

Industrial control technology



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Overview of EduTrainer Universal



The EduTrainer Universal

Do you use PLCs from global market leaders or less well-known but innovative control concepts? Does your training tend to focus on mastering processes and technologies rather than safe handling of wires and screwdrivers?

If so, the EduTrainer Universal is the right solution for you!

No matter what is most important to you, you can get exactly the EduTrainer Universal that you need:

- Fully set up and configured or your own design (online configurator)
- With PLCs from Siemens, Allen-Bradley, Festo and other manufacturers
- With or without
- Power supply unit
- 4 mm safety sockets
- SysLink system interface

Universal shape and size

The EduTrainer Universal deserves its name:

- It fits in A4 mounting frames.
- It fits in an MPS station.
- However, it can also stand on a table or lie flat.
- It comes as a fully configured standard Preferred version – or you can customize it yourself.
- Available in narrow and wide versions.

Universal design

There are many more than just 5 or 6 manufacturers of programmable logic controllers worldwide. The EduTrainer Universal is designed for different H-rails so that it can be fitted with any PLC. Below the PLC, the 19" plug-in format ensures that the EduTrainer can be equipped with any conceivable combination of connecting plates and simulation modules. A range of simulation modules allows for many different processes to be connected and simulated during the training.



Overview of EduTrainer Compact



The EduTrainer Compact

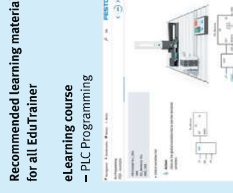
Do you want to teach PLC programming in addition to relay circuits at your pneumatic or hydraulic laboratory? Do you want a device that suits your workbench? Does your training tend to focus on mastering processes and technologies rather than safe handling of wires and screwdrivers?

The EduTrainer Compact is the ideal control system for pneumatics and hydraulics and has proven itself worldwide.

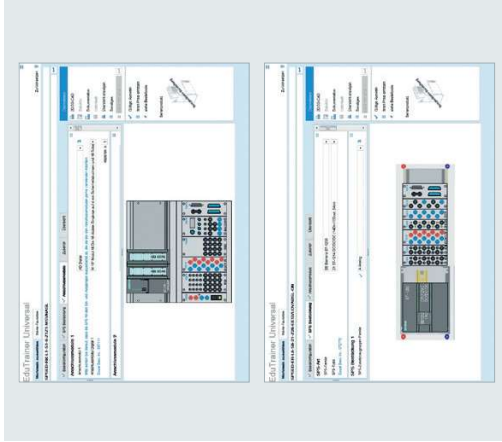


The EduTrainer Compact can be integrated into the ER mounting frames of various laboratory systems or used as Standalone desktop devices. The sensors and actuators are connected to the inputs/outputs of the PLC via 4 mm safety sockets. The inputs can be simulated with switches or potentiometers. Depending on the configuration, 4 mm safety sockets or SysLink universal I/O interface sockets are available. This provides many different options for connecting to all Festo Didactic equipment sets.

- The heavy-duty PLC for pneumatics or hydraulics laboratories
- Suitable for an ER mounting frame
- Fully set up and configured or your own design (online configurator)
- With PLCs from Siemens, Festo and other leading manufacturers
- External voltage supply via 4 mm safety sockets
- With or without 4 mm safety sockets for PLC inputs and outputs
- With or without SysLink system interface for PLC inputs and outputs



How to select the right EduTrainer



We recommend the **Preferred version from the catalog**. Simply select an EduTrainer from the following pages or from the website.

Online configuration with listed PLCs

If you cannot find a suitable Preferred version, an EduTrainer can be configured with one of the PLCs offered in our online configurator ([→ www.festo-didactic.com](http://www.festo-didactic.com)). You can configure the required EduTrainer yourself and order it from us.

Online configuration with other PLCs

If the desired PLC is not listed in the online configurator, an EduTrainer can be configured with the required PLC as an EduTrainer "with special PLC".

Online configuration for self-installation of PLC

You can configure an EduTrainer "without PLC" if you already own the PLC and would like to install it yourself or if you want to make your own changes and modifications to the EduTrainer.

Control systems and PLC modules

In addition to EduTrainers, we also offer you individual controllers or controller components:

- All Siemens trainer packages and individual controllers
- Festo components
- Allen-Bradley components
- Controllino (Arduino-based compact controller)
- And others

The benefits to you:

- Cost-effective solution
- Completely harmonized technology
- Quick delivery

The benefits to you:

- Customized solution
- Easy to select from listed components

The benefits to you:

- Customized solution
- Any PLC available on the market (as long as external dimensions and connections are compatible)
















The benefits to you:

- Maximum flexibility in designing the device
- Any PLC available on the market (as long as external dimensions and connections are compatible)

Note: If you do not have the controller or Siemens Trainer Package you need, please visit our website or request the controller directly from us.

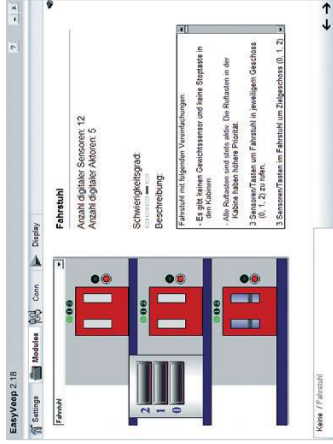
More controllers that suit your requirements can be found at [→ www.festo-didactic.com](http://www.festo-didactic.com). See "online configurator".

Interfaces to the process

With an EduTrainer or any PLC you can control the process of your choice.	1. Simulation of the PLC inputs and display of the PLC outputs	2. Control of virtual processes	3. Control of real processes
The programmer (PC), controller and processes are connected via various interfaces	Testing a PLC program using the simulation box	Industry-oriented, cost-effective PLC training by means of simulation software, e.g. CIROS	Using equipment sets and MPS stations
EduTrainer or PLC of your choice			Cable set 
I/O Data cable I/O data cable with SysLink connectors for EduTrainer at both ends (order no. 034031/167197) or with SysLink connector at one end and open ends for any PLC (order no. 167122)			
Interface EasyPort USB (order no. 548687)			
Cable set with safety plugs (order no. 0892666)			
Process model – Digital simulation box (order no. 170643) or simulation box digital/analog (order no. 526863) – Simulation software CIROS – FluidSIM – EasyVeep – Equipment sets and MPS stations			

EasyPort USB

Interface for measuring, open-loop control, closed-loop control



Connection of software/simulation all PLCs

The principle is simple: the USB interface is connected to the PC. The connection to the automation equipment is via standard SysLink connectors. Therefore input and output signals can be read into and output from a PC. To ensure that EasyPort is adaptable to different situations, we have developed software for the device drivers with a graphical user interface, via which connections can be made.

Technical data

- 24 V power supply via separate screw terminals or via SysLink connectors
- Interface to PC (galvanically isolated): USB 2.0, RS 232. Up to 4 modules can be connected via a USB hub. Transmission speed: 115 kbaud
- Analog interface: sub-D 15-pin socket, 12 bit resolution, 4 analog inputs, 2 analog outputs, sample frequency 0.5 kHz
- Digital interface: 16 digital inputs, 16 digital outputs on 2x 24-pin Centronics sockets with 8 digital inputs each (24 V), 8 digital outputs (24 V), 24 V power supply.
- Digital signals represented by LEDs
- Large LCD display, display of channel, unit, trend, and measured value (4 digits). Selection of the channel to be displayed and the units via keys.
- Controllable via ActiveX Control from LabVIEW, C++, or Visual Basic

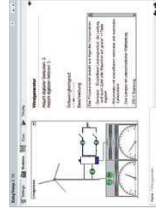
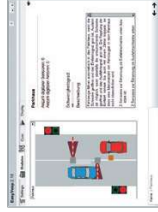
EasyPort USB 19"

- Technical data as with EasyPort USB, but for installation in a 19" support system
- Front plate: 19" plate with 36 HP









Control of numerous practical process models

With the included EasyPort, and the EasyKeep simulation software, a wide variety of practical process models can be controlled with any PLC. The models are documented and meet a broad range of requirements.

- Alarm systems
- Level crossings
- Elevators
- Garage doors
- Multi-storey car parks
- Sluice gates
- Sorting systems
- Hot water tanks
- Washing machines
- Wind generators
- and much more



Connects the simulation to the real world

Example applications	Measuring	Control (open loop)	Closed-loop control	Controlling a simulation
<p>PC: Software and simulations</p> <ul style="list-style-type: none"> - Fluidlab-PA - Fluidlab-P - Fluidlab-H - LabVIEW - C++ - Visual Basic 	<p>Interface: USB</p> 	<p>Interface: USB</p> 	<p>Interface: USB</p> 	<ul style="list-style-type: none"> - EasyKeep - FluidSIM - QRDS - LabVIEW - C++ - Visual Basic <p>Interface: USB</p> 
<p>Interface: EasyPort USB</p>	<p>Interface: digital/analog</p> 	<p>Interface: digital/analog</p> 	<p>Interface: digital/analog</p> 	<p>Interface: digital</p> 
<p>Real training equipment</p>	<ul style="list-style-type: none"> - Simulation box, digital/analog - MPS PA - TP 210 - TP 610 <p>EasyPort USB is the PC interface for receiving analog measurements and digital signals.</p> <p>Measurement data logged via:</p> <ul style="list-style-type: none"> - Fluidlab-PA - Fluidlab-P - Fluidlab-H 	<ul style="list-style-type: none"> - Simulation box, digital/analog - MPS PA - TP 210 - TP 301 <p>EasyPort USB is the PC interface to control actual processes or simulations on a PC via an actual PLC.</p> <p>Actual process, controlled via:</p> <ul style="list-style-type: none"> - S7-PLCSIM - FluidSIM - CODESYS 	<ul style="list-style-type: none"> - Simulation box, digital/analog - MPS PA - TP 210 - TP 610 <p>EasyPort USB is the PC interface to control an actual closed-loop controlled system.</p> <p>Closed-loop controlled system, controlled via:</p> <ul style="list-style-type: none"> - Fluidlab-PA - Fluidlab-P - Fluidlab-H 	<ul style="list-style-type: none"> - Any PLC - Simulation box, digital - EduTrainer <p>Recommendation: The CODESYS starter kit with CECC-UK and EasyPort USB contains everything that is needed to start on the subject of control.</p> <p>Simulated process, displayed via:</p> <ul style="list-style-type: none"> - QRDS - FluidSIM - EasyKeep

EasyPort USB 548687



EasyPort USB 19" 8021637



Also order:

- For EasyPort with a real process or SimuBox: I/O data cable with SysLink connectors (IEEE 488) at both ends, 2.5 m 34031
- Analog cable, parallel, 2 m 529141
- For EasyPort with a real PLC: I/O data cable with SysLink connectors (IEEE 488) on both ends, crossover 167106
- For EasyPort, freely wireable, with any PLC: I/O data cable with SysLink connector IEEE 488 and open ends 167122
- For EasyPort with an EduTrainer: I/O data cable, crossover, with plug and socket, 0.3 m 167197
- For EasyPort with a real PLC or SimuBox: Analog cable, crossover, 2 m 530039
- CODESYS starter kit with CECC-UK and EasyPort USB 8024001
- Universal connection unit, digital (SysLink) 162231
- Quick-fix screw adapter 549806

Scope of delivery

- EasyPort USB; EasyPort USB 19"
- 24 V connecting cable on 4 mm safety plugs
- USB cable
- CD-ROM: EasyKeep, EasyOPC driver, datasheet, ActiveX control, examples of control using LabVIEW

EduTrainer Universal Preferred versions Laboratory SIMATIC S7-1500

1



The ultimate in power and efficiency

The SIMATIC S7-1500 controller family represents the new controller generation in the TIA portal and a milestone in automation. It delivers maximum performance and user-friendliness for medium and high-end applications in machine and plant automation.

EduTrainer Universal with:

CPU S7-1512C-1PN
 - Main memory: 250 kB for program and 1 MB for data
 - Memory card included
 - Interface: PROFINET IRT with 2-port switch

1	S7-1512C-1PN	8065595
2	S7-1516F-3PN/DP	8043524
3	S7-1516F-3PN/DP	8034574

Notes
 Order no. 8065595, 8043524 and 8034574 are based on Siemens SCE Trainer Packages and each one contains one EduTrainer including programming cable (Ethernet cable) and programming software STEP 7 TIA portal. When Siemens updates these Trainer Packages, the controllers are replaced by successor models. Subject to technical implementation.

Recommended accessories:		
I/O data cable with SysLink connectors (IEEE 488), 2.5 m	34031	
Analog cable, parallel, 2 m	529141	
Safety laboratory cable, 3 m	571817	
IEC power cable 90° → Page 195		

Other accessories:
 Analog cable, crossover, 2 m

2



3



CPU S7-1516F-3PN/DP

- Main memory: 1.5 MB for program and 5 MB for data
 - Memory card included
 - Interface 1: PROFINET IRT with 2 port switch
 - Interface 2: Ethernet
 - Interface 3: PROHBUS, 10 ns bit performance

Inputs/outputs:
 - 32 digital outputs (24 V DC)
 - 8x analog inputs, 8x U/I/RTD/TC, 16-bit resolution
 - 4x analog outputs, 4x U/I, 16-bit resolution

Special license rules apply for schools and educational institutes in the commercial sector.

EduTrainer Universal Preferred versions MPS SIMATIC S7-1500

1



The ultimate in power and efficiency

The controller family SIMATIC S7-1500 is a new controller generation in the TIA portal and a milestone in automation. It delivers maximum performance and user-friendliness for medium and high-end applications in machine and plant automation.

EduTrainer Universal with:

CPU S7-1512C-1PN (MPS)
 - Main memory: 250 kB for programs and 1 MB for data
 - Memory card included
 - Interface: PROFINET IRT with 2-port switch

Inputs/outputs:
 - 32 digital inputs (24 V DC)
 - 5x analog inputs, 4x U/I, 1x R/RTD, 16-bit resolution
 - 2x analog outputs, 2x U/I, 16-bit resolution

CPU S7-1516F-3PN/DP (MPS)

- Main memory: 1 MB for program and 5 MB for data
 - Memory card included
 - Interface 1: PROFINET IRT with 2-port switch
 - Interface 2: Ethernet
 - Interface 3: PROHBUS, 10 ns bit performance

Inputs/outputs:
 - 32 digital inputs (24 V DC)
 - 32 digital outputs (24 V DC, 0.5 A)
 - 8x analog inputs, 8x U/I/RTD/TC, 16-bit resolution
 - 4x analog outputs, 4x U/I, 16-bit resolution

Special license rules apply for schools and educational institutes in the commercial sector.

The mounting system

- EduTrainer Universal, size 1 (W x H) 305 x 297 mm
- Can be placed in a desk or in an frame
- Can be placed on a desk or in an MPS station
- Stable, powder-coated, sheet-steel mounting system
- Integrated power supply unit, AC 110/230 V, DC 24 V, 4 A
- 19" module system connector SysLink (Ø HP), with 2x SysLink plug connector for MPS station and control panel, each with 8 digital inputs and 8 digital outputs and 1x Sub-D 15-pin plug connection with 4 analog inputs and 2 analog outputs; emergency stop jumper to connect a safety circuit for disconnecting 8 digital outputs.

1	S7-1512C-1PN (MPS)	8065592
2	S7-1516F-3PN/DP (MPS)	8065594

Notes
 Order no. 8065432 and 8065594 are based on Siemens SCE Trainer Packages and each one contains one EduTrainer including programming cable (Ethernet cable) and programming software STEP 7 TIA portal. When Siemens updates these Trainer Packages, the controllers are replaced by successor models. Subject to technical implementation.

Recommended accessories:		
I/O data cable with SysLink connectors (IEEE 488), 2.5 m	34031	
Analog cable, parallel, 2 m	529141	
Safety laboratory cable, 3 m	571817	
IEC power cable 90° → Page 195		

Other accessories:
 Analog cable, crossover, 2 m

2



EduTrainer Compact Preferred version

SIMATIC S7-1500



15125P F1 PN	8065601
Notes	
Order no. 8065601 is based on a Siemens SCE Trainer Package and contains one EduTrainer including programming cable and programming software Step 7 TIA-Portal. When Siemens updates these Trainer Packages, the controllers are replaced by successor models. Subject to technical implementation.	
Recommended accessories:	
Power supply unit for mounting frame → Page 195	
4 mm Safety laboratory cables → Page 195	
Ethernet cable → Page 194	

The ultimate in power and efficiency

The controller family SIMATIC S7-1500 represents the new controller generation in the TIA portal and a milestone in automation. It delivers maximum performance and user-friendliness for medium and high-end applications in machine and plant automation.

EduTrainer Compact with:

- CPU 15125P F-1 PN**
 - Main memory: 300 KB for program and 1 MB for data
 - Interface: PROFINET IRT with 3-port switch
 - Memory card included
 - Ethernet cable included
- Programming software included
- Inputs/outputs:
 - 16 digital Inputs (24 V DC, 0.5 A)
 - 8 digital outputs (24 V DC, 0.5 A)

The mounting system

- EduTrainer Compact for ER mounting frame, size 2 (W x H x D) approx. 364 x approx. 170 x approx. 80 mm
- 19" modules with 4 mm safety plugs, SysLink system connector or 24 V/0 V
- Suitable for ER mounting frame or freestanding on the cable housing
- Lightweight injection-molded housing
- The units are supplied fully assembled
- Other combinations are possible via the online configurator

1



Bundle of 6

The modular mini control system from Siemens

For solutions in discrete and stand-alone automation applications in the lower performance range. The family of SIMATIC S7-1200 controllers is equipped with an integrated engineering system: SIMATIC STEP 7 Basic for controller and HMI.

EduTrainer Universal with CPU

- S7-1215C (order no. 8096453)**
 - Digital inputs on 4 mm safety sockets and switches/buttons for signal simulation
 - Voltage distribution each with 8x 24 V/0 V on 4 mm safety sockets
 - Digital outputs on 4 mm safety sockets
- Analog inputs on 4 mm safety socket switchable to simulation via potentiometer
- Analog output on 4 mm safety sockets
- Simulation module with 2x SysLink push-in connectors with digital inputs and outputs and Sub-D, 15-pin push-in connectors with analog inputs and outputs; 4 mm safety sockets for emergency stop bridge to connect a safety circuit for digital outputs. The controller can use it to connect to stations, operator panels, applications and, with the external PC interface Easy-Port, to visualizations on the PC.
- 125 KB RAM, 4 MB loading buffer
- Interface: PROFINET (2x RJ45)
- 10 digital inputs (24 V DC)
- 10 digital outputs (24 V DC, 0.5 A)
- 2 analog inputs: 2 (0 – 10 V DC)
- 1 analog output (±10 V DC, 0 – 20 mA)

1 6xS7-1215GP (RKL/ID)A-2x (0VSL)	8096453
2 6xS7-1215GP (RKL/SL)	8096454

Notes
Order nos. 8096453 and 8096454 are based on Siemens SCE Trainer Packages and contain six EduTrainers each, including programming cable (Ethernet cable) and programming software STEP 7 Basic. When Siemens updates these Trainer Packages, the controllers are replaced by successor models. Subject to technical implementation.

Recommended accessories:	
I/O data cable with SysLink connectors (IEE 488), 2.5 m	34031
Safety cable, parallel, 2 m	529141
Safety laboratory cable, 3 m	571817
IEC power cable 90° → Page 195	
Recommended accessories:	
Analog cable, crossover, 2 m	533039

EduTrainer Universal with CPU

- S7-1215C (order no. 8096454)**
 - Simulation module with 2x SysLink push-in connectors with digital inputs and outputs and Sub-D, 15-pin push-in connectors with analog inputs and outputs; 4 mm safety sockets for emergency stop bridge to connect a safety circuit for digital outputs. The controller can use it to connect to stations, operator panels, applications and, with the external PC interface Easy-Port, to visualizations on the PC.
 - 125 KB RAM, 4 MB loading buffer
 - Interface: PROFINET (2x RJ45)
 - 14 digital inputs (24 V DC)
 - 10 digital outputs (24 V DC, 0.5 A)
 - 2 analog inputs: 2 (0 – 10 V DC)
 - 1 analog output (±10 V DC, 0 – 20 mA)

The mounting system

- EduTrainer Universal Dimensions (W x H): approx. 305 mm x 297 mm
- Stable, powder-coated, sheet-steel mounting system
- Integrated power supply unit, AC 110/230 V DC 2A, 4 A
- The carrier sits securely on a desk or in an MPS and can be integrated into an A4 frame, or placed at an angle on the desk, by simply removing the leveling feet and following a few more simple steps
- The units are supplied fully assembled

System requirements

- Windows 10 (64 Bit) Home & Professional & Enterprise 1909, 2004, 20H2 / IoT Enterprise 2016 LTSC / 2019 LTSC



Bundle of 6

Notes	
Order nos. 8096453 and 8096454 are based on Siemens SCE Trainer Packages and contain six EduTrainers each, including programming cable (Ethernet cable) and programming software STEP 7 Basic. When Siemens updates these Trainer Packages, the controllers are replaced by successor models. Subject to technical implementation.	
Recommended accessories:	
I/O data cable with SysLink connectors (IEE 488), 2.5 m	34031
Safety cable, parallel, 2 m	529141
Safety laboratory cable, 3 m	571817
IEC power cable 90° → Page 195	
Recommended accessories:	
Analog cable, crossover, 2 m	533039

Special license rules apply for schools and educational institutes in the commercial sector.

Special license rules apply for schools and educational institutes in the commercial sector.

EduTrainer Universal Preferred versions Laboratory

SIMATIC S7-1200

The modular mini control system from Siemens

For solutions in discrete and stand-alone automation applications in the lower performance range. The family of SIMATIC S7-1200 controllers is equipped with an integrated engineering system: SIMATIC STEP 7 Basic for controller and HMI.

EduTrainer Universal with CPU

- S7-1215C (order no. 8096453)**
 - Digital inputs on 4 mm safety sockets and switches/buttons for signal simulation
 - Voltage distribution each with 8x 24 V/0 V on 4 mm safety sockets
 - Digital outputs on 4 mm safety sockets
- Analog inputs on 4 mm safety socket switchable to simulation via potentiometer
- Analog output on 4 mm safety sockets
- Simulation module with 2x SysLink push-in connectors with digital inputs and outputs and Sub-D, 15-pin push-in connectors with analog inputs and outputs; 4 mm safety sockets for emergency stop bridge to connect a safety circuit for digital outputs. The controller can use it to connect to stations, operator panels, applications and, with the external PC interface Easy-Port, to visualizations on the PC.
- 125 KB RAM, 4 MB loading buffer
- Interface: PROFINET (2x RJ45)
- 14 digital inputs (24 V DC)
- 10 digital outputs (24 V DC, 0.5 A)
- 2 analog inputs: 2 (0 – 10 V DC)
- 1 analog output (±10 V DC, 0 – 20 mA)

System requirements

- Windows 10 (64 Bit) Home & Professional & Enterprise 1909, 2004, 20H2 / IoT Enterprise 2016 LTSC / 2019 LTSC

EduTrainer Compact Preferred versions

SIMATIC S7-1200



Bundle of 6

1

1	6xS7-1215C1P (ER2/DIO-A2AV/0V)*	8096455
2	6xS7-1215C0* (ER2/DIO-A5U)	8096456
3	1xS7-1215C1P (ER2/DIO-A2AV/0V)**	8096457
4	1xS7-1215C1P (ER2/DIO-A5U)**	8096458
5	1xS7-1214C1P (ER2/DIO-A5U)**	8115009

Notes
 *Order nos. 8096455 and 8096456 are based on Siemens SCE Trainer Packages and contain six EduTrainers each, including programming cable (Ethernet cable) and programming software STEP 7 Basic. When Siemens updates these Trainer Packages, the controllers will be promptly replaced by successor models. Subject to technical implementation.
 **Order nos. 8096457, 8096458 and 8115009 contain one EduTrainer without programming cable (Ethernet cable) and programming software. The programming software Step 7 can be ordered in different packages at www.festo-didactic.com

Recommended accessories:
 I/O data cable with SysLink connectors (IEEE 488), 2.5 m 34031
 Analog cable, parallel, 2 m 529141
 Power supply unit for mounting frame → Page 195
 4 mm Safety laboratory cables → Page 194
 Ethernet cable → Page 194
 Programming software STEP 7 → www.festo-didactic.com



Bundle of 6

2

4

3

5

EduTrainer Compact Preferred versions

LOGO! 8



Bundle of 6

1

1	6x LOGO! 8**	8041132
2	1x LOGO! 8**	8041133

Notes
 *Order no. 8041132 is based on a Siemens SCE Trainer Package and contains six EduTrainers including programming software LOGO! Soft Comfort V8.
 **Order no. 8041133 contains one EduTrainer without programming software. The matching programming software LOGO! can be ordered separately, if necessary.

Recommended accessories:
 Power supply unit for mounting frame → Page 195
 4 mm Safety laboratory cables → Page 195
 Ethernet cable → Page 194
 Programming software LOGO! Soft Comfort V8 8040050



2

LOGO! EduTrainer Compact

Compact trainer devices that provide users with an introduction to logical signal processing within a mini control system.

Features of LOGO! modules:

- With LOGO! 8 the successful Siemens logic module enters the next generation.
- New logic module generation
- Display with new look and feel
- Ethernet communication
- Integrated web server
- New software in new design

EduTrainer Compact with:

- LOGO! 8**
 - Basic functional module 12/24 RCE
 - 8 digital inputs
 - 4 relay outputs
 - DM8 extension module:
 - 4 digital inputs
 - 4 relay outputs

The modular mini control system from Siemens

- For solutions in discrete and stand-alone automation applications in the lower performance range. The family of SIMATIC S7-1200 controllers is equipped with an integrated engineering system: SIMATIC STEP 7 Basic for controller and HMI.

EduTrainer Compact with CPU 57-1215C (order no. 8115009)

- Digital inputs on 4 mm safety sockets and switches/pushbuttons for signal simulation
- Analog inputs and outputs on 8x 2x V0 Y on 4 mm safety plugs
- Digital outputs on 4 mm safety sockets
- Analog inputs and outputs on 4 mm safety sockets
- 7.5 kB RAM, 4 MB loading buffer
- Interface: 2x RJ45
- 14 digital inputs (24 V DC)
- 8 digital outputs (24 V DC, 0.5 A)
- 2 analog inputs (0 – 10 V)
- 1 analog output (±10 V DC, 0 – 20 mA)

EduTrainer Compact with CPU 57-1215C (order no. 8096456, 8096458)

- Digital inputs on 4 mm safety sockets and switches/pushbuttons for signal simulation
- Digital outputs on 4 mm safety sockets
- Analog inputs and outputs on 4 mm safety sockets
- Simulation module with 2x SysLink plug connectors for MPS stations and control panel with digital inputs and outputs and Sub-D, 15-pin plug connection with analog inputs and outputs; 4 mm safety sockets for emergency stop jumper to connect a safety circuit for digital outputs

The mounting system

- EduTrainer Compact for ER mounting frame, size 2 (W x H x D) approx. 364 mm x approx. 170 mm x approx. 80 mm
- 19" modules with 4 mm safety plugs, SysLink system connector
- Suitable for ER mounting frame or freestanding on the table
- Lightweight injection-molded housing
- Expandable to some extent with 19" simulation modules
- The units are supplied fully assembled
- Other combinations are possible via the online configurator

LOGO! 12/24 RCE (V8)

- With LOGO! 8 the successful Siemens logic module enters the next generation.
- New logic module generation
- Display with new look and feel
- Ethernet communication
- Integrated web server
- New software in new design

EduTrainer Compact with:

- LOGO! 8**
 - Basic functional module 12/24 RCE
 - 8 digital inputs
 - 4 relay outputs
 - DM8 extension module:
 - 4 digital inputs
 - 4 relay outputs

The mounting system

- EduTrainer Compact for ER mounting frame
- Height x depth x width approx.: 170 x 80 x 364 mm
- Suitable for ER mounting frame or tabletop stand-alone
- Lightweight, injection-molded housing
- The units are shipped fully assembled

Special license rules apply for schools and educational institutes in the commercial sector.

Special license rules apply for schools and educational institutes in the commercial sector.

EduTrainer Universal Preferred version MPS

Festo CECC-LK CODESYS V3.5



World language IEC 61131-3

The CECC controllers are the latest generation of compact controllers from Festo. A CECC controller can be programmed for IL, LD, FBD, ST, SFC and CFC with CODESYS provided by Festo in accordance with IEC 61131-3.

EduTrainer Universal with:

Festo CECC-LK (MPS)

Interfaces:

- 4x IO Link master
- 1x IO Link device
- Ethernet connection
- USB connection
- CANopen

Inputs/outputs:

- 12 digital inputs (24 V DC)
- 8 digital outputs (24 V DC, 0.5 A)
- IO Link extension module:
- 8 digital inputs (24 V DC)
- 8 digital outputs (24 V DC, 0.5 A)

CODESYS

CODESYS is a development environment for programmable logic controllers (PLC) in accordance with the IEC 61131-3 standard for application development in industrial automation.

The point-to-point communication of the IO Link interface enables a simple and safe three-conductor wiring between the controller, sensors or actuators, and also makes remote parameterization possible. A wide variety of IO Link devices are available on the market. They are mostly sensors, actuators or a combination of these as well as special IO Link nodes to increase the number of inputs/outputs or to use standard sensors and actuators.



CECC-LK (MPS) 8043320

Notes

The CODESYS V3.5 programming software can be downloaded for free on the Festo website.

Recommended accessories:

I/O data cable with SysLink connectors (IEE 488), 2.5 m	34031
Safety laboratory cable, 3 m	571817
IEC power cable 90° → Page 195	

World language IEC 61131-3

Benefit from automation programming in a world language, based on IEC 61131-3.

Increased performance

CPX-CEC means improved cycle times and more connectable actuators. The modular I/O system offers complete flexibility. Intelligent pneumatic and electric axes can be activated via fieldbus. The extensive CODESYS function library provides diagnostics and condition monitoring options. Open- and closed-loop control – the AC 110/230 V, DC 24 V, 4 A solution for efficient automation of workstations or via remote control.

EduTrainer Universal with:

CPX-CEC CODESYS 2.3 (MPS)

- 400 MHz processor
- Data memory 32 MB flash/32 MB RAM
- Integrated web server
- Master CANopen fieldbus
- Communication via Ethernet (Modbus/TCP, EasyIP, TCP/IP)
- Process visualization using operator unit CPX or OPC server
- Inputs/outputs:
 - 16 digital inputs (24 V DC)
 - 16 digital outputs (24 V DC, 0.5 A)

CPX-CEC CODESYS 3.5 (MPS)

- 800 MHz processor
- Data memory 32 MB flash/256 MB RAM
- Integrated web server
- Master CANopen fieldbus
- Communication via Ethernet (Modbus/TCP, EasyIP, TCP/IP)
- Process visualization using operator unit CPX or OPC server
- Inputs/outputs:
 - 16 digital inputs (24 V DC)
 - 16 digital outputs (24 V DC, 0.5 A)

The mounting system

- EduTrainer A4 rack, desktop variant, size 1,
- W x H 305 x 297 mm
- 19" module system connector SysLink (Ø HP), with 2x SysLink plug connector for MPS station and control panel, each with 8 digital inputs and 8 digital outputs and 1x Sub-D 15-pin plug connection with 4 analog inputs and 2 analog outputs; emergency stop jumper to connect a safety circuit for disconnecting 8 digital outputs.
- Integrated power supply unit, AC 110/230 V, DC 24 V, 4 A
- The size 1 rack can be placed on a table or in an MPS station.
- Stable, powder-coated, sheet-steel holder system

1



1 CPX-CEC CODESYS 2.3 (MPS) 567274

2 CPX-CEC CODESYS 3.5 (MPS) 8065602

Notes

Includes Ethernet cable for programming the CPX-CEC. The CODESYS V2.3 and V3.5 programming software can be downloaded for free on the Festo website.

Recommended accessories:

I/O data cable with SysLink connectors (IEE 488), 2.5 m	34031
Safety laboratory cable, 3 m	571817
IEC power cable 90° → Page 195	

2



EduTrainer Compact Preferred versions Festo CECC CODESYS V3.5



1

- 1 CECC-LK 577602
- 2 CECC-D 8024002

Note

The free Codesys V3.5 programming software is available for download on the Festo homepage.

Recommended accessories:

- Power supply unit for mounting frame → Page 195
- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194



2

The compact controller from Festo

The CECC controllers are the latest generation of compact controllers from Festo. A CECC controller can be programmed for IL, LDR, FCH, ST, SFC and CFC with CODESYS provided by Festo in accordance with IEC 61131-3.

EduTrainer Compact with:

Festo CECC-LK
Festo CECC-LK is a compact and powerful PLC. The industrial design controller has 12 digital inputs, 8 digital outputs, and 2 fast digital inputs. In addition, a wide variety of interfaces are available as standard features on board:

- 4x IO Link Master
- 1x IO Link Device
- Ethernet connection
- USB connection
- CANopen

Festo CECC-D
Festo CECC-D EduTrainer Compact, like CECC-LK, but without IO Link.

CODESYS

Codesys is a development environment for programmable logic controllers (PLC) in accordance with the IEC 61131-3 standard for application development in industrial automation.

The point-to-point communication of the IO Link interface enables a simple and safe three-conductor wiring between the controller, sensors or actuators, and also makes remote parameterization possible. A wide variety of IO Link devices are available on the market. They are mostly sensors, actuators or a combination of these as well as special IO Link nodes to increase the number of inputs/outputs or to use standard sensors and actuators.



The mounting system

- EduTrainer Compact for ER mounting frame, size 2 (W x H x D) approx. 364 mm x approx. 170 mm x approx. 80 mm
- 19" modules with 4 mm safety plugs
- Suitable for ER mounting frame or freestanding on the cable
- Lightweight injection-molded housing
- The unit is supplied fully assembled
- Other combinations are possible via the online configurator



An ideal tool for newcomers to PLC technology.

With the compact and powerful PLC CECC-LK, a 24 volt PC interface (EasyPort USB) and the necessary software and hardware.

The PLC is programmed from your PC using Codesys provided by Festo, in accordance with IEC 61131, and information is exchanged with the visualization program via the PC interface. The visualization software provides various process models from the world of technology and everyday situations, such as level crossings, multi-storey car parks, sorting systems, washing machines, garage doors, wind generators, lifting luggage and more. A Getting Started kit is provided to explain how to use the hardware and software.

Order no.

8024001

CODESYS starter kit with CECC-LK and EasyPort USB



Festo CECC CODESYS V3 compact controller

Codesys is a development environment for programmable logic controllers (PLC) in accordance with the IEC 61131-3 standard for application development in industrial automation. The free Codesys programming software is available for download on the Festo homepage.

- In addition, there is a wide variety of interfaces available as standard features on board:
- 4x IO Link master
 - 1x IO Link device
 - Ethernet connection
 - USB connection
 - CANopen

The point-to-point communication of the **IO Link interface** enables a simple and safe 3-conductor wiring between the controller, sensors or actuators, and also makes remote parameterization possible. There is a variety of IO Link devices on the market. They are mostly sensors, actuators or a combination of these as well as special IO Link nodes to increase the number of inputs/outputs or to use standard sensors and actuators.

A comprehensive Codesys function library enables stand-alone open and closed-loop control and efficient automation of, for example, manual workstations to IEC 61131.

- Individual device or integratable via Codesys V3.
- Simple programming and navigation to IEC 61131-3.
- Hybrid: use CANopen Master and integrated IO Link to directly activate electric and pneumatic drives and connect valve terminals.
- Ethernet 10/100 Mbit/s, Modbus TCP Client/Server, EasyVP, TCP/IP

Festo CECC-D, like CECC-LK, but without IO Link.

Festo CECC-LK is a compact and powerful PLC. The industrial design controller has 12 digital inputs, 8 digital outputs, and 2 fast digital inputs.

Festo CECC-LK → see figure

8023951

Festo CECC-D

8023952

Recommended accessories:

- IO data cable with one SysLink connector as per IEC 488 and open ends 167122

EduTrainer Universal Preferred versions Laboratory

Allen-Bradley CompactLogix



The mounting system

- EduTrainer Universal, size 1 (W x H) 305 x 297 mm
- Can be placed on a desk or in an MPS station
- Stable, powder-coated, sheet-steel mounting system
- Integrated power supply unit, AC 110/230 V, DC 24 V, 4 A

All EduTrainer systems include all the required equipment with simulation modules:

- 19" module 1GIN (12 HP), 16 digital inputs on 4 mm safety sockets and 16 switches/pushbuttons for signal simulation
- 19" module 16OUT (12 HP), 16 digital outputs on 4 mm safety sockets
- 19" module 4AN/2AOUT (12 HP), analog processing 4 analog inputs on 4 mm safety sockets can be switched to simulation via potentiometer and 2 analog outputs on 4 mm safety sockets (not with order no. 8022737)
- 19" module 24 V IO (9 HP), 8x 4 mm safety sockets, red for 24 V distribution, 8x 4 mm safety sockets, blue for 0V distribution
- 19" module system connector SysLink (Ø HP), with 2x SysLink plug connector for MPS station and control panel, each with 8 digital inputs and 15-pin plug connector with 4 analog inputs and 2 analog outputs; emergency stop jumper to connect a safety circuit for disconnecting 8 digital outputs

The standard in North America

Allen-Bradley CompactLogix controllers of the series 1769 are ideal for small to compact control applications that do not require axis control or safety functions. These controllers offer integrated serial EtherNet/IP or ControlNet channels and modular DeviceNet communications.

EduTrainer Universal with:

AB CL 1769-L24ER-QB1B (digital)

- Main memory: 0.75 MB
- 1 GB SD memory card included
- Interfaces: 2x EtherNet/IP, 1x USB
- Inputs/outputs:
 - 16 digital inputs (24 V DC)
 - 16 digital outputs (24 V DC, 0.5 A)

1	AB CL 1769-L24ER-QB1B (digital)	8022737
2	AB CL 1769-L24ER-QBFC1B (digital/analog)	8022848
Recommended accessories:		
	I/O data cable with SysLink connectors (IEEE 488), 2.5 m	34031
	Analog cable, parallel, 2 m	529141
	Safety laboratory cable, 3 m	571817
	IEC power cable 90° → Page 195	8034585
	Programming software RSLogix	533039
	Other accessories:	
	Analog cable, crossover, 2 m	



Special license rules apply for schools and educational institutes in the commercial sector.

EduTrainer Universal Preferred version MPS

Allen-Bradley CompactLogix

The mounting system

- EduTrainer Universal, size 1 (W x H) 305 x 297 mm
- Can be placed on a desk or in an MPS station
- Stable, powder-coated, sheet-steel mounting system
- Integrated power supply unit, AC 110/230 V, DC 24 V, 4 A
- 19" module system connector SysLink (Ø HP), with 2x SysLink plug connector for MPS station and control panel, each with 8 digital inputs and 8 digital outputs and 1x Sub-D 15-pin plug connection with 4 analog inputs and 2 analog outputs, emergency stop jumper to connect a safety circuit for disconnecting 8 digital outputs.

The standard in North America

Allen-Bradley CompactLogix controllers of the series 1769 are ideal for small to compact control applications that do not require axis control or safety functions. These controllers offer integrated serial EtherNet/IP or ControlNet channels and modular DeviceNet communications.

EduTrainer Universal with:

AB CL 1769-L24ER-QB1B (MPS)

- Main memory: 0.75 MB
- 1 GB SD memory card included
- Interfaces: 2x EtherNet/IP, 1x USB
- Inputs/outputs:
 - 16 digital inputs (24 V DC)
 - 16 digital outputs (24 V DC, 0.5 A)

1	AB CL 1769-L24ER-QB1B (MPS)	8034582
Recommended accessories:		
	I/O data cable with SysLink connectors (IEEE 488), 2.5 m	34031
	Safety laboratory cable, 3 m	571817
	IEC power cable 90° → Page 195	8034585
	Programming software RSLogix5000	

Special license rules apply for schools and educational institutes in the commercial sector.

19" Simulation modules

<p>1. 19" module 16IN (12 HP) 16 digital inputs on 4 mm safety sockets and 16 switches/push-buttons for Signal Simulation. Order no. 567111</p>	<p>2. 19" module 8IN (6 HP), without switch 8 digital inputs on 4 mm safety sockets. Order no. 576620</p>	<p>3. 19" module 16OUT (12 HP) 16 digital outputs on 4 mm safety sockets. Order no. 567112</p>	<p>4. 19" module 8IN (6 HP) 8 digital inputs on 4 mm safety sockets and 8 switches/push-buttons for Signal Simulation. Order no. 567113</p>	<p>5. 19" module 8OUT (6 HP) 8 digital outputs on 4 mm safety sockets. Order no. 567114</p>	<p>6. 19" module 4OUT (6 HP) - 4 relay outputs at eight 4 mm safety sockets - Maximum load: 24 V, 4,5 A Order no. 573278</p>	<p>7. 19" module 4AN/2AOUT (12 HP) - Analog value processing 4 analog inputs on 4 mm safety socket switchable to simulation via potentiometer and 2 analog outputs on 4 mm safety sockets - Display for measured value indicator with selector switch for channel selection - Voltage range: 0-10 V, -1.0-+1.0 V Order no. 567119</p>	<p>8. 19" module 4AN/2AOUT (6 HP) - 4 analog inputs at 4 mm safety sockets - 2 analog outputs at 4 mm safety sockets Order no. 574197</p>	<p>9. 19" module word processing (12 HP) Two-line display for showing the input word and output word in HEX, DEZ and BCD. Changing of the input word via keypad. Order no. 567118</p>	<p>10. 19" module system connector 37-pin (9 HP) - 1x 37-pin Sub-D connector for 16 digital inputs - 1x 37-pin Sub-D socket for 16 digital outputs - Emergency stop jumper for 8 digital outputs Order no. 567116</p>	<p>11. 19" module system connector SysLink (9 HP) - 2x SysLink with 8 digital inputs and 8 digital outputs each - 1x 15-pin Sub-D socket for 4 analog outputs and 2 analog inputs - Emergency stop jumper for 8 digital outputs Order no. 567122</p>
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<p>1. 19" module 24V (9 HP) - 8x 24 V on 4 mm safety sockets, red - 8x 0 V on 4 mm safety sockets, blue Order no. 567195</p>	<p>2. 19" module 24V (6 HP) 8x 24 V on 4 mm safety sockets, red Order no. 567120</p>	<p>3. 19" blanking plate 4/2 TE 8022733 18 TE 8022732 12 TE 567123 9 TE 567124 6 TE 567125 3 TE 567126</p>	<p>4. 16-pin flat cable 16-pin flat cable, open at one end to connect 19" modules with analog connection to any PLC with screw or CageClamp contacts, 500 mm long. Order no. 567196</p>	<p>5. 10-pin flat cable 10-pin flat cable, open at one end to connect 19" modules with digital connection to any PLC with screw or CageClamp contacts, 500 mm long. Order no. 567197</p>
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EduTrainer for mini control systems

For a basic introduction to control and monitoring tasks

Basic trainer for mini control systems

Mini control systems are becoming increasingly common in industry and trade. They are used for numerous small control and monitoring tasks for which a PLC would be oversized. Mini control systems or programmable control relays control and operate conveyors, monitor doors and gates, control heating, and so on.

For training purposes, they represent the link between classic safety circuits and programmable logic controllers. Functions can be implemented quickly and easily based on the learned ladder diagram or function chart methodology using simple programming software.

Mini control systems are characterized by the large number of features that they provide. They are easy to program and to connect, are flexible and low-cost, and are therefore indispensable in basic training.

Another advantage of these small and compact devices, which are suitable for mounting in 35 mm H-rails, is that they implement many functions in a single device.

Mini control systems include:

- Controllers
- Indicators
- Diagnostic tools
- Text displays with operating buttons
- Interfaces to fieldbus systems
- Web servers
- and many more.

Numerous extension modules expand the possible functions.

The **EduTrainer for mini control systems** provides a broad basic platform for your project work. The board is designed to hold mini control systems and expansion modules, for example the Siemens LOGO! 8, the Eaton EasyE4 or a Controllino.

Up to 12 inputs can be picked off on 4 mm safety sockets. Four of these inputs can also be connected directly to the device using a pushbutton/latched switch. Up to 8 relay outputs can be changed to digital outputs using a toggle switch. Up to 2 analog outputs can also be connected to 4 mm safety sockets.

The device also includes two controllable analog encoders, which can be used to bridge voltages from 0 to 10 V at two inputs. An RJ45 Ethernet socket can connect the controller to the programming unit or network switch.

Please request a quotation for your individual requirements.



Bundle of 6



EduTrainer mini control system LOGO! 8

6x EduTrainer with LOGO! 8

+ digital expansion

The EduTrainer provides a broad basic platform for your project work. The board is equipped with a Siemens LOGO! of the series OBA8, an extension for digital signals.

The total of 12 outputs and 8 relay outputs of the controller are accessible on the device using 4 mm safety sockets. 4 of these inputs can also be connected directly on the device using a button/latched switch. The relay outputs can be changed to digital outputs using a toggle switch.

The device also includes two controllable analog encoders, which can be used to bridge voltages from 0 to 10 V at two inputs.

An RJ45 Ethernet socket can connect the controller to the programming device or network switch.

Scope of Delivery per Device

Training device with:

- 1x Siemens logo! OBA8
- 1x extension module DM8
- 4x connections for 24 V power supply
- 12x input sockets
- 16x potential free connections for relay outputs
- 1x Ethernet socket
- 2x 15 pin system interfaces (each 4 I/O)
- 2x potentiometer for analog value simulation
- 4x button/latched switches
- 1x output switch
- 1x programming software classroom license

– Windows XP 7, 8, 10 (32 and 64 bit), Mac OSx 10.7 Lion up to Mac OSx El Capitan, Linux SUSE 11.3, SP3, K 3.0.76

The device also includes two controllable analogue encoders, which can be used to bridge voltages from 0 to 10 V at two inputs.

An RJ45 Ethernet socket can connect the controller to the programming device or network switch.

Technical Data

- Front plate: 266 x 297 mm
- Device depth: approx. 90 mm
- Supply voltage: 24 V DC

Special license rules apply for schools and educational institutes in the commercial sector.

6x LOGO! 8 D without power supply
6x LOGO! 8 D with power supply*

8071409
8071410

Recommended accessories:

- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194
- *IEC power cable 90° → Page 195

1x EduTrainer with LOGO! 8

+ digital expansion

The EduTrainer provides a broad basic platform for your project work. The board is equipped with a Siemens LOGO! of the series OBA8, an extension for digital signals.

The total of 12 outputs and 8 relay outputs of the controller are accessible on the device using 4 mm safety sockets. 4 of these inputs can also be connected directly on the device using a button/latched switch. The relay outputs can be changed to digital outputs using a toggle switch.

The device also includes two controllable analogue encoders, which can be used to bridge voltages from 0 to 10 V at two inputs.

An RJ45 Ethernet socket can connect the controller to the programming device or network switch.

Scope of Delivery

Training device with:

- 1x Siemens logo! OBA8
- 1x extension module DM8
- 4x connections for 24 V power supply
- 12x input sockets
- 16x potential free connections for relay outputs
- 1x Ethernet socket
- 2x 15 pin system interfaces (each 4 I/O)
- 2x potentiometer for analogue value simulation
- 4x button/latched switches
- 1x output switch
- 1x programming software

– Windows XP 7, 8, 10 (32 and 64 bit), Mac OSx 10.7 Lion up to Mac OSx El Capitan, Linux SUSE 11.3, SP3, K 3.0.76

System Requirements

- Windows XP 7, 8, 10 (32 and 64 bit), Mac OSx 10.7 Lion up to Mac OSx El Capitan, Linux SUSE 11.3, SP3, K 3.0.76

Technical Data

- Front plate: 266 x 297 mm
- Device depth: approx. 90 mm
- Supply voltage: 24 V DC

1x LOGO! 8 D without power supply
1x LOGO! 8 D with power supply*

8071412
8071413

Recommended accessories:

- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194
- *IEC power cable 90° → Page 195

EduTrainer mini control system LOGO! 8



EduTrainer with LOGO! 8

The EduTrainer provides a broad basic platform for your project work. The board is equipped with a Siemens LOGO! from the series OBAS. All 8 inputs and 4 relay outputs of the controller are accessible on the device using 4 mm safety sockets. 4 of these inputs can also be connected directly on the device using a button/latched switch. The relay outputs can be changed to digital outputs using a toggle switch.

The device also includes two controllable analogue encoders, which can be used to bridge voltages from 0 to 10 V at two inputs.

An RJ45 Ethernet socket can connect the controller to the programming device or network switch

Scope of Delivery

- Training device with:
- 1x Siemens logot OBAS
 - 4x connections for 24 V power supply
 - 12x input sockets
 - 16x potential free connections for relay outputs
 - 1x Ethernet socket (each 4 I/O)
 - 2x 15 pin system interfaces for analogue value simulation
 - 2x potentiometer for analogue value simulation
 - 4x button/latched switches
 - 1x output switch
 - 1x programming software

System requirements

- Windows XP: 7, 8, 10 (32 and 64 bit), Mac OS X 10.7 Lion up to Mac OS X El Capitan, Linux SUSE 11.3, SP3, K 3.0.76

Technical Data

- Front plate: 266 x 297 mm
- Device depth: approx. 90 mm
- Supply voltages: 24 V DC

1x LOGO! 8 without power supply Netzteil
1x LOGO! 8 with power supply*

8071407
8071408

Recommended accessories:

- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194
- *IEC power cable 90° → Page 195



EduTrainer with LOGO! 8 + digital and analog expansion

The EduTrainer provides a broad basic platform for your project work. The board is equipped with a Siemens LOGO! of the series OBAS, an extension for digital signals and an extension for analog outputs. The total of 12 outputs, 8 relay outputs and 2 analog outputs of the controller are accessible on the device using 4 mm safety sockets. 4 of these inputs can also be connected directly on the device using a button/latched switch. The relay outputs can be changed to digital outputs using a toggle switch.

The device also includes two controllable analogue encoders, which can be used to bridge voltages from 0 to 10 V at two inputs.

An RJ45 Ethernet socket can connect the controller to the programming device or network switch.

Scope of Delivery

- Training device with:
- 1x Siemens logot OBAS
 - 1x extension module DM8
 - 1x extension module AM2 AQ
 - 4x connections for 24 V power supply
 - 12x input sockets
 - 16x potential free connections for relay outputs
 - 1x Ethernet socket
 - 2x 15 pin system interfaces (each 4 I/O)
 - 2x potentiometers for analogue value simulation
 - Analog value simulation
 - 4x button/latched switches
 - 1x output switch
 - 1x programming software

System requirements

- Windows XP: 7, 8, 10 (32 and 64 bit), Mac OS X 10.7 Lion up to Mac OS X El Capitan, Linux SUSE 11.3, SP3, K 3.0.76

Technical Data

- Front plate: 266 x 297 mm
- Device depth: approx. 90 mm
- Supply voltage: 24 V DC

1x LOGO! 8 DA without power supply
1x LOGO! 8 DA with power supply*

8071414
8137466

Recommended accessories:

- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194
- *IEC power cable 90° → Page 195

EduTrainer mini control system easyE4



EduTrainer with easyE4

The EduTrainer provides a broad basic platform for your project work. The board is equipped with an Eaton EASYE4-UC12RC1, an extension for digital signals and an extension for analog outputs. The total of 12 outputs, 8 relay outputs and 2 analog outputs of the controller are accessible on the device using 4 mm safety sockets. 4 of these inputs can also be connected directly on the device using a button/latched switch. The relay outputs can be changed to digital outputs using a toggle switch.

The device also includes two controllable analogue encoders, which can be used to bridge voltages from 0 to 10 V at two analog inputs.

An RJ45 Ethernet socket can connect the controller to the programming device or network switch.

Scope of Delivery

- Training device with:
- 1x Eaton EASYE4-UC12RC1
 - 1x extension module EASYE4-UC8RE1
 - 1x extension module EASYE4-DC6AE1
 - 4x connections for 24 V power supply
 - 12x input sockets
 - 16x potential free connections for relay outputs
 - 1x Ethernet socket
 - 2x 15 pin system interfaces (each 4 I/O)
 - 2x potentiometer for analogue value simulation
 - 4x button/latched switches
 - 1x output switch
 - 1x programming software

System requirements

- Windows 7 SP1/8/8.1/10

Technical Data

- Front plate: 266 x 297 mm
- Device depth: approx. 90 mm
- Supply voltage: 24 V DC

1x easyE4 DA without power supply
1x easyE4 DA with power supply*

814298
814296

Recommended accessories:

- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194
- *IEC power cable 90° → Page 195

EduTrainer mini control system Controllino



EduTrainer with Controllino

The EduTrainer provides a broad basic platform for your project work. The board is equipped with a Controllino MAM Automation pure. 12 outputs, 8 relay outputs and 2 analog outputs of the controller are accessible on the device using 4 mm safety sockets. The inputs can be used either as digital or analog inputs. 4 of these inputs can also be connected directly on the device using a button/latched switch. The relay outputs can be changed to digital outputs using a toggle switch.

The device also includes two controllable analogue encoders, which can be used to bridge voltages from 0 to 10 V at two analog inputs.

An RJ45 Ethernet socket can connect the controller to the programming device or network switch.

Scope of Delivery

- Training device with:
- 1x Controllino MAM Automation pure
 - 4x connections for 24 V power supply
 - 12x input sockets
 - 16x potential free connections for relay outputs
 - 1x Ethernet socket
 - 1x USB socket
 - 2x 15 pin system interfaces (each 4 I/O)
 - 2x potentiometer for analog value simulation
 - 4x button/latched switches
 - 1x output switch
 - 1x programming software, open source

System Requirements

- Corresponds to the open source software Arduino IDE

Technical Data

- Front plate: 266 x 297 mm
- Device depth: approx. 90 mm
- Supply voltage: 24 V DC

1x Controllino without power supply
1x Controllino with power supply*

8071415
8137477

Recommended accessories:

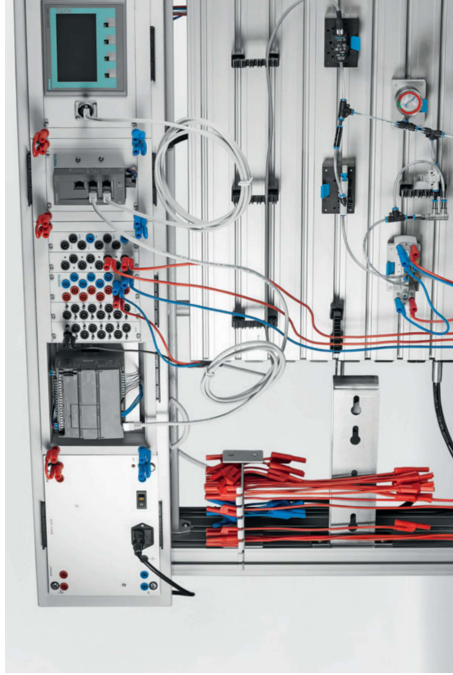
- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194
- *IEC power cable 90° → Page 195

Operation and networking in basic training Control panels (HMI) and switches

Used in A4 mounting frame
or as a desktop device



Used with pneumatics/hydraulics in
ER mounting frame



Touch Panel TP700 EduTrainer



Training device for an A4 mounting frame or as a desktop device. The communication connections for 1x PROFIBUS, 2x PROFINET and 2x USB are accessible at the front via robust plug connectors.

The Touch Panel TP700 Comfort of the Siemens HMI series is a 7" touch panel for advanced applications.

Comfort panel features include:

- Comprehensive high-end functionality: archive, VB scripts and various viewers for displaying system documentation (e.g. as PDF files) or in the form of Internet pages
- Multiple interfaces for process communication
- Integrated PROFINET switch
- Programming from WinCC Comfort V11 (TIA portal)

Scope of delivery

- Siemens TP700 Comfort Touch Panel set up on an A4 board
- Ethernet cable (CAT 6, crossed, 6 m)
- Engineering, options and runtime software and license for WinCC Advanced (TIA portal)

Special license rules apply for schools and educational institutes in the commercial sector

System requirements

- Windows 7 (64-bit) Professional/Enterprise/Ultimate SP1
- Windows 10 (64-bit) Professional/Enterprise 1703

Technical data

- Front panel: 266 x 297 mm
- Device depth: 90 mm
- Supply voltage: 24 V DC

Touch Panel TP700*

8022729

Recommended accessories:

- 4 mm Safety laboratory cables → Page 195
- Ethernet cable → Page 194

*Special license rules apply for schools and educational institutes in the commercial sector.

Touch panel KTP400 EduTrainer Compact



Training device for an ER mounting frame (pneumatics/hydraulics). The communication connections for 1x PROFNET and 1x USB are accessible at the front via sturdy plug connectors.

The Touch Panel KTP400 Basic PN is a 4" touch panel with 4 additional, programmable, tactile function buttons and is part of the new basic Siemens HMI series for simple applications.

Features of the basic panel:
 – Touch and button functionality
 – Interface for connecting to various PLCs

– Archiving via USB stick
 – Programming as of WinCC Basic V13 (TIA portal)

Technical data
 – Height x depth: approx. 170 x approx. 80 mm
 – Device width: 245 mm
 – Supply voltage: 24 V DC

Touch panel KTP400 EduTrainer Compact* 8041758

Recommended accessories:
 EduTrainer Compact with Siemens controllers
 4 mm Safety laboratory cables → Page 195

Available as a package: Touch panel KTP400 EduTrainer Compact + Ethernet switch XB005 EduTrainer Compact*

1x Touch panel KTP400 EduTrainer Compact + 1x Ethernet switch XB005 EduTrainer Compact*
 6x Touch panel KTP400 EduTrainer Compact + 6x Ethernet switch XB005 EduTrainer Compact*

Ethernet switch XB005 EduTrainer Compact



Training device for an ER mounting frame (pneumatics/hydraulics). The universal Ethernet switch Siemens Scalance XB005 allows you to set up small star and linear structures and provides a simple way of showing how PLCs, touch panels (HMI) and other components are networked.

The device is used in combination with PLCs and Touch Panel EduTrainers.

For schools and educational institutes in the commercial sector.

System requirements
 – 64-bit: Windows 7, Windows 8 SP1
 – 32-bit: Windows 7

Technical data
 – Height x depth: approx. 170 x approx. 80 mm
 – Device width: 245 mm
 – Supply voltage: 24 V DC

Ethernet switch XB005 EduTrainer Compact 8041755

Touch panel KTP700 EduTrainer



Training device for an A4 mounting frame or as a desktop device. The communication connections for 1x PROFNET and 1x USB are accessible at the front via robust plug connectors.

The KTP700 Basic PN Touch Panel is a 7" touch panel with 8 additional, programmable, tactile function buttons and is part of the new basic Siemens HMI series for simple applications.

Features of the basic panel:
 – Touch and button functionality
 – Interface for connecting to various PLCs

– Archiving via USB stick
 – Programming as of WinCC Basic V13 (TIA portal)

System requirements
 – 64-bit: Windows 7, Windows 8 SP1
 – 32-bit: Windows 7

Technical data
 – Front panel: 266 x 297 mm
 – Device depth: 90 mm
 – Supply voltage: 24 V DC

1x Touch panel KTP700 EduTrainer* 8027731
 6x Touch panel KTP700 EduTrainer* 8041505

Recommended accessories:
 Trainer Package SIMATIC S7-1200 DC/DC* 567238
 6x S7-1200-TP (ON)* 567241
 6x S7-1200-TP* 567240
 4 mm Safety laboratory cables → Page 195

Available as a package: Touch panel KTP700 EduTrainer + Ethernet switch XB005 EduTrainer*
 1x Touch panel KTP700 EduTrainer + 1x Ethernet switch XB005 EduTrainer*
 6x Touch panel KTP700 EduTrainer + 6x Ethernet switch XB005 EduTrainer*

Ethernet switch XB005 EduTrainer



Training device for an A4 mounting frame or as a desktop device. The universal Siemens Ethernet switch Scalance XB005 allows you to set up small star and linear structures and provides a simple way of showing how PLCs, touch panels (HMI) and other components are networked.

The device is used in combination with PLCs and Touch Panel EduTrainers.

For schools and educational institutes in the commercial sector.

System requirements
 – 64-bit: Windows 7, Windows 8 SP1
 – 32-bit: Windows 7

Technical data
 – Front panel: 266 x 297 mm
 – Device depth: 90 mm
 – Supply voltage: 24 V DC

Ethernet switch Scalance XB005 4473300

Special license rules apply for schools and educational institutes in the commercial sector.

Touch panel PanelView Plus 7 EduTrainer



Training device for an A4 mounting frame or as a desktop device. The communication connections for 1x Ethernet and 1x USB are accessible at the front via sturdy plug connectors.

The PanelView Plus 7 standard panels monitor and control devices connected to controllogix controllers in an EtherNet/IP network.

Features of the PanelView Plus 7 standard panels:

- Ethernet communication that supports networks with linear and star topologies.
- PDF display functions for accessing PDF files stored on the terminal.
- Programming with FactoryTalk View

Scope of delivery

Allen-Bradley Touch Panel PanelView didactically set up on an A4 board

System requirements

- Windows 7 SP1 Enterprise, Ultimate Edition
- Windows 8 Professional, Enterprise Edition 32 bit, 64 bit

Technical data

- Front panel: 266 x 297 mm
- Device depth: 90 mm
- Supply voltage: 24 V DC

Touch panel PanelView Plus 7 EduTrainer **5007887**

Recommended accessories:

EduTrainer Universal with Allen-Bradley controllers → Page 176/177

4 mm Safety laboratory cables → Page 195

Ethernet cable → Page 194

Programming software

On request

Ethernet switch US5T EduTrainer



Training device for an A4 mounting frame or as a desktop device. The universal Allen-Bradley Ethernet switch US5T allows you to set up small network structures and provides a simply way of showing how PLCs, touch panels (HMI) and other components are networked.

The device can be used in combination with PLCs and Touch Panel EduTrainers.

Scope of delivery

Allen-Bradley Ethernet Switch US5T set up on an A4 board

Technical data

- Front panel: 133 x 297 mm
- Device depth: 90 mm
- Supply voltage: 24 V DC

Ethernet switch US5T EduTrainer **4994634**

DIN Rail 100 EduTrainer



Training device for an A4 mounting frame or as a desktop device. It can be universally used as a carrier for 24 V devices with a maximum width of 100 mm.

The power supply is external via 4 mm safety sockets.

Scope of Delivery

An A4 board prepared to accept 24 V devices.

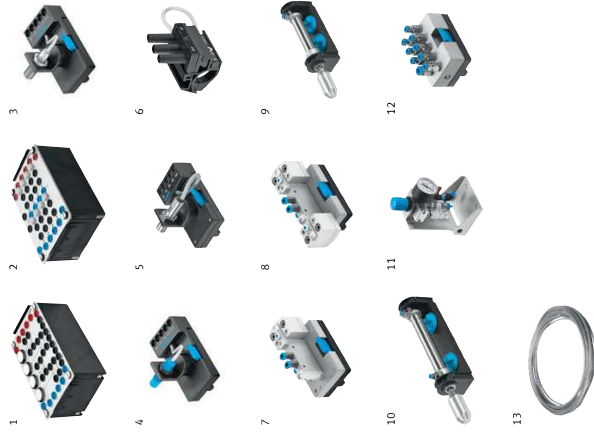
Technical Data

- Front plate: 133 x 297 mm
- Device depth: approx. 90 mm
- Supply voltage: 24 V DC

DIN Rail 100 **8075703**

Basic PLC programming

Equipment set TP 301



Complete equipment set TP 301

The most important components at a glance:

1	1x Signal input, electrical	162242
2	1x Indicator unit and distributor, electrical	162244
3	1x Proximity sensor, inductive, M12	548643
4	1x Proximity sensor, capacitive, M12	548651
5	1x Proximity sensor, optical, M12	572744
6	4x Proximity sensor, electronic, with cylinder mounting	2344752
7	1x 5/2-way solenoid valve with LED	567199
8	1x 5/2-way double solenoid valve with LED	567209
9	1x Single-acting cylinder	152887
10	2x Double-acting cylinder	152888
11	1x Start-up valve with filter control valve	540691
12	1x Manifold	152896
13	2x Plastic tubing, 4x 0.75 silver 1.0 m	151496

Recommended accessories:

Aluminum profile plate → Page 192	162231
Universal connection unit, digital (SysLink)	
Power supply unit for mounting frame → Page 195	
4 mm Safety laboratory cables → Page 195	
EduTrainer	

Supplementary equipment set from TP 201 to TP 301

Supplements the Pneumatics basic level equipment set, TP 201, to form a complete Programmable Logic Controllers equipment set, TP 301.

Complete supplementary equipment set TP 201 to TP 301

The most important components at a glance:		
3	1x Proximity sensor, inductive, M12	548643
4	1x Proximity sensor, capacitive, M12	548651
6	2x Proximity sensor, electronic, with cylinder mounting	2344752

Training content

- Benefits of the PLC compared to conventional solutions, such as electrical, electrohydraulic or electrohydraulic solutions
- Functions of system components of a PLC
- Commissioning a PLC
- Application criteria for mechanical, optical, capacitive and inductive proximity sensors
- Sequence control and parallel logic
- Systematic programming of a PLC in accordance with international standard IEC 61131-3
- IEC 61131-3 programming languages: Function Block Diagram, Ladder Diagram, Statement List, Structured Text and Sequence Language

Also order:

Workbook Programmable Logic

de	93313
en	93314
es	94427

Recommended training media
 Textbook Programmable Logic Controllers, Basic level

Networks and IT Security

Equipment set TP 1333



IT security plays an ever-increasing role in more and more professions. Mechatronic engineers, industrial electronic engineers and IT specialists need sound professional qualifications. Training package TP 1333 offers this over a range of subjects based on a wide range of training scenarios.

Equipment set TP 1333 contains components for the setup of example networks that serve to communicate all important fundamentals of IT security:

- 2x EduTrainers with integrated electricity supply and one each of S615 router and XC208 switch
- 1x Ethernet cable set (SysLink) or with 4 mm safety connectors, I/O modules can be connected via 4 mm safety connectors.
- 1x Festo NetLab Toolkit configuration software
- 1x configuration files for the exercises with S615 router and XC208 switch
- 1x workbook, in printed form and on a USB data carrier

The enclosed workbook contains detailed practical exercises on applications that are becoming increasingly important in the industry. Theoretical foundations supplement the exercises perfectly. Pre-configured software setups and sample solutions optimize laboratory-based learning. Exercises 1 to 4 can be carried out separately at one workstation. Exercises 5 and 6 are carried out jointly at neighboring workstations. The workbook covers the following key cyber security topics in everyday industrial situations:

- switching and monitoring networks
- address allocation in production networks
- routing and firewall functions
- VLAN-separated manufacturing networks
- Network Address Translation (NAT)
- Virtual Private Networks (VPN)

Equipment set TP 1333 with workbook and software

de	8127838
en	8127839
es	8127830
fr	8127831

To complete the exercises in their entirety, two PLCs and two PCs with a Windows 10 operating system are required. The PLC must allow external adjustment of IP address e.g. project with the IP address is set directly at the device" setting. Alternatively, control with factory settings should be possible.

Special license rules apply for schools and educational institutes in the commercial sector.

Accessories and optional components



1 Aluminum profile plate
The anodized aluminum profile plate forms the basis for all training packages. All of the components fit securely and safely into the grooves on the profile plate. There are grooves on each side and, if required, both sides can be fitted with components. The grooves are compatible with the ITEM profile system. Grid dimensions: 50 mm.



For installation on tables we recommend the appropriate rubber feet (order no. 158343).



3 Mounting bracket set
This mounting bracket set makes it possible to mount an EduTrainer Compact either on a vertically or horizontally positioned profile plate using the Quick-Fix mounting system. It also offers the possibility to use an EduTrainer Compact in a stable inclined position on a table surface. The set includes the assembly instructions and all the necessary components for assembly.



4 Rubber feet
For non-slip, protective mounting of profile plates on tabletops of any type. Set (4 pieces).



5 Plug-in adapter set
The plug-in adapter set can be used to mount the ER units directly on the blue plug-in board or on the aluminum profile plate. One set is required to mount one unit.



6 A4 ER mounting plate
The ER mounting plate can be installed in any A4 mounting frame. A cut-out permits installation of 2 large or 4 small Festo Didactic ER units (H x W).

1 Simulation box, digital
The simulation box is used to display the input and outputs signals of an MPS station or PLC. Two modes of application are possible:
- 4 analog voltage inputs: Range: -10 V – +10 V (max. 30 V, input resistance: 200 kΩ)
- 4 analog current inputs: Range: 0 – 20 mA (max. +4 – +24 mA), input voltage: max. ±30 V
- 2 analog outputs: Voltage: -10 – +10 V, short-circuit-proof, max. ±30 V, fuse-protected, current: max. 20 mA

2 Simulation box, digital/analog
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, parallel: Order no. 034031 (e.g. SimuBox with SPS EduTrainer or EasyPort)
- Analog cable, parallel: Order no. 529141 (e.g. SimuBox with EasyPort)
- Analog cable, crossover: Order no. 533039 (e.g. SimuBox with MPS Analog-terminal)
- I/O data cable, crossover: Order no. 167197

3 Connection unit, analog
Permissible voltage range: 22 – 27 V DC
- Reference: GND
- Quick and simple checking of contacts
- Rapid fine adjustment
- Unambiguous detection of switch outputs

4 Universal connection unit, digital (SysLink)
The universal connection unit connects all 4 mm safety sockets with the 24-pin system connector as per IEEE 488 (SysLink). It thus becomes a universal interface between units with 4 mm connection technology and devices equipped with SysLink connectors as per IEEE 488:
- Connection to an I/O terminal of an MPS station via an I/O cable with SysLink connectors at both ends, order no. 034031
- I/O coupling via the 4 mm laboratory connectors of a PLC using an open I/O cable (IEEE 488 connector – bare wires), order no. 167122
- Simple connection of actuators and sensors via 4 mm laboratory connectors with the EasyPort interface unit for FluidSIM

5 Sensor tester
The sensor tester speeds up commissioning of systems with integrated sensors and proximity sensors. It can be used for:
- Quick and simple checking of contacts
- Rapid fine adjustment
- Unambiguous detection of switch outputs

6 Network interface BNI IOL with 8 programmable inputs/outputs
For use as a decentralized module for connecting binary standard sensors and controlling actuators. An IO Link device communicates with the higher-level IO Link master module using the IO Link protocol.

7 BNI IOL network interface with 16 programmable inputs/outputs
For use as a decentralized module for connecting standard binary sensors and controlling actuators. An IO Link device communicates with the IO Link master module via the IO Link protocol.

8 Safety sockets each for 8 three-wire sensors
2 safety sockets each for 8 actuators

9 Safety sockets each for 8 actuators
4 mm safety sockets for 24 V DC SysLink connector (IEEE 488) I/O status display: Via LED

10 I/O status display: Via LED

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- 4 analog current inputs: Range: 0 – 20 mA (max. +4 – +24 mA), input voltage: max. ±30 V
- 2 analog outputs: Voltage: -10 – +10 V, short-circuit-proof, max. ±30 V, fuse-protected, current: max. 20 mA

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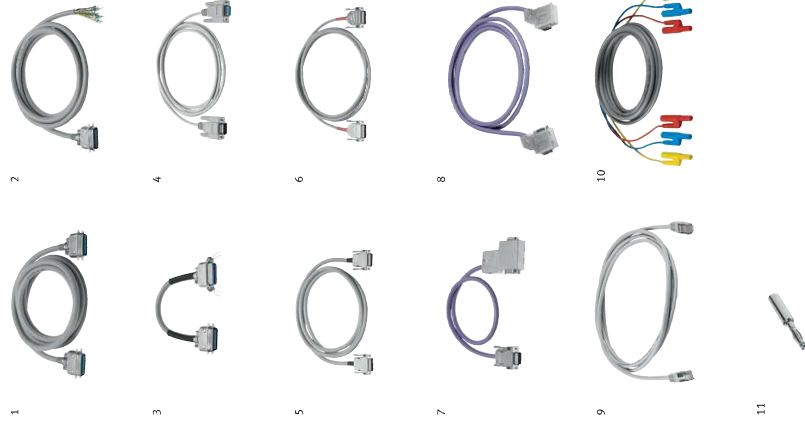
7 BNI IOL network interface with 16 programmable inputs/outputs
For use as a decentralized module for connecting standard binary sensors and controlling actuators. An IO Link device communicates with the IO Link master module via the IO Link protocol.

8 Safety sockets each for 8 three-wire sensors
2 safety sockets each for 8 actuators

9 Safety sockets each for 8 actuators
4 mm safety sockets for 24 V DC SysLink connector (IEEE 488) I/O status display: Via LED

10 I/O status display: Via LED

Accessories and optional components



- 1 **I/O data cable with SysLink connectors (IEEE 488)**
For connection of SysLink interfaces, for example an EduTrainer PLC, with the universal connection unit, digital (order no. 162231).
2,5 m **34031**
- 2 **I/O data cable with one SysLink connector as per IEEE 488 and open ends**
For connecting EasyPort to the I/O terminals of a PLC.
2,5 m **167122**
- 3 **I/O data cable, crossover, with plug and socket**
Connects the EduTrainer Universal of an MPS station with EasyPort (order no. 548687).
Adapter cable for connecting any PLC to a universal connection unit (order no. 162231) via I/O data cable with SysLink connector on one side and open ends (order no. 167122).
0,3 m **167197**
- 4 **PC data cable RS232**
For connection of the interface configuration box (EasyPort) to the RS232-interface of the PC.
female – female, 1,5 m **160786**
male – female, 1,5 m **162305**
- 5 **Analog cable, parallel**
EasyPort/PLC connection for a real process or a simulation box.
2 m **529141**
- 6 **Analog cable, crossover**
EasyPort with actual PLC and/or simulation box.
2 m **533039**
- 7/8 **PC adapter**
Connection between 2 PROFIBUS stations.
8 0,5 m **533035**
9 2,0 m **533036**

- 9 **Ethernet cable**
RJ45, CAT5
0,5 m **8062902**
1 m **8062903**
1,5 m **8062904**
2 m **567280**
- 10 **Safety laboratory cable, 3 m**
For connecting an EduTrainer Universal without a power supply unit to an external 24 V DC power supply unit. 3 m long. 3x 4 mm safety plugs (blue, red, green/yellow).
Order no. **571817**
- 11 **Plug-in adapter, electrical**
Adapter for inserting cables with safety plugs into sockets without shock-hazard protection. This is no longer compliant with DIN EN 61010 (IEC 1010). Set of 10 adapters.
Order no. **185692**
- Connecting cable for solenoid valves with M8 central plug**
Connecting cable (4-pin socket) for connecting solenoid valves with an M8 central plug.
– Cable length 2,5 m with open ends
– Cable length 1 m with 4 mm safety plugs and solenoid coil numbering
2,5 m with open ends **158962**
1 m with safety plugs **540703**
Order no.

- 1 **Power supply unit for ER mounting frame**
– Input voltage: 85 – 265 V AC (47 – 63 Hz)
– Output voltage: 24 V DC, short-circuit-proof
– Output current: max. 4 A
– Dimensions: 170 x 240 x 92 mm
Without power cable
Order no. **8049382**
Connector as per CEE 7/VII for DE, FR, NO, SE, FI, PT, ES, AT, NL, BE, GR, TR, IT, DK, IR, ID
- Order no. **159396**
Connector as per NEMA 5-15 for US, CA, Central America, BR, CO, EC, KR, TW, TH, PH, JP
- Order no. **162411**
Connector as per BS 1363 for GB, IE, MT, SG, UA, HK, AE
- Order no. **162412**
Connector as per AS 3112 for AU, NZ, CN, AR
- Order no. **162413**
Connector as per SEV 1011 for CH
- Order no. **162414**
Connector as per SANS 1664-1 for ZA, IN, PT, SG, HK, (GB), (AE)
- Order no. **162415**
- 2 **IEC power cable 90°**
One end fitted with a 90° IEC connector and the other fitted with a country-specific connector. Preferred version for EduTrainer Universal.
Connector as per CEE 7/VII for DE, FR, NO, SE, FI, PT, ES, AT, NL, BE, GR, TR, IT, DK, IR, ID
Order no. **549860**
Connector as per NEMA 5-15 for US, CA, Central America, BR, CO, EC, KR, TW, TH, PH, JP
- Order no. **549861**
Connector as per BS 1363 for GB, IE, MT, SG, UA, HK, AE
- Order no. **549862**
Connector as per AS 3112 for AU, NZ, CN, AR
- Order no. **549863**
Connector as per SEV 1011 for CH
- Order no. **549864**
Connector as per SANS 1664-1 for ZA, IN, PT, SG, HK, (GB), (AE)
- Order no. **549865**

- 3 **4 mm Safety laboratory cables**
– Plugs with rigid protective sleeve and axial socket
– Conductor cross section: 1 mm²
– 1000 V CAT II
– Power rating: 16 A
- 50 mm
4 mm Safety laboratory cables,
Order no. **8092626** (red)
8092627 (blue)
8092628 (black)
- 300 mm
4 mm Safety laboratory cables,
Order no. **8092630** (red)
8092631 (blue)
8092632 (black)
8092638 (green-yellow)
- 4 mm Safety laboratory cables,
Order no. **8092639** (red)
8092640 (blue)
8092641 (black)
8092647 (green-yellow)
- 1000 mm
4 mm Safety laboratory cables,
Order no. **8092648** (red)
8092649 (blue)
8092650 (black)
8092656 (green-yellow)
- 1500 mm
4 mm Safety laboratory cables,
Order no. **8092657** (red)
8092658 (blue)
8092659 (black)
8092665 (green-yellow)

