Welcome to the Learning System for Automation and Technology

Your partner for vocational and continuing training

Learning, knowledge and education are the big themes of this new century. Festo Didactic brings over 35 years’ experience to the table when developing solutions for fast learning and successful retention for the entire range of automation and technology. This expertise and experience puts us in a key position in this market of the future. Demand for training will continue to grow rapidly. And that’s why we have set ourselves the goal of making learning ever more efficient.

A great challenge for us. A great partner for you.

One-stop shopping

Today the Learning System for Automation is more comprehensive and up-to-date than ever and includes all current automation topics in its product range:
– Pneumatics
– Electropneumatics
– Hydraulics
– Electrohydraulics
– Electronics
– Sensors
– Robotics
– CNC technology
– PLC and fieldbus technology
– Manufacturing technology and process engineering
– Mechatronics

From basics to a complete training center

From basic training packages and technology-specific courses right through to planning, control and handling of complex networked CIM systems and complete, fully furnished learning centres – we have created a world of learning for you which is tailored to your personal needs for efficient study and guaranteed learning success.

At your side, worldwide

We speak your language! And we are just around the corner – in more than 100 countries around the world. We will gladly visit you at your office or home – whether you want to book courses or buy software, books or other products. Or perhaps you want to use the extensive range of online services – we’re just a mouseclick away at www.festo.com/didactic – the Internet marketplace for education and training.

New products 2004

Software
Designing and simulating 2
Programming and visualizing 4

Courseware
Mechatronics 6
Pneumatics, hydraulics 8

Training packages Electronics/PLC
Controllers 9
Fieldbus 12
Components 14

Workstation systems
Components and accessories 15

MPS®
Stations 16
Operating/observing 24
Safety engineering 25

Integrated Systems CIM/FMS
Order-based production with MPS® 30
microFMS, MultiFMS 31

Process Control System
Integrated systems 32

Festo Didactic new products 2004: www.festo.com/didactic
Software
Designing and simulating

FluidSIM®3.6: An idea became reality

“With an installed base of more than 75,000 versions, FluidSIM® is no doubt one of the most successful software packages in control engineering education. Ten different language versions are proof of the internationally of this simulation tool.

“Many suggestions from customer have led to our highly motivated development team continuing to improve and expand the functionality of FluidSIM®. Additional modules are planned for the future, keeping FluidSIM® up-to-date. This includes, for example, the extension of the symbol libraries for an industrial version.

“We are making FluidSIM® more modular in order to make working with the program even easier. And we plan the integration of dynamic simulation and a diagnostic tool that will allow fluid circuits to be examined in detail. Our aim is to work with FluidSIM® users to ensure that it maintains its leadership position as the Number One in fluid engineering.”

Dipl. Ing. (FH) Hartmut Braun
FluidSIM® Product Manager

Digital technology:
– 30 new symbols
– Detailed descriptions of all new symbols as per Siemens LOGO! Soft

Minicontroller with 8 I/Os:
– Complete minicontroller as a logic module with 8 inputs and 8 outputs that can access EasyPort directly. This makes FluidSIM® suitable, for example, for use in preparation for the intermediate mechatronics specialist examination.
– Communication with other applications is via the OPC standard.

Added convenience for electrical engineers:
– Automatic current path numbering and logic element tables in electrical circuits
– Pop-up terminal markings

XPS-95 Bronze Award 1996

Festo Didactic news products 2004: www.festo.com/didactic
The lesson preparation tool

- Windows functionality:
  - Drag & drop, copy & paste, context-sensitive menus
  - Transfer of text and graphics to Word and PowerPoint
  - Print preview, scaling and printing in all formats
  - Integrated slide show:
    - basic circuits, animated cutaways, teaching units, import of many Windows-compatible data formats (doc, ppt, avi, ...)
  - Integrated fundamentals of pneumatics and hydraulics on Video CD

Great new simulation features:

- New element:
  - The simple flow control valve.
- Counter or time display for all counter and time-delay elements.
- Force settable in the range -1000 to 1000 N for pneumatic cylinders. The parameter values set are automatically displayed in a pop-up window.

Unlimited experimentation possibilities with realistic real-time simulation:

- Calculation of pressure and flow rate, current and voltage
- Calculation of piston speed taking all friction losses into account
- Calculation of real pressure loss, for example at throttle points
- Error messages for open circuit and drawing errors
- Variable cylinder design and simulation for tractive and thrust loads

Do you know any other training program that can simulate the rectifier circuit (see screen shot on right) as accurately as FluidSIM® Hydraulics?

<table>
<thead>
<tr>
<th>FluidSIM®</th>
<th>German</th>
<th>English</th>
<th>Spanish</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>FluidSIM® 3.6 Pneumatics</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Student version</td>
<td>193 754</td>
<td>193 758</td>
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<td>532 671</td>
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<tr>
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<td>193 760</td>
<td>532 672</td>
<td>532 673</td>
</tr>
<tr>
<td>x-Multi-user license for local licensing</td>
<td>529 383</td>
<td>529 385</td>
<td>532 674</td>
<td>532 675</td>
</tr>
<tr>
<td>x-Multi-user license for network licensing</td>
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<td>529 386</td>
<td>532 676</td>
<td>532 677</td>
</tr>
<tr>
<td>FluidSIM® 3.6 Hydraulics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student version</td>
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<td>Single-user license</td>
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<td>197 090</td>
<td>532 680</td>
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<td>529 380</td>
<td>529 382</td>
<td>532 684</td>
<td>532 685</td>
</tr>
</tbody>
</table>

Other languages: Italian, Russian, Turkish, Chinese and Korean on request.
Always right up to date: Free updates in the Internet!
Software
Programming and visualizing

COSIMIR® PLC

COSIMIR® PLC is a PC-based graphic 3D simulation system that delivers the virtual learning environment for the mechatronics training system MPS®.

You can train the following using automation systems of varying complexity:
– Get to know the mode of operation and system structure of a system
– Train PLC programming and the testing of PLC programs
– Systematic troubleshooting of systems

The simulation environment and the graphic representation correspond to the industrial quality of COSIMIR® Professional.

Highlights at a glance
– With example program for all MPS® process models for control of the corresponding real model.
– Comprehensive online documentation: Training aims, functionality, notes on programming, and technical data.
– Simulation of the dynamic motion behavior of pneumatic and electrical actuators.
– Fault simulation with the possibility of fault elimination and logging. You can define mechanical, electrical, and pneumatic fault scenarios. Access to the creation of faults in the process model is password-protected. Location and elimination of errors can be logged, allowing training in systematic commissioning and repair in the event of fault in the simulation environment.
– Sequence design without programming knowledge: In manual mode you can carry out single-step operation, thus creating sequences without programming.
– Programming of the virtual PLC can be done with the SIMATIC Manager in STL, LDR, FUC or an editor that generates STEP 7-compatible code. The following diagnostic possibilities are available: Display of single steps, display of individual inputs and outputs, display of signal status changes in time diagrams, setting of breakpoints.

Specific functions of the software packages

<table>
<thead>
<tr>
<th>COSIMIR® PLC Educational</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated 3D process models</td>
<td>MPS® stations (except robot) and an FMS 50 automatic storage/retrieval system</td>
</tr>
<tr>
<td>Sensor simulation</td>
<td>Physically realistic sensor simulation</td>
</tr>
<tr>
<td>PLC</td>
<td>Integrated virtual STEP 7 PLC</td>
</tr>
<tr>
<td>OPC server for control of process models</td>
<td>With Soft-PLC PLCSIM or any other PLC, wiring via EasyPort</td>
</tr>
</tbody>
</table>

Order numbers

<table>
<thead>
<tr>
<th>German</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-user network license with dongle for parallel port</td>
<td>538 944</td>
</tr>
<tr>
<td>Single-user network license with dongle for USB port</td>
<td>539 053</td>
</tr>
<tr>
<td>Single-user license with online activation</td>
<td>538 997</td>
</tr>
<tr>
<td>Multi-user and network licenses, with dongles for parallel port or USB Port</td>
<td>On request</td>
</tr>
</tbody>
</table>
**New functions at a glance**

- The **model library** contains all new current Mitsubishi robot systems.
- The **import filter** has been extended by numerous CAD formats.
- The new **online communication interface (RCI Explorer)** to Mitsubishi robots allows a direct link between the PC and the robot via
  - Ethernet network interface
  - Serial interface
- **RCI Explorer** provides powerful functions for programming, monitoring and troubleshooting, including:
  - Project administration, program archiving and backup of parameter settings
  - Online “Teach In” of positions
  - Syntax check
  - Program start in automatic mode or single-step mode
  - Breakpoint setting for troubleshooting
  - Online display of current position data in axis and world coordinates
  - Online monitoring of current axis speeds and motor currents
  - Input/output monitor
  - Variable monitor

**Order numbers**

<table>
<thead>
<tr>
<th></th>
<th>COSIMIR® Industrial 4.1</th>
<th>COSIMIR® Professional 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>German, English</td>
<td>German, English</td>
</tr>
<tr>
<td>Single-user license with dongle for parallel port</td>
<td>539 083</td>
<td>539 088</td>
</tr>
<tr>
<td>Single-user license with dongle for USB port</td>
<td>539 084</td>
<td>539 089</td>
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<tr>
<td>Update single-user license (for parallel port and USB Port)</td>
<td>539 087</td>
<td>539 095</td>
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<tr>
<td>Network license, with dongle for parallel port or USB Port</td>
<td>On request</td>
<td>On request</td>
</tr>
</tbody>
</table>
Courseware
Mechatronics

The new courseware concept:
Mechatronics Assistant

The times when you had “waste time” researching, copying, collating, stapling, and distributing are over.

Mechatronics Assistant for training in educational institutes and industry:
The new Mechatronics Assistant is a syllabus-oriented structured archive on CD-ROM with all the documents you need for your training:
– Practice- and topic-oriented set of exercises with solutions, including for all MPS® stations
– Drawings, circuit diagrams, graphics
– Video sequences
– Presentation
– Technical documentation
– Operating instructions and safety notes
– Manuals and other aids

Universal tool:
These features make Mechatronics Assistant a multimedia tool for project work, training and exam preparation, a hypertext-based reference work for all training-related areas of automation technology and a planning medium for training of mechatronics specialists related vocations.

More than 2000 pages:
Turnkey tasks for modules, stations and systems mean that you can start teaching straight away with MPS®. Both introductory exercises and complex project tasks are available to the instructor. And of course, any task can be simply edited and saved as a new task – allowing you to create your own archive.

More than 500 slides and more than 1000 pages of teaching material for the instructor:
The instructor’s folder contains not only the complete ready-to-print trainee’s and instructor’s manual but also a broad collections of slides, templates for the creation of additional exercises, work sheets, and many tips on working with the Mechatronics Assistant.

System requirements:
– Intel-PC or compatible, at least 300 MHz
– Windows NT4.0 SP5 or Windows 2000 Professional SP2 (recommended); Windows 98, 98 SE and ME (possible)
– At least 64 MB RAM
– At least 32-speed CD-ROM drive
– Microsoft® Word 97 or Microsoft® Word 2000
– MS Internet Explorer 5.5 or 6.0
– Sun Java 2 Runtime Environment SE V1.4.1
– Flash Player 6 AX control

A fountain of knowledge:
More than 500 pages on over 25 topics – fundamentals on all aspects of mechatronics for reference, reading or as an introduction to a new topic.
The Mechatronics Assistant archive has unique features that make your work easier.

**Source formats:**
Many documents in Mechatronics Assistant are available in their source format (such as DOC, DXF, PPT). This allows you to put documents into your own personal format and use them again and again.

**Multidimensional database structure:**
Mechatronics Assistant documents can be accessed in several ways:
- According to the outline syllabus for mechatronics specialists
- By topic (commissioning, troubleshooting, programming, assembly)
- By MPS® station

**Cross-references via hyperlinks:**
With texts, more detailed information can be quickly accessed via a hyperlink. The source-format graphics are also linked with keywords, allowing searches for keywords within the graphics.

**A tool for instructors and trainees:**
The structure and handling are designed so that trainees can work within Mechatronics Assistant themselves based on a defined task. Trainees find everything they need for the solution. Access to the solutions area is password-protected.

**Mastering the technology:**
We guarantee this with the Premium Documentation which sets new standards:
- 3D setup instructions for stations, modules and components, all manuals, operating instructions and data sheets – in electronic form. This saves long searches, ensures that technical documentation on all exercises and projects is always handy and cannot be lost. More than 5,000 pages of technical documentation – that’s more than extensive.

**But there’s more:**
We have established a service page for Mechatronics Assistant users. Here you can download updates, new exercises, example programs and project ideas. All at no charge! This gives you the edge in training – your Mechatronics Assistant keeps on growing: www.festo.com/didactic

Order no. 529 133 (German)
Order no. 529 134 (English)

Festo Didactic new products 2004: www.festo.com/didactic
Courseware
Pneumatics, hydraulics

DVD
Electropneumatics and electrohydraulics, basic level

The film primarily shows electrical controllers. In addition to an introduction to electrical engineering it shows the most important switch elements and basic circuits. Practical applications alternate with animations and circuit examples.

Running time: 48 minutes

The film is multilingual. The following languages can be selected:
- German
- English
- Spanish
- French
- Italian
- Turkish
- Chinese
- Russian

The DVD is packed in a mini Systainer.

Order no. 538 487
SIMATIC S7 EduTrainer® Compact
(for the ER mounting frame or as desktop device)

The SIMATIC S7-300 is a modular PLC system by Siemens for industrial applications. For use in vocational and continuing training, the PLC has been integrated into didactic environment in the Festo Didactic ER format. The S7 Edu-Trainer® Compact units are equipped with the S7-313C with integrated digital and analog inputs and outputs as well as Profibus-DP or the S7-314C-2DP with integrated digital and analog I/Os.

Interfaces:
– 2 SysLink IEEE 488 sockets, one each for 8 digital inputs/outputs
– Submin-D socket, 15-pin, for analog inputs/outputs
– 4 mm safety for 24 V operating voltage
– MPI interface or additional Profibus-DP interface with CPU S7-313C-2DP/314C-2DP
– AS-Interface connection socket
– EMERGENCY STOP function

Components

<table>
<thead>
<tr>
<th>SIMATIC S7 EduTrainer® Compact without Profibus-DP, complete:</th>
<th>Quantity</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>313C with digital/analog processing and placeholder module DM370</td>
<td>533 018</td>
<td></td>
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<tr>
<td>313C with digital/analog processing and AS-Interface master CP343-2</td>
<td>533 019</td>
<td></td>
</tr>
<tr>
<td>313C with digital/analog processing and simulator module SM374</td>
<td>533 020</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>SIMATIC S7 EduTrainer® Compact with Profibus-DP, complete:</th>
<th>Quantity</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>313C-2DP with digital processing and placeholder module DM370</td>
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<td></td>
</tr>
<tr>
<td>313C-2DP with digital processing and AS-Interface master CP343-2</td>
<td>527 424</td>
<td></td>
</tr>
<tr>
<td>313C-2DP with digital processing and analog I/O group SM334</td>
<td>533 022</td>
<td></td>
</tr>
<tr>
<td>313C-2DP with digital processing and simulator module SM374</td>
<td>533 023</td>
<td></td>
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<tr>
<td>314C-2DP with digital/analog processing and placeholder module DM370</td>
<td>536 905</td>
<td></td>
</tr>
<tr>
<td>314C-2DP with digital/analog processing and AS-Interface master CP343-2</td>
<td>536 906</td>
<td></td>
</tr>
<tr>
<td>314C-2DP with digital/analog processing and simulator module SM374</td>
<td>536 907</td>
<td></td>
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</tbody>
</table>

Housing dimensions 145 x 240 x 170 mm (H x W x D)
A CD-ROM included in the scope of delivery contains examples for training with STEP 7, AS-Interface and Profibus-DP as well as PPT shows on AS-Interface, distributed automation with Profibus-DP and valve terminals (German).
The S7/STEP 7 documentation on CD-ROM (5-lingual) is included in the scope of delivery.

Notes:
– The S7 is connected to the programming device or the PC via the integrated MPI interface and the PC adapter cable, and programmed in STEP 7.
– Units are supplied ready assembled.
– Data buffering by Micro Memory Card (included in scope of delivery).
**Training packages Electronics/PLC**

**Controllers**

**LOGO! EduTrainer® TP**

TP 201, 202

The LOGO! EduTrainer® TP continues the series of EduTrainer® with LOGO! and is a compact trainer with integrated connection technology for 4 mm laboratory connectors. 8 digital inputs and 4 digital relay outputs allow the control of simple electropneumatics exercises (TP 201/202).

Required accessories:
- LOGO! Soft Comfort
- Programming cable
- LOGO! manual

Order no. 535 250

**S7 EduTrainer® Start**

TP 201, 202, 301

A new variant has been added to the series of S7 EduTrainer® Compact trainers. In contrast to these trainers, the 4 mm safety sockets are integrated into the unit itself. The smallest processor of the S7-300 family – the 312C with 10 inputs and 6 outputs (digital) – was chosen as the CPU.

This EduTrainer® has 3 interfaces to the process:
- 4 mm safety sockets for the connection of components from the equipment sets Electropneumatics (TP 201/202) and PLC technology (TP 301)
- Phoenix screw-terminal plug for realistic wiring of sensors and actuators without 4 mm technology
- SysLink socket as per IEEE 488, for 8 digital inputs and 8 digital outputs for the connection of a Simulation Box, an EasyPort for process simulation or an MPS® station

This EduTrainer® is particularly suitable for an introduction to PLC technology and for the control of small applications with a small number of digital inputs and outputs.

Order no. 535 255
Trainingspaket ELEktronik/PLC

Controller

Simulationsbox, digital

Simulation accessories  
Order no. 170 643

The simulation box allows simulation of the input and output signals of an MPS® station or a PLC. Two types of application are possible:

– Simulation of inputs for testing of a PLC program:
  Use I/O data cable (Order no. 034 031) for this purpose.

– Setting of outputs (with separate 24 V power supply) in order to operate an MPS® station. The necessary cable (Order no. 167 106) is included in the scope of delivery.

The simulation box contains a SysLink socket.

Simulationsbox, digital/analog

Simulation accessories  
Order no. 526 863

The digital/analog simulation box additionally allows the simulation and display of analog signals (0 – 10 V). The simulation box is supplied without connection cables.

The following connection cables are recommended for flexible application:

– I/O data cable with SysLink connectors at each end, crossover  
Order no. 167 106

– I/O data cable  
Order no. 034 031

– Analog cable, parallel  
Order no. 529 141

– Analog cable, crossover  
Order no. 533 039

PC adapter with RS232 cable

S7 accessories  
Order no. 184 555

Programming cable for the SIMATIC S7.
**Training packages Electronics/PLC**

**Fieldbus**

Fieldbus technology AS-Interface, TP 401

**Training aims:**
- Fieldbus systems in automation
- Application criteria for fieldbus systems
- Comparison of various fieldbus systems
- Network topologies and access methods
- ISO/OSI 7 layer model
- AS-Interface fundamentals
- AS-Interface transmission system
- AS-Interface master/slave
- Configuration of an AS-Interface network with STEP 7

- Connecting and programming bus stations

A SIMATIC S7-300 with AS-Interface master is required for solution of the tasks in this training package. One of the listed S7 EduTrainers® is suitable.

Use of a universal connection unit (Order no. 162 231) allows sensors and actuators to be connected via 4 mm safety sockets.

**Programming software:**
- STEP 7, V5.1 (IEC 1131-3) or later
- STL, LAD, FCH, GRAPH and SCL
- Trainer Package for 12 PCs, 5-lingual (Order no. 531 141)

**Recommended training media:**
- Textbook Programmable Logic Controllers, Basic level
- Workbook AS-Interface
- Bus Studio WBT, Fundamentals of fieldbus technology
- CD-ROM "Examples for training with STEP 7, AS-Interface and Profinet-DP and PPT shows on AS-Interface, distributed automation with Profinet-DP and valve terminals"

**Necessary accessories:**
- Aluminium profile plate (1100 x 700 mm) (Order no. 159 411)
- Tabletop power supply unit or power supply unit for the mounting frame
- Set of cables (Order no. 167 091)

<table>
<thead>
<tr>
<th>Components</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AS-Interface master</strong></td>
<td></td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® Compact 313C with digital/analog processing and AS-Interface master CP343-2*</td>
<td>533 019</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® Compact 314C-2DP with digital/analog processing and AS-Interface master CP343-2*</td>
<td>536 906</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® Compact 313C-2DP with digital processing and AS-Interface master CP343-2*</td>
<td>527 424</td>
</tr>
<tr>
<td>S7 EduTrainer® plus with AS-Interface master CP343-2 (Order no. 526 853)</td>
<td>on request</td>
</tr>
<tr>
<td><strong>AS-Interface slaves</strong></td>
<td></td>
</tr>
<tr>
<td>AS-Interface power supply*/**</td>
<td>527 426</td>
</tr>
<tr>
<td>AS-Interface I/O connection unit*/**</td>
<td>527 427</td>
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<tr>
<td>AS-Interface control unit*/**</td>
<td>527 428</td>
</tr>
<tr>
<td>AS-Interface valve terminal (4 valve slices)**</td>
<td>527 431</td>
</tr>
<tr>
<td>AS-Interface interface for valve terminal (8 valve slices, Order no. 532 932)</td>
<td>187 714</td>
</tr>
<tr>
<td>Valve terminal with single valve interface (8 valve slices)</td>
<td>532 932</td>
</tr>
<tr>
<td>AS-Interface diffuse sensor with adapter for Stack magazine**</td>
<td>532 929</td>
</tr>
<tr>
<td>AS-Interface single valve interface for MIDI solenoid valve (from TP 201, 301)</td>
<td>533 525</td>
</tr>
<tr>
<td>AS-Interface single valve interface for MIDI double pilot valve (from TP 201, 301)**</td>
<td>533 524</td>
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<tr>
<td><strong>Accessories</strong></td>
<td></td>
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<tr>
<td>AS-Interface cable with fieldbus sockets, 50 cm</td>
<td>533 032</td>
</tr>
<tr>
<td>AS-Interface cable with fieldbus sockets, 125 cm</td>
<td>533 033</td>
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<tr>
<td>AS-Interface cable with fieldbus sockets, 200 cm</td>
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<tr>
<td>AS-Interface flat cable, yellow, 100 cm</td>
<td>534 365</td>
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<tr>
<td>AS-Interface flat cable, black, 100 cm</td>
<td>534 366</td>
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<tr>
<td>Fieldbus socket, straight</td>
<td>018 495</td>
</tr>
<tr>
<td>Fieldbus socket, angled</td>
<td>018 525</td>
</tr>
<tr>
<td>DUO cable for sensor connection to AS-Interface single valve interface, straight</td>
<td>018 685</td>
</tr>
<tr>
<td>DUO cable for sensor connection to AS-Interface single valve interface, angled</td>
<td>018 687</td>
</tr>
<tr>
<td>Universal connection unit, digital (SysLink)*</td>
<td>162 231</td>
</tr>
<tr>
<td>I/O data cable (SysLink)</td>
<td>034 031</td>
</tr>
</tbody>
</table>

* Four plug-in adapters (Order no. 323 571) are required for securing components to the profile plate, see Accessories.

** These components are required to carry out the exercises in workbook TP 401 AS-Interface. These exercises also require a PLC with AS-i master function, AS-i cable, the universal connection unit with I/O data cable, components for the TP 201 equipment set and the MPS® Stack magazine module (Order no. 527 434), Changer module (Order no. 527 435), and the necessary sensor cables.

Festo Didactic news products 2004: www.festo.com/didactic
Training packages Electronics/PLC

Fieldbus

Fieldbus technology Profibus-DP, TP 402

Training aims:
– Fieldbus systems in automation
– Application criteria for fieldbus systems
– Comparison of various fieldbus systems
– Network topologies and access methods
– ISO/OSI 7 layer model
– Profibus-DP fundamentals
– Profibus-DP transmission system
– Profibus-DP master/slave
– Configuration of a Profibus-DP network with STEP 7

– Connecting and programming bus stations

A SIMATIC S7-300 with Profibus-DP master is required for solution of the tasks in this training package. One of the listed S7 EduTrainers® is suitable. Use of a universal connection unit (Order no. 162 231) allows sensors and actuators to be connected via 4 mm safety sockets.

Components

<table>
<thead>
<tr>
<th>Profibus-DP master</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMATIC S7 EduTrainer® Compact 313C-2DP with digital processing and placeholder module DM370*</td>
<td>533 021</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® Compact 313C-2DP with digital processing and AS-Interface master CP343-2*</td>
<td>527 424</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® Compact 313C-2DP with digital processing and analog I/O group SM334*</td>
<td>533 022</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® Compact 313C-2DP with digital processing and simulator module SIM74*</td>
<td>533 023</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 314C-2DP with digital/analog processing and placeholder module DM370</td>
<td>536 905</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 314C-2DP with digital/analog processing and AS-Interface master CP343-2</td>
<td>536 906</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 314C-2DP with digital/analog processing and simulator module SIM74</td>
<td>536 907</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 313C-2DP with simulation plates for 16/16 digital I/O, Profibus-DP integrated</td>
<td>533 562</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 313C-2DP with simulation plates for 16/16 digital I/O, SysLink, Profibus-DP integrated</td>
<td>533 563</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 313C-2DP with simulation plates for 16/16 digital I/O, 4/2 analog I/O, Profibus-DP integrated</td>
<td>533 564</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 313C-2DP with simulation plates for 16/16 digital I/O, 4/2 analog I/O, SysLink, Profibus-DP integrated</td>
<td>533 565</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 314C-2DP with simulation plates for 16/16 digital I/O, 4/2 analog I/O, Profibus-DP integrated</td>
<td>536 742</td>
</tr>
<tr>
<td>SIMATIC S7 EduTrainer® plus 314C-2DP with simulation plates for 16/16 digital I/O, 4/2 analog I/O, SysLink, Profibus-DP integrated</td>
<td>536 743</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Profibus-DP slaves</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMATIC S7 EduTrainer® ET 2005 with 12 inputs and 10 outputs*/**</td>
<td>527 425</td>
</tr>
<tr>
<td>Profibus-DP valve terminal (7 valve, 1 relay slice and 16-way input stage)**</td>
<td>527 432</td>
</tr>
<tr>
<td>Profibus-DP interface for valve terminals (8 valve slices, Order no. 552 952)</td>
<td>165 809</td>
</tr>
<tr>
<td>Valve terminal with single valve interface (8 valve slices)</td>
<td>532 932</td>
</tr>
<tr>
<td>Profibus-DP 16-way input stage for valve terminal</td>
<td>533 523</td>
</tr>
<tr>
<td>Connection cable for 16-way input stage – Profibus-DP valve terminal</td>
<td>178 564</td>
</tr>
<tr>
<td>Trainer Package Touchpanel TP170A with Protol/Lite (with Profibus-DP connection)</td>
<td>on request</td>
</tr>
</tbody>
</table>

Accessories

| Profibus cable, 50 cm/200 cm | 533 035/533 036 |
| Universal connection unit, digital (SysLink)* | 162 231 |
| I/O data cable (SysLink) | 034 031 |

* Four plug-in adapters (Order no. 323 571) are required for securing components to the profile plate, see Accessories.
** These components are required to carry out the exercises in workbook TP 402 Profibus-DP. These exercises also require a PLC with DP master function, Profibus cable, the universal connection unit with I/O data cable, components for the TP 201 equipment set and the MPS® Stack magazine module (Order no. 527 434), Changer module (Order no. 527 435), and the necessary sensor cables.
## Training packages Electronics/PLC

### Components

<table>
<thead>
<tr>
<th>Control of virtual process models</th>
<th>Components for EduTrainer®</th>
<th>Components for any PLC with terminal strip</th>
<th>Process models (selection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two software solutions with different process models and functions are available:</td>
<td>EduTrainer® of your choice</td>
<td>PLC of your choice</td>
<td>Railway crossing (EasyVeep)</td>
</tr>
<tr>
<td><strong>EasyVeep</strong></td>
<td>VEEP® 2 for EduTrainer® (Order no. on request)</td>
<td>VEEP® 2 for any PLC (Order no. on request)</td>
<td>Multistory car park (EasyVeep)</td>
</tr>
<tr>
<td>The EasyVeep software package is included in the scope of delivery of EasyPort. EasyVeep provides you with numerous interesting software process models that you can control with a real PLC via EasyPort. The realistic models are documented and satisfy a wide range of needs. Topics include:</td>
<td>Comprising: Interface EasyPort D16 (Order no. 167 121)</td>
<td>Comprising: Interface EasyPort D16 (Order no. 167 121)</td>
<td>Elevator (EasyVeep)</td>
</tr>
<tr>
<td>– Railway crossing</td>
<td></td>
<td></td>
<td>MPS® station (COSIMIR® PLC)</td>
</tr>
<tr>
<td>– Multistory car park</td>
<td></td>
<td></td>
<td>MPS® station (COSIMIR® PLC)</td>
</tr>
<tr>
<td>– Sorting system</td>
<td></td>
<td></td>
<td>MPS® system (COSIMIR® PLC)</td>
</tr>
<tr>
<td>– Lock chamber</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Elevator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COSIMIR® PLC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COSIMIR® PLC is the new PC-based graphic simulation program that contains the virtual learning environment for the mechatronics training system MPS®:</td>
<td>Software EasyVeep or COSIMIR® PLC</td>
<td>Software EasyVeep or COSIMIR® PLC</td>
<td></td>
</tr>
<tr>
<td>– All MPS® Stations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Various FMS 50 work cells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Also, you can train the following using various complex automation systems:</td>
<td>I/O data cable with SysLink connectors as per IEEE 488 at both ends, crossover (Order no. 167 106)</td>
<td>I/O data cable with one SysLink connector as per IEEE 488 and cable-end sleeves (Order no. 167 122)</td>
<td></td>
</tr>
<tr>
<td>– Get to know the mode of operation and structure of a system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Practice PLC programming and PLC program testing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Carry out systematic troubleshooting of systems.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The simulation environment and the graphic display quality correspond to the industrial quality of COSIMIR® Professional.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Workstation systems
### Components and accessories

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table-top mounting frame A4</strong></td>
<td>Order no. 536 582</td>
</tr>
<tr>
<td>Mounting frame</td>
<td></td>
</tr>
<tr>
<td>Allows an EduTrainer® plus or A4 units to be mounted in a universal mobile rack.</td>
<td></td>
</tr>
</tbody>
</table>

| **ER mounting frame holder for profile plate** | Order no. 539 002 |
| Accessories for mounting frames |                 |
| 2 angle brackets with assembly material for mounting an ER mounting frame (Order no. 162 226) on a profile plate (1100 x 700 mm, Order no. 159 411). Direct mounting of the ER mounting frame on the horizontal profile plate allows the variable use of training packages on any work table. |                 |

| **Slotted mounting plate** | Order no. 159 331 |
| Accessories for mounting frames |                 |
| Sensors and actuators from the equipment set can be mounted on this plate. The Quick-Fix system is compatible. The slotted mounting plate can be installed in the conventional A4 support frame or on the table top. Several mounting plates can be bolted together for larger setups. |                 |
| Size ________________________________ 532 x 297 mm |                 |

| **ER mounting frame A4** | Order no. 536 200 |
| Accessories for mounting frames |                 |
| The ER mounting plate can be mounted in any A4 mounting frame. A cutout allows the mounting of 2 large or 4 small Festo Didactic ER units. The two metal tabs with lateral holes allow vertical mounting on a profile plate with the aid of two aluminium profiles. |                 |

| **ER blank panel** | Order no. 011 429 |
| Accessories for mounting frames |                 |
| (Not shown) | ER-format plug-in unit to cover empty slots in ER mounting frames. |
Distributing station AS-Interface

Function:
The Distributing station separates workpieces. Up to 8 workpieces may be in the magazine tube of the stack magazine. A double-acting cylinder pushes the workpieces out separately. The Changer module grips the separated workpiece with a vacuum gripper. Driven by a rotary cylinder, the swivel arm of the changer moves the workpiece to the downstream station's transfer point.
The station is equipped with various AS-Interface components (slaves). A PLC with AS-Interface master functionality is required for operation of the station.

Technical data:
– Operating pressure 600 kPa (6 bar)
– Power supply 24 V DC
– 3 AS-Interface slaves

Recommended accessories:
– Simulation box, digital (Order no. 170 643)
– Workpiece set “Bodies” (Order no. 167 021)
– Tabletop power supply unit

You can choose from a wide range of other controllers for alternative equipping of the PLC board.

<table>
<thead>
<tr>
<th>Components</th>
<th>Quantity</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short description</td>
<td>1</td>
<td>648 811</td>
</tr>
<tr>
<td>Aluminium profile plate</td>
<td>1</td>
<td>170 395</td>
</tr>
<tr>
<td>Cable holders (set of 10 pieces)</td>
<td>2</td>
<td>196 965</td>
</tr>
<tr>
<td>Profile plate connectors</td>
<td>2</td>
<td>162 228</td>
</tr>
<tr>
<td>Station link receiver</td>
<td>1</td>
<td>196 964</td>
</tr>
<tr>
<td>Start-up valve with filter control valve, 40 µm</td>
<td>1</td>
<td>152 894</td>
</tr>
<tr>
<td>AS-Interface CP valve terminal</td>
<td>1</td>
<td>535 239</td>
</tr>
<tr>
<td>Stack magazine module</td>
<td>1</td>
<td>162 385</td>
</tr>
<tr>
<td>Changer module</td>
<td>1</td>
<td>162 387</td>
</tr>
<tr>
<td>AS-Interface reflex light sensor</td>
<td>1</td>
<td>532 929</td>
</tr>
<tr>
<td>Sensor cable</td>
<td>1</td>
<td>532 930</td>
</tr>
<tr>
<td>Vacuum switch</td>
<td>1</td>
<td>196 973</td>
</tr>
<tr>
<td>CP solenoid valve</td>
<td>1</td>
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</tr>
<tr>
<td>AS-Interface single-valve interface</td>
<td>1</td>
<td>535 236</td>
</tr>
<tr>
<td>AS-Interface mounting kit</td>
<td>1</td>
<td>535 237</td>
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<tr>
<td>DUO cable</td>
<td>3</td>
<td>018 685</td>
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<tr>
<td>Extension cable</td>
<td>1</td>
<td>175 488</td>
</tr>
<tr>
<td>Minor accessories (tubing, cable binders, cable-end sleeves)</td>
<td>1</td>
<td>535 240</td>
</tr>
<tr>
<td>Complete station</td>
<td></td>
<td>195 760</td>
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<tr>
<td>Trolley</td>
<td></td>
<td>120 856</td>
</tr>
<tr>
<td>Control console</td>
<td></td>
<td>195 764</td>
</tr>
<tr>
<td>Control console with AS-Interface connection (alternative)</td>
<td></td>
<td>535 814</td>
</tr>
<tr>
<td>PLC board with SIMATIC S7-313C-2DP</td>
<td></td>
<td>533 527</td>
</tr>
<tr>
<td>PLC board with SIMATIC S7-313C (alternative)</td>
<td></td>
<td>533 526</td>
</tr>
<tr>
<td>AS-Interface upgrade S7-300 (kit with setup instructions)</td>
<td></td>
<td>533 028</td>
</tr>
</tbody>
</table>

Possible combinations

<table>
<thead>
<tr>
<th>Downstream stations</th>
<th>V</th>
<th>P</th>
<th>B</th>
<th>H</th>
<th>PU</th>
<th>R</th>
<th>M</th>
<th>S</th>
<th>HS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream stations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Innovative valve technology:
AS-Interface CP valve terminal

All signals from the Changer module are consolidated to an AS-Interface slave by the valve terminal: Vacuum generation and interrogation, 5/3-way valve for the semi-rotary actuator and end-position sensing for the semi-rotary actuator.

Sensor right on the bus:
AS-Interface sensor

Various AS-Interface slaves are used in the Distributing station AS-Interface. A typical AS-Interface element is the optical sensor (reflex light sensor) with integrated AS-Interface port.

Training content for project work:

Mechanics:
- Mechanical design of a station

Pneumatics:
- Tubing pneumatic components
- Vacuum technology
- Pneumatic linear and rotary drives

Fieldbus technology:
- Getting to know the AS-Interface
- Testing, integrating and commissioning AS-Interface components in an automated system
- Designing, configuring and programming AS-Interface networks

Recommended training media:

- Mechatronics Assistant (contains over 100 pages of project assignments on the topic of the Distributing station with AS-Interface, see Courseware – Mechatronics)
- Design and simulation program FluidSIM® Pneumatics (see Software – Designing and simulating)
- WBT Bus Studio
- Workbook Fieldbus technology AS-Interface
- TP 401 (see Training packages Electronics/PLC – Fieldbus)
Sorting station DP

**Function:**
The Sorting station sorts workpieces onto three slides. Workpieces placed on the start of the conveyor are detected by a diffuse sensor. Sensors upstream of the barrier detect the workpiece properties (black, red, metal). Branches – which are actuated by short-stroke cylinders via a deflector – allow sorting of workpieces onto the appropriate slides. A retro-reflective sensor monitors the level of the slides. A light barrier monitors the fill level of the slides. The station is equipped with a CP valve terminal with Profinet-DP port (DP slave). A PLC with Profinet-DP Master functionality is required for operation of the station.

**Technical Data:**
- Operating pressure 600 kPa (6 bar)
- Power supply 24 V DC
- DP slave (8 digital inputs, 4 digital outputs)

**Recommended accessories:**
- Simulation box, digital (Order no. 170 643)
- Workpiece set “Bodies” (Order no. 167 021) or “Cylinders for assembly” (Order no. 162 239)
- Tabletop power supply unit

You can choose from a wide range of other controllers as alternative equipment for the PLC board.

<table>
<thead>
<tr>
<th>Components</th>
<th>Quantity</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short description</td>
<td>1</td>
<td>648 821</td>
</tr>
<tr>
<td>Aluminium profile plate</td>
<td>1</td>
<td>170 395</td>
</tr>
<tr>
<td>Electrical mounting system</td>
<td>1</td>
<td>535 241</td>
</tr>
<tr>
<td>Cable holders (set of 10 pieces)</td>
<td>1</td>
<td>196 965</td>
</tr>
<tr>
<td>Profile plate connectors</td>
<td>2</td>
<td>162 228</td>
</tr>
<tr>
<td>Station link transmitter</td>
<td>1</td>
<td>196 963</td>
</tr>
<tr>
<td>Start-up valve with filter control valve, 40 µm</td>
<td>1</td>
<td>152 894</td>
</tr>
<tr>
<td>Profinet-DP CP valve terminal</td>
<td>1</td>
<td>535 242</td>
</tr>
<tr>
<td>Conveyor module 350 with DC motor</td>
<td>1</td>
<td>196 962</td>
</tr>
<tr>
<td>Set of guide rails, Sorting</td>
<td>1</td>
<td>654 968</td>
</tr>
<tr>
<td>Starting current limiter</td>
<td>1</td>
<td>350 768</td>
</tr>
<tr>
<td>Branch module, pneumatic</td>
<td>2</td>
<td>526 230</td>
</tr>
<tr>
<td>Slide module</td>
<td>3</td>
<td>653 393</td>
</tr>
<tr>
<td>Stopper module</td>
<td>1</td>
<td>196 971</td>
</tr>
<tr>
<td>Diffuse sensor</td>
<td>2</td>
<td>196 959</td>
</tr>
<tr>
<td>Retro-reflective sensor</td>
<td>1</td>
<td>196 969</td>
</tr>
<tr>
<td>Sensor, inductive</td>
<td>1</td>
<td>196 968</td>
</tr>
<tr>
<td>CP input module</td>
<td>1</td>
<td>535 243</td>
</tr>
<tr>
<td>Sensor cable</td>
<td>2</td>
<td>532 930</td>
</tr>
<tr>
<td>Extension cable</td>
<td>6</td>
<td>175 488</td>
</tr>
<tr>
<td>Connection cable 4 mm, 3-pin</td>
<td>1</td>
<td>381 525</td>
</tr>
<tr>
<td>Minor accessories (tubing, cable binders, cable-end sleeves)</td>
<td>1</td>
<td>535 244</td>
</tr>
<tr>
<td><strong>Complete station</strong></td>
<td></td>
<td>195 761</td>
</tr>
<tr>
<td><strong>Trolley</strong></td>
<td></td>
<td>120 856</td>
</tr>
<tr>
<td><strong>Control console</strong></td>
<td></td>
<td>195 764</td>
</tr>
<tr>
<td><strong>PLC board with SIMATIC S7-313C-2DP</strong></td>
<td></td>
<td>533 527</td>
</tr>
</tbody>
</table>

You can choose from a wide range of other controllers as alternative equipment for the PLC board.
**Profibus-DP**

The station has a Profibus-DP valve terminal. All process inputs and outputs are connected to the valve terminal. Information transmission to the PLC takes place via the Fieldbus Profibus-DP; the Sorting station is configured as a Profibus-DP slave.

For project work:

**Modularity in every detail**

All sensors are connected to the input module via plug-in connectors. The systematic use of modularity supports project-based training. Simple projects can be carried out using parts of the station.

**Training content for project work:**

- **Mechanics:**
  - Mechanical design of a station
  - Selection and use of various electrical drives

- **Pneumatics:**
  - Tubing pneumatic components

- **Electrical engineering:**
  - Correct wiring of electrical components

- **Fieldbus technology:**
  - Getting to know the AS-Interface
  - Testing, integrating and commissioning AS-Interface components in an automated system
  - Designing, configuring and programming AS-Interface networks

**Recommended training media:**

- Mechatronics Assistant (contains over 200 pages of project assignments on Sorting station with Profibus-DP, see Courseware – Mechatronics)
- Design and simulation program FluidSIM® Pneumatics (see Software – Designing and simulating)
- WBT Bus Studio
- Workbook Fieldbus technology Profibus-DP
- TP 402 (see Training packages Electronics/PLC – Fieldbus)
Pick & Place station

Function:
The Pick & Place station is equipped with a two-axis Pick & Place module. Workpiece housings placed on the conveyor are detected by the diffuse sensor. The workpiece is transported to the pneumatic separator on the conveyor belt and detected by a second diffuse sensor. The Pick & Place module picks up a workpiece insert from the slide and places it on the workpiece housing. The complete workpiece (housing and insert) is released by the separator and transported to the end of the conveyor belt. A light barrier detects the workpiece at the end of the conveyor belt.

The following functions can also be implemented with the station:
– Segregation of workpieces (housings or bodies) onto the slide
– Alternative feed of workpieces (housings or bodies) from the slide

Possible combinations

<table>
<thead>
<tr>
<th>Downstream stations</th>
<th>V</th>
<th>P</th>
<th>B</th>
<th>H</th>
<th>PU</th>
<th>PP</th>
<th>FM</th>
<th>R</th>
<th>M</th>
<th>S</th>
<th>HS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream stations</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Technical Data:
– Operating pressure 600 kPa (6 bar)
– Power supply 24 V DC
– 8 digital inputs
– 6 digital outputs

Recommended accessories:
– Simulation box, digital
  (Order no. 170 643)
– Workpiece set “Housings”
  (Order no. 534 619)
– Workpiece insert “Clock”
  (Order no. 534 621)
– Workpiece insert “Thermometer”
  (Order no. 534 622)
– Workpiece insert “Hygrometer”
  (Order no. 534 623)
– Tabletop power supply unit

You can choose from a wide range of other controllers as alternative equipment for the PLC board.
The best:
Linear spindle drive units

The Festo SLT spindle drive units are a great supplement to the Pick & Place module. The variable stops, shock absorbers and a mounting that is variable in all directions solve every Pick & Place task. Motivation for all sorts of projects.

Vacuum technology from the Festo kit:
Vacuum generator
Pressure switch
Vacuum filter
Suction cup

The vacuum components are optimally matched. They show clearly what’s needed for a vacuum application: vacuum production with the vacuum generator, the right suction cup with an appropriate filter and an electronic pressure switch with teachable switch points for pressure sensing.

Training content for project work:
Mechanics:
– Mechanical design of a station
Pneumatics:
– Tubing pneumatic components
– Vacuum technology
– Pneumatic linear and rotary drives
Electrical engineering:
– Correct wiring of electrical components
– Connection of DC motors
Sensors:
– Use of pressure switches with integrated microprocessor
– Correct use of diffuse sensors and light barriers
– Correct use of limit switches
PLC:
– Programming and use of a PLC
– Structure of a PLC program
– Programming an operating mode

Recommended training media:
– Mechatronics Assistant (see Courseware – Mechatronics)
– Design and simulation program FluidSIM® Pneumatics (see Software – Designing and simulating)
– Textbook Pneumatics, Basic Level
– Textbook Programmable Logic Controllers, Basic Level
Fluidic muscle press station

**Function:**
The Fluidic muscle press station presses workpiece inserts into housings. The rotary-linear changer positions the housing with the insert laid on top beneath the press. The fluidic muscle carries out the pressing process. The rotary-linear changer then transports the finished workpiece to the transfer position. A diffuse sensor mounted on the changer arm for workpiece interrogation. The pressing force is monitored and displayed by an analog pressure sensor. The pressing speed and depth can be set both manually – via flow control valve and pressure regulator – and electronically with the proportional pressure regulator.

**Possible combinations**

<table>
<thead>
<tr>
<th>V</th>
<th>P</th>
<th>B</th>
<th>H</th>
<th>PU</th>
<th>PP</th>
<th>FM</th>
<th>R</th>
<th>M</th>
<th>S</th>
<th>HS</th>
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</thead>
<tbody>
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</tbody>
</table>

**Downstream stations**

**Upstream stations**

**Technical Data:**
- Operating pressure 600 kPa (6 bar)
- Power supply 24 V DC
- 8 digital inputs (plus 1 analog input usable)
- 7 digital outputs (plus 1 analog output usable)

**Recommended accessories:**
- Simulation box, digital/analog (Order no. 526 863)
- Workpiece set “Housings” (Order no. 534 619)
- Workpiece insert “Clock” (Order no. 534 621)
- Workpiece insert “Thermometer” (Order no. 534 622)
- Workpiece insert “Hygrometer” (Order no. 534 623)
- Tabletop power supply unit

You can select from a wide range of other controllers as alternative equipment for the PLC board.

**Components**

<table>
<thead>
<tr>
<th>Short description</th>
<th>Quantity</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium profile plate</td>
<td>1</td>
<td>170 395</td>
</tr>
<tr>
<td>Electrical mounting system</td>
<td>1</td>
<td>196 958</td>
</tr>
<tr>
<td>I/O terminal</td>
<td>1</td>
<td>034 035</td>
</tr>
<tr>
<td>Cable holders (set of 10 pieces)</td>
<td>1</td>
<td>196 965</td>
</tr>
<tr>
<td>Profile plate connectors</td>
<td>2</td>
<td>162 228</td>
</tr>
<tr>
<td>Station link receiver</td>
<td>1</td>
<td>196 964</td>
</tr>
<tr>
<td>Station link transmitter</td>
<td>1</td>
<td>196 963</td>
</tr>
<tr>
<td>Start-up valve with filter control valve, 40 µm</td>
<td>1</td>
<td>152 894</td>
</tr>
<tr>
<td>CP valve terminal</td>
<td>1</td>
<td>538 708</td>
</tr>
<tr>
<td>Rotary-linear changer module</td>
<td>1</td>
<td>535 249</td>
</tr>
<tr>
<td>Fluidic muscle press module</td>
<td>1</td>
<td>535 251</td>
</tr>
<tr>
<td>Pressure sensor</td>
<td>1</td>
<td>679 598</td>
</tr>
<tr>
<td>Proportional pressure regulator</td>
<td>1</td>
<td>538 705</td>
</tr>
<tr>
<td>Analog terminal</td>
<td>1</td>
<td>526 213</td>
</tr>
<tr>
<td>Minor accessories (tubing, cable binders, cable-end sleeves)</td>
<td>1</td>
<td>526 865</td>
</tr>
</tbody>
</table>

**Complete station**

535 248

**Trolley**

120 856

**Control console**

195 764

**PLC board with SIMATIC S7-313C**

533 526

**PLC board with FEC® Standard FST**

526 875
State of the art

With latest components – such as the fluidic muscle, the SLG linear drive or the DRQD semi-rotary drive with adjustable mid-position, your trainees experience industrial automation technology of tomorrow today.

Option:
Processing of analog values

The analog pressure sensor delivers and analog signal and, with the aid of programmable switching points, can deliver a binary signal. The analog signals are supplied to a separate terminal – for connection to the Simulation box or a PLC with an analog module. This allows you to use the station with a controller with or without analog processing. Both types of signal can also be used for control of the fluidic muscle: analog via the proportional pressure regulator or binary via a switching valve.

Training content for project work:

Mechanics:
– Mechanical design of a station
Pneumatics:
– Use of linear slide units
– Use of rotary drives
– Use of pressure regulators
– Use of fluidic muscles
Electrical engineering:
– Correct wiring of electrical components
Sensors:
– Use of end-position sensors and optical diffuse sensors
– Function and uses of analog sensors based on the example of an analog pressure sensor
PLC:
– Programming and application of a PLC
– Analog signal processing

Recommended training media:
– Mechatronics Assistant (see Courseware – Mechatronics)
– Design and simulation program FluidSIM® Pneumatics (see Software – Designing and simulating)
– Textbook Programmable Logic Controllers, Basic Level
– Textbook Proximity switches
– Virtual process environment VEEP®2
### SysLink control console

- **Control console**
- Fully assembled with operating panel, communication panels, spare panel and support frame with SysLink connector.
- Membrane keypad
- Start pushbutton with LED
- Stop pushbutton
- Reset pushbutton with LED
- 2 flexibly assignable control lamps
- 4 mm safety sockets with LED status display for simple I/O connection. SysLink and Sub-D sockets for connection to PLC of choice are available on the rear panel.

**Order no. 195 764**

### AS-Interface control console

- Fully assembled with AS-Interface control console, communication panels, spare panel, and support frame with AS-Interface connector.

**Order no. 535 814**

### EasyGSM

- **Control console**
- New, attractive training content for your MPS® stations: Send remote maintenance service, fault messages via SMS.
- The FC38 – a minicontroller from the IPC FEC® family – together with a M20 GSM modem and antenna provide a complete fault messaging system. It is a compact module, easily mounted on the MPS® Control console. All stations can be retrofitted with the GSM module, regardless of the PLC board present. The modem requires an enabled SIM card and a GSM 900 network connection.
- Digital inputs
- Digital outputs 8 (2 relay, 6 transistor)
- Ethernet 10Base T, RJ45, 10 Mbit/s

**Order no. 535 224**

### WinCC, InTouch

- **Visualization software**
- A wide range of tasks, solutions and sample applications are available as free downloads for Mechatronics Assistant users at [www.festo.com/didactic](http://www.festo.com/didactic).

**WinCC**

- WinCC is designed for the visualization and control of processes, sequences and machines. Its powerful process coupling, particularly to the SIMATIC family, mean that WinCC is the optimum solution in combination with the S7-300 PLC. Connection to the controller takes place using the Siemens PC adapter cable via MPI or Profibus DP.

**Order no. 195 439**

**InTouch**

- The packages comprises the InTouch development and runtime system for Windows with 256 PLC variables, the NetDDE driver and the standard Wizard library. InTouch is the optimum solution in combination with the FEC® Standard PLC. Connection to the controller takes place via Ethernet TCP/IP.

**Order no. 192 108**

(French, German, English)
The system

Plexiglas safety enclosure

The Modular Production System offers many possibilities for integrating the topic of safety engineering:
– Plexiglas safety enclosures for systems or subsystems
– Safety circuits with door switches
– EMERGENCY STOP controls
– Safety circuits for individual stations
– Safety circuits for systems or subsystems

Control technology

Simply switch it off – whether whole systems or subsystems – with the flexible MPS® safety concept.

The central EMERGENCY STOP board is part of the safety concept of the Modular Production System and allows integration of up to 10 MPS® stations in a safety circuit. Used in conjunction with connected EMERGENCY STOP pushbuttons and/or position switches, it allows a high level of safety to be achieved. The central EMERGENCY STOP board can be installed with a PLC board in a station trolley.
Set up using Mechanical Components from Festo

The profiles, panels, and connectors of the Plexiglas safety enclosure are part of the Festo Mechanical Components system.

Mechanical Components from Festo is a system of industrial devices and equipment designed for a broad range of applications. The range of applications is limitless, not least because of compatibility with other profile systems.

A Profile set  
B Cover panel  
C Rear panel  
D Side panel with opening  
E Side panel without opening  
F Door  
G Safety switch

Modularity:
The Modular System for Safety Engineering allows a whole range of different safety enclosures to be implemented.

Mechatronics Assistant – 1000 pages of educational material on CD-ROM

The Mechatronics Assistant offers tasks and fundamentals. Turn Safety Engineering into a practice-oriented training topic.
### Plexiglas safety enclosure for an individual station or a combination of several stations (not for combinations with the Punching station)

**Modular System for Safety Engineering**

<table>
<thead>
<tr>
<th>Required components for ... stations:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile set, small (A)</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Door (F)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear panel (C)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Top panel, small (B)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Side panel, small, without opening (E)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Side panel, small, with opening (D)</td>
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</tbody>
</table>

Order no. 534 633

### Plexiglas safety enclosure for the combination of Robot, Assembly and Punching stations

**Modular System for Safety Engineering**

<table>
<thead>
<tr>
<th>Required components for ... stations:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile set, small (A)</td>
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</tr>
<tr>
<td>Door (F)</td>
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<tr>
<td>Rear panel (C)</td>
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<tr>
<td>Top panel, large</td>
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<td></td>
<td></td>
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<tr>
<td>Side panel, large, without opening</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side panel, large, with opening</td>
<td></td>
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</tr>
</tbody>
</table>

Order no. 534 633

### Profile sets

**Modular System for Safety Engineering**

- Profile set, small, for an individual station. Consisting of profiles (anodized aluminium) with connectors and mounting accessories. Order no. 663 654
- Profile set, large, for the combination of Robot, Assembly and Punching stations. Consisting of profiles (anodized aluminium) with connectors and mounting accessories. Order no. 534 633
Panels

**Modular System for Safety Engineering**

- **Top panel, small, for individual stations, made of Plexiglas (PMMA). Complete with mounting accessories.**
  - Order no. 663 657

- **Back panel, small, for individual stations, made of Plexiglas (PMMA). Complete with mounting accessories.**
  - Order no. 663 656

- **Side panel, small, without opening, for use on left or right side, made of Plexiglas (PMMA). Complete with mounting accessories.**
  - Order no. 663 659

- **Side panel, small, with opening, for use on left or right side, made of Plexiglas (PMMA). Complete with mounting accessories.**
  - Order no. 663 658

- **Top panel, large, for the combination of Robot, Assembly and Punching stations. Made of Plexiglas (PMMA). Complete with mounting accessories.**
  - Order no. 534 634

- **Side panel, large, without opening, for the combination of Robot, Assembly and Punching stations. Made of Plexiglas (PMMA). Complete with mounting accessories.**
  - Order no. 534 636

- **Side panel, large, with opening, for the combination of Robot, Assembly and Punching stations. Made of Plexiglas (PMMA). Complete with mounting accessories.**
  - Order no. 534 635
Door

Modular System for Safety Engineering

Door, made of Plexiglas (PMMA). Complete with mounting accessories. Order no. 663 655

Safety switch for the door (Order no. 663 655). Order no. 663 661

EMERGENCY STOP board

Board upgrades

EMERGENCY STOP board for integration of MPS® station combinations into a central EMERGENCY STOP concept. Up to 10 MPS® stations can be connected to the EMERGENCY STOP board. A 4-pin cable (Order no. 535 245) is required for the connection of each station. The cable is not included. The connected stations can be switched off by a maximum of 6 EMERGENCY STOP pushbuttons. The EMERGENCY STOP pushbuttons are not included.

Inputs (EMERGENCY STOP pushbuttons) __ 1 – 6
Outputs (stations) ____________________ 1 – 10

Connection cable, 4-pin, for connection of an MPS® station (PLC board) to the EMERGENCY STOP board. Order no. 535 245

EMERGENCY STOP panel

Control console

The EMERGENCY STOP panel allows integration of the EMERGENCY STOP pushbutton into the control panel. The pushbutton is connected to a PLC board or an EMERGENCY STOP board via a 2.5 m cable with 2-pin screw-terminal plug. The EMERGENCY OFF panel can be integrated into the control console (Order no. 195 764). A blank panel (Order no. 534 630) is required for installation into the control console. The blank panel is not included.

Blank panel for the control console. Order no. 534 630
Integrated Systems CIM/FMS
Order-based production with MPS®

In the MPS® systems red black and silver bodies are processed and assembled to single-acting cylinders. The color is left to chance. The production of different types to order is however daily routine in industrial production.

For this reason we have developed new complete solutions for the integration of new training content. Or we upgrade your existing Release C MPS® stations.

What’s new?
WinCC monitoring and control system and PROFINet:
We use the WinCC monitoring and control system for order placement and tracking. As WinCC has to access all stations, they are all networked. The new standard PROFINet is used for this. PROFINet is the new, open Ethernet-based communication standard of the PROFIBUS user organization and the holistic approach to the application of Industrial Ethernet in automation.

New components:
The stack magazine is supplemented by a 3-fold magazine. This allows the bodies to be sorted by color in the first station. A changed sensor holder also allows “bad parts” such as a rotated body to be passed into the process. These are detected and ejected in the downstream stations. The individual orders are sorted onto the slides at the Sorting station.

The example system shown comprises:
– MPS® Distributing station, supplemented by a 3-fold magazine and the sensor holder for bad parts
– MPS® Testing station
– Conveyor belt as 90° elbow
– MPS® Processing station
– MPS® Handling station with program extension for rejection of bad parts
– Conveyor belt as 90° elbow
– MPS® Robot station with RV-2AJ, with program extension for measuring height of workpieces
– MPS® Assembly station, glass safety enclosure for Robot and Assembly station
– MPS® Sorting station with additional indicator lamp
– Control of MPS® stations via SIMATIC S7-313C-2DP
– PC with WinAC, PROFINet and WinCC, including application

The example system shows which additional elements are integrated. Further configurations are possible. Call us – we’ll gladly make you an offer tailored to your needs.
The microFMS flexible manufacturing cells are now available with all CNC machines of the Series 55, 105 and 155, including in the new Concept Series. And with Mitsubishi robots, you can choose between various 5-axis and 6-axis models. The cells can be combined with MPS®, FMS 50 and iCIM systems (see also MultiFMS).

The basic versions (Level 1) of microFMS can be upgraded with a cell computer and an Ethernet connection. This allows fully automated manufacture of a wide range of products. The CNC machines are loaded with the appropriate programs via DNC. The user interface allows simple selection of product variants and operation of the system.

MultiFMS is the combination of FMS 50 and microFMS. This results in three training systems in one: MPS®, FMS 50 and microFMS. It allows training on single stations, station combinations, subsystems or the entire system. Both FMS 50 and microFMS allow the use of various equipment levels. Various products from the COSIMIR® family are available as virtual learning environments for these systems and subsystems.
Process Control System
Integrated systems

Compact system with open interface

Training measurement and control technology using real processes:
The compact system combines 4 controlled systems: temperature, pressure, flowrate and fill level. Depending on the PLC or controller, these can be controlled individually or cascaded.
Examples of control tasks:
– 2-step fill level control
– P control for pressure control
– I control
– PID control

Industrial sensors and actuators – for example a pneumatic process valve with optical display – ensure that the compact system is practice-oriented. The tubing system is connectorized and easily changed, allowing redesign, for example during project work.

All digital and analog signals are available at clearly defined connectorized interfaces. All analog signals are converted into standard signals, allowing almost any PLC or controller to be used for open- and closed-loop control. We offer this system preferably with the SIMATIC S7-313C and our Control console in ER format. The adjustable mounting frame on the station can also be used for A4 format devices such as our EduTrainer® plus.