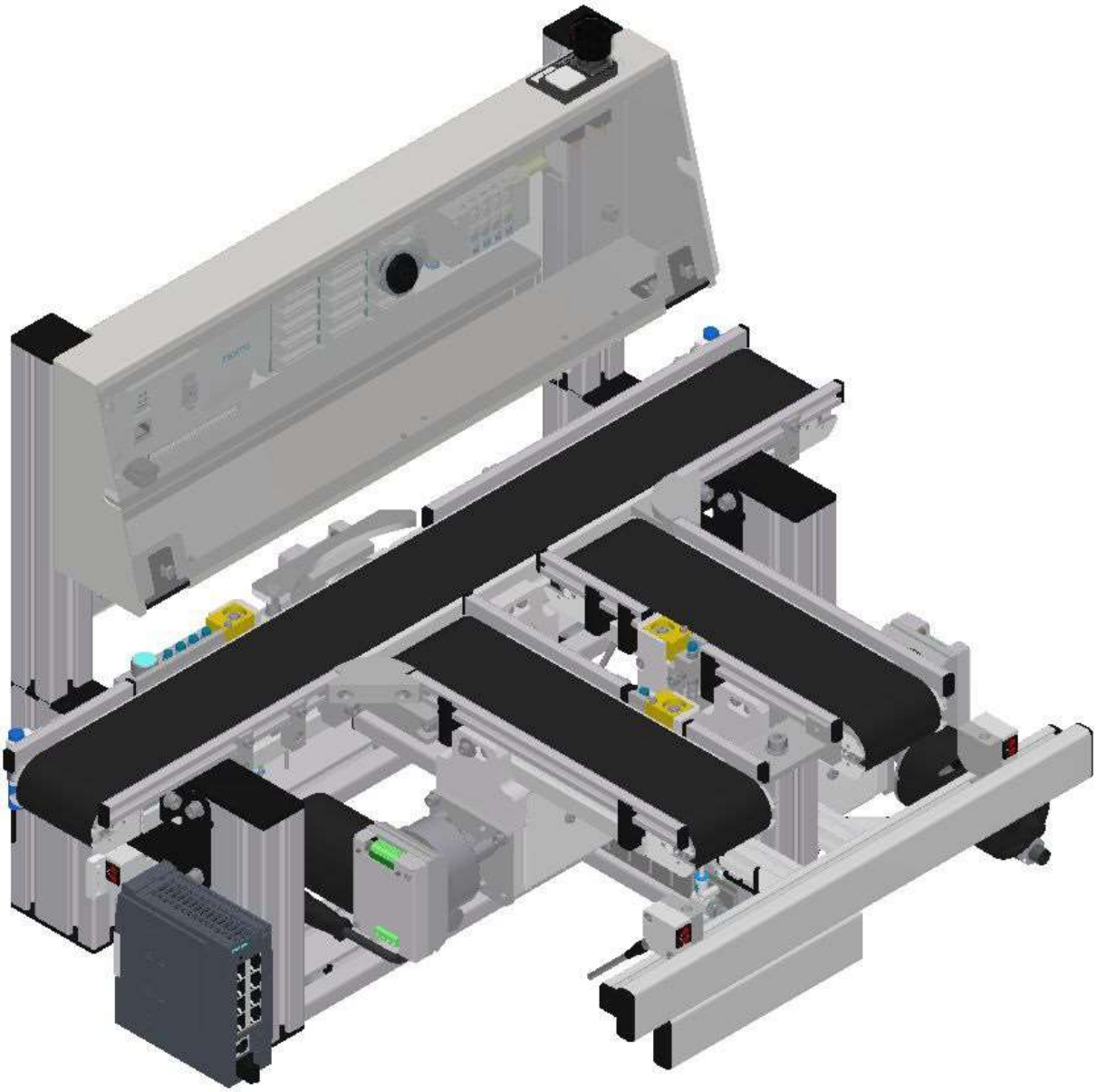
8058667

Branch

FESTO

CP Factory/CP Lab

Original operating instructions



Festo Didactic
8058667 en
04/2022

Order number: 8058667
Revision Level: 04/2022
Authors: Schober, Weiss
Layout: Frank Ebel
File Name: CP-L-BRANCH-GB-8058667-A001.doc

+49 711 3467-0
+49 711 34754-88500
www.festo-didactic.com
did@festo.com

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 – risk of entanglement

Warning – lifting heavy loads

Electrostatically sensitive devices

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

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 felelősségre 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) Šį atitikties deklaraciją 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 diesbetreffende 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 Beigesi tamamen üreticinin sorumluluğu altındadır. Belgede açıklanan obje, ilirliğin ilgili uyum mevzuatına uygundur.

EG-Konformitätserklärung
EU Declaration of Conformity
Декларация за съответствие на ЕС
Prohlášení o shodě ES
EF-overensstemmelseserklæring
Δήλωση συμμόρφωσης 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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Festo Didactic Ltée/Ltd

675 rue du Carbone
Québec, QC G2N 2K7
Canada
www.festo-didactic.com

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**
  - Product safety for the CP-Lab conveyor was evaluated as part of a risk assessment.
  - 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 Panel doors on underground control cabinet

Transparent, impact-resistant, polycarbonate plate with lock.
Can only be accessed with tool (control cabinet key); tool must be kept in a secure place!
Access reserved for qualified electricians.
The safety door is not monitored! Make sure the safety door is always closed.

4.13.2 Emergency stop

Every station contains an emergency stop mushroom actuator. All the emergency stop actuators in the system are interconnected. The emergency stop signal shuts off all the actuators. Operator confirmation is required to restart the system; there is no automatic restart.

4.13.3 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, 4.0 A safety low voltage (PELV)
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	810 mm
Width	415 mm
Height	289 mm
Weight	Ca. 35 kg
Subject to change	

6 Introduction

6.1 General information CP Lab system

The Festo Didactic Learning System is designed to meet a number of different training and vocational requirements. The CP Lab conveyor and the application modules of the system enable training and further education geared to operational reality. The hardware consists of didactically prepared industrial components.
The stations provide an appropriate system for practice-orientated education/classes of the following key qualifications

- Social competence,
- Technical competence and
- Method competence

Moreover, training can be provided to instil team spirit, willingness to cooperate and organizational skills. Actual project phases can be taught by means of training projects, such as:

- Planning,
- Assembly,
- Programming,
- Commissioning,
- Operation,
- Maintenance
- Fault finding and
- Trouble shooting.

This manual describes the handling of the CP Lab conveyor and the application modules. All necessary operations for operation are explained and described. In some cases, the facts are explained with the aid of graphics or pictures, which thus serve to facilitate communication.

The CP Lab system is developed for all apprentices who want to move something. It doesn’t matter if the education is for electro- or metal profession, for mechatronics, technician- or engineer education.

Concept

During technical lessons for pupils we use our simple models with O-ring drive. In the CP Lab system the material flow is realized with a common industrial belt. In industrial, automated production, special belts are essential part of the production system. Products with different measurements are transported on belts with different widths or on double belts.

Transfer system with modules

The transfer system is a modular system which consists of two essential components. First the CP Lab conveyor which can be equipped with different drive concepts and second the constitutive modules for topics like sensors, electrical positioning, handling, assembling, camera inspection, barcode scanning, RFID and many others.

6.2 Resources

The training equipment of the system consists of several resources. They are used depending on the process selection.
The following resources are available:

Pallet carrier / illustration similar

These pallet carriers are available for transporting the pallets.
Partnumber in MES - 31

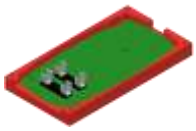
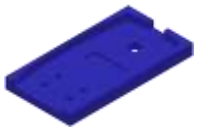
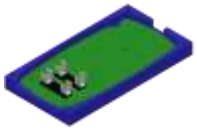
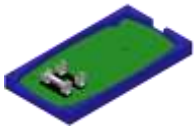
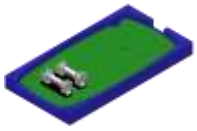
Pallet / illustration similar

These pallets are available for receiving always one workpiece.
Partnumber in MES - 25

Workpieces

The workpieces are differentiated according to the project into production parts and external production parts.

Workpieces	Description	Workpieces	Description
	CP raw material black No. 101		CP back cover blue No. 113
	CP raw material grey No. 102		CP back cover red No. 114
	CP raw material blue No. 103		CP – board No. 120
	CP raw material red No. 104		CP fuse No. 130
	CP front cover red No. 107		CP front cover black No. 210 – if there is a CNC milling machine integrated in the system, the front cover can also be produced there , thus becoming a production part.
	CP front cover blue No. 108		CP front cover black without fuses No. 211
	CP front cover grey No. 109		CP front cover black with fuse left No. 212
	CP front cover black No. 110		CP front cover black with fuse right No. 213
	CP back cover black No. 111		CP front cover black with both fuses No. 214
	CP back cover grey No. 112		

Workpieces	Description	Workpieces	Description
	CP front cover grey No. 310 – if there is a CNC milling machine integrated in the system, the front cover can also be produced there , thus becoming a production part.		CP front cover red No. 510 – if there is a CNC milling machine integrated in the system, the front cover can also be produced there , thus becoming a production part.
	CP front cover grey without fuses No. 311		CP front cover red without fuses No. 511
	CP front cover grey with fuse left No. 312		CP front cover red with fuse left No. 512
	CP front cover grey with fuse right No. 313		CP front cover red with fuse right No. 513
	CP front cover grey with both fuses No. 314		CP front cover red with both fuses No. 514
	CP front cover blue No. 410 – if there is a CNC milling machine integrated in the system, the front cover can also be produced there , thus becoming a production part.		CP black complete without board No. 1200
	CP front cover blue without fuses No. 411		CP part customer No. 1210 freely selectable
	CP front cover blue with fuse left No. 412		CP part black with no fuse No. 1211
	CP front cover blue with fuse right No. 413		CP part black with fuse on the left No. 1212
	CP front cover blue with both fuses No. 414		CP part black with fuse on the right No. 1213
			CP part black with both fuses No. 1214

7 Design and Function

7.1 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.

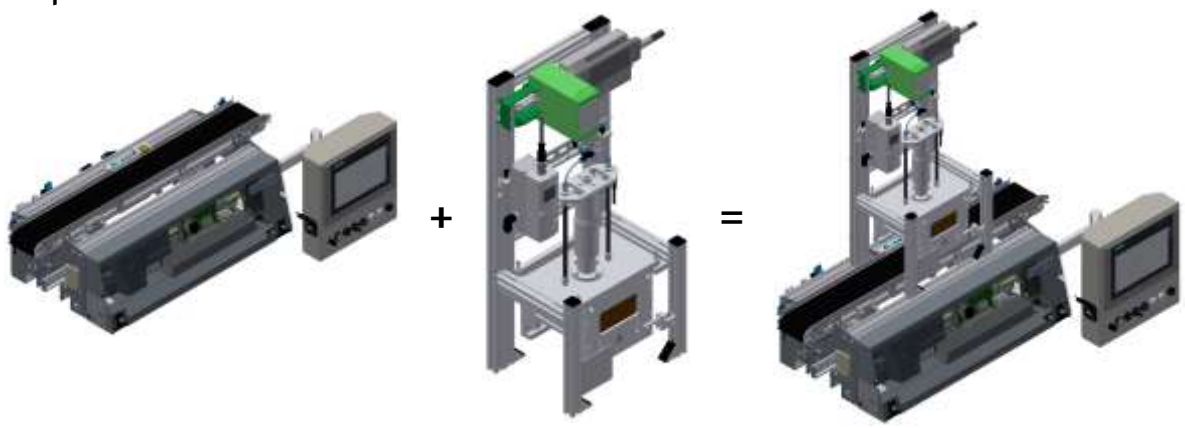
NOTE

- 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.

7.2 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



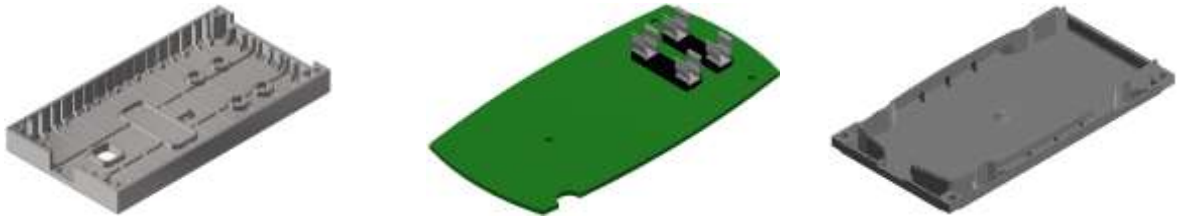
basic module, e.g. CP Lab Conveyor | application module, e.g. muscle press | station muscle press

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.



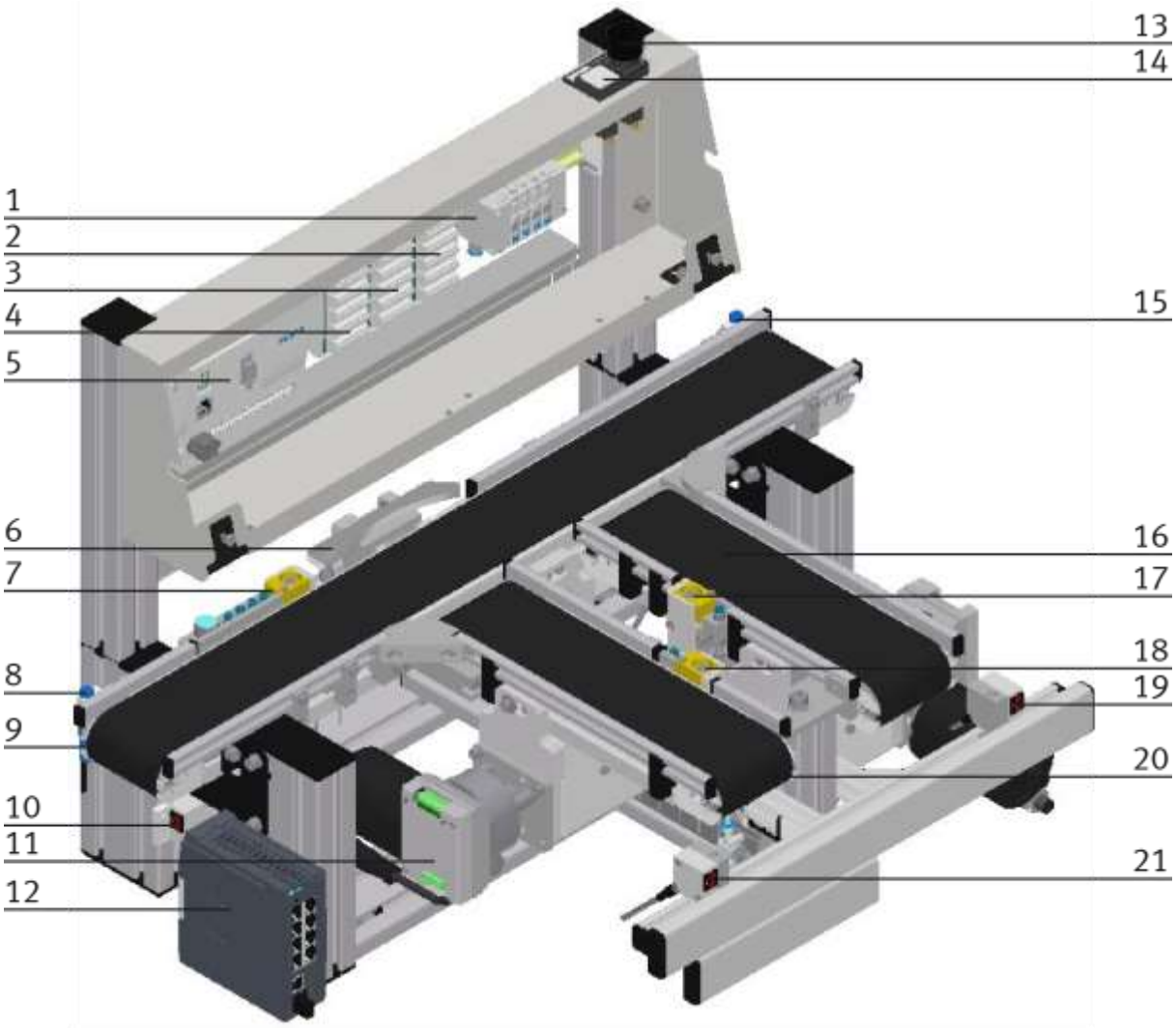
front cover | board | back cover

7.3 The CP Lab branch

The CP Lab switch consists of

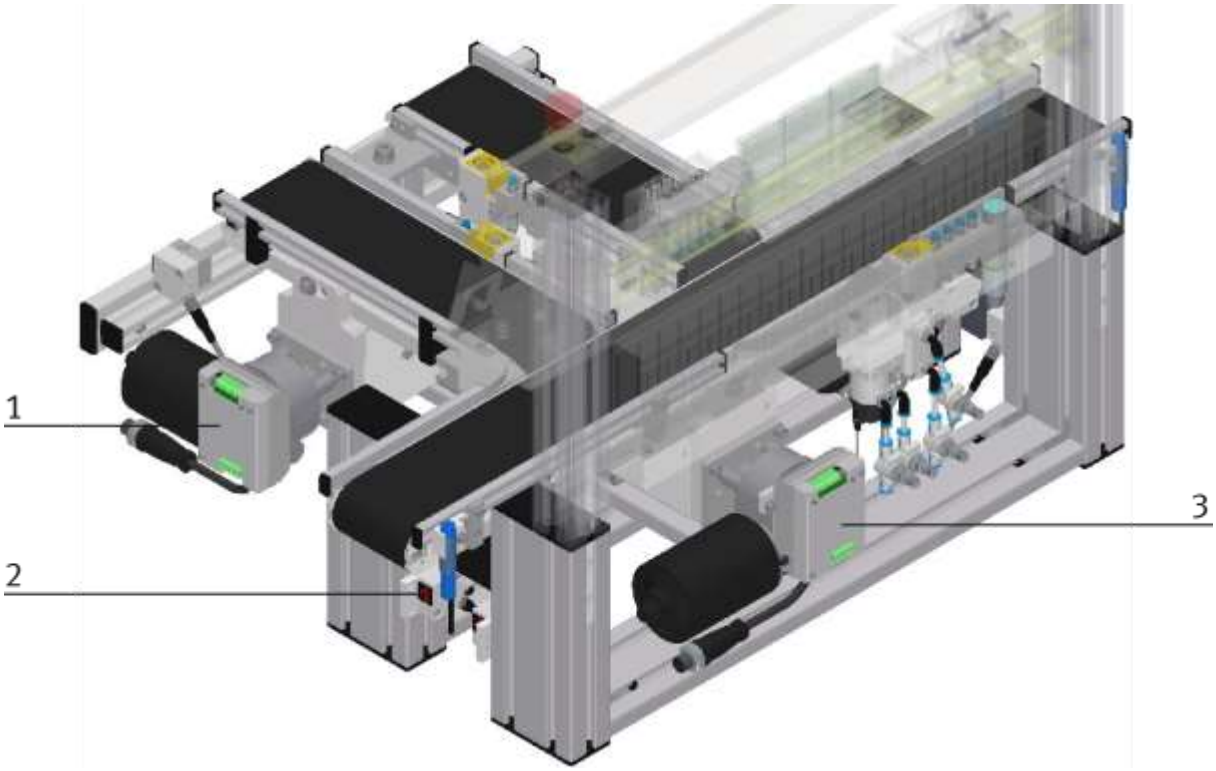
- a 80mm wide and 700mm long conveyor with a branch. The length of the branch is 300mm and consists of an executing and an introductory band.
- a base frame
- a control box for the control system and other electrical components
- Coupling sensors are located on the base frame to facilitate simple communication with other, directly connected CP Lab tapes.
- Capacitive sensors are located at the beginning and at the end of the CP Lab tape, which detect the pallet on the conveyor belt.
- A switch which can guide the goods carriers onto the conveyor belt or straight out
- three 24 V motors

The task of the CP Lab switch is to carry out warp carriers with and without workpieces on CP Factory Module or a Robotino. In addition, goods can be imported from CP Factory modules or from a Robotino into the CP Lab system.



CP Lab branch front view / illustration similar

Position	Description	Position	Description
1	Valve terminal	12	Scalance Ethernetswitch (option)
2	24V Power supply XZ3 – motor MA3	13	OFF button
3	24V Power supply XZ2 – motor MA2	14	Switch automatic on SF2
4	24V Power supply XZ1 – motor MA1	15	Capacitive sensor conveyor end
5	Festo PLC CECC-LK	16	Conveyor / insert conveyor
6	Branch	17	Insert stopper Q4MB4
7	Stopper main conveyor	18	Separating stopper Q4MB3
8	Capacitive sensor conveyor start BG13	19	Coupling sensor transmitter GF8
9	Conveyor / Main conveyor	20	Conveyor / separating conveyor
10	Coupling sensor forward station	21	Coupling sensor receiver KF8
11	Starting current limiter QA2 - motor MA2		



CP Lab branch rear view / illustration similar

Position	Description	Position	Description
1	Starting current limiter QA3 - motor MA3	3	Starting current limiter QA1 - motor MA1
2	Coupling sensor next station BG14		

7.4 Stopper unit

The stopper unit is located bevor the separating conveyor of the CP Lab branch. The carrier runs over the extended stopper unit. The screw (pos. 1 picture below) runs into the slot of the carrier. At the end of the slot the carrier is stopped.

With the help of the sensors at the stopper unit, the carrier can be identified. There are two ways for identifying:

- Variant 1
  It is identified by 4 inductive sensors; for this exercise, the carriers may be provided with grub screws at different positions.
- Variant 2
  The identity is read by the RFID sensor.

It is also possible to use the first of the inductive sensors for controlling; in this case the first grub screw is read and reports the position of the workpiece at the stopper.

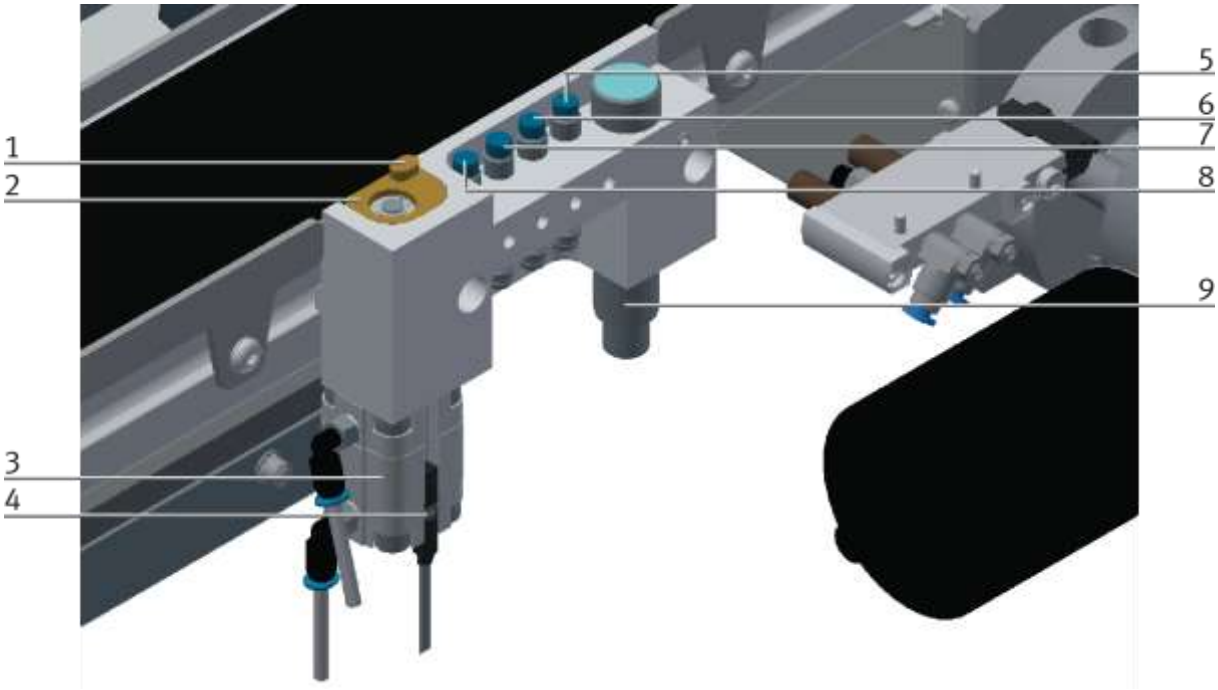
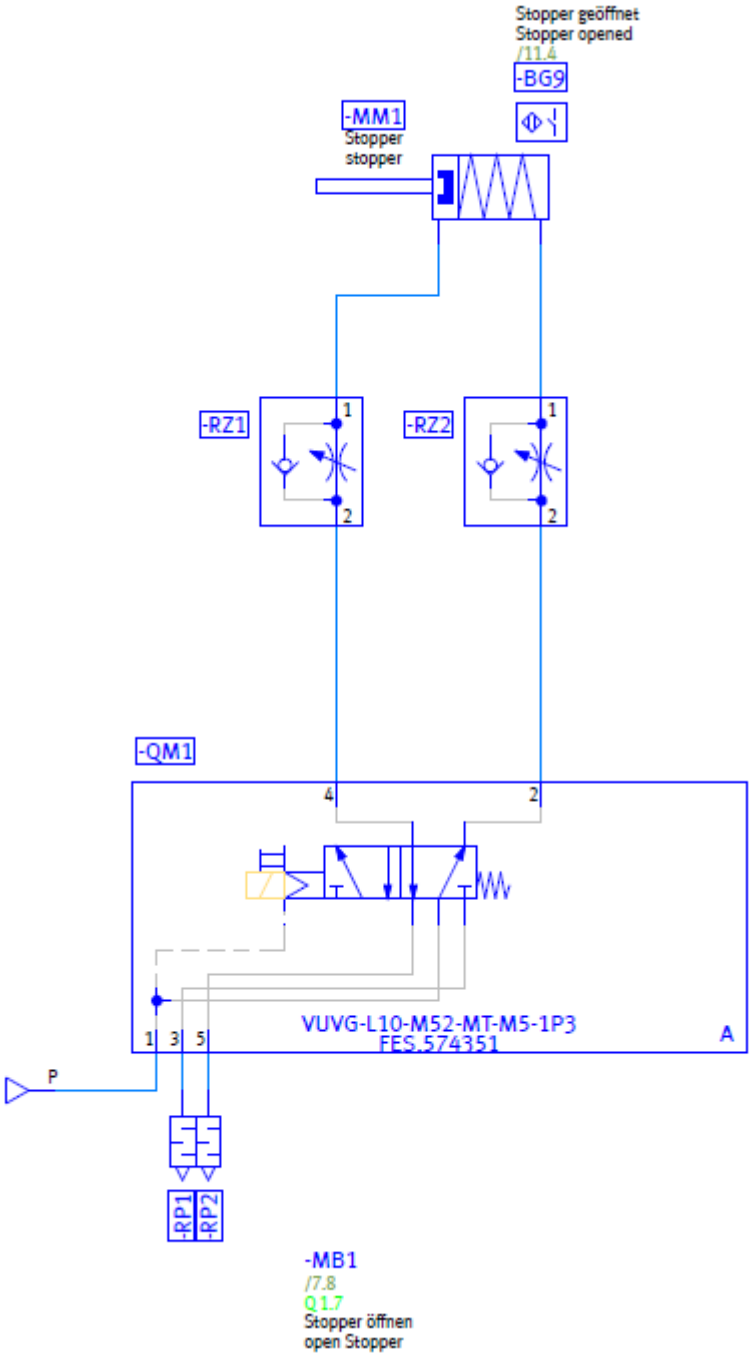


illustration similar

Position	Description	Position	Description
1	Stopper and guide for carrier	6	Inductive sensor 150395 / SIEN-M8NB-PS-S-L
2	Sprung stopper ratchet	7	Inductive sensor 150395 / SIEN-M8NB-PS-S-L
3	Stopper 157211 / AEVUZ-16-5-P-A	8	Inductive sensor 150395 / SIEN-M8NB-PS-S-L
4	Sensor for stopper retracted 574334 / SMT-8M-A-PS-24V-E-0,3-M8D	9	RFID read-write head M18 Siemens 6GT2821-1AC32
5	Inductive sensor 150395 / SIEN-M8NB-PS-S-L		

The CP Factory / Lab stop unit consists of

- 1 spring-return cylinder AEVUZ-16-5-P-A with 2 pneumatic connections
- 2 One-way flow control valves (exhaust air throttles)
- 1 monostable 5/2-way valve (VUVG-L10-M52-MT-M5-1P3)
- 1 brass element
- 1 spring



Set up:
In the internal thread of the cylinder piston rod, a hexagon socket screw with washer is introduced. The washer forms a positive fit with the brass element as long as the brass element is not pressed down by hand and the cylinder is in the home position. Between brass element and cylinder body a spring is inserted.
The cylinder is connected via two connections, each with a one way flow control valve. The one way flow control valves are connected to the monostable 5/2-way valve.
The use of the spring-return cylinder as a double-acting cylinder with a monostable 5/2-way valve is due to the following requirements for the stopper:

Stopper requirements:
- In the basic position the piston rod of the cylinder should extend.
- The speed for retracting and retracting the cylinder should be adjustable separately.
- Excessive noise during the extension and retraction movement of the cylinder should be avoided.
- In the event of compressed air or voltage drop, the cylinder must assume its basic position, ie extend.
- Compressed air and / or voltage must not lead to any hazard exposure.
- The extension of the cylinder must not exert excessive impact on an overlying carrier.
- The cylinder should be dimensioned as small as possible.

Analysis of the movement profile:
Situation:
In the depressurized state, the piston rod is in the upper end position due to the spring return, as it is a compact cylinder of the AEVUZ (pulling mode) series. Also, the brass element is in the upper end position, since due to the extended cylinder piston rod, the spring between brass element and cylinder body is relaxed.
Both the brass element, as well as the piston rod can be pressed down in the pressureless state. Brass element and piston rod then return to their normal position.

Compressed air connection / resistance:
As soon as the compressed air is switched on, the piston rod can no longer be pushed down by hand. However, the brass element already, since its position in the basic position of the cylinder depends only on the state of the spring between the brass element and the cylinder body.
The behavior with compressed air connection / resistance is comparable to the upward movement:

Upward movement:
The 5/2-way valve ventilates in the basic position, the lower chamber of the cylinder. The rising pressure in the lower chamber and the spring installed in the cylinder press the piston rod out of the cylinder housing until the upper end position is reached. In this case, the one way control valve -RZ2 allows the compressed air without throttling. The compressed air from the upper chamber escapes via the one way control valve -RZ1. This is therefore an exhaust air throttling. This allows the speed of the upward movement to be adjusted.
If no carrier is located above the stopper, the brass element also returns to its basic position. The upward movement of the piston rod relaxes the spring between the brass element and the cylindrical body during the movement. This also pushes the brass element upwards.

If a carrier is located above the stopper, the measuring element is pressed against the carrier by the force of the spring between the measuring element and the cylinder body. The spring force is low enough that the carrier is not pushed upwards and is strong enough for the measuring element to return to the basic position after the carrier has left the stopper.

Downward movement:
If the valve coil or manual control of the monostable 5/3-way valve is actuated, the valve changes to the working position. The lower chamber of the cylinder is vented through the throttle of the one way flow control valve -RZ2, while -RZ1 causes the compressed air to flow unimpeded into the upper chamber of the cylinder. This is therefore also an exhaust air throttling. Thus, the speed of the downward movement can be adjusted via -RZ2.
During the downward movement, the spring of the cylinder and the spring between the measuring element and the cylinder body are additionally pretensioned.

Monostable 3/2-way valve with throttling and single-acting cylinder
This variant can not be used since

- the speeds for the extension and retraction movement can not be set independently of each other
- due to the small size of the single-acting cylinder, a precise adjustment of the supply air throttle is made more difficult => noise
- In the case of small sizes of the single-acting cylinder with exhaust air throttling, no sufficiently large compressed air cushion can be built up in the chamber so that the mechanism of the exhaust air throttling has a positive effect

7.5 Branch

Illustration similar

Position	Description	Position	Description
1	Lever to separate carriers	4	One-way flow control valves inlet air 193967 / GR-QS-4
2	Turning cylinder 1565425 / DSM-T-6-90-P-FW	5	One-way flow control valves outlet air 193967 / GR-QS-4
3	Proximity switch 551373 / SMT-10M-PS-24V-E-2,5-L-OE Branch position straight BG1 Branch position separating BG2		

7.6 Connecting the CP Lab Switch

All sensors and actuators are permanently wired to the controller and do not have to be connected. Communication is via Ethernet directly with the PLC.

7.6.1 Pneumatic commissioning

The mechanic mounting must be finished and completed. At first you have to connect the CP Lab branch to the pneumatic system of the room. The corresponding service unit has to be provided by the customer and should be placed right next to it. The quick coupling plug has got a nominal size of 5 mm. If the local system has got a nominal size of 7.9 mm, it is possible to exchange the quick coupling plug of the service unit for a bigger one (adapter 1/8 to 1/4 necessary).
Now the station can be supplied by 6 Bar and the pneumatic commissioning is completed.
The connection is made at the valve terminal (1)

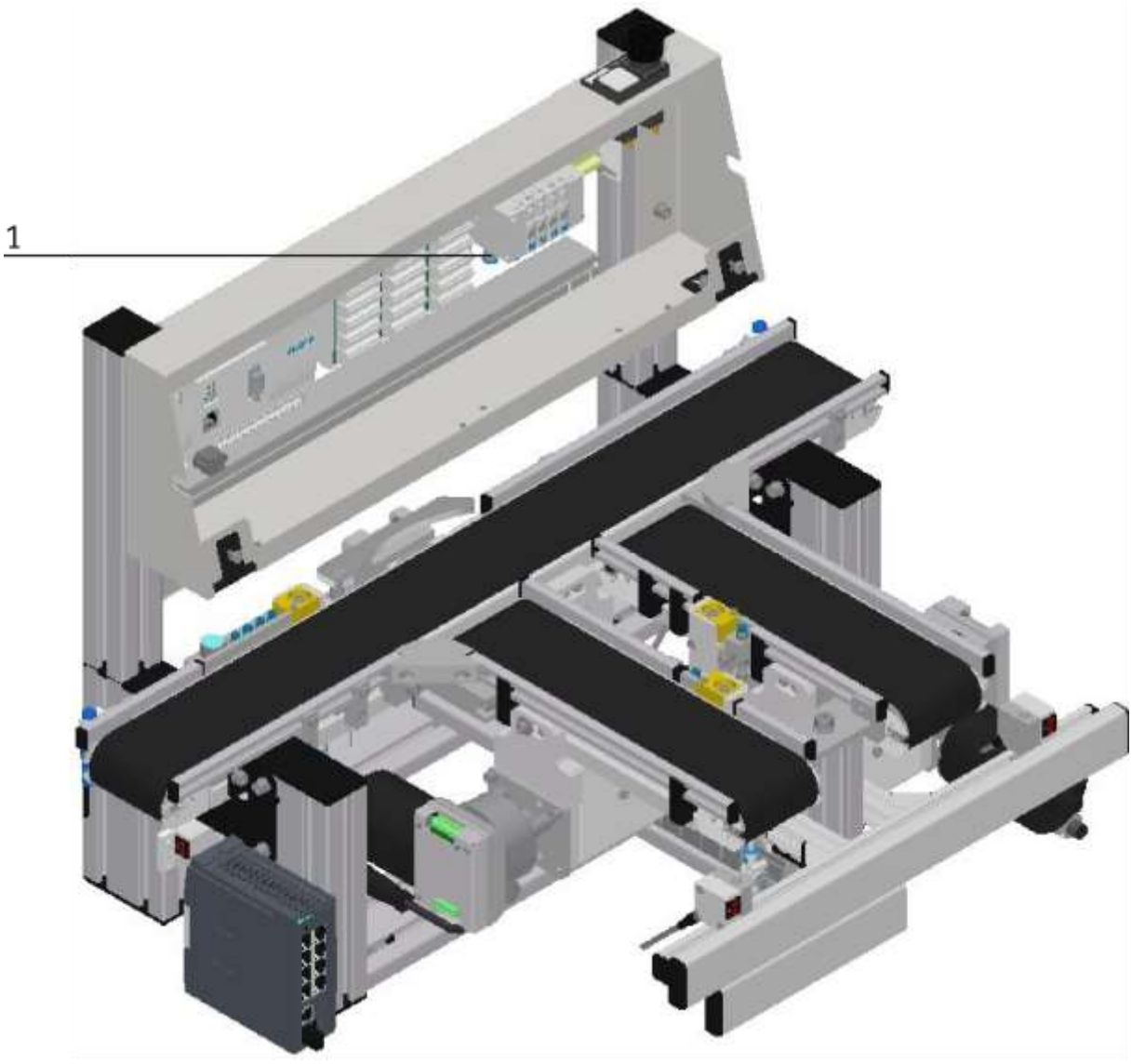


Illustration similar

7.6.2 Electrical commissioning

Now the CP Lab branch has to be supplied with electrical voltage (24V). The controller gets its voltage from the XZ1 and is hard-wired.

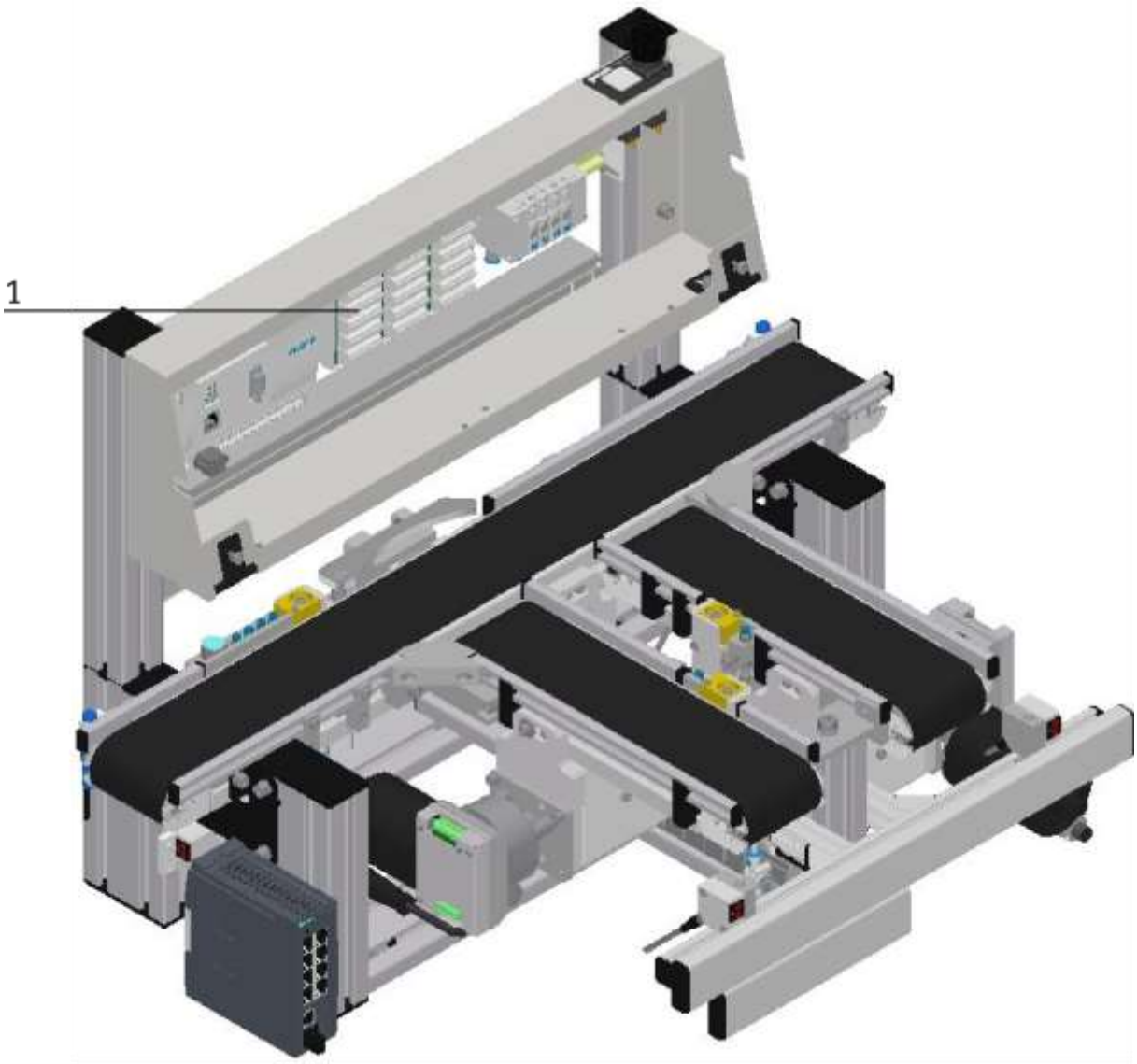


Illustration similar

The power supply is connected to the XZ1 (1). The voltage is 24 V.

XZ1:X1- 24VB

XZ1:X2 - 24VA

XZ1:X3 – 0V

XZ1:X5 - PE

7.6.3 OFF button system

The CP Lab branch is equipped with an OFF button. The OFF button is connected to the PLC via a 2-pin cable. Cable (1) from stop to PLC is hard-wired.

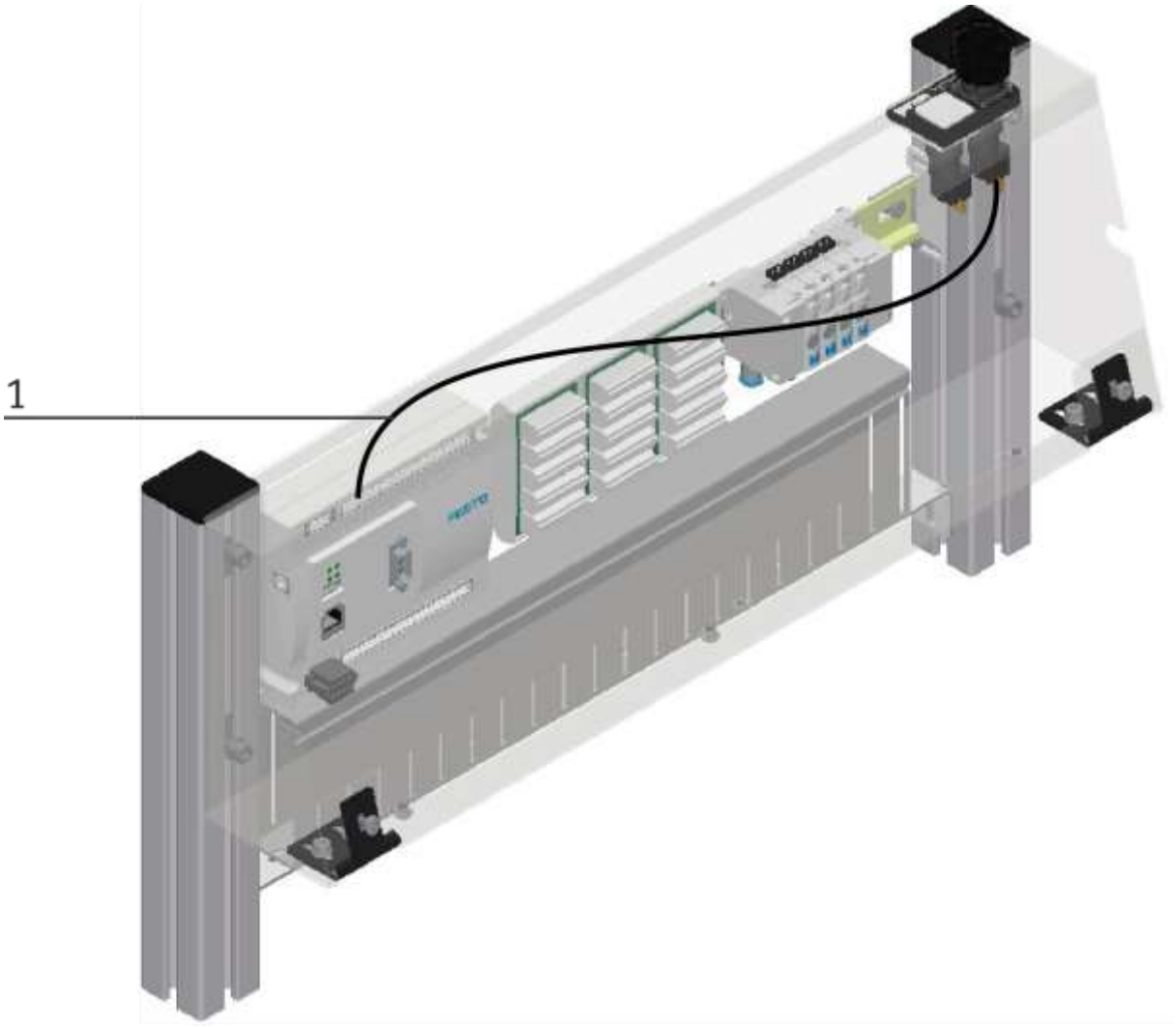


Illustration similar

8 Operation

The CP-Lab switch has no operating functions. The station is set to automatic mode by means of the automatic switch. The control system is adopted by MES.

⚠ WARNING

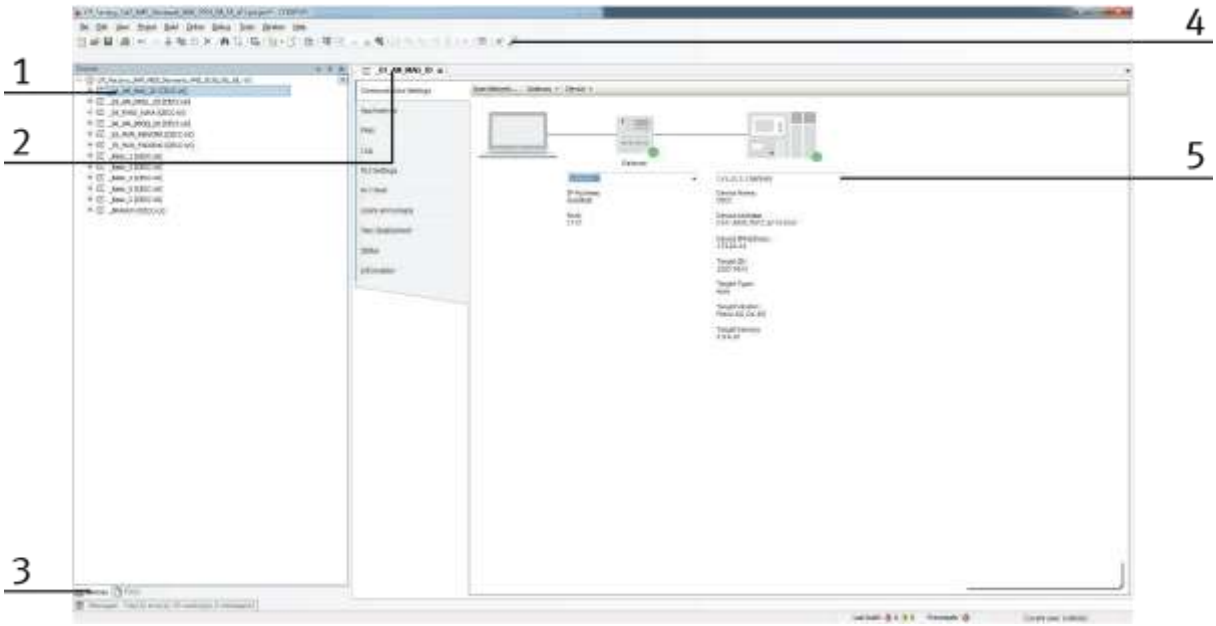
- **Danger of being pulled in at the conveyors**
  - When the automatic mode starts, the belts of the conveyor belts start to move, creating a risk of being pulled in.
  - When starting, do not stand directly at the ends of the belt or hold on to them, keep enough distance.
  - Failure to heed the information given can lead to injuries.

8.1 Start the automatic sequence

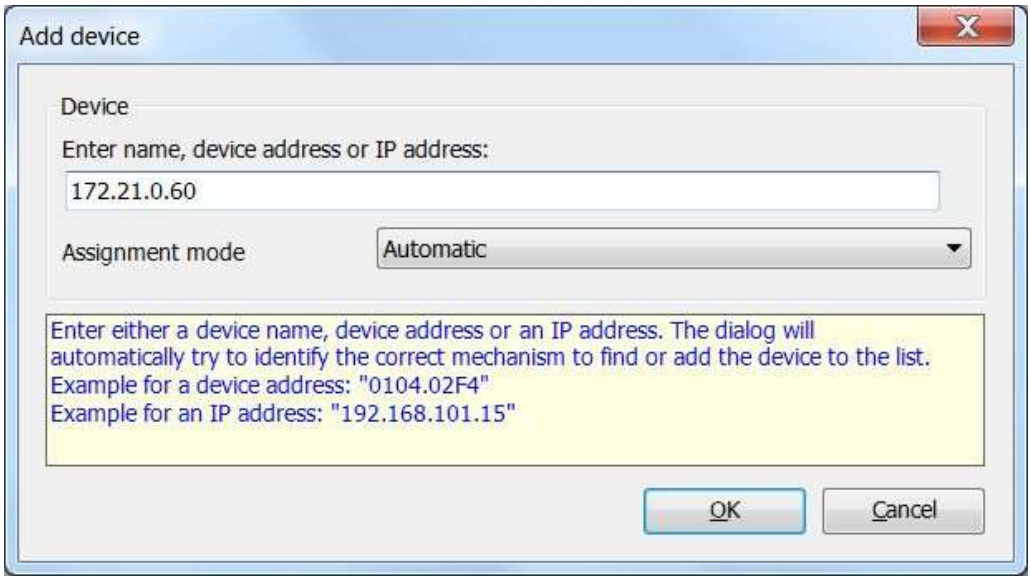
1. Unlock the OFF button
2. Press automatic button

8.2 Software Festo

8.2.1 Find and select the PLC

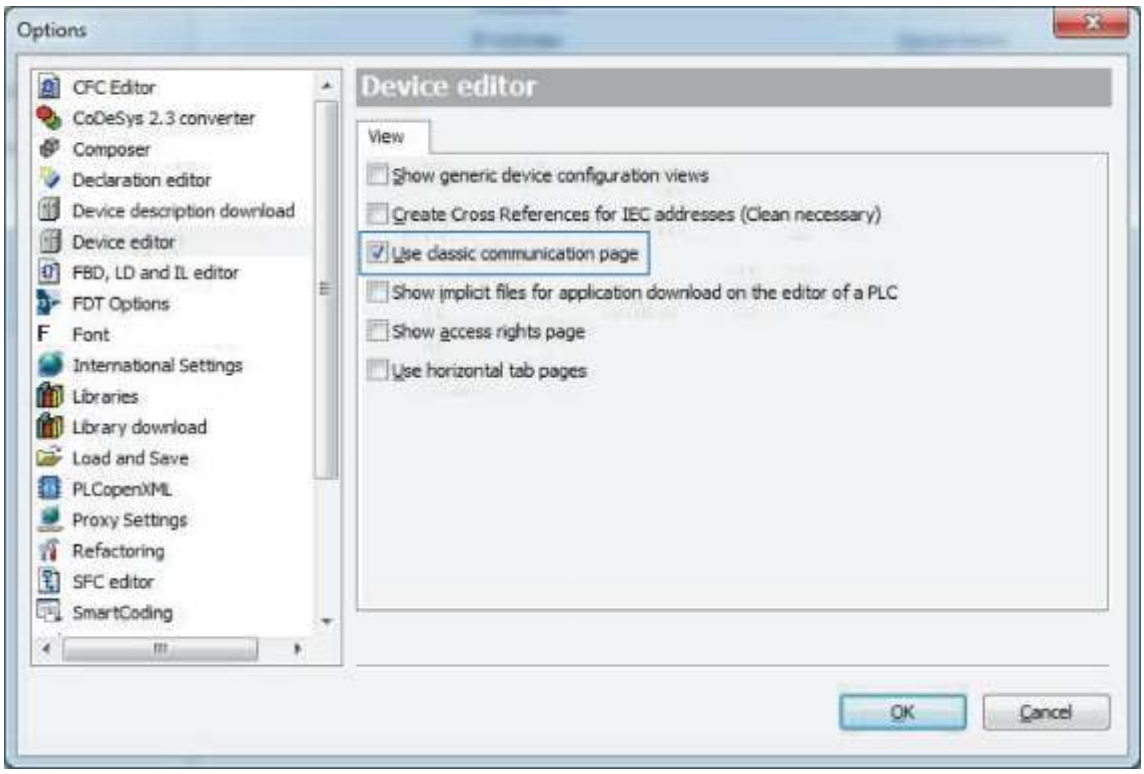


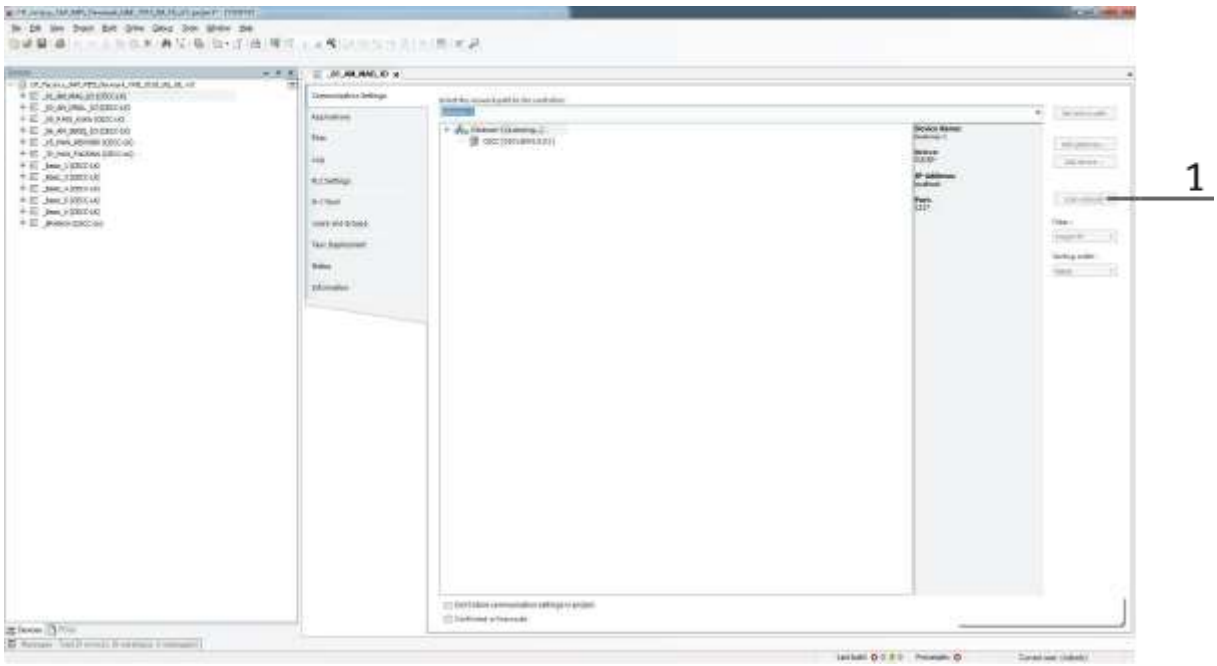
Position	Description
1	Step 1: Double click in this field
2	Step 2. Device window
3	Devices announcement
4	In case Festo Field Device Tool is installed, the devices can be found with this tool
5	Step 3: Type IP address here



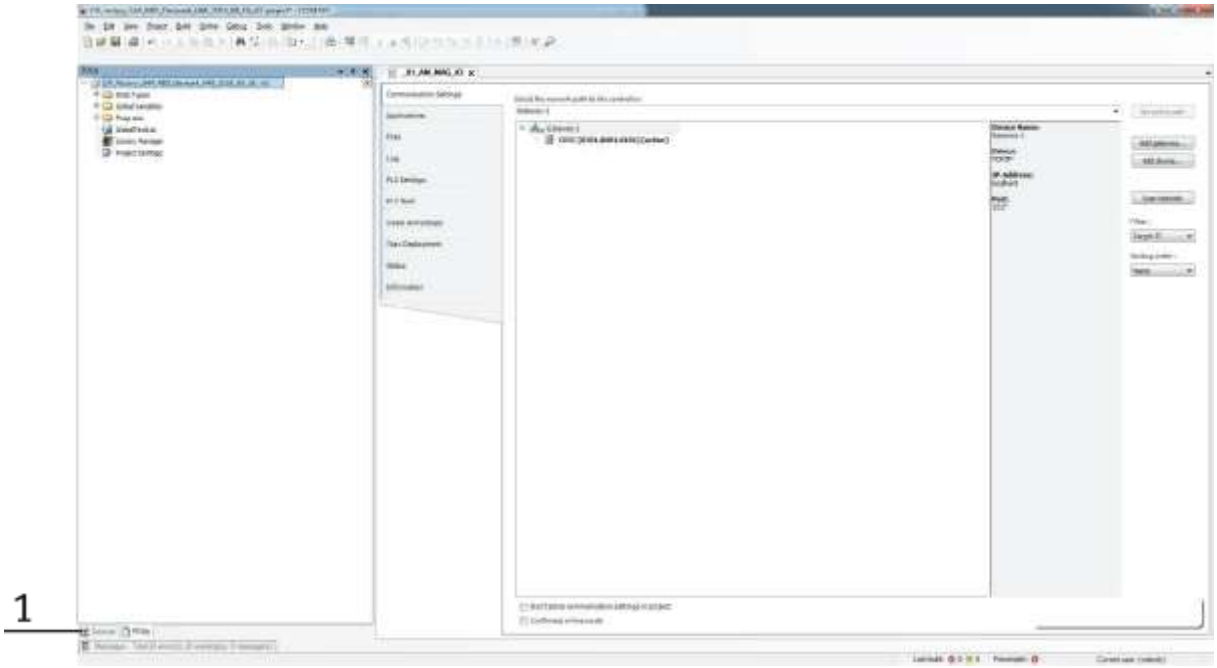
Insert IP Address and confirm with OK.

The view for the Device can be changed in Tools --› Options --› Device Editor

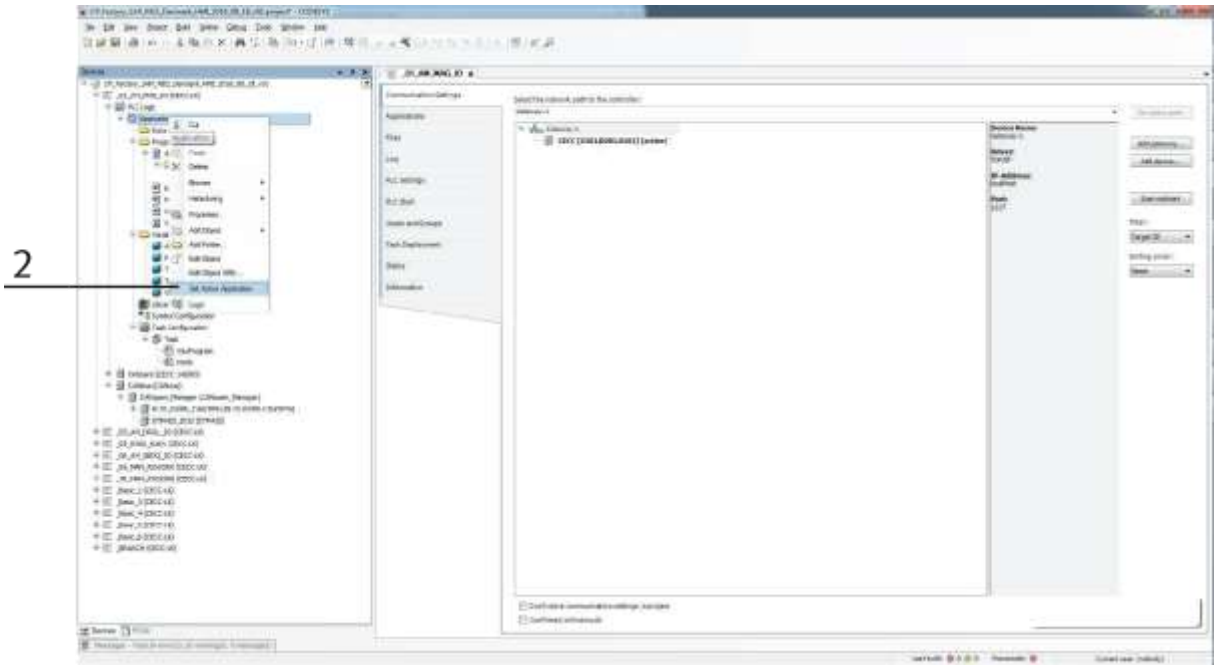




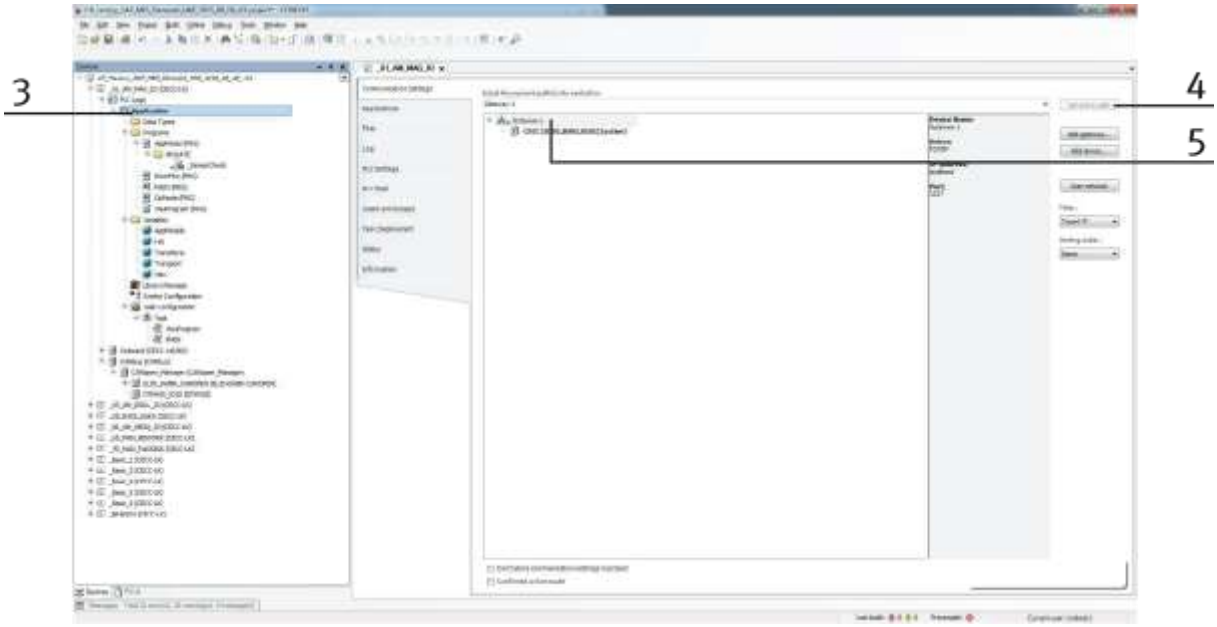
1. Scan network to find devices.



1. POUs window: the project elements here will be downloaded to all devices

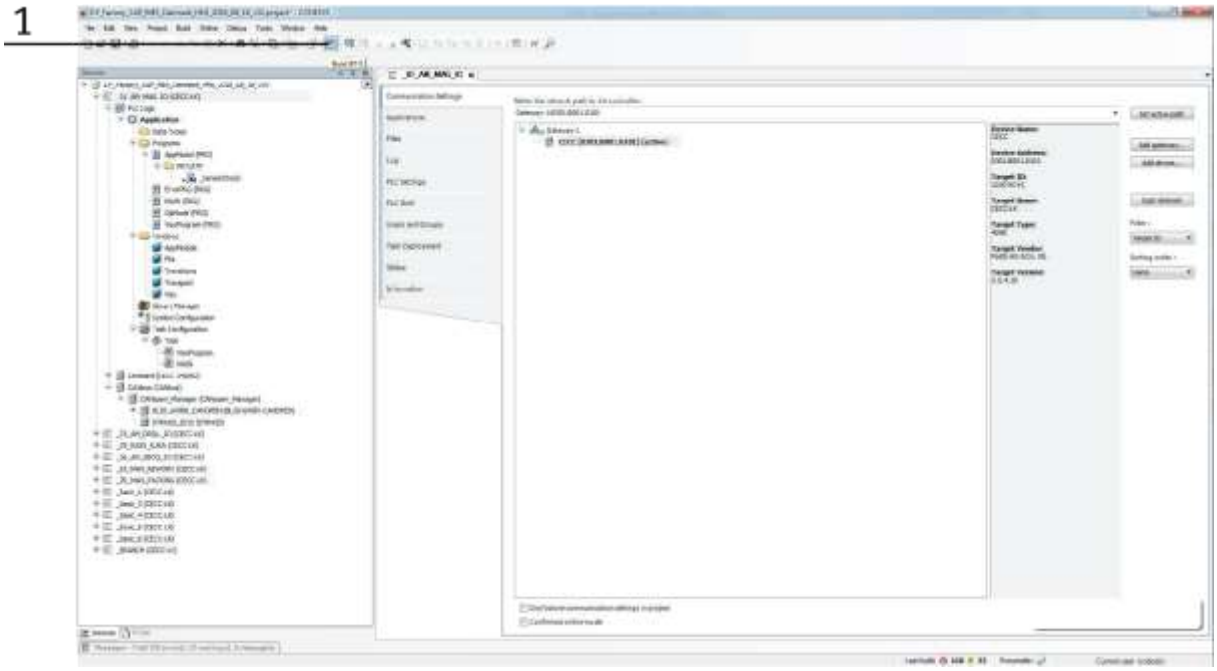


1. In the Devices window, open the required device, right click and set as active application

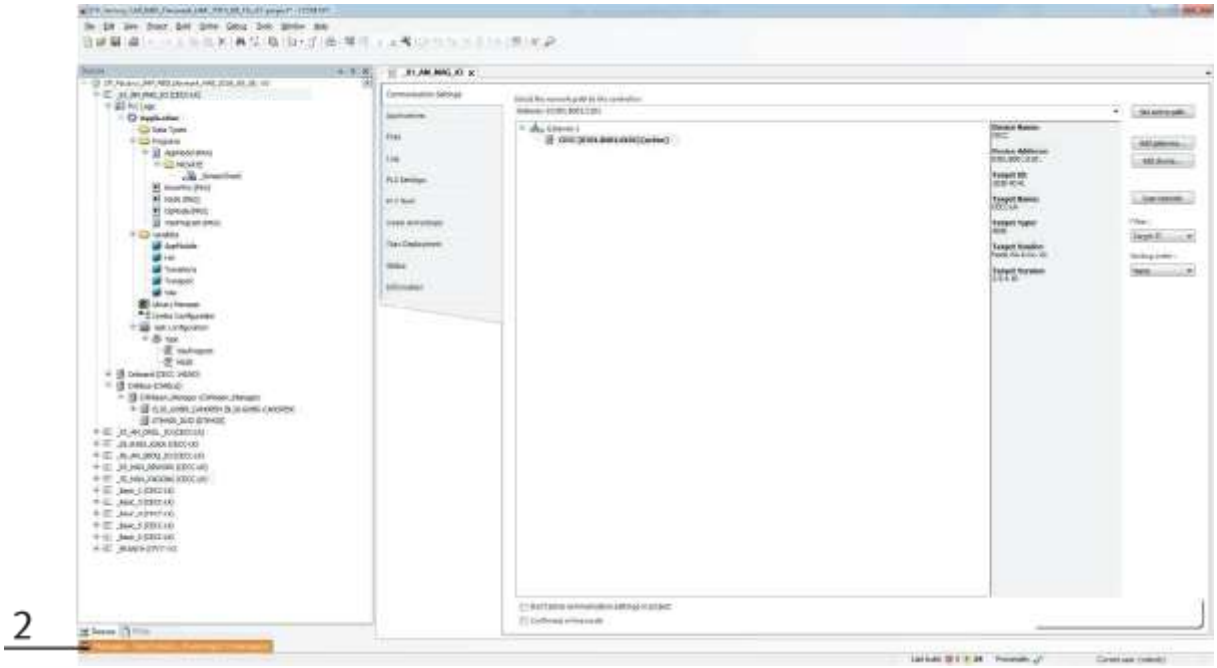


2. Then the title becomes dark.
3. Finally, choose the right device and set as active path as well.
4. The title of the chosen device becomes dark.

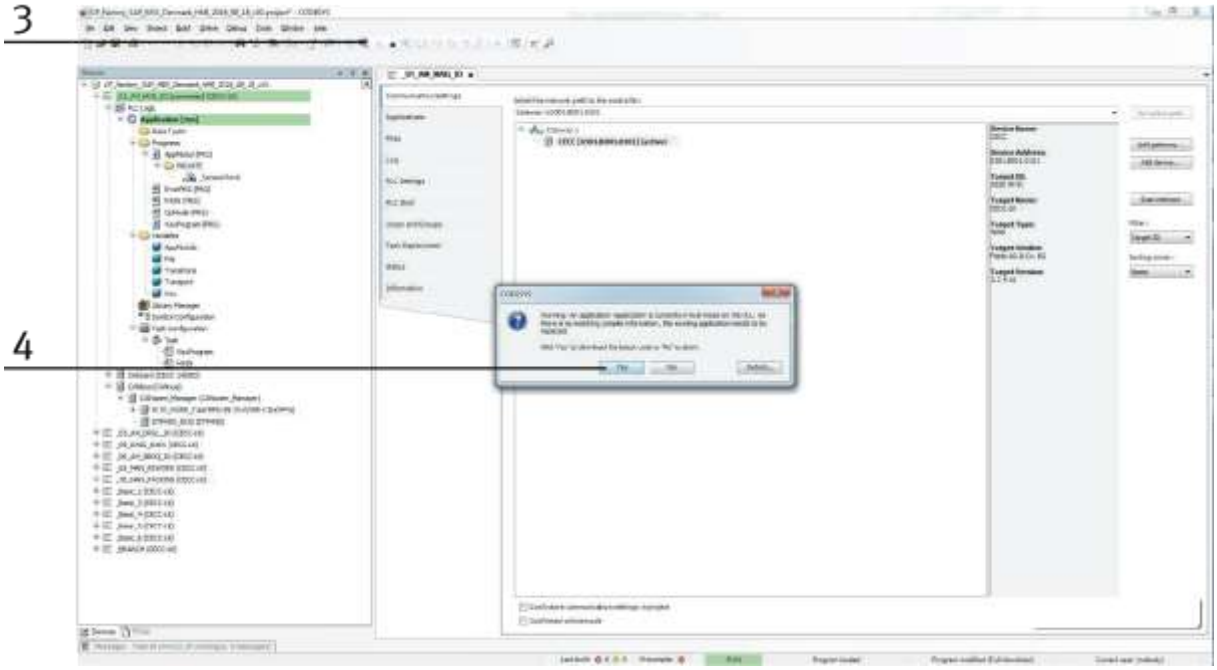
8.2.2 Download the project



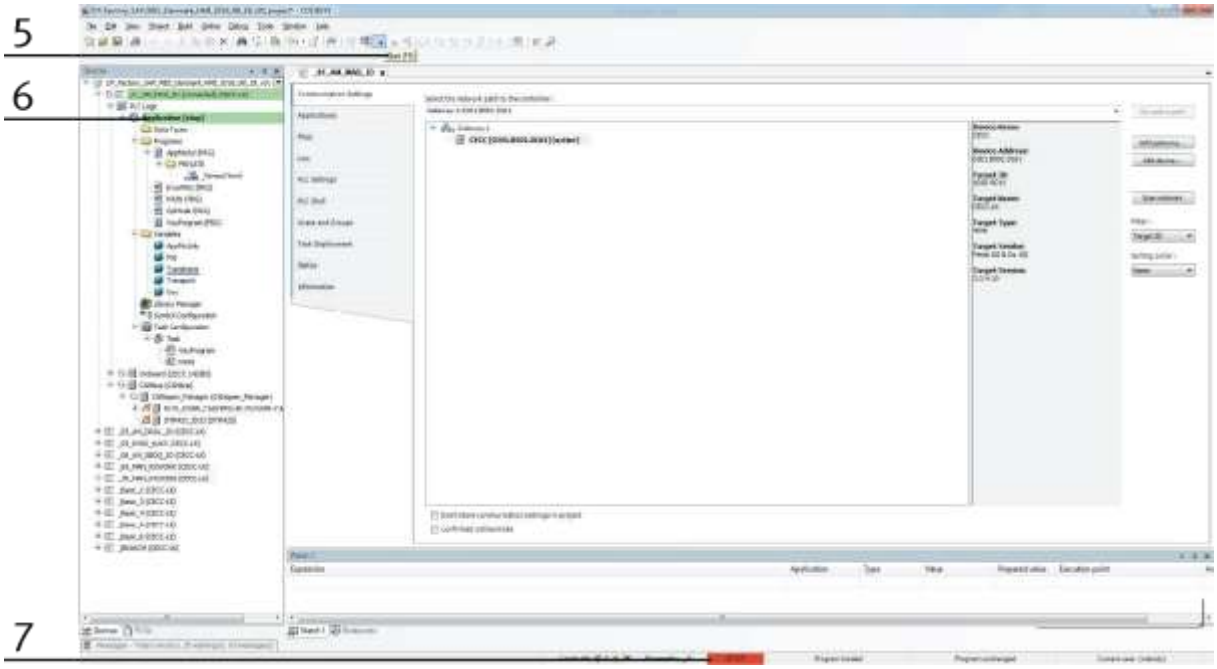
1. Click on the build button (F11)



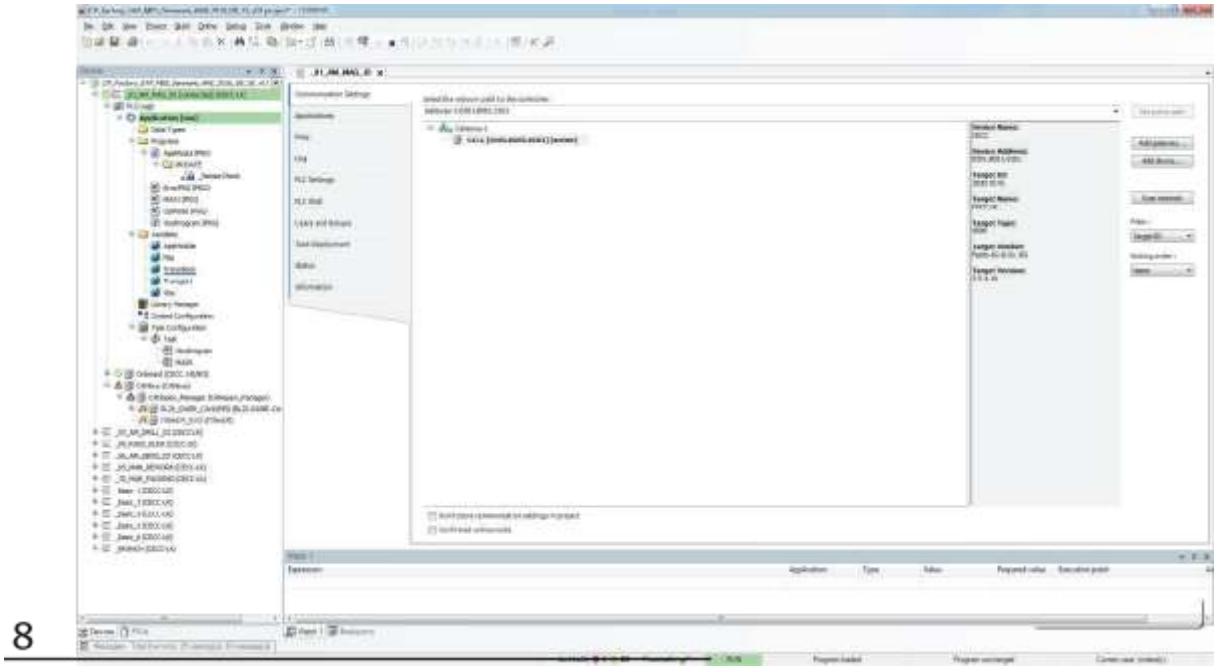
2. No errors



3. Click on the login button or Online --› Login
4. This is downloading the project as well

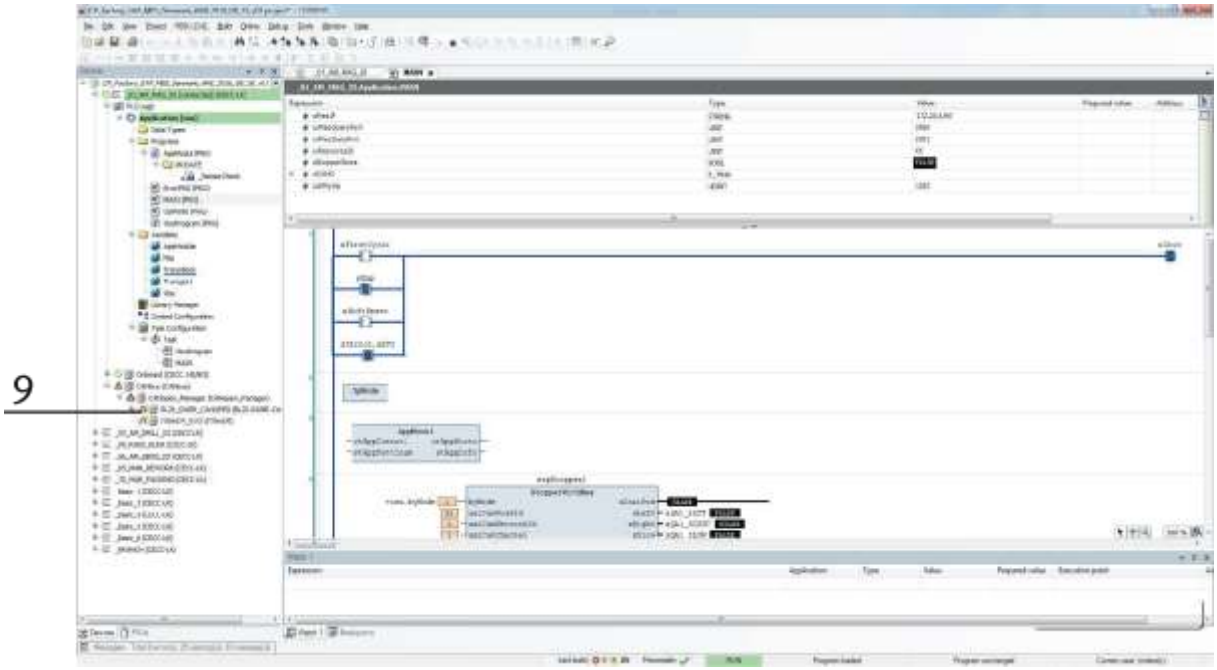


5. After downloading the project, the PLC always in stop mode (7)
6. The green colour shows that the PLC is logged in (4)
7. Then click on Start (5)

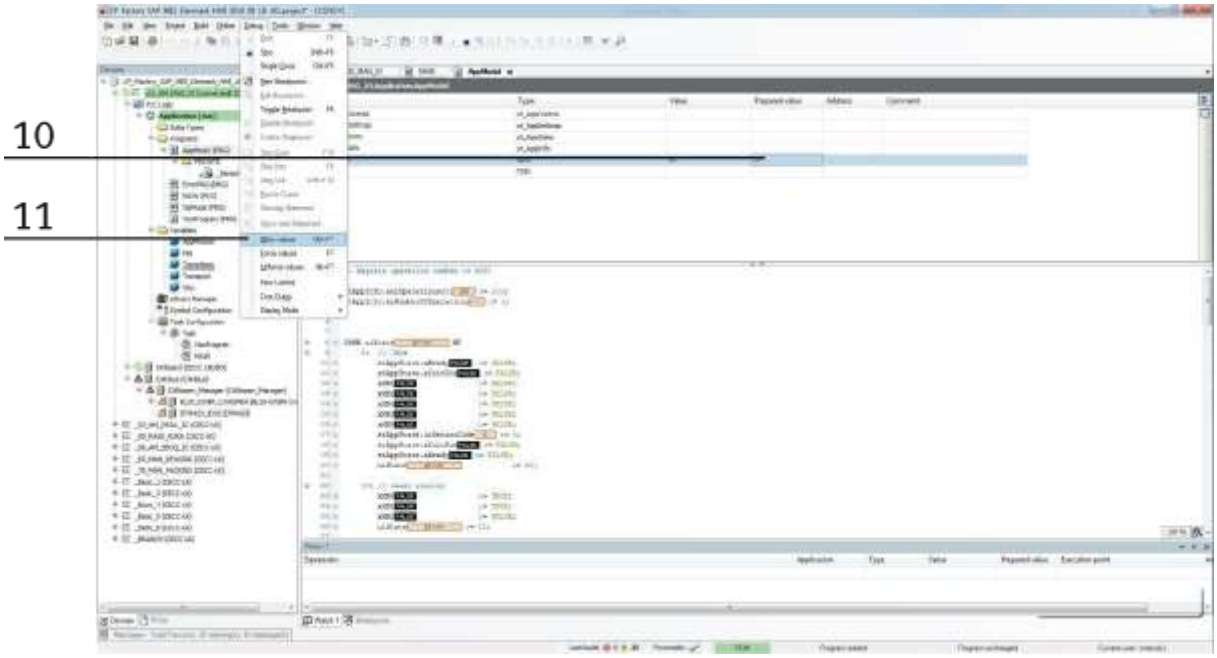


8. PLC is running

After logged in the PLC always in debug mode: the state is visible in runtime

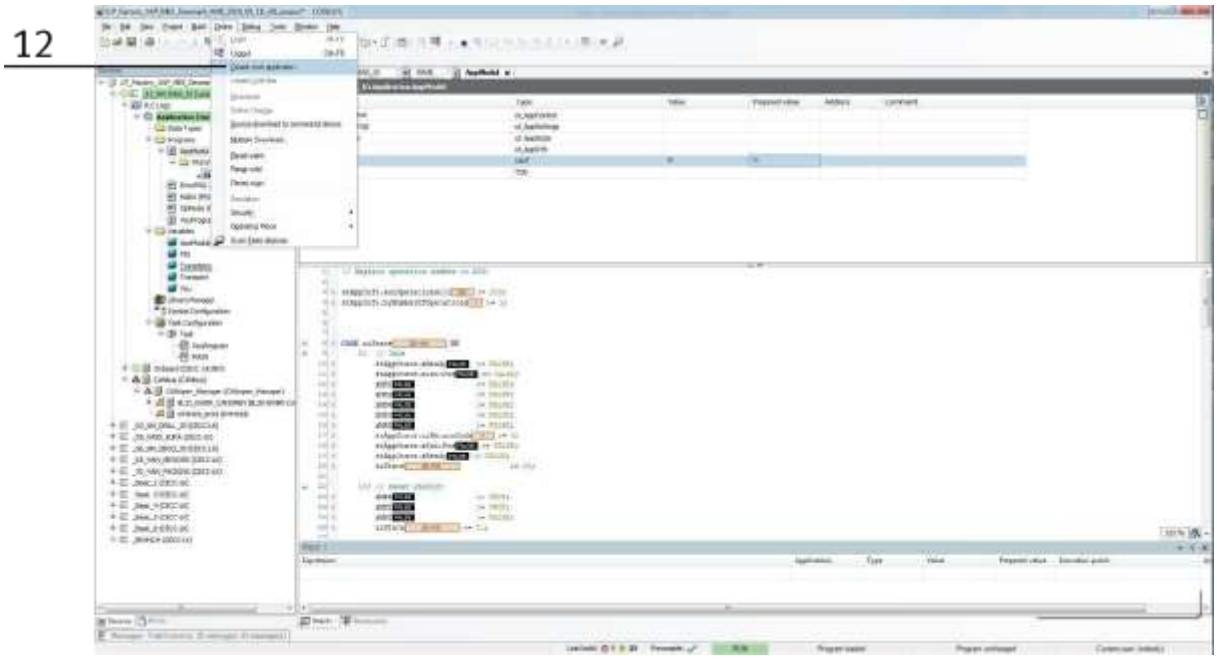


9. Wrong hardware configuration shown with a red triangle



10. Variable values can be changed by writing it in to the “Prepared value” cell
11. Then Debug--› Write values
    This loading all the values which are written into the “Prepared value” cell

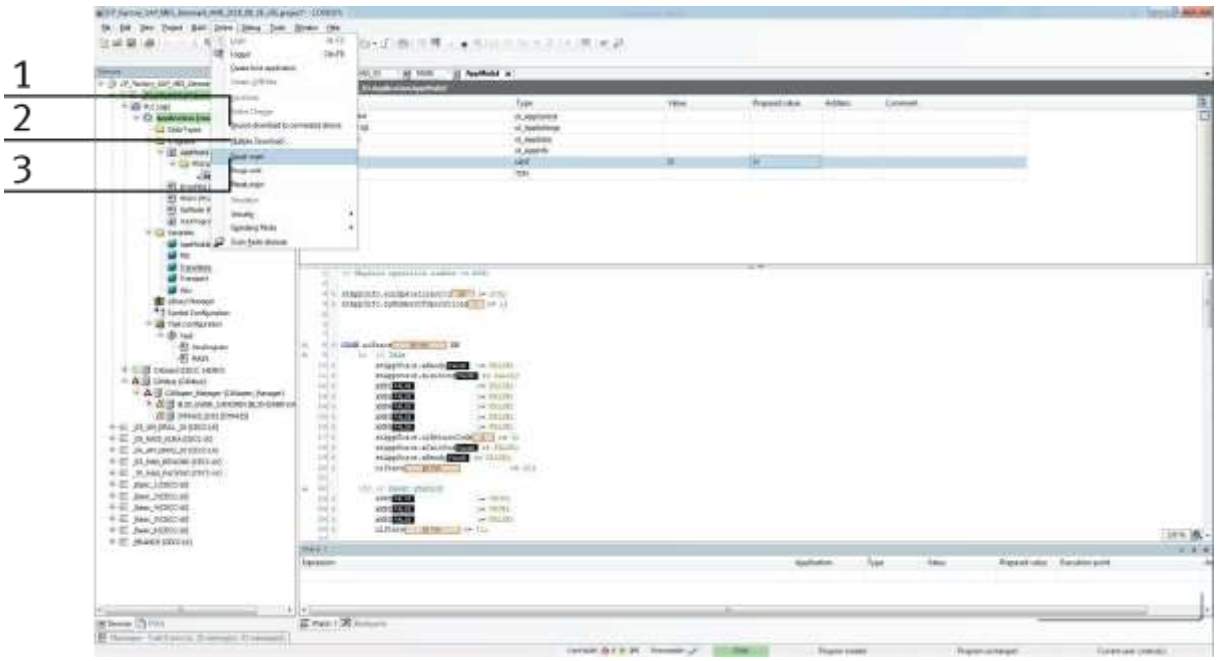
After the project downloaded and the PLC shutdown, the project is lost. To keep the project on the PLC at the next startup, a boot application should be created



12. Create boot application: this project will be start at the next startup of the PLC

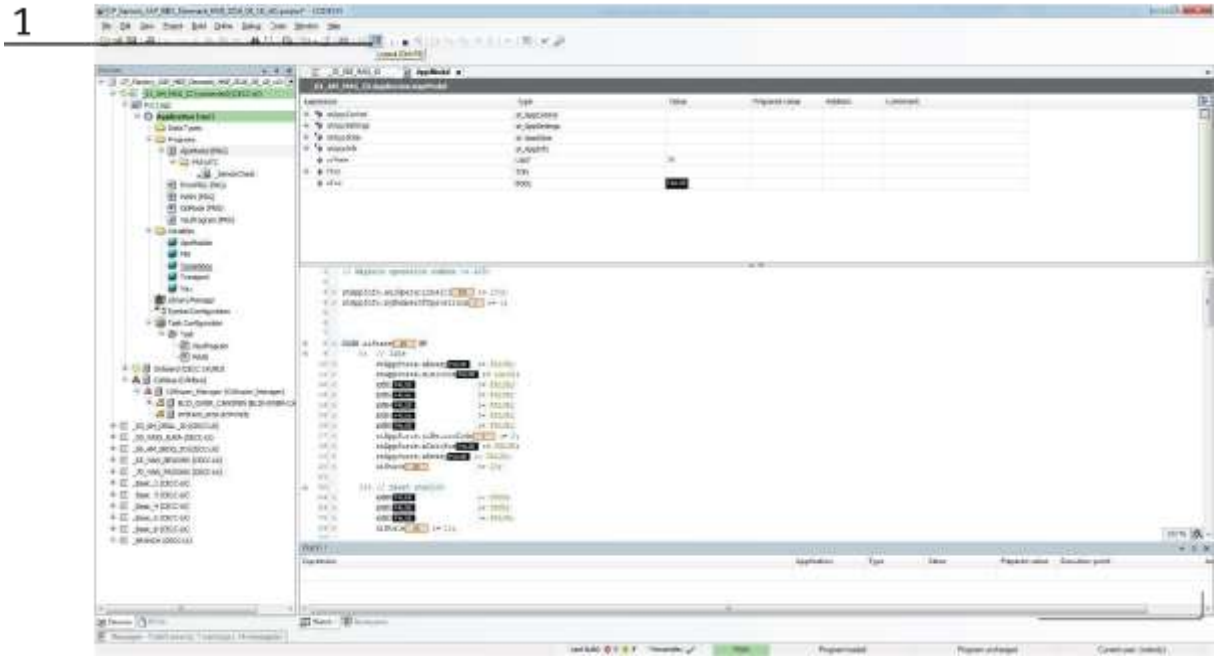
(In case the boot application is not used, and a mistake appears in the code, by switching off and on the PLC, the original project will be restarted)

8.2.3 The PLC can be reset



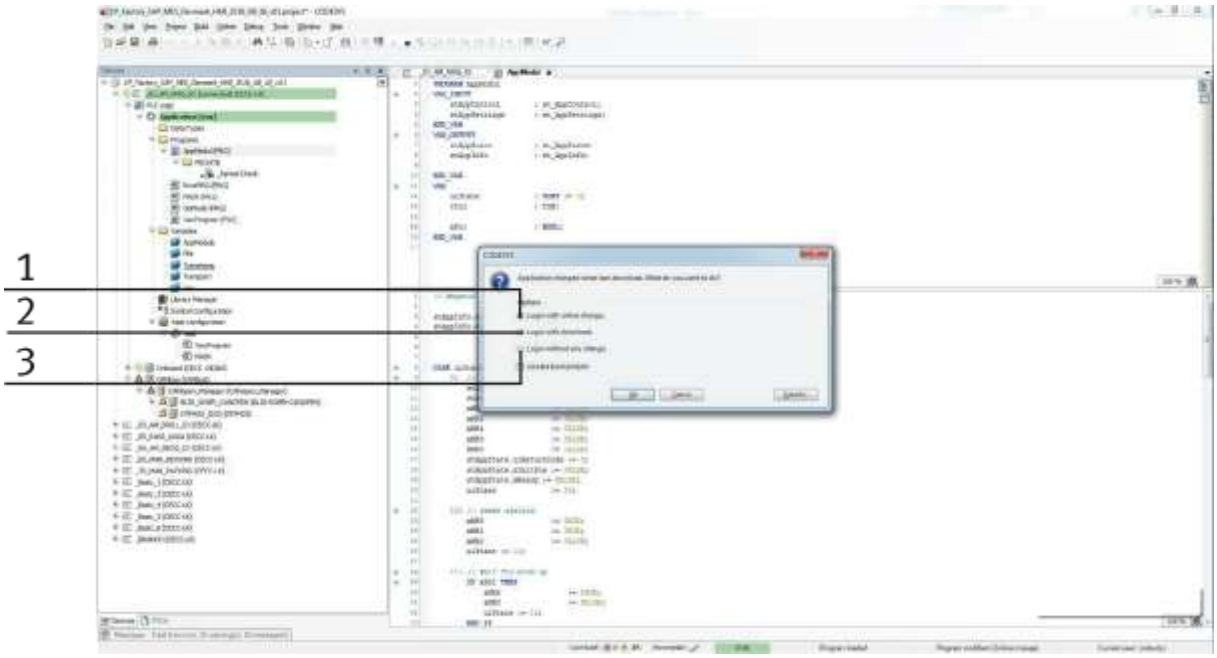
1. Reset warm: just reinitializing the variables – mostly used
2. Reset cold: restart the PLC
3. Reset origin: clears the project from the PLC

When the program needs to be edited, it has to logout from the PLC

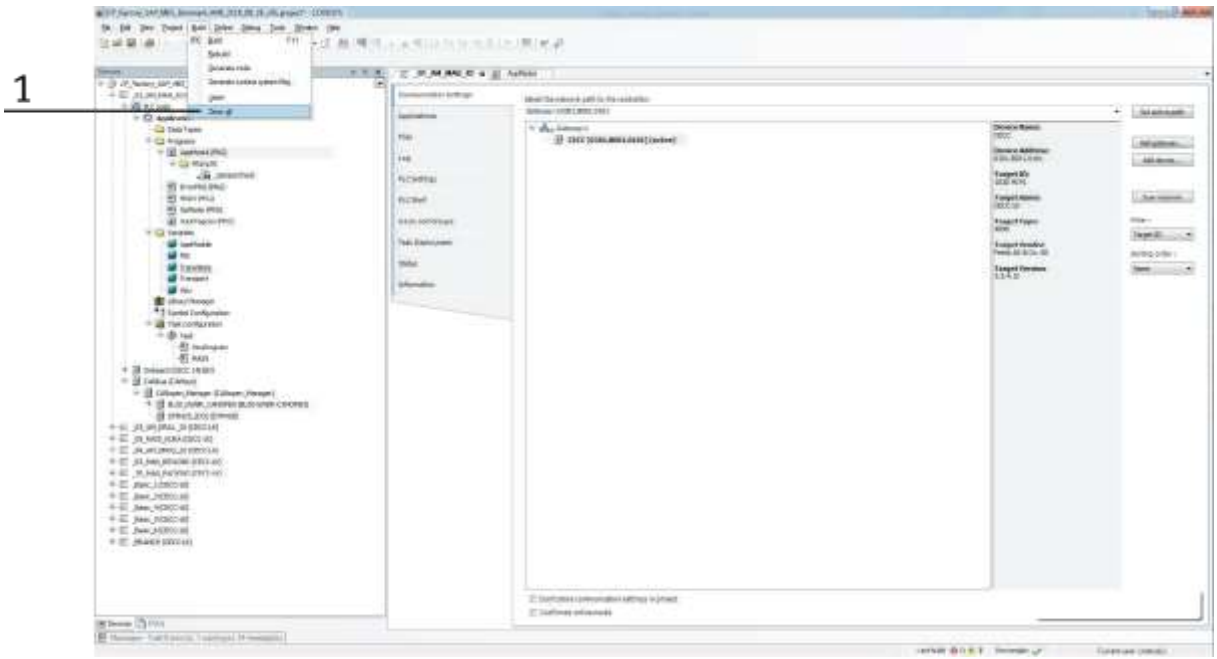


1. Logout button

If the project is downloaded into the PLC and just some small changes has been done, the following message window appears:



1. Keeps the variables in their original values and the changes are done as well
2. Downloading the project and reinitializing the variables
3. Logging into debug mode without the changes



1. In case there are pointers or other special tools used in the project, after editing the code, a “Clean all” is recommended. This recalculates the memory allocation.

9 Components

9.1.1 RFID Read/Write system

The RFID read-write head describes and/or reads the data from a RFID data storage medium which is located on the bottom of the carrier. Any information concerning the workpiece can be read or transmitted.
The read-write head is directly connected to the I/O link of the ET200SP.

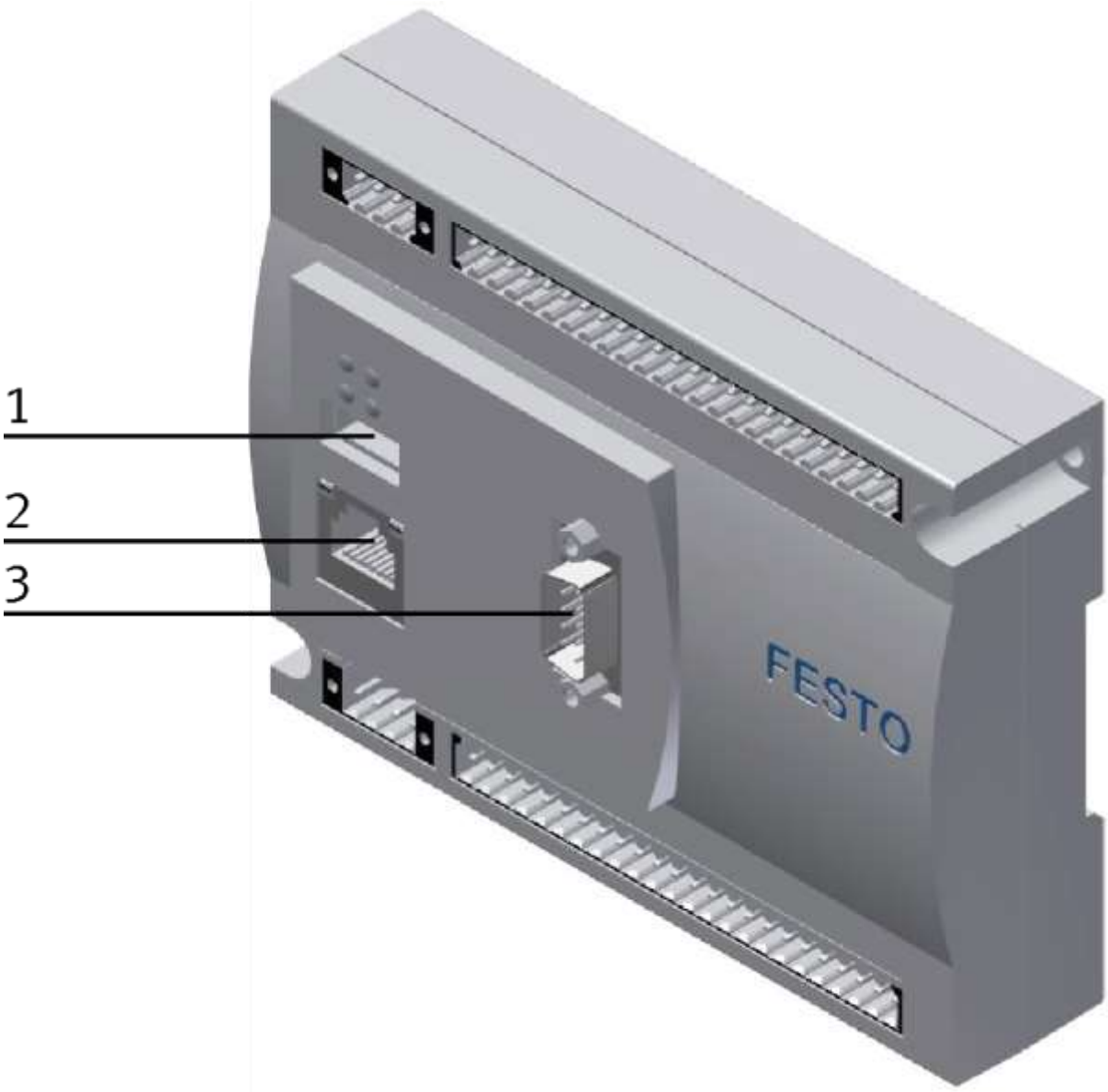
Read-write head RF210R IO-Link / illustration similar

TW-R16-B128 RFID data storage medium / illustration similar

Clamp read-write head	Cable	I/O Link
TF1:1 / 24 V	XTF1:1 / BN	XG1/X12:1 - L+
TF1:3 / 0V	XTF1:3 / BU	XG1/X12:3 - L-
TF1:4 / Data	XTF1:4 / BK	XG1/X12:2 - C/Q

9.2 Controller Festo CECC

The Festo control consists of only one component (order no. 574418-CECC-LK)

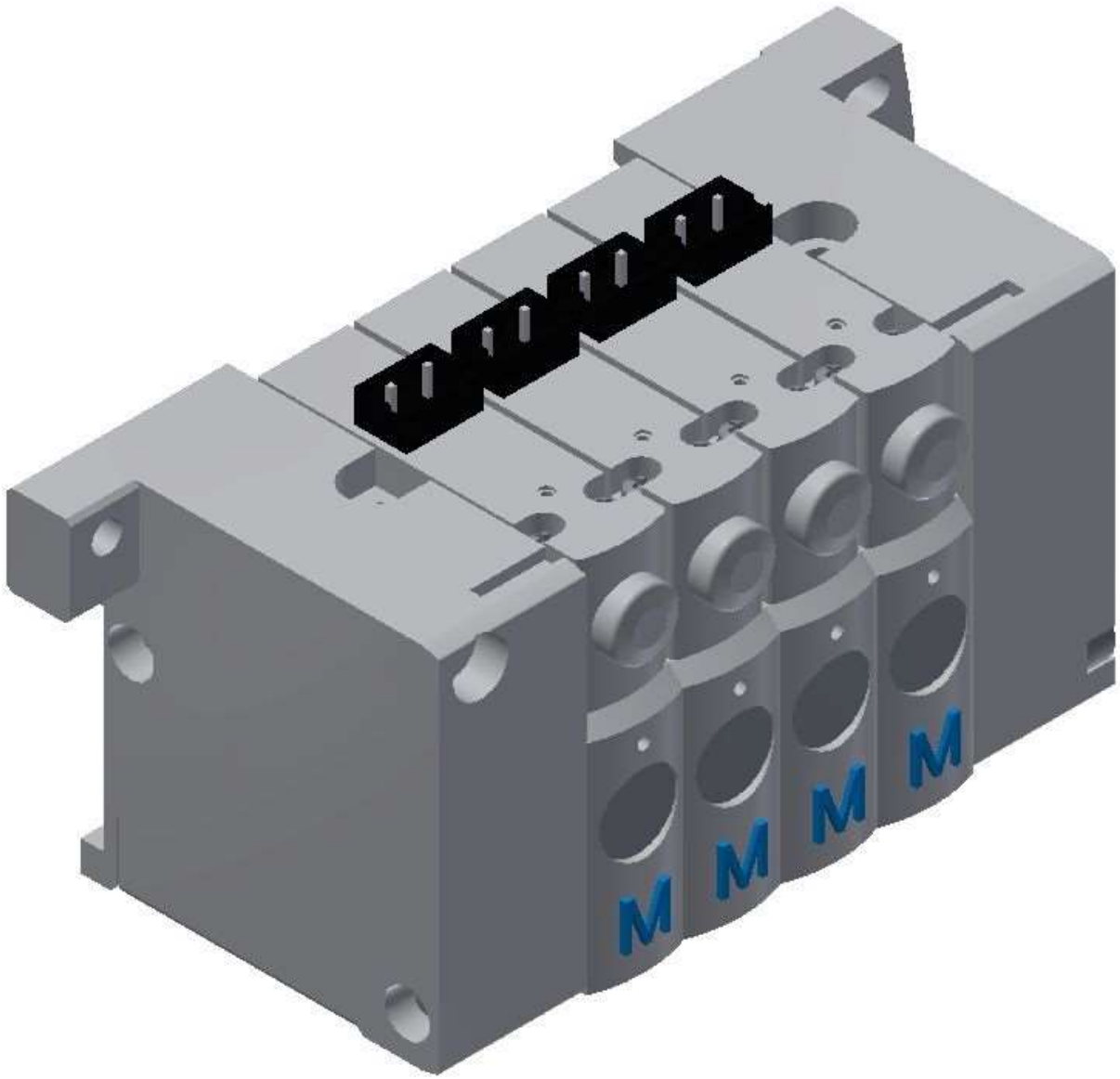


Festo CECC / illustration similar

Position	Description	Comment
1	USB Interface	For extern memory
2	Ethernet Interface RJ 45	For a PC (to program with CodeSys) or for external operation panel CDPX
3	CanOpen Interface	To connect CanOpen Slaves

9.3 Valve terminal

The valve terminal controls the cylinder of the stopper unit and the branch. The magnet valves have supplementary hand operation.
If this is pressed (groping), the corresponding cylinder moves out / on for the duration of the pressure.
When the manual override is pressed and turned (locked), the cylinder will permanently open / close.



Valve terminal 525675 / 80P-10-1LIT-PB-N-SLC-4M+T / illustration similar

10 Extensions

10.1 Extension with an active corner

In order to make a circulation of several CP Lab conveyors, it is possible to assemble the CP Lab conveyors in the rectangle and to connect the conveyors with active corners. A motor drives the corner and the carrier is transported to the following CP Lab conveyor. The active corners are connected in parallel to the motor used, the corner is mounted on the left side of the CP Lab conveyor. The coupling sensors of the conveyors are simply forwarded to the following CP Lab conveyor using light guide bridges.

Illustration similar

Example concatenation 4 CP Lab conveyors with active corners

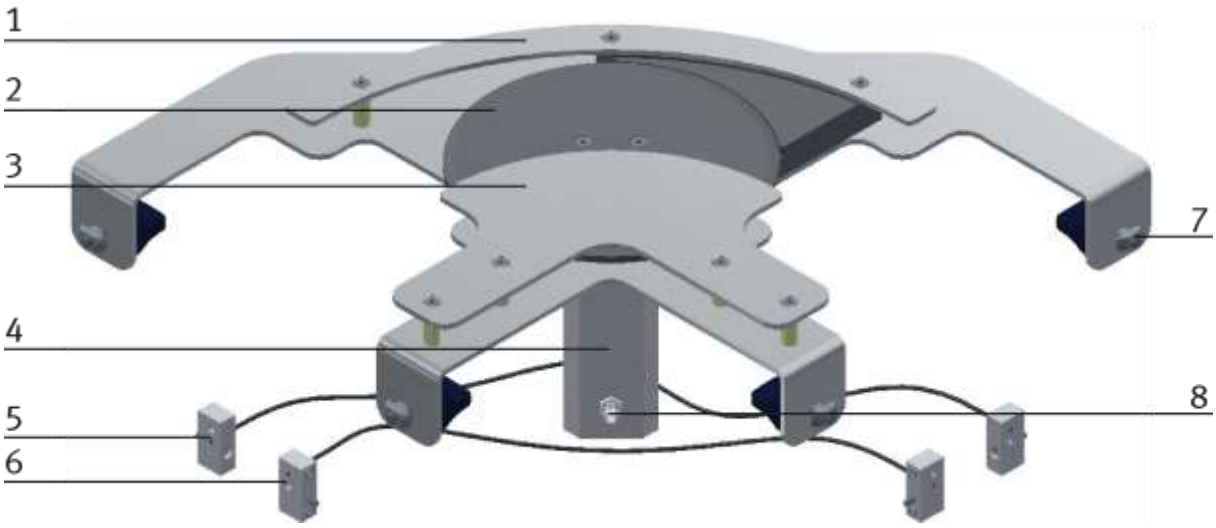


Illustration similar

Position	Description
1	Outside guard railing
2	Turning table
3	Inside guard railing
4	Motor
5	Coupling sensor transmission
6	Coupling sensor transmission
7	Screw
8	Motor connection (see Circuit diagram p.13)

10.2 Extension with a passive corner

In order to achieve a circulation from several CP Lab conveyors, it is possible to assemble the CP Lab conveyor in the rectangle and to connect the conveyors with passive corners. The corners are equipped with balls which enable the carrier to be transported without drive to a further band mounted at a right angle. The coupling sensors of the conveyors are simply forwarded to the following CP Lab conveyor using light guide bridges.

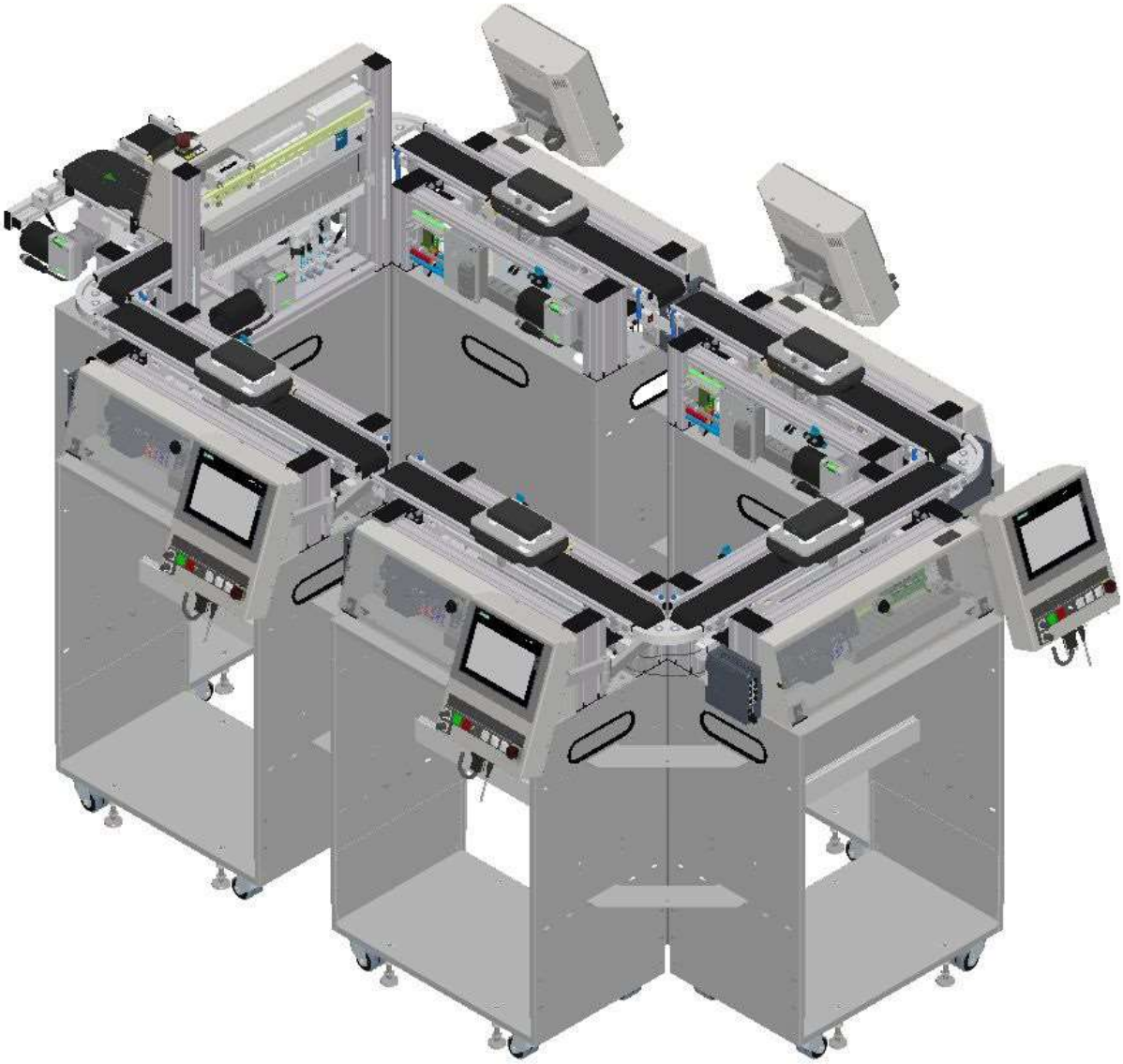


Illustration similar

Example concatenation 6 CP Lab conveyors with passive corners

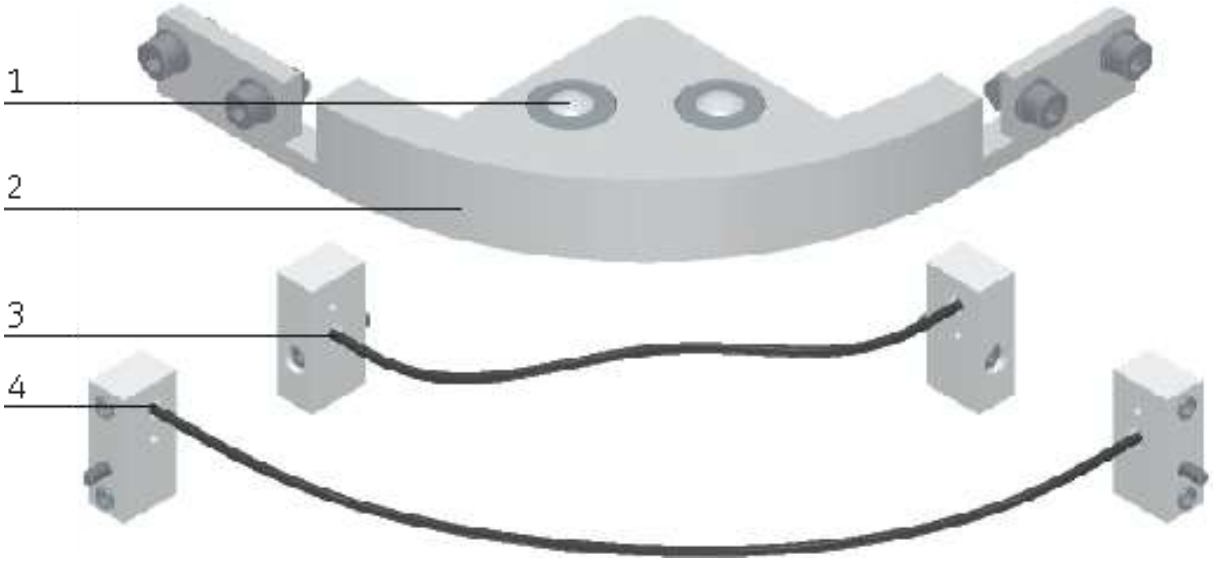


Illustration similar

Position	Description
1	Ball caster
2	Passive guard railing
3	Coupling sensor transmission
4	Coupling sensor transmission

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.

Festo Didactic SE
Rechbergstraße 3
73770 Denkendorf
Germany

+49 711 3467-0
+49 711 34754-88500
www.festo-didactic.com
did@festo.com

