

fischertechnik



TRAINING FACTORY INDUSTRY 4.0

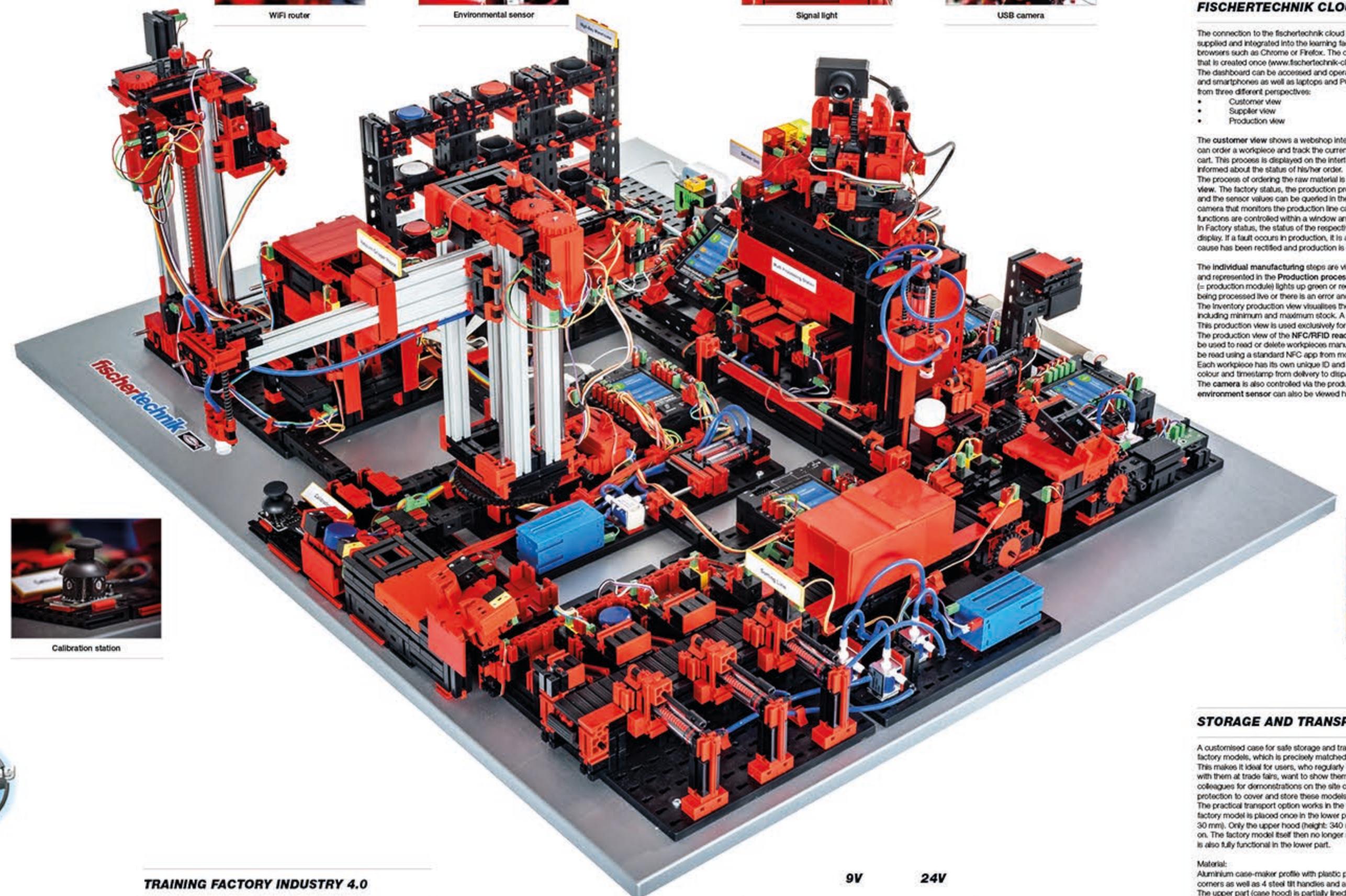


CONTROL AND SOFTWARE

Control:
The Training Factory Industry 4.0 is controlled by the 9V-based fischertechnik TXT Controller; its six units are installed. These are networked within the factory and communicate with each other via MQTT. MQTT (Message Queuing Telemetry Transport) is an open message protocol that enables the transmission of data in the form of messages between devices. The complete performance data of the TXT Controller can be viewed at www.fischertechnik.de; the most important features are:

- Dual processor: ARM Cortex A8 (32-bit/600MHz) + Cortex M3
- Storage capacity: 256 MB DDR3 RAM, 128 MB Flash
- Storage extension: Micro SD card slot
- Display: colour 2.4" touch display (320x240 pixel)
- 8 universal inputs: Digital/analogue 0-9VDC, analogue 0-5 kΩ
- 4 quick counter inputs: Digital, frequency up to 1 kHz
- 4 motor outputs: 9 V/250 mA (maximum: 600 mA); infinitely variable speed, start/stop/protection, individually 8 individual outputs, e.g. for lamps
- Combined Bluetooth/WiFi wireless module BT 2.1 EDR+4.0, WiFi 602.11 b/g/n
- Infrared receiver diode
- USB 2.0 client: Mini USB port for connection with the PC
- USB Host port: USB-A port for fischertechnik USB camera, USB sticks, etc.
- Camera interface via USB host, Linux camera drivers integrated in the operating system
- 10-pole pin row to increase inputs and outputs as well as I2C port
- Integrated loudspeaker
- Integrated real-time clock with replaceable button battery for recording the measured values in a defined period
- Linux based Open-Source operating system
- Programming possible with ROBO Pro, C-Compiler, PC-Library, etc.
- Power supply: 9V DC 3.45 mm port, or fischertechnik 2.5 mm ports

Software: C/C++ API programming interface:
The software application is written in C/C++ and is loaded on the controller in the ready-to-start status. The corresponding C/C++ library and API are available on GitHub at the time of delivery of the Training Factory Industry 4.0: <https://github.com/fischertechnik>.
This library can be used to write customized C/C++ programs for the Training Factory Industry 4.0.



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.
- Spares 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.

TRAINING FACTORY INDUSTRY 4.0

Changes in industrial production driven by digitalisation make stronger networking and more relevant information necessary on all production levels. With the fischertechnik Training Factory Industry 4.0, these digitalisation activities can be simulated, learned and applied on a small scale before they are implemented on a large scale.

An extremely flexible, modular, reasonably priced and robust training and simulation model, highly effective in use. The fischertechnik learning environment is used for learning and understanding Industry 4.0 applications in vocational schools and training as well as for research, teaching and development at universities, in companies and IT departments. The simulation depicts the ordering process, the production process and the delivery process in digitised and networked process steps.

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

- Training and simulation on a realistic production model
- In-depth learning through haptic comprehension
- Optical and sensory applications
- Digital traceability with NFC-RFID
- Customised production in lot size 1
- Integrated cloud connection, control via smart devices
- Using and operating dashboards
- Web-based remote monitoring
- Linking of production and materials planning data
- Connection of upstream and downstream logistics processes
- For experts: own program creation in C/C++

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.

9V 24V

Item No.	551584
EAN	404962254168
Dimension (mm)	972 x 772 x 402
Weight (kg)	24
Control	6x ROBOTICS TXT Controller
Software	ROBO Pro (not included)
Power Supply	3x power supply required 50587 (for 230V) 122952 (for 120V)

Models included in the factory

Please contact us if you are interested, we will be happy to advise you.
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FISCHERTECHNIK CLOUD AND DASHBOARD

The connection to the fischertechnik cloud is established via the WiFi router supplied and integrated into the learning factory. We recommend using the web browsers such as Chrome or Firefox. The cloud can be used via a personal access that is created online (www.fischertechnik-cloud.com). The dashboard can be accessed and operated via mobile devices such as tablets and smartphones as well as laptops and PCs. It enables platforms to be displayed 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 track the current status of the order in the shopping cart. This process is displayed on the interface for the customer so that he/she is informed about the status of his/her order.

The process of ordering the raw material is displayed and visualised in the supplier view. The factory status, the production process, the stock, the NFC-RFID reader and the sensor value can be queried in the production view. In addition, the camera that monitors the production line can also be controlled here. All these functions are controlled within a window and activated via the menu.

In factory status, the status of the respective module is visualised via a traffic light display. If a fault occurs in production, it is acknowledged via a button after the cause has been rectified and production is continued.

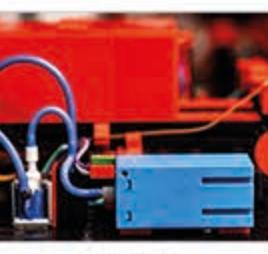
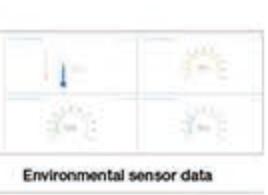
The individual manufacturing steps are visually simplified using connected nodes and represented in the Production process view. The currently active node (= production module) lights up green or red when the respective process step is being processed live or there is an error and is waiting to be corrected.

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 tag 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.



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: 404962254218
Inside dimension (mm): 1.000 x 780 x 370
Outside dimension (mm): 1.040 x 620 x 410
Suitable for: 551584 Training Factory Industry 4.0
536934 Factory simulation, 9V

Example Illustration