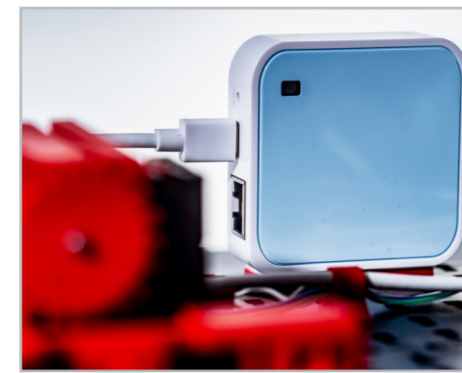
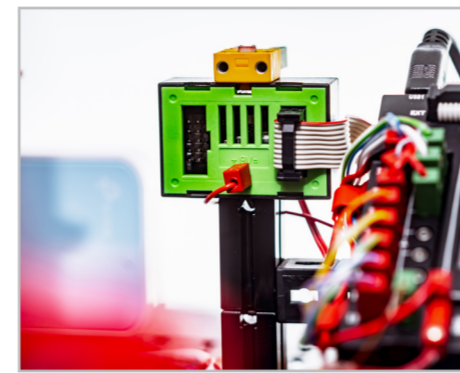


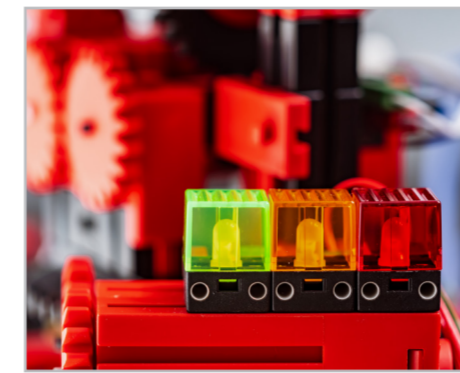
TRAINING FACTORY INDUSTRY 4.0 - 24V



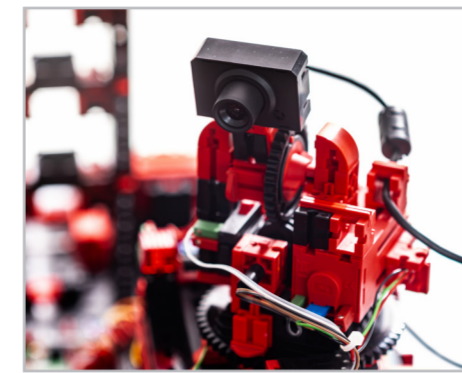
WiFi router



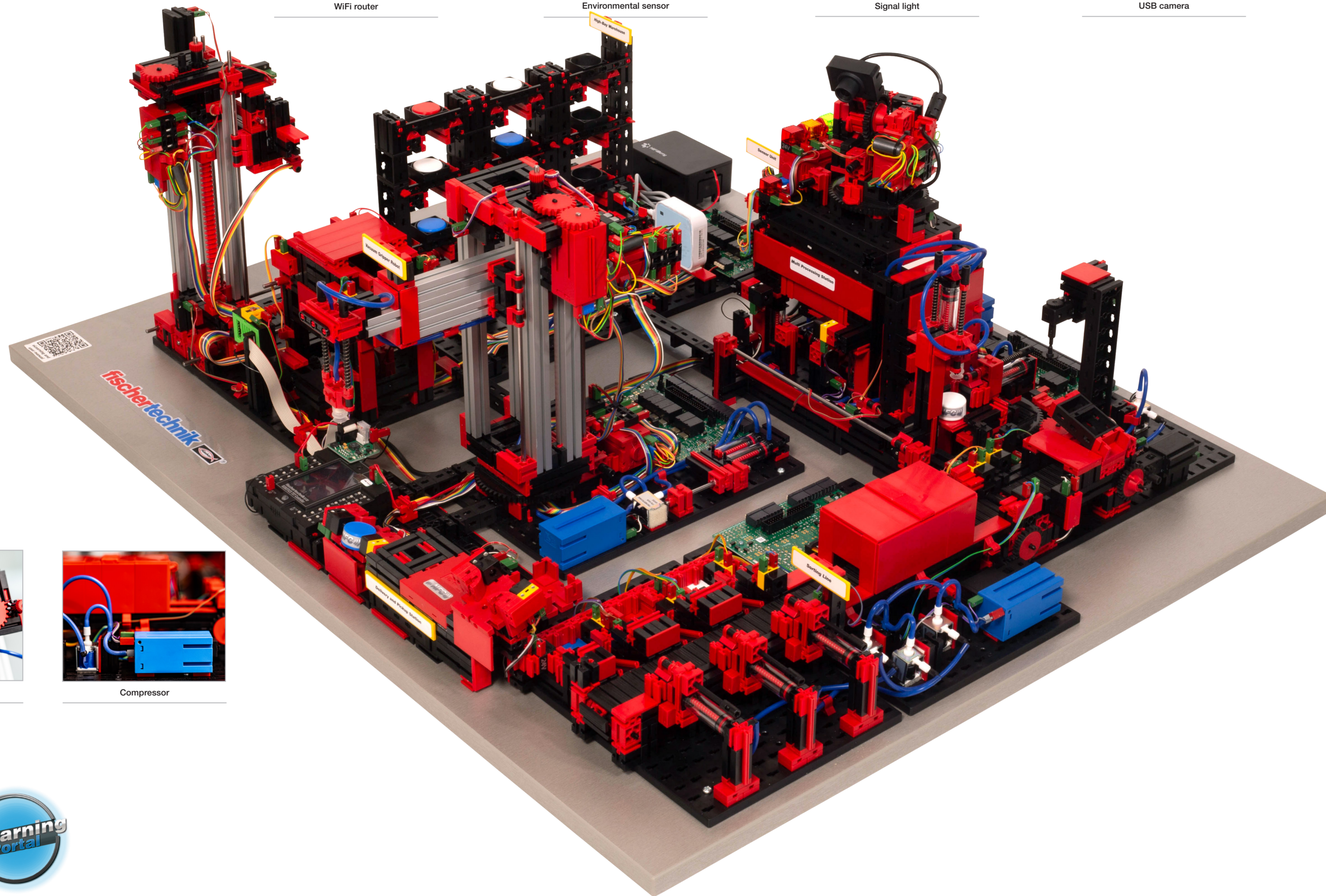
Environmental sensor



Signal light



USB camera



CONTROL AND SOFTWARE

Control with 24V:
The Training Factory Industry 4.0 24V is controlled by a PLC (brand independent, not included in the scope of delivery) and comes with a ready-made sample program (as Structured Text, ST).
The sample program is based on a Siemens S7-1500 (details at www.fischertechnik.de/simulation). The newly developed 24V adapter boards as interface to the PLC are available in the Training Factory Industry 4.0 pre-assembled, and are connected to the PLC via terminals.
Among other things, this latest generation of adapter boards allows

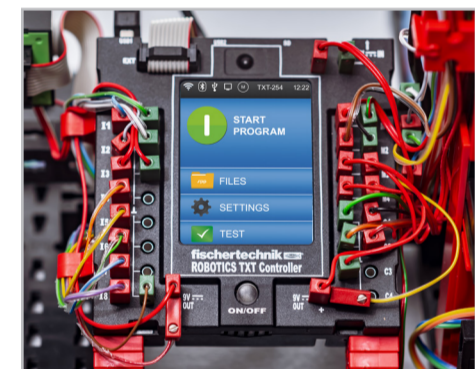
- the encoder motors to be controlled in speed via PWM
- the use of push/pull output stages for phototransistors and buttons

A fischertechnik TXT controller is also installed in the Training Factory Industry 4.0 24V. This is supplied with power via the adapter board and provides the connection to the fischertechnik cloud. The TXT Controller also communicates in MQTT to the IoT gateway (Raspberry Pi) which in turn translates in OPC-UA to the PLC controller. This also allows the 9V based components on this model—such as the environmental sensor, the USB camera, the brightness sensor, and the NFC reader—to communicate via the MQTT interface and read out from the PLC. Another interesting feature—which is another function of the IoT gateway—is the possibility of an optional connection to a separate cloud.
As such, Training Factory Industry 4.0 offers maximum flexibility for the end user.

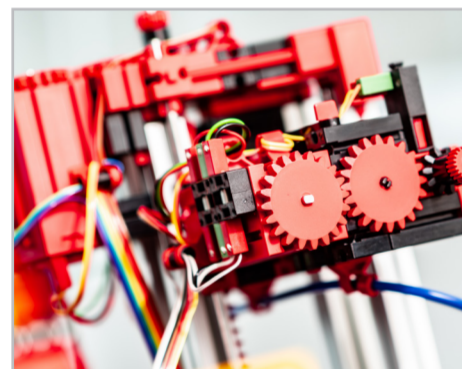
Software:
The PLC sample program for controlling the fischertechnik Training Factory Industry 4.0 was created for use with a Siemens S7-1500 and can be found at Github, where it can be used and downloaded free of charge:
<https://github.com/fischertechnik>

Of course, the fischertechnik Training Factory Industry 4.0 can also be used with many other popular PLC models and brands, and individual solutions can be programmed and implemented by the end-user. Please note that it may be necessary to make small adjustments to the sample program, which are to be implemented independently.

AR/VR, Digital Gemini:
The fischertechnik training and simulation models are also ideal for the use and demonstration of digital applications.
We will be happy to provide you with the necessary CAD data.



TXT Controller



Encoder motor



Compressor

ACCOMPANYING BOOKLET

In addition to all technical documents available at www.fischertechnik.de, the fischertechnik eLearning portal also contains a didactic accompanying booklet with detailed operating instructions as well as vital and helpful training and teaching content specially developed for the Training Factory Industry 4.0.
The technical specifications and explanations for the individual modules of the learning factory are also listed. The accompanying booklet can be viewed at www.fischertechnik-elearning.com.



SERVICE OFFERS

- **Contact:**
If you need any consultation or have any questions, you can contact Monday to Friday by phone and email.
Our service consultants will be glad to help you quickly. You can also go through the FAQs on www.fischertechnik.de for further information.
- **Delivery:**
All fischertechnik training and simulation models are delivered in a particularly sturdy shipping carton, which guarantees a safe delivery across the world. In addition, all deliveries are insured against transport damage at our expense.
- **Maintenance:**
You can request for a maintenance service for all training and simulation models to be able to use the full range of functions reliably over many years.
If needed, please contact us directly for more information. We will be happy to make you an all-inclusive offer.
- **Spare parts:**
Each fischertechnik component can be purchased and replaced individually even years after your model purchase.
Thus it is guaranteed that you always have a fully functional model in operation.
The complete overview of individual parts can be found at www.fischertechnik.de/spare-parts
- **CAD data:**
If you need CAD data for the training and simulation models, please contact us so that we can provide you with individual CAD data and make you an offer.

TRAINING FACTORY INDUSTRY 4.0 – AVAILABLE IN 2 VERSIONS:

The digitally driven change in industrial production requires stronger networking and integration on all production levels, and more accurate information. With fischertechnik Training Factory Industry 4.0, these digitization activities can be simulated, learned, and applied before they are implemented on a large scale. A highly flexible, modular, cost-effective, and robust training and simulation model, which can be extremely useful for teaching and demonstrations purposes.

The fischertechnik learning environment is used for learning and understanding Industry 4.0 applications in vocational schools and industrial training, as well as for use in research, teaching and development at universities, in companies, and in IT departments. These models are used to simulate the ordering process, the production process and the delivery process in digitalized and networked process steps.

The following topics can be addressed with fischertechnik Training Factory Industry 4.0:

- Training and simulation on a realistic production image
- Deepening learning through haptic comprehension
- Optical and sensory applications
- Digital traceability with NFC/RFID
- Customer-specific production in batch size 1
- Integrated cloud connection, control via smart devices
- Use and operation of dashboards
- Web-based remote monitoring
- Linking of production and disposition data
- Connection of upstream/downstream logistics processes
- High-bay warehouse operates according to FIFO industry standard
- For 24V: Sample program as structured text (ST) for Siemens PLC S7-1500 already included, custom program creation by end-user is also possible
- For 9V: Sample program in C/C++ already included, custom program creation by end-user is also possible

Factory environment:
This consists of the factory modules like storage and retrieval stations, Vacuum Gripper robot, High-Bay Warehouse, Multi Processing Station With Oven, a Sorting Line With Color Detection, an environmental sensor and a pivoting camera. After the order has been placed in the dashboard, the workpieces pass through the respective factory modules and the current status is immediately visible on the dashboard.
The integrated environmental sensor reports values for temperature, humidity, air pressure and air quality. The camera sees the entire system through the vertical and horizontal pan range and can thus be used for web-based remote monitoring.
Individual workpieces are tracked using NFC (Near Field Communication): A unique identification number (ID) is assigned to each workpiece. This enables traceability and visibility of the current status of the workpieces in the machining process.



FISCHERTECHNIK CLOUD, 2 DASHBOARDS RASPBERRY PI AND NODE-RED

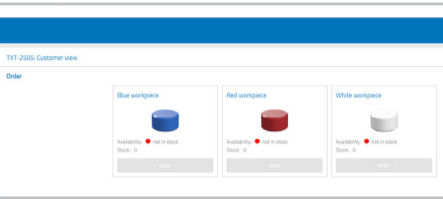
The WLAN router supplied and integrated into the Training Factory Industry 4.0 is used for connection to the fischertechnik cloud-based dashboard. Use of Chrome or Firefox web browsers is recommended. The cloud can be accessed once an initial connection is established with the end-user's smart phone, tablet, or other device (www.fischertechnik-cloud.com). The servers for the cloud are located in Germany, and adhere to very strict European requirements which apply to the storage of data. Personal data is stored in an account with password access protection, using the industry-standard protocol for authorization, "OAuth2". All data sent to the cloud is encrypted with certificates (https standard).

2 dashboards:
The fischertechnik dashboard in the cloud can be called and operated via mobile devices such as tablet and smartphone as well as on laptop and PC. Additionally, a local dashboard, created with Node-RED, is available on the Raspberry Pi (IoT gateway) is implemented, and custom dashboards can also be created via Node-RED. The dashboards included in Training Factory Industry 4.0 enable the display of platforms from three different perspectives:

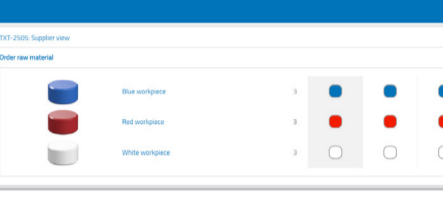
- Customer view
- Supplier view
- Production view

The **customer view** shows a webshop interface with a shopping cart, where you can order a workpiece and follow the current status of the order in the shopping cart. This history is displayed on the interface for the customer, so that he is informed about the status of his order. In the **supplier view**, the process for ordering raw materials is displayed and visualized. In the **production view**, the factory status, the production process, the inventory, the NFC/RFID reader and the sensor values can be queried. In addition, the camera that monitors the production line can also be controlled here. All these functions are controlled within one window and are switched over via the menu.

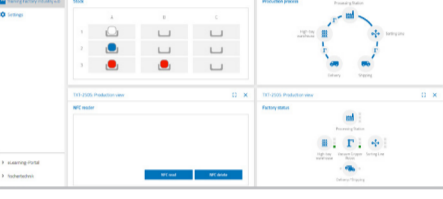
The **individual manufacturing steps** are visually simplified using connected nodes and represented in the **Production process view**. The currently active node (= production module) lights up green or red when the respective process step is being processed live or there is an error and is waiting to be corrected.
The inventory production view visualises the current **inventory** of workpieces including minimum and maximum stock. A reorder point procedure is stored.
This production view is used exclusively for visualisation.
The production view of the **NFC/RFID reader** displays the workpiece data and can be used to read or delete workpieces manually. The raw data of the NFC tags can be read using a standard NFC app from mobile devices with NFC readers.
Each workpiece has its own unique ID and displays the following data: Status, colour and timestamp from delivery to dispatch.
The **camera** is also controlled via the production view and the read values of the **environment sensor** can also be viewed here.



Customer view



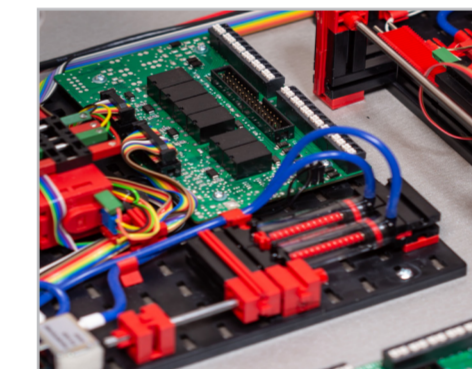
Supplier view



Production view



Environmental sensor data



Boards of the latest generation



Raspberry Pi (IoT Gateway)

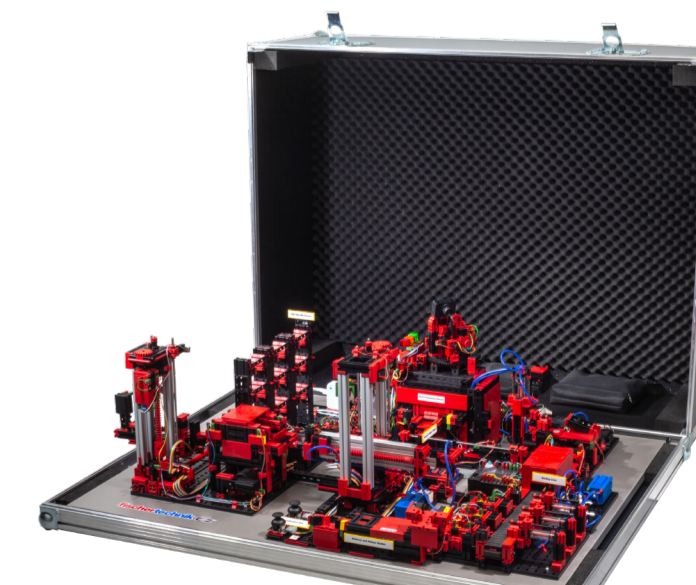


NFC Chip & NFC/RFID Reader

STORAGE AND TRANSPORT CASE

A customised case for safe storage and transport of fischertechnik factory models, which is precisely matched to their dimensions. This makes it ideal for users, who regularly take the factory models with them at trade fairs, want to show them to their customers and colleagues for demonstrations on the site or are looking for protection to cover and store these models.
The practical transport option works in the following manner: The factory model is placed once in the lower part of the case (height: 30 mm). Only the upper hood (height: 340 mm) is removed or put on. The factory model itself then no longer needs to be moved and is also fully functional in the lower part.

Material:
Aluminium case-maker profile with plastic plates and steel ball corners as well as 4 steel tilt handles and angle protection corners. The upper part (case hood) is partially lined with soft foam blocks in different heights and has 3 internal zipper pockets for stowing cables and accessories. The lower part is lined with hard foam.



Item No.	551587
EAN	4048962354218
Inside dimension (mm)	1.000 x 780 x 370
Outside dimension (mm)	1.040 x 820 x 410
Suitable for	551584 Training Factory Industry 4.0, 9V 554868 Training Factory Industry 4.0, 24V 536629 Factory simulation, 9V 536634 Factory simulation, 24V
Weight (kg)	17