

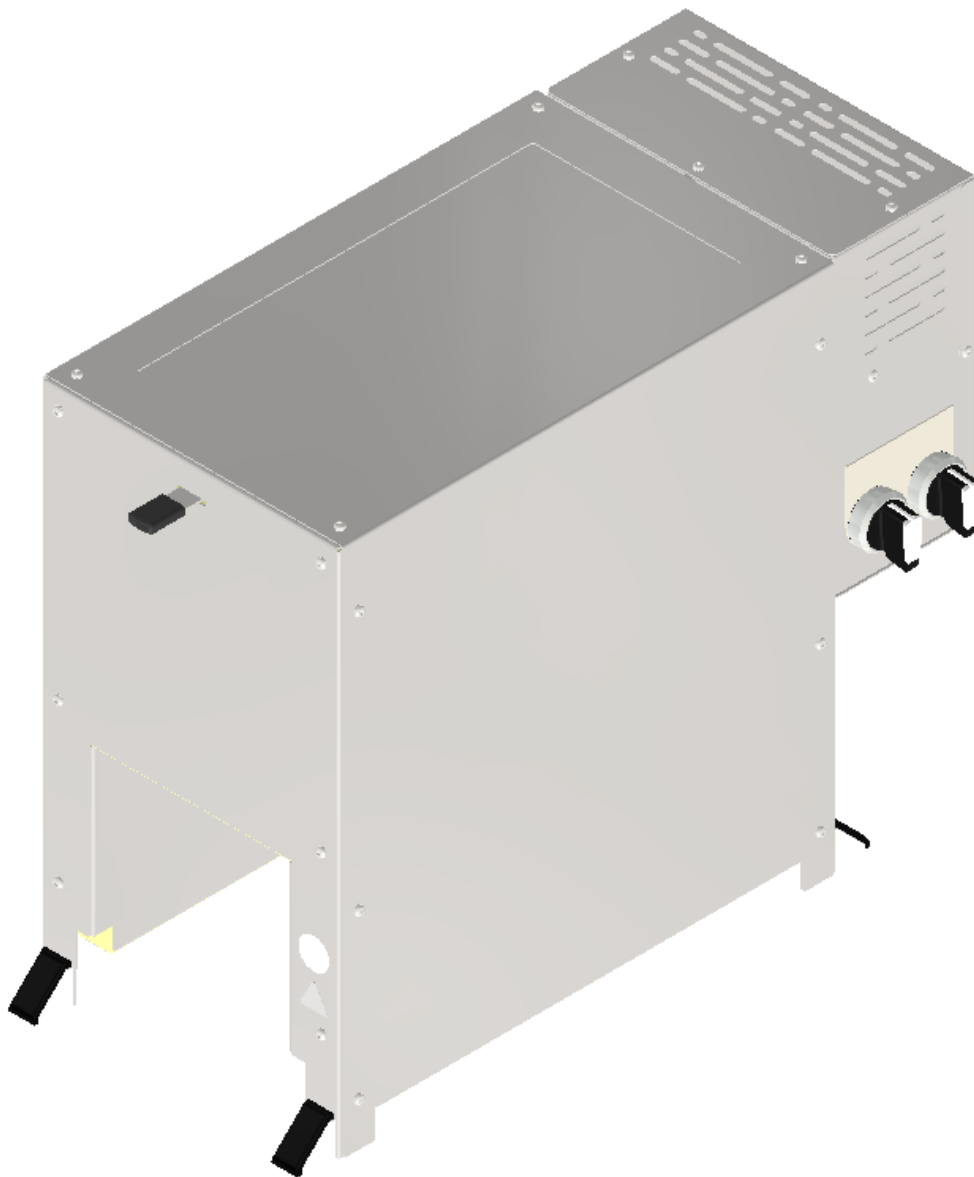
8032512

Oven

FESTO

CP Factory/CP Lab

Original operating
instructions



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Original operating instructions

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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
	<p>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.</p>

Main document

Associated documents attached:

Safety instructions concerning transport (print/electronic)

Component datasheets (print/electronic)

Circuit diagram (print/electronic)

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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
	<p>... indicates an imminently hazardous situation that will result in fatal or severe personal injury if not avoided.</p>

	 WARNING
	<p>... indicates a potentially hazardous situation which may result in fatal or severe personal injury if not avoided.</p>

	 CAUTION
	<p>... indicates a potentially hazardous situation that may result in moderate or slight personal injury or severe property damage if not avoided.</p>

	NOTE
	<p>... indicates a potentially hazardous situation that may result in property damage or loss of function if not avoided.</p>

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 – hot surface



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
	<ul style="list-style-type: none">• Malfunctions which could impair safety must be eliminated immediately!

	 CAUTION
	<ul style="list-style-type: none">• 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
	<ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> • Switch off the power supply! <ul style="list-style-type: none"> – 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! <ul style="list-style-type: none"> – Use a tool such as a screwdriver for actuating sensors.

	 CAUTION
	<ul style="list-style-type: none"> • Risk of burns due to hot surfaces <ul style="list-style-type: none"> – 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. <ul style="list-style-type: none"> – Allow the device to cool off before commencing work. – Use suitable personal protective clothing, e.g. safety safety gloves.

4.3 Electrical components

	 WARNING
	<ul style="list-style-type: none"> • Disconnect from all sources of electrical power! <ul style="list-style-type: none"> – 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 <ul style="list-style-type: none"> – 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! <ul style="list-style-type: none"> – 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 <ul style="list-style-type: none"> – 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
	<ul style="list-style-type: none"> • Risk of fire due to use of unsuitable power supply <ul style="list-style-type: none"> – If a device is 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 transportSwitch off the power supply immediately.
- **Protect the device to prevent it from being restarted accidentally.**

4.4 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.

4.5 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
	<ul style="list-style-type: none"> • Unsecure operating conditions due to software tampering <ul style="list-style-type: none"> – Forms of software tampering (e.g. viruses, Trojans, malware and worms) can lead to unsecure operating conditions in your system, which may in turn lead to severe or fatal injury or property damage. – Keep your software up to date. – Integrate the automation and actuator components into an overarching and comprehensive industrial security concept for the installation or machine in question that is in line with the latest technological developments. – Make sure that all the products you have installed are incorporated into your overarching industrial security concept. – Use suitable measures, such as a virus scanner, to protect files save on exchangeable storage media from malware.

4.6 Additional safety instructions

General requirements for safe operation of the devices:

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



	 WARNING
	<ul style="list-style-type: none">• This product is designed for use in industrial environments, and may cause malfunctions if used in domestic or small commercial environments.


4.7 Guarantee and liability

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

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

4.8 Transport

	 WARNING
	<ul style="list-style-type: none">• Danger due to tipping over<ul style="list-style-type: none">– 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.

	<i>NOTE</i>
	<ul style="list-style-type: none">• Station contains delicate components!<ul style="list-style-type: none">– Take care not to shake during transportation• The station is only permitted for installation on solid, non-vibrating surfaces.<ul style="list-style-type: none">– Make sure that the ground underneath the station has sufficient load-bearing capacity.

4.9 Name plates



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)

4.10 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 v shodě s příslušnými harmonizačními právními předpisy Unie.

(DA) Denne overensstemmelseerklæring 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 ainuvastusel. Kirjelatud deklareeritav toode on kooskõlas asjaomaste liidu ühtlustamisaktidega.

(FI) Tämä vaatimustenmukaisuusvakuutus on annettu valmistajan yksinomaisella vastuulla. Kuvattu vakuutusken kohde on asiaa koskevan unionin yhdenmukais-tamislaainsäädännön 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 nyilatkozatot tárgyba megfelel a vonatkozó uniós harmonizációs jogszabályoknak.

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

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

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

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

(PL) Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta. Wymieniony przedmiot niniejszej deklaracji jest zgodny z odpowiednimi 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 declaratie de conformitate este emisă pe răspunderea exclusivă a producătorului. Obiectul descris al declaratiei 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 Unie.

(SL) Za izdajo te izjave o skladnosti je odgovoren izključno proizvajalec. Opisani predmet izjave je v skladu z ustreznimi 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 sorumluluğunda 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-overensstemmelseerklæring
Αηλώζη ζυμμόρφωσης 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
Declaratie 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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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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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. Angewandte 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)-l) Delegierte Rechtsakte für Funkanlagen / Delegated acts for Radio equipment



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

4.11 General product safety

 WARNING	
	<ul style="list-style-type: none">• General product safety, CE conformity<ul style="list-style-type: none">– 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.

4.12 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
	<ul style="list-style-type: none">• Damage to the safety window<ul style="list-style-type: none">– 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.

4.12.1 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.

4.12.2 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	1AC 230 V±10%, 50 Hz
Power supply system	Outer conductor L1, neutral conductor N, protective conductor PE
Full load current	4,5 A
Digital inputs	1
Digital outputs	1
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	422 mm
Width	213 mm
Height	324 mm
Weight	Approx 6,5 kg
Subject to change	

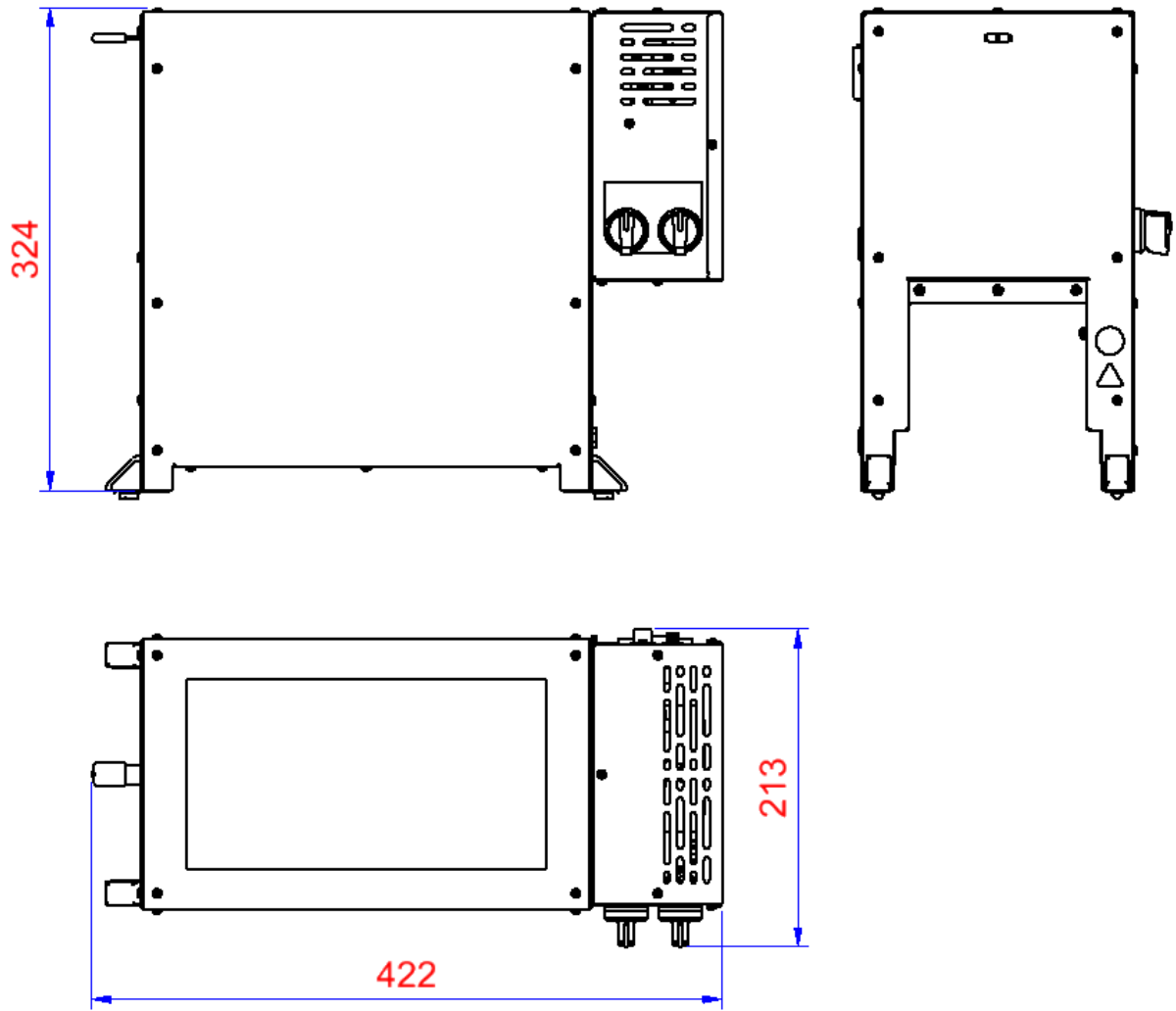








Illustration similar


6 Design and Function

6.1 Transport

	 WARNING
	<ul style="list-style-type: none"> • Damage to transport equipment when moving heavy machines/machine sections <ul style="list-style-type: none"> – When the stations are shipped out, extra care must be taken to ensure that heavy machines/machine sections are always transported using a suitable forklift 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
	<ul style="list-style-type: none"> • Securing transit routes <ul style="list-style-type: none"> – 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 <ul style="list-style-type: none"> – 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.

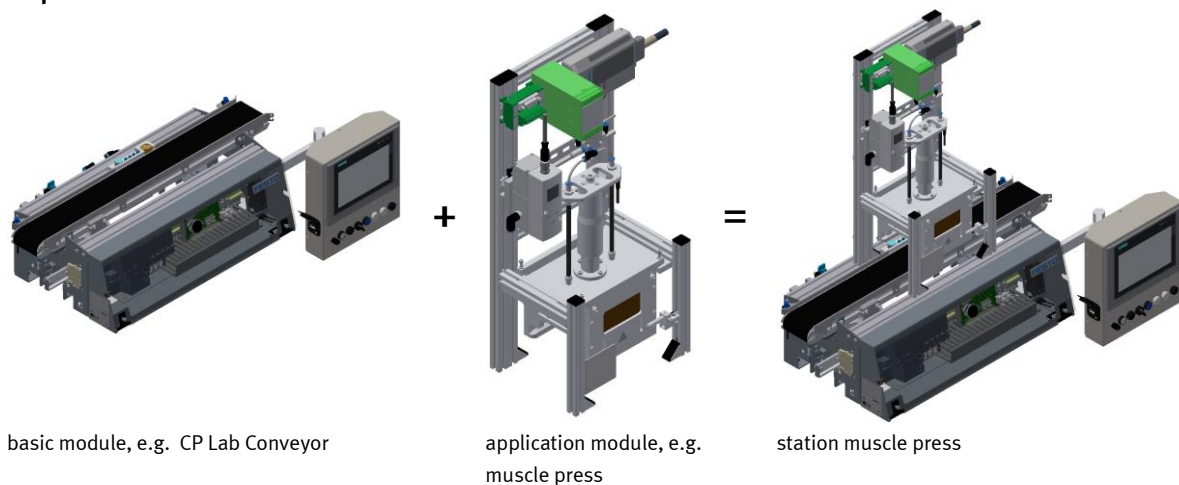
	 WARNING
	<ul style="list-style-type: none"> • Danger of crushing for hands/feet <ul style="list-style-type: none"> – It is not permitted to grip onto or under the feet when handling the machine, as there is an increase risk of hands or feet getting crushed or trapped in these areas. – When setting down the station, make sure no persons have their feet under the machine's feet.

	<i>NOTE</i>
	<ul style="list-style-type: none">– 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.

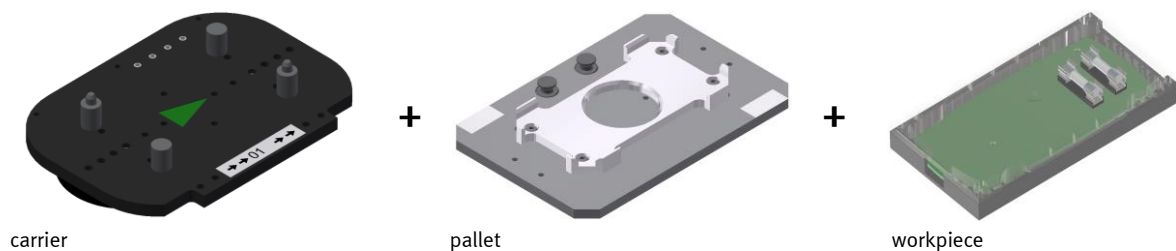
6.2 Overview of the System

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

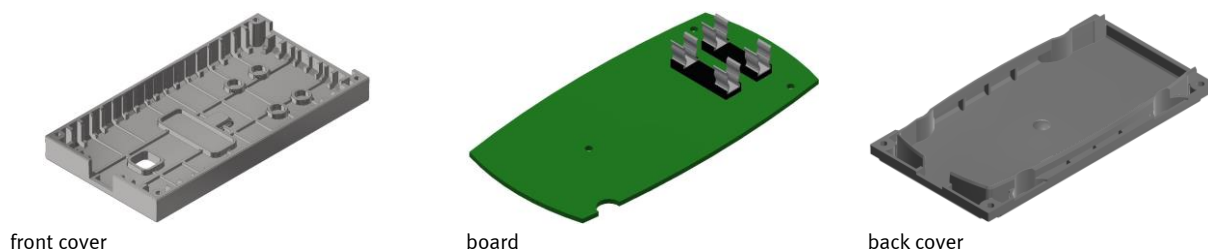


If several stations are put in a row one behind the other, this will form a production line.



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.



6.3 The application module oven

The task of the application module oven is

- To heat workpieces to prepare them for thermal processing

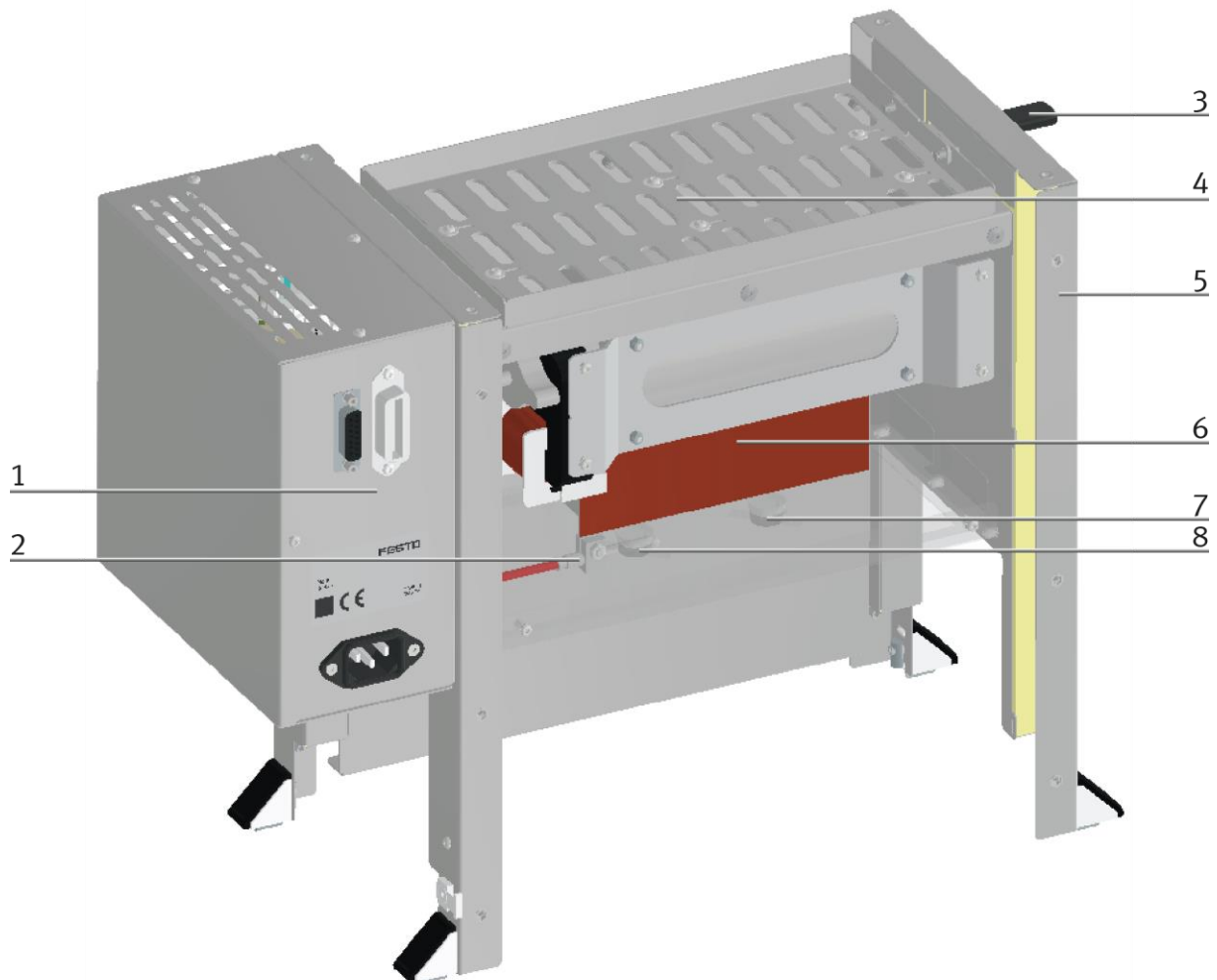


Illustration similar

Position	Description	Name	Ordernumber
1	Electrical unit (see next screen)		
2	PT100 Measuring transducer / RA1	RS.455-3968	455-3968
3	Manual slider to move the regulating plate / an error situation can be caused with it		
4	Regulating plate / in conjunction with manual slide valve, an error situation can be brought about. The slots are closed when the hand slide is adjusted.		
5	Sheet metal frame / basic unit		
6	Heater / Cross-flow blower / MA1	Bürk.80H780	831107
7	Shutdown at 80° / SF1	Conrad.36TXE21	611816
8	Shutdown at 80° / SF2	Conrad.36TXE21	611816

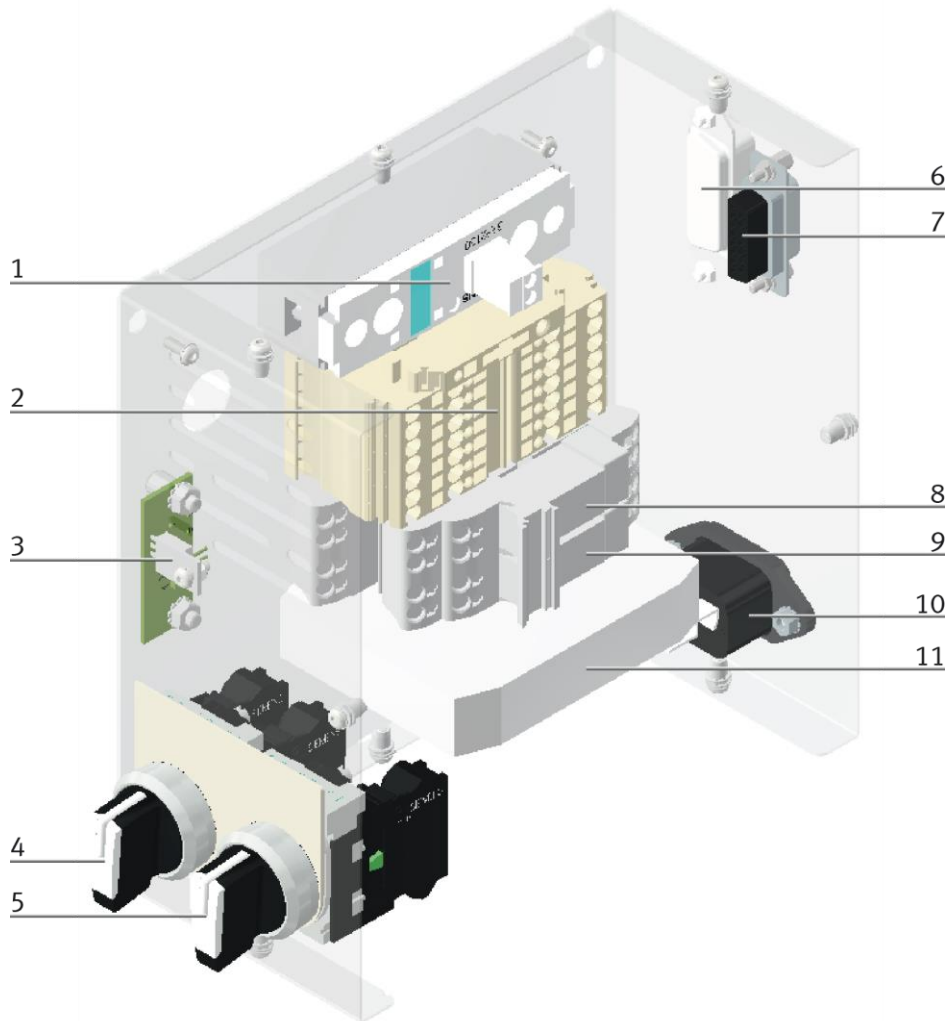


Illustration similar

Position	Description	Name	Ordernumber
1	Siemens Solid state relay	3RF2130-1AA02	8039297
2	Terminal block XD2		787673
3	PT100- / PT100 – Measuring transducer		8093903
4	Switch for heating power 500W / 1000W /Auto KF2	3SU1052-2BL60-0AA0 3SU1550-0AA10-0AA0 3SU1400-1AA10-3BA0	792121 792106 792107
5	Switch to activate heating / QB1	3SU1052-2BC60-0AA0 3SU1550-0AA10-0AA0 3SU1400-1AA10-3BA0	792120 792106 792107
6	Conrad Centronics connector		740284
7	Sub-D plug 15 pol		741680
8	Wago Relay module	788-312	268327
9	Wago Relay module	788-312	268327
10	Schuko Plug -mains socket 230 V / XJ1	FBS-SUB-9-WS-CO-K	783298

6.4 Function

The application module heats workpieces. The workpieces are recognized by a light barrier during the infeed into the application module and the carrier is stopped. The temperature of the workpiece is measured with the temperature sensor PT100. The cross-flow blower is switched on. The blower operates until the necessary temperature is reached, then a waiting time is started. When this time has elapsed, the fan goes out and the carrier is released from the application module.

By means of the hand wheel, two plates can be displaced relative to each other. The ventilation slots are thus closed and an error situation can be simulated.

6.4.1 Switch for heating power

- Left position (1000 W) - heating power is manually controlled and is 1000 W.
- middle position (500 W) - heating power is manually controlled and is 500 W
- Position right (Auto) - the heating power is automatically controlled and can also be set/changed on the HMI.

6.5 Process description

Start Conditions

- All connections have been made properly

Process

1. If a carrier with a workpiece is transported through the light barrier of the application module oven, the carrier is stopped and an automatic sequence is started.
2. The temperature is determined.
3. The cross-flow blower is switched on.
4. When the temperature is reached, a drying time is started.
5. After the drying time, the blower is switched off
6. The carrier is released and moves out of the application module.

6.6 Electrical Connections

Connection with syslink connectors

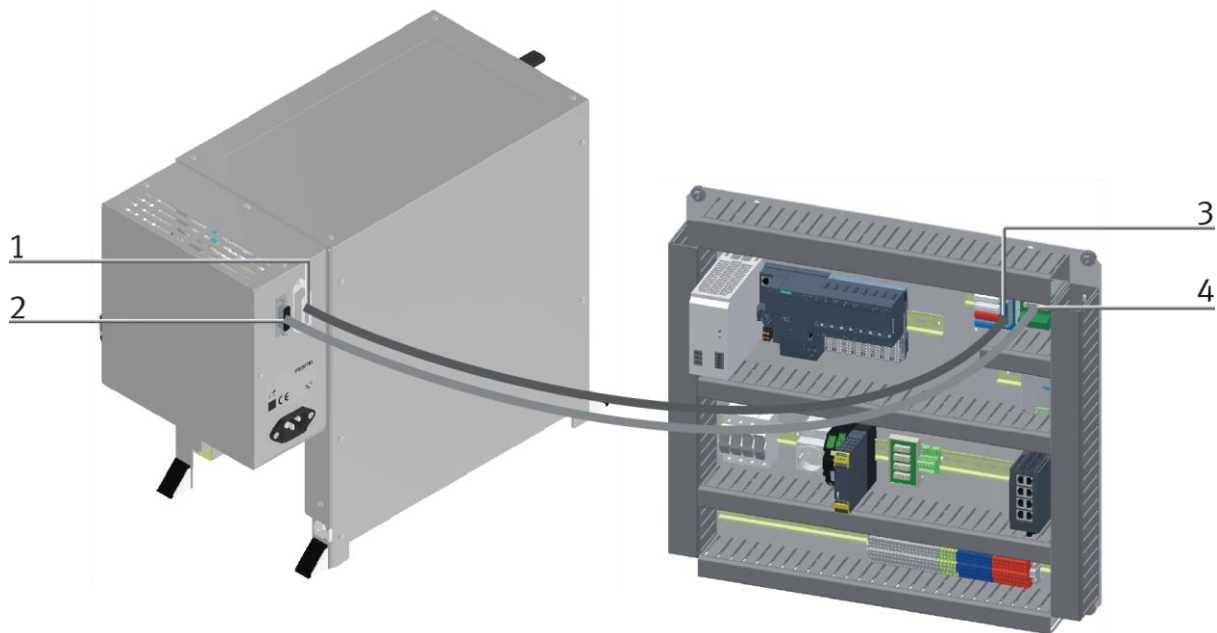
The application module is connected to the electrical board of the module via I/O cable. The I/O interface (1) of the application module is connected to the I/O terminal (4) on the electrical board of the basic module.

The example refers to the connection to a basic module linear, it is possible that the terminal names of the I/O terminal deviate when connected to another module.

Analog connection

The analog connection of the application module is connected to the electrical board of the basic module.

The analog interface (2) of the application module is connected to the analog terminal (3) on the electrical board of the basic module.



Electrical connection oven application via I/O and analogue / illustration similar

Position	Description
1	Syslink Plug XD1
2	Analogue plug XD2
3	Analogue Terminal XD16A
4	I/O Terminal XD6


Digital Outputs

Description	BMK	Application
Switch on cross-flow blower	KF1	XD1 / XJ:1
Heater power	KF2	XD1 / XJ:2
Reserve		XD1 / XJ:3
Reserve		XD1 / XJ:4
Reserve		XD1 / XJ:5
Reserve		XD1 / XJ:6
Reserve		XD1 / XJ:7
Reserve		XD1 / XJ:8


Analogue Inputs

Description	BMK	Application
Measuring transformer	BA1	XD2 / XJ:6 / ANATM
Measuring transformer	BA1	XD2 / XJ:8 / ANATOUT

7 Commissioning

	NOTE
	<ul style="list-style-type: none"> – 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 cabling 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
	<ul style="list-style-type: none"> – 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
	<ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> • Any damages must always be repaired instantly.

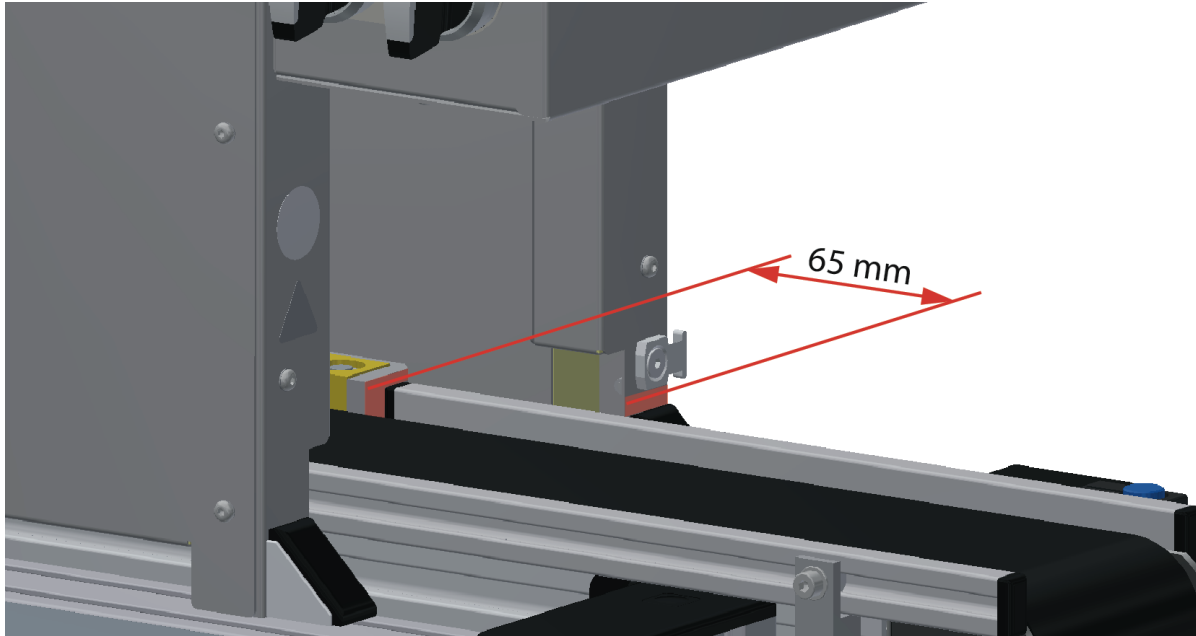
The CP Application Module may only be operated on the following conditions:

- 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

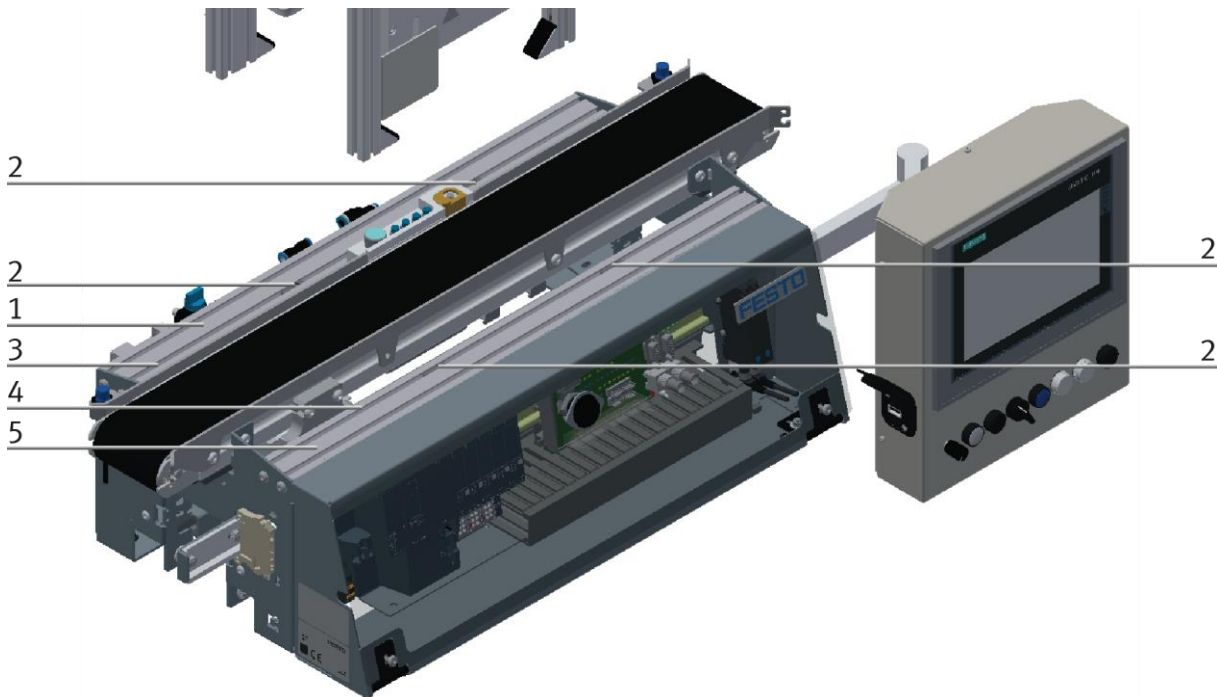
7.4.1 Assembly of an CP application module to basic module CP Lab Conveyor

	NOTE
	<p>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.</p>

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.




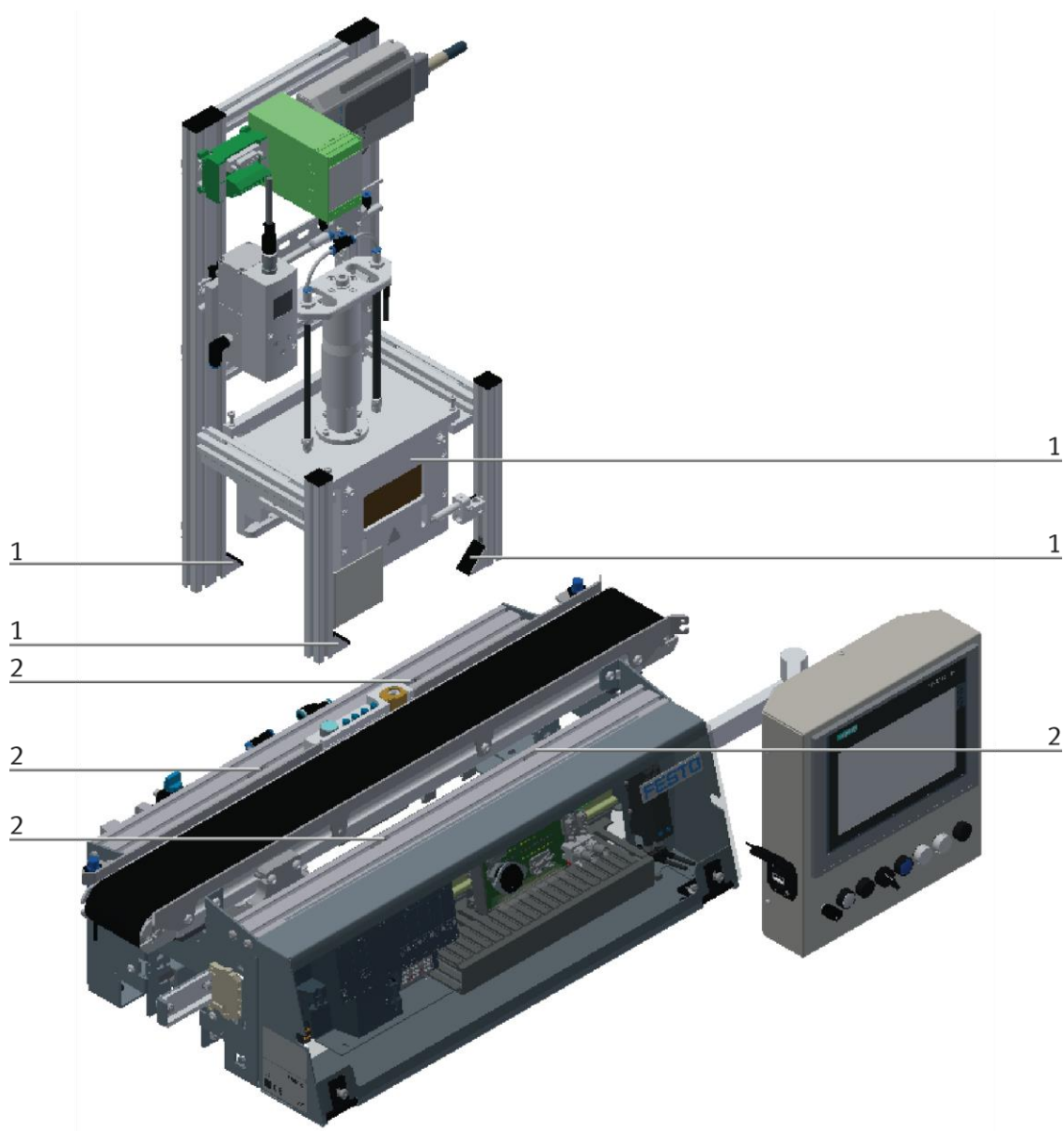
Positioning slot nuts / illustration similar

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.

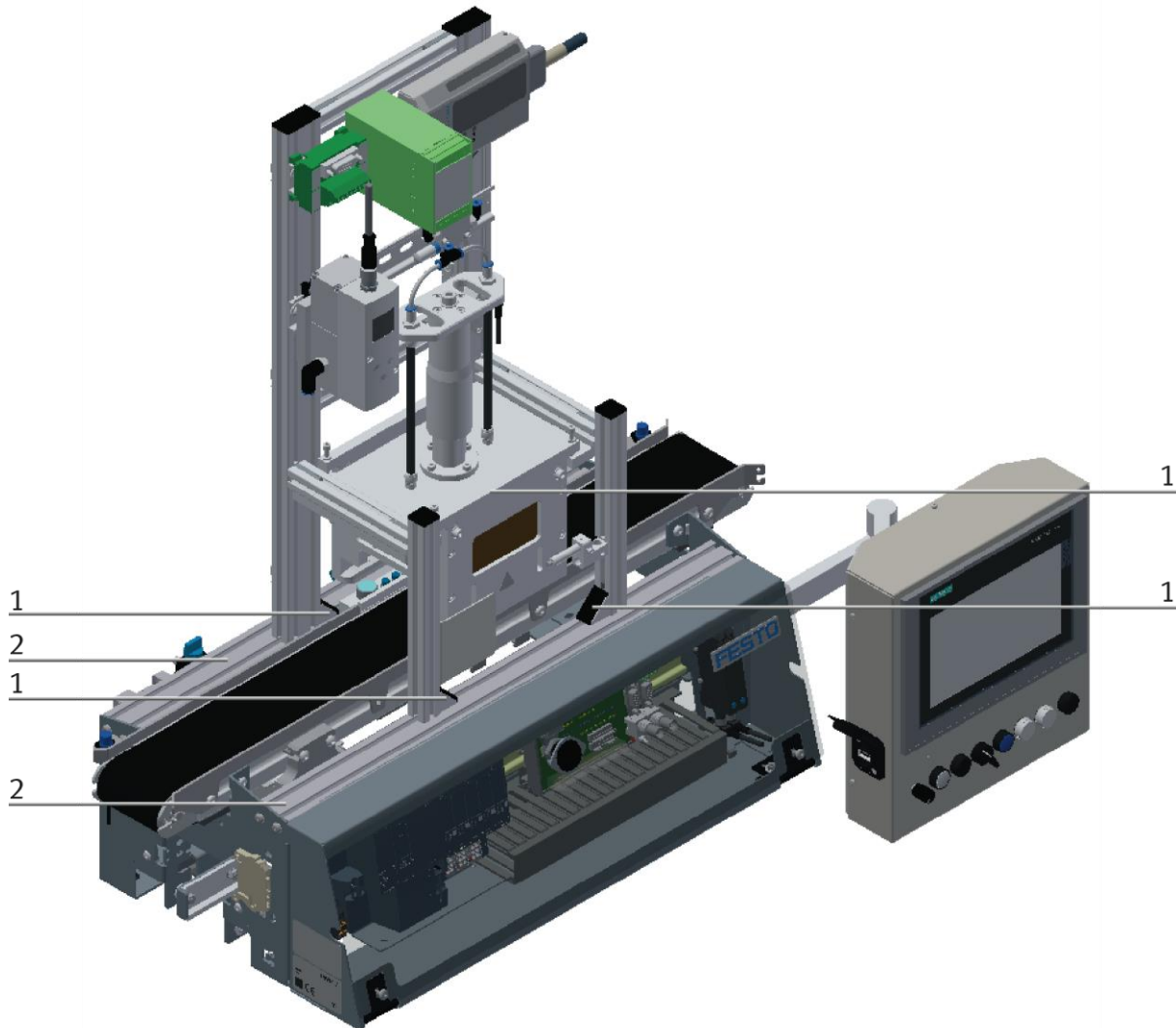


How to put on the CP application module / illustration similar

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

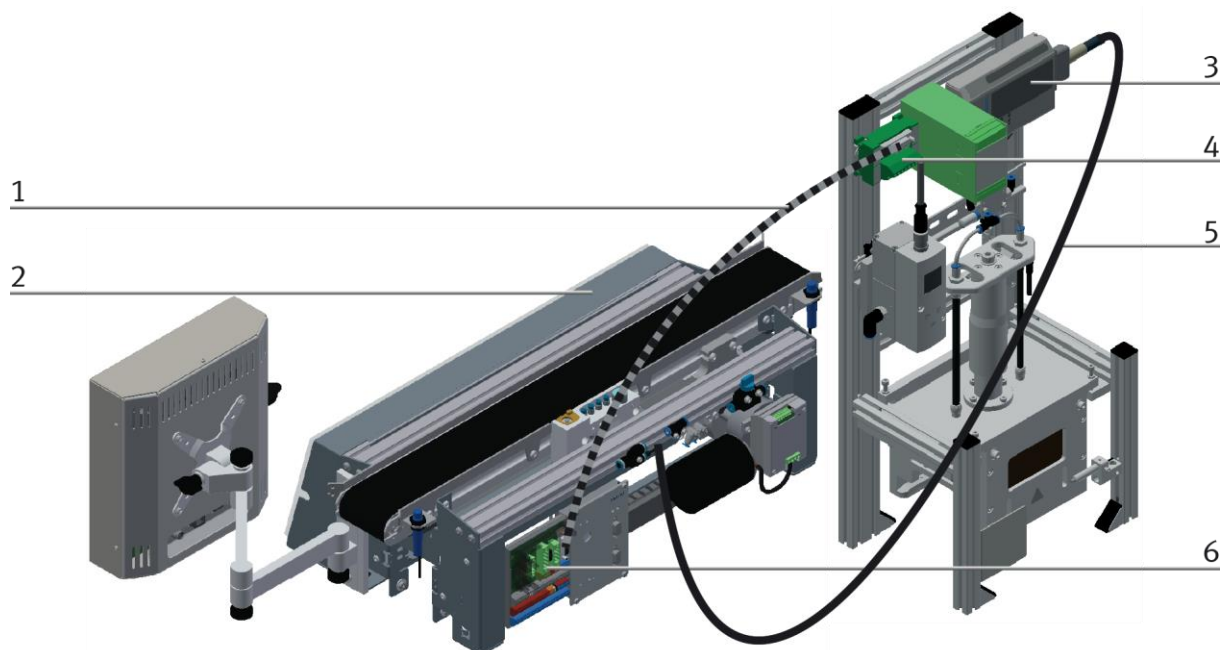
Position	Description
1	CP application module: mounting bracket with cover
2	basic module CP Lab Conveyor: cross profile

7.4.2 Connecting the CP application module electrically to basic module CP Lab Conveyor SysLink-interface for digital signals

	NOTE
<p>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!</p>	

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.



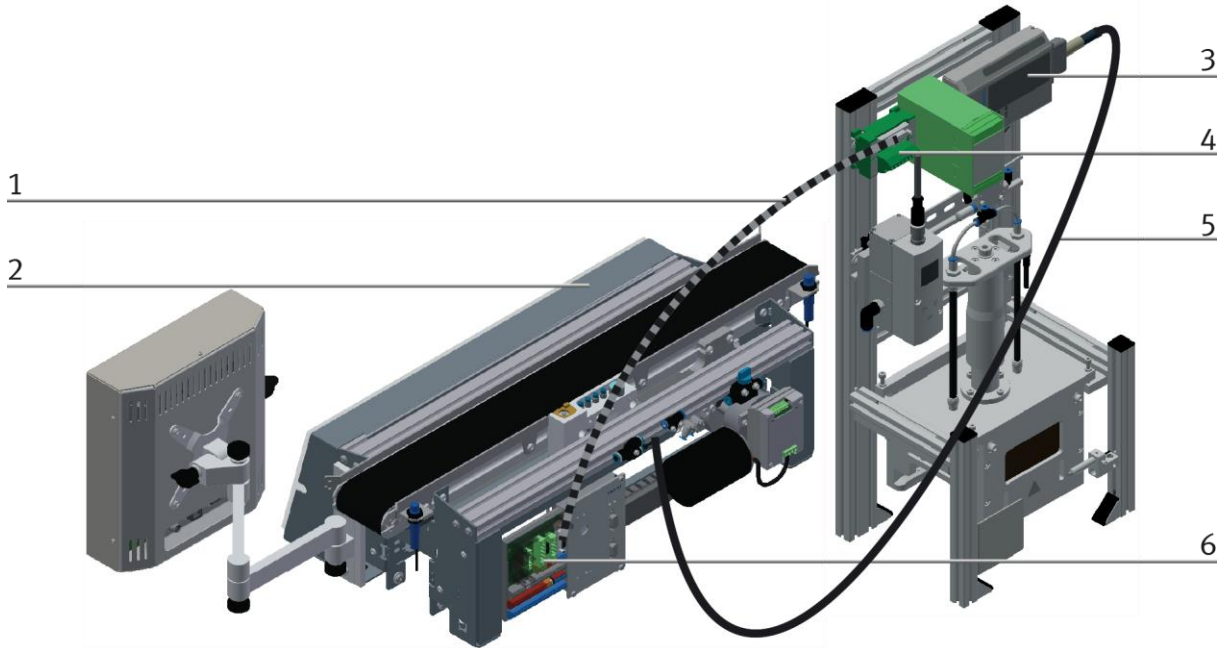
Electrical connections / illustration similar

Position	Description
1	connecting cable with 15-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 with 15-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)

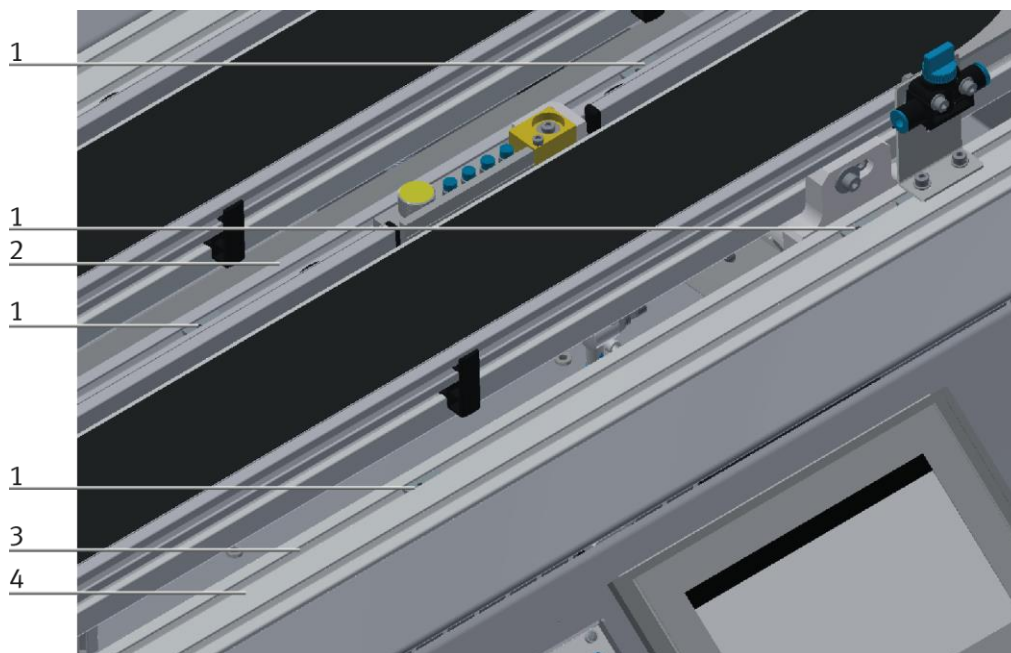
7.4.3 Assembly of an CP application module to a CP Factory basic module

	NOTE
<p>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.</p>	

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.




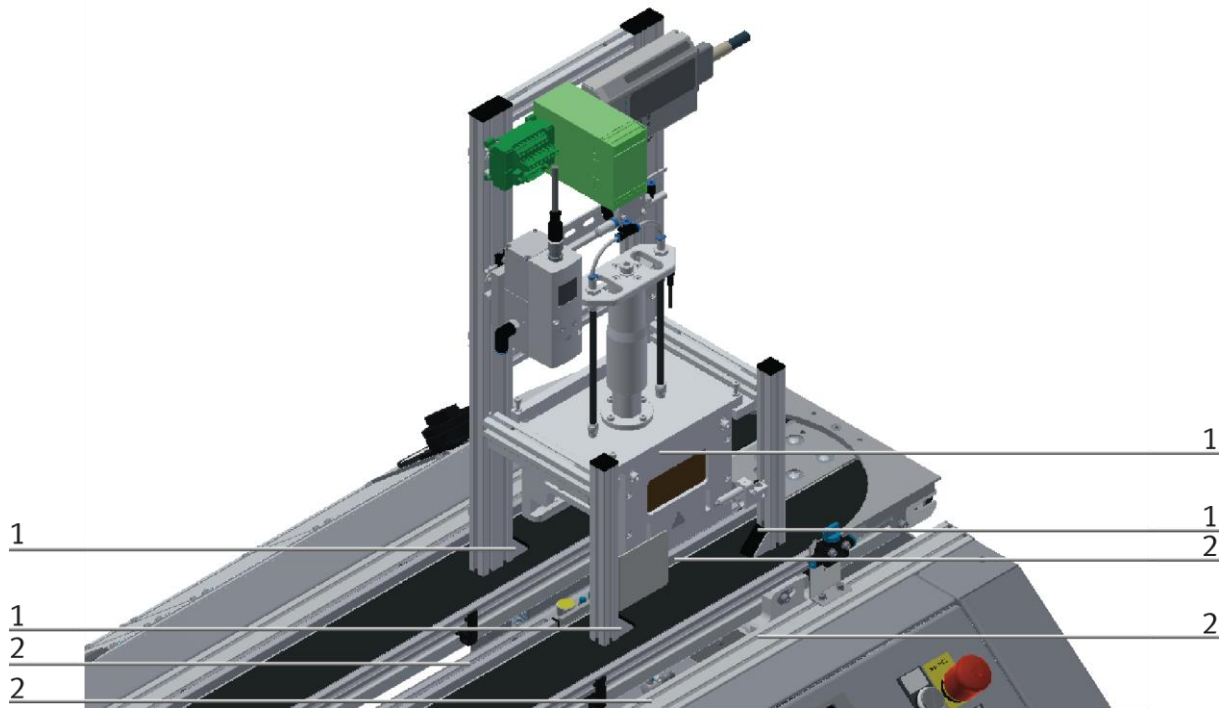
Positioning slot nuts / illustration similar

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.

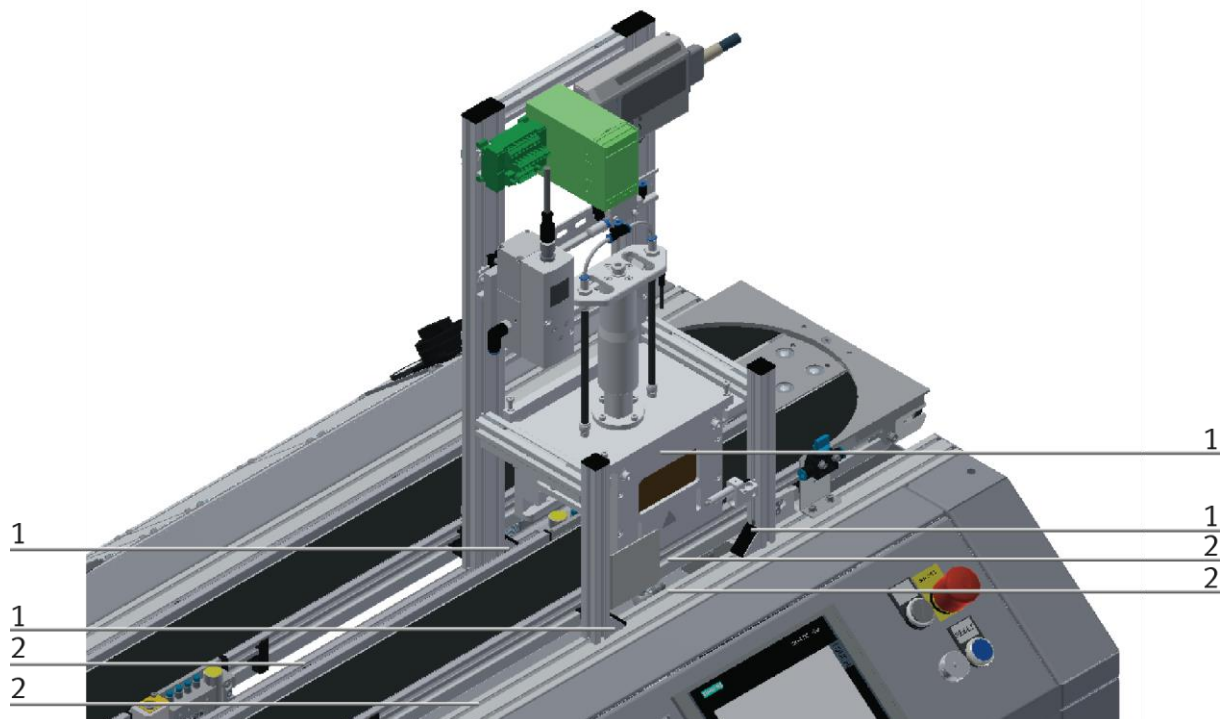


How to put on the CP application module / illustration similar

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

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

SysLink-interface for digital signals

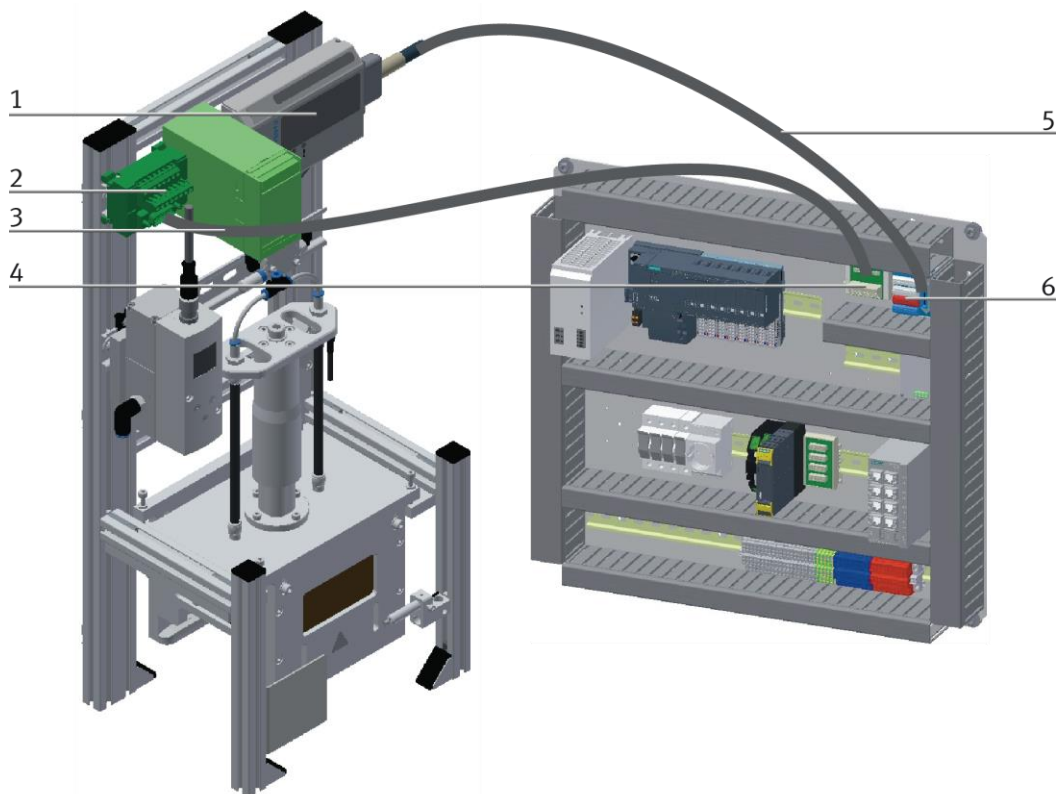
The CP application module exchanges digital input and output signals with the basic module via the SysLink interface:

- 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)

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.

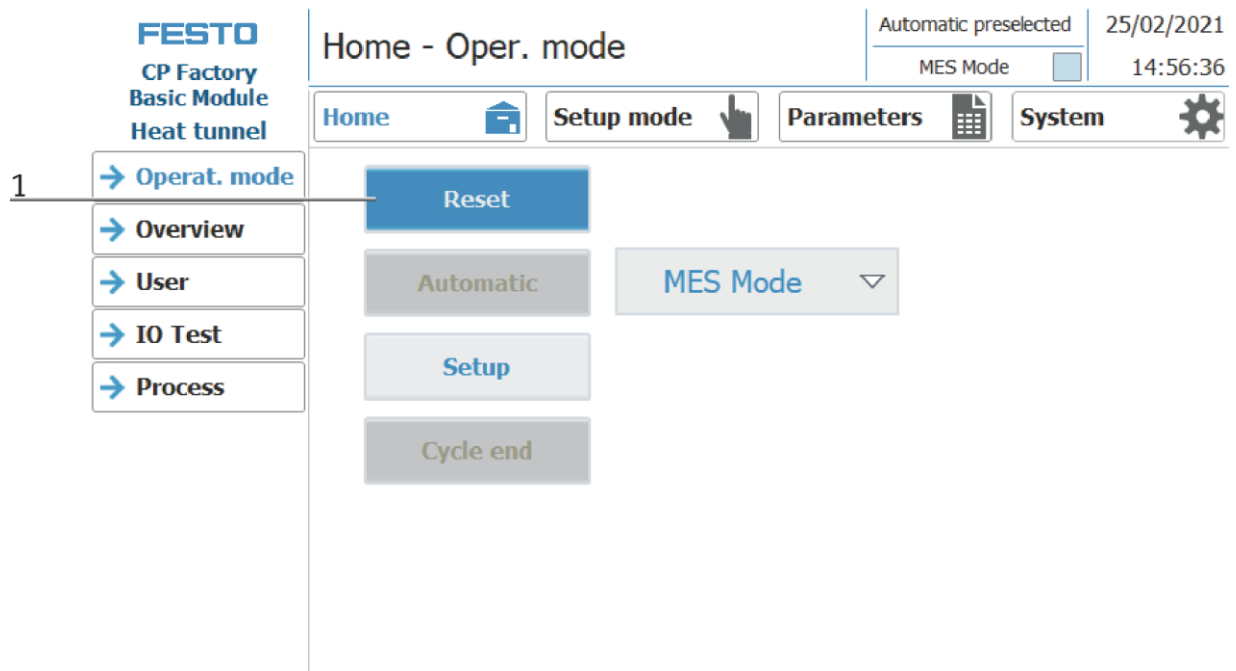
The operation of the application module can be realized by every customer according to his wishes, the supplied programs are only an operating suggestion with which the application module is on CP-Lab or CP-Factory System can be operated. Own operating concepts or external controls are also possible.

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 oven at HMI

To set the application module, the application module must be set to setup mode.

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



- Then click on Setup, setup mode is active.

FESTO
CP Factory
Basic Module
Heat tunnel

Home - Oper. mode

Automatic preselected | 25/02/2021
MES Mode | 14:56:36

Home Setup mode Parameters System

→ Operat. mode
→ Overview
→ User
→ IO Test
→ Process

Reset
Automatic
Setup
Cycle end

MES Mode ▾

- Change to Setup mode page.

FESTO
CP Factory
Basic Module
Heat tunnel

Setup - Application

Setup mode | 25/02/2021
MES Mode | 14:57:12

Home Setup mode Parameters System

→ Application
→ Belt
→ Stopper

switch on (EB_KF1)	Heating
000000ms	8
switch on (EB_KF2)	Heat power
000000ms	1

Nominal temperature C
Actual temperature C
Heat time actual s
Heating on/off
Heating power

80
60
40
20
0

14:56:22 25/02/2021 14:57:12 25/02/2021

4. Choose application

FESTO
CP Factory
Basic Module
Heat tunnel

Setup - Application

Setup mode 25/02/2021
MES Mode ■ 14:57:12

4 → **Application**

→ Belt

→ Stopper

switch on (EB_KF1)	Heating
000000ms	8
switch on (EB_KF2)	Heat power
000000ms	1

Nominal temperature C

Actual temperature C

Heat time actual s

Heating on/off

Heating power

The graph displays temperature in degrees Celsius on the y-axis (0 to 80) against time on the x-axis. A green line shows the temperature starting at 0°C at 14:56:22 and jumping to approximately 25°C at 14:57:12. The temperature remains constant at 25°C until the end of the recorded period at 14:57:12 on 25/02/2021.

- Application is selected to setup the application module. The actuators of the subordinate, intelligent Application is selected to set up the application module. By pressing the buttons, the corresponding actuators can be started. The sensors are only display and cannot be set manually.

The screenshot shows the 'Setup - Application' interface for the FESTO CP Factory Basic Module Heat tunnel. The interface is divided into several sections:

- Navigation:** Home, Setup mode (selected), Parameters, System.
- Left Panel:** Application, Belt, Stopper.
- Parameters:**
 - switch on (EB_KF1): Heating, 000000ms, 8
 - switch on (EB_KF2): Heat power, 000000ms, 1
 - Nominal temperature: +0 C
 - Actual temperature: +25 C
 - Heat time actual: 0 s
 - Heating on/off: KF1, KF2
 - Heating power: 500 W
- Graph:** A line graph showing temperature (0 to 80) over time (14:56:22 to 14:57:12). The graph shows a step function where the temperature rises from 0 to approximately 25 C at 14:56:22 and remains constant until 14:57:12.

Position number	Description
1	switch on heating Button switch on (Actuator EB_KF1 is activated, lights up blue when active) Heater is ready
2	Adjust the heat power Button Heat power: change power between 500 W and 1000 W Button switch on Switch on heater with chosen power (actuator EB_KF2 is activated, lights up blue when active)
3	Nominal temperature: Here the nominal value is announced
4	Actual temperature: The current temperature is announced
5	Heating time actual: The length of the heating duration is displayed here

8.2 Transitions of the application module

The transitions are located in the Parameters submenu

Parameters - Transitions

Automatic mode 25/02/2021
Default Mode 14:58:04

Home Setup mode Parameters System

1 → Application
→ Transitions
→ Belt, Stopper

No.	Start condition	Application execute	Parameter				End condition	
			Temp[°C]	Heat time [s]	---	---	OK	NOK
Init		<input type="checkbox"/>	0	0	0	0	1200	0
1	1200	<input checked="" type="checkbox"/>	50	32	0	0	1300	0
2	0	<input type="checkbox"/>	0	0	0	0	0	0
3	0	<input type="checkbox"/>	0	0	0	0	0	0
4	0	<input type="checkbox"/>	0	0	0	0	0	0
5	0	<input type="checkbox"/>	0	0	0	0	0	0
6	0	<input type="checkbox"/>	0	0	0	0	0	0
7	0	<input type="checkbox"/>	0	0	0	0	0	0
8	0	<input type="checkbox"/>	0	0	0	0	0	0
9	0	<input type="checkbox"/>	0	0	0	0	0	0
10	0	<input type="checkbox"/>	0	0	0	0	0	0

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

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

Settings of the transition table

Initializing of the carriers

State code on RFID at carrier infeed: 2

State code on RFID at carrier outfeed: 3

1 Initialize carrier. with state code: 4

Number of carriers to initialize: 5

Already initialized carriers: 6

Transition execution

Checking start conditions again after application execution 7

8

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

8.3 Process of application module

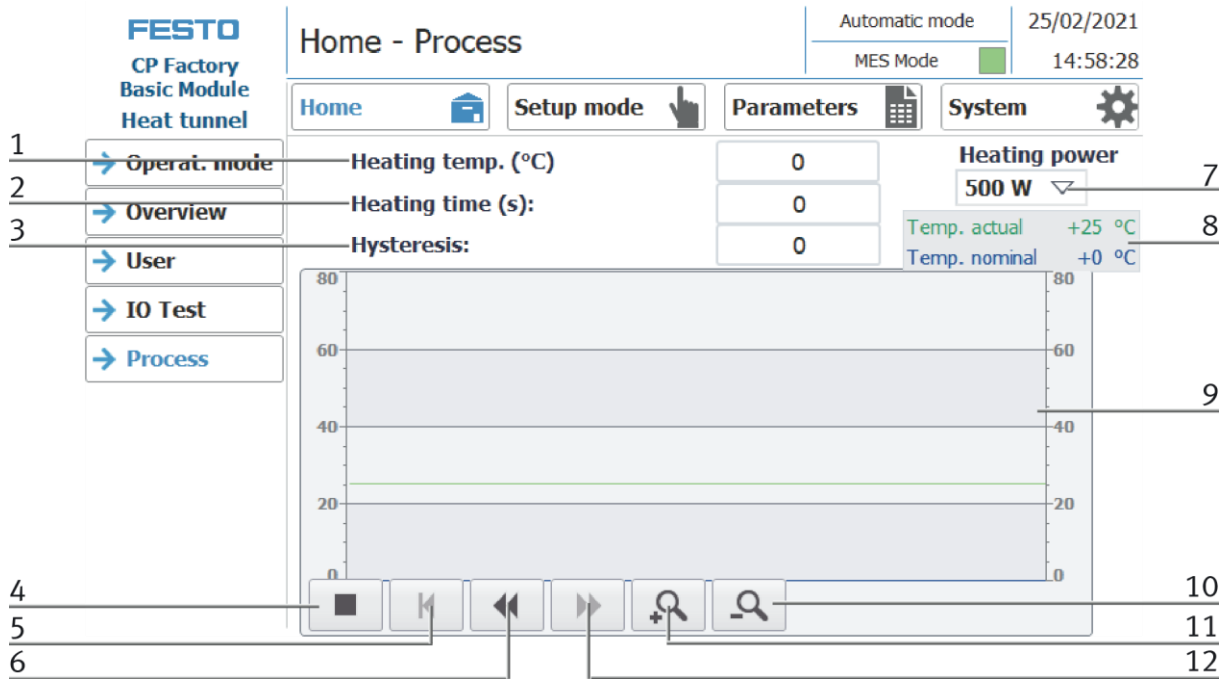
1. The following page is opened via the "Process" button.

The screenshot shows the control interface for the FESTO CP Factory Basic Module Heat tunnel. On the left, a navigation menu lists: Operat. mode, Overview, User, IO Test, and Process (highlighted with a '1'). The main interface is titled 'Home - Process' and includes status indicators for 'Automatic mode' and 'MES Mode' (with a green indicator and timestamp 14:58:28 on 25/02/2021). Navigation buttons for 'Home', 'Setup mode', 'Parameters', and 'System' are present. The central display shows:

- Heating temp. (°C): 0
- Heating time (s): 0
- Hysteresis: 0
- Heating power: 500 W
- Temp. actual: +25 °C
- Temp. nominal: +0 °C

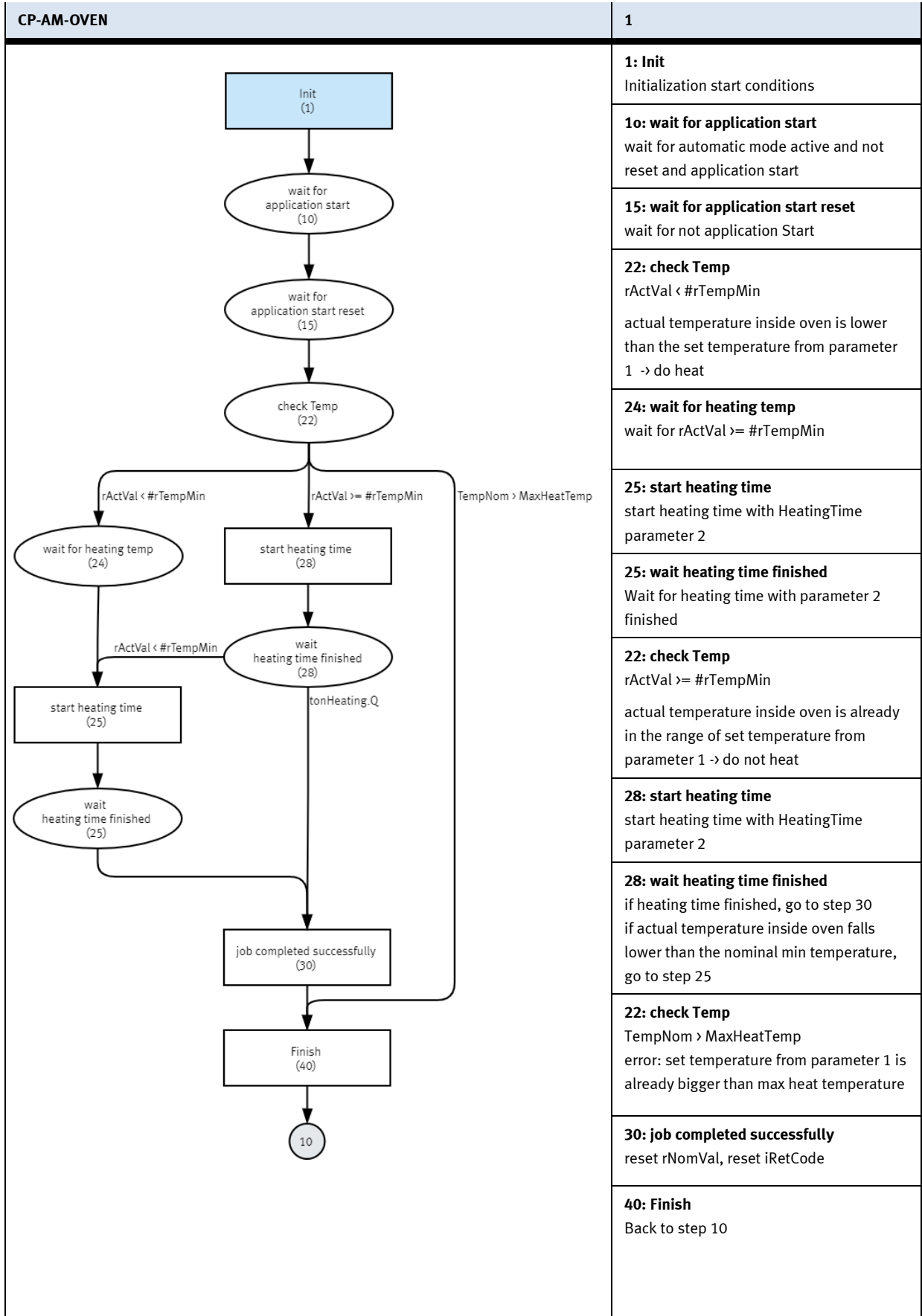
 At the bottom, there is a graph with a y-axis from 0 to 80 and a control bar with icons for stop, back, forward, and zoom.

This page displays the setpoint and actual values of the heating process. See the following screen.



Position	Description
1	Display set point heating temperature
2	Display set point heating time
3	Display and input of the hysteresis for the heating controller
4	Stop diagnosis
5	Diagnosis of the timeline back to the beginning
6	Diagnosis of the time axis move to the left
7	Switching the heating power from 500 W to 1000 W via software. The module must be in setup mode and the KF2 switch must be in the Auto position.
8	Display temperature setpoint and actual value
9	Display of the temperature curves
10	Reduce diagnosis of the timeline
11	Enlarge timeline diagnosis
12	Move diagnosis of the time axis to the right

8.4 Flow chart



8.4.1 Parameter (OVEN)

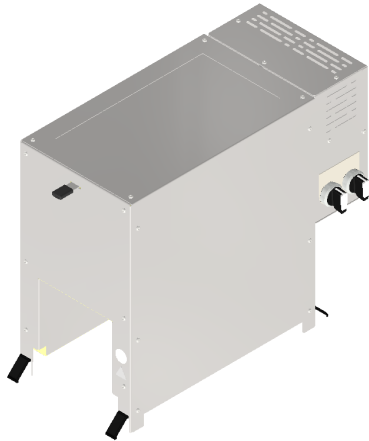


Illustration similar

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

Operation number	Description
112	Heating / heating part

Operation Number (OpNo): Short Description:

Description:

Free Text (Web-Page):

Parameter

No.	Description	Low limit	High limit	Type	Value
1	temperature	30	80	changable	60
2	time [s]	0	120	changable	5

8.4.2 Default Parameter (OVEN)

Parameter number	Description
1	Heating temperature [°C] Limitation: No limitation of the value in the transition table. Limitation in the application module ApplicationHeating (FB300) to 70°C HW switch-off at 80°C
2	Heating time [s] Limitation: No limitation of the value in the transition table

9 Message texts and interactive error messages at the HMI

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

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

9.1 Message texts

Report class	Location	Alarm name	
0	ActuatorCntrApp	Heating	Time monitoring heating. Setpoint was not reached. PLC: plcHeat; Instanz: Heating.
0	ActuatorCntrApp	HeatPower	Timeout (10 min) Actuator activation EB_KF2! Instanz: HeatPower.
2	ErrorApp	WarnHeat	Time monitoring heating. Setpoint was not reached. PLC: plcHeat; Instanz: WarnHeat

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	Retry - An attempt is made to run the application again.
2	Ignor – 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	Retry - An attempt is made to run the application again with the same parameters.
2	Ignor – 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 workpiececarrier arrives.

9.2.3 General

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

9.2.1 Application module oven

Value	Text	Fix error
5030	Heating temperature not reachable (>70°C)	check parameters

10 Spare part list

10.1 Electric parts

Description	Part number	Res.Ident	Use
PT100 Measuring transducer	455-3968	RA1	
Heater / cross flow blower	831107	MA1	
Shutdown at 80°	611816	SF1	
Shutdown at 80°	611816	SF2	
Siemens Solid state relay	3RF2130-1AA02	KF1	
PT100- / PT100 – Measuring transducer	PT1-1-1-0-200°C	BA1	Temperature detection
Switch for heating power 500W / 1000W	3SU1052-2BL60-0AA0 3SU1550-0AA10-0AA0 3SU1400-1AA10-3BA0	SF4	Heating capacity
Switch for power supply	3SU1052-2BC60-0AA0 3SU1550-0AA10-0AA0 3SU1400-1AA10-3BA0	QB1	Main switch
Conrad Centronics- Connector			
Sub-D plug 15 pol.	741680		
Wago Relay module	268327		
Wago Relay module	268327		
Schuko Plug -mains socket 230 V	783298	XJ1	


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.

	<p style="text-align: right;"><i>NOTE</i></p> <p>Do not use aggressive or abrasive cleaners.</p>
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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

	<p style="text-align: center;"><i>NOTE</i></p> <p>Electronic waste contains recyclable materials and must not be disposed of with the domestic waste. Bring electronic waste to a designated municipal collection point.</p>
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