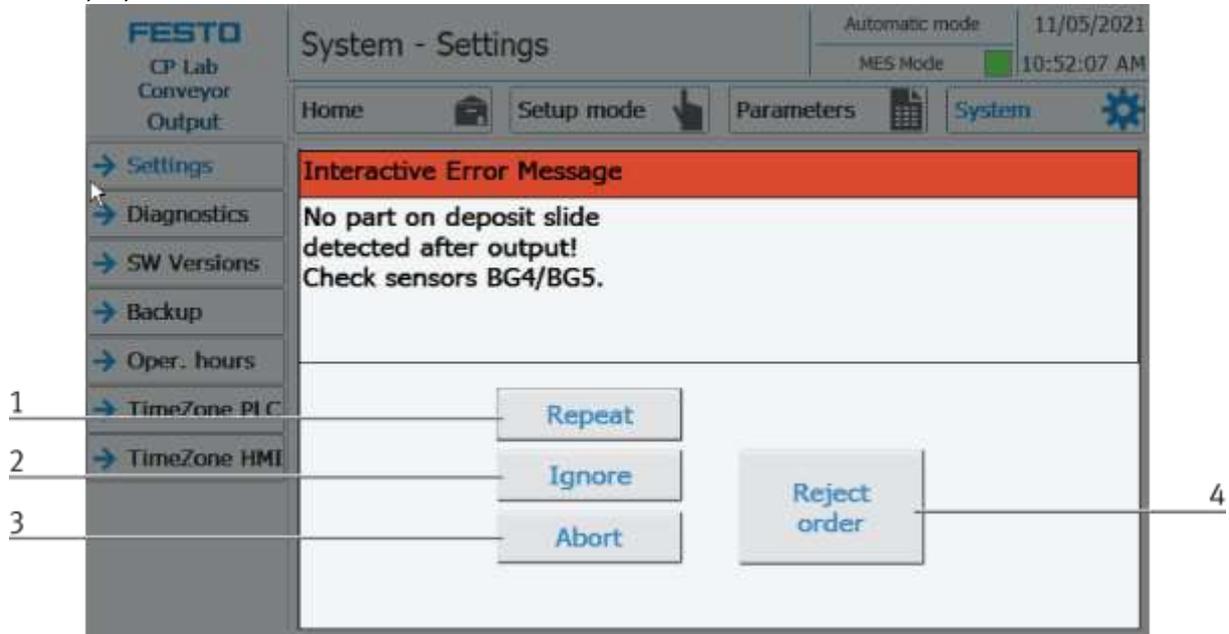
The Pop Up has four buttons.

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 Drilling

Value	Text	Fix error
1010	Wrong parameter for drilling program	Use correct drilling program
5013	Back cover already available	Remove back cover / check sensor BG8
5014	Front cover not available	Insert front cover / check sensor BG4
5015	Orientation of front cover is wrong	Turn / insert front cover the correct way / check sensor BG3

10 Spare part list

10.1 Electric parts

Description	Part number	Res.Ident	Use
Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG1	X-axis in left end position
Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG2	X-axis in right end position
Drilling machine 1	656874	MA1	Switch on drilling machine 1
Drilling machine 2	656874	MA2	Switch on drilling machine 2
Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG5	Z-axis in upper end position
Proximity sensor SMT-10M-PS-24V-E-2,5-L-OE	551373	BG6	Z-axis in lower end position
Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG3	0 = front cover inserted correctly
Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG4	1 = front cover present
Light guide unit D: SOEG-L-Q30-P-A-S-2L	8127556	BG8	1 = back cover already present
Light guide SOOC-TB-M4-2-R25	552812	BG3	0 = front cover inserted correctly
Light guide SOOC-TB-M4-2-R25	552812	BG4	1 = front cover present
Light guide SOOC-TB-M4-2-R25	552812	BG8	1 = back cover already present
I/O Module	8027412	XD1	
Clamps			
starting current limiter		QA3	Drilling machine 1
starting current limiter		QA4	Drilling machine 2

10.2 Pneumatic parts

Description	Part number	Res.Ident	Use
Valve CPVSC1-K-M5C	548899	MB 1	Move X-axis to the left
Valve CPVSC1-K-M5C	548899	MB 2	Move X-axis to the right
Valve CPVSC1-K-M5C	548899	MB 5	Move Z-axis upwards
Valve CPVSC1-K-M5C	548899	MB 6	Move Z-axis downwards
Valve CPVSC1-K-M5C	548899	MB7	Unlock clamping unit at Z-axis
X-axis linear drive DGC-12-120-KF-YSR-A	530907 – M608		
X-axis guided linear drive DGC-12-120-FA-P	530907 – M708		
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 mini slide DGSL-10-40-E3-Y3A	543905		
One-way flow control valve GRLA-M5-QS-3-LF-C	175053		
One-way flow control valve GRLA-M5-QS-3-LF-C	175053		
Clamping unit (integrated at mini slide)	543905		

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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