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**Quotation/  
Proforma Invoice**  
125.161

Project  
WorldSkills, EuroSkills

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Customer No.  
195586

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## Festo Didactic – Technical Education Solutions

**Festo Didactic** is the world-leading provider of equipment and solutions for industrial education. We design and implement learning centers and laboratories, educational equipment and programs that train people to perform in highly dynamic and complex industrial environments. Our goal is to maximize learning success in educational institutions and industrial companies around the globe.

Festo Didactic educational solutions directly evolve from technologies and innovations in automation and engineering. They place students in real-life situations and enable them to gain practical experience with high-tech industrial components and current systems. The product design focuses on excellence in usability and practice orientation: All functional components stand out from their complex industrial surroundings. They are easy to use and easy to remember. Their specific functions, positions and connections within the learning system intuitively show how technologies really work.

All learning environments, such as learning factories, laboratory equipment and e-learning products, are offered in conjunction with technical, organizational and people-oriented training programs – in 40 languages worldwide – and are associated with services like planning and operating complex learning centers, and with consultancy services for industrial companies.



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## Mandatory WorldSkills Mechatronics training equipment

Well prepared with the fundamental equipment set



Festo is a Global Industry Partner of WorldSkills and a Premium Sponsor of the official competition equipment for skill 04 Mechatronics at any WorldSkills competition.

To prepare young competitors for a championship, the learning solution Modular Production System MPS is the ideal training equipment.

The challenge: set up a functioning system and get it running without errors. Remember, only one station in the competition is known, the other station(s) are kept a secret until competition day.

With just a little more useful equipment, you increase the possibilities of the tasks as well as ergonomic working and the mobility of the workplace. This accessory material is optional and perfectly completes the preparation for the competition.

On the following pages you find both the mandatory and the supplemental WorldSkills Mechatronics training equipment in detail.

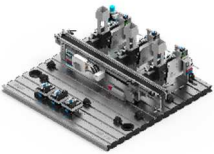

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## Important note


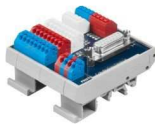
As per WorldSkills regulations, competitors must bring their own PLC, HMI, programming tools, connection cables, power supply and handcraft tools. Therefore, this material is not included in this offer. Please do not hesitate to contact us, if you need it.

## Part 1: 3 – 4 hrs. training



Tasks: Assembly, wiring, tubing, commissioning, maintenance

Pos. 1	1,00	<p><b>MPS Distribution Pro Station D</b> 8129387</p> <p>The MPS D Distributing Pro station covers, among other things, the basics of PLC programming and sensor technology. In addition, the station provides an introduction to conveyor control via motor controllers and the associated material transport.</p> <p>The easily comprehensible structure of the MPS station simplifies the creation of a sequence program. Different workpieces can be inserted in the Stacking Magazine module, so that each magazine can push out a different workpiece or a different color of workpiece.</p> <p>The station separates workpieces located in three stacking magazines. A double-acting cylinder pushes the workpieces out individually. The Conveyor module transports the workpiece to the right or left, whereby the nature of the workpiece is determined by appropriate sensor technology. The Conveyor can be stopped to separate the workpiece.</p> <p>The station can be connected to a PLC board, an I/O simulation box or to an external PC interface via 24-pin IEEE 488 pin-compatible connectors. By using components from market-leading manufacturers in automation technology, the station can be used for hands-on training in planning, assembly, programming, commissioning, operation, maintenance and troubleshooting of production plants.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• Operating pressure: 600 kPa (6 bar)</li> <li>• Power supply: 24 V DC</li> <li>• Dimensions workpiece angular/round: maximum 40 mm</li> </ul> <p><b>Scope of delivery (main components)</b></p> <ul style="list-style-type: none"> <li>• Profile plate 700 x 700 mm</li> <li>• Conveyor module 700 mm long</li> <li>• 3 x Stacking magazine module with switch</li> <li>• 3 x C-interface</li> </ul>	 <p>Picture similar</p>
Pos. 2	1,00	<p><b>Kit WS – Detection Module with Analogue Sensor</b> 8142040</p> <p>Detect module with analog sensor – kit</p> <p>The detection module is installed in an MPS station on a crash barrier on the belt or chute module. Based on the evaluation and combination of the sensors, different workpieces are identified (red, black, metallic, transparent). The module is supplied as a kit for tasks related to WorldSkills with 3 different sensors as well as a laser sensor and an electrical interface.</p> <p>It is suitable for detecting workpieces with a maximum diameter of 40 mm.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• Power supply: 24 V DC</li> <li>• Square/round workpiece dimensions: maximum 40 mm</li> <li>• 3 digital sensors</li> <li>• 1 analogue sensor (0-10V) with digital output</li> </ul>	 <p>Picture similar</p>

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		<p><b>Scope of delivery</b></p> <ul style="list-style-type: none"> <li>• Sensor carrier</li> <li>• Mini I/O terminal</li> <li>• Diffuse reflection sensor: PNP, normally open</li> <li>• Forked light barrier: PNP, normally open</li> <li>• Sensor inductive: working range</li> <li>• 2 – 8 mm (adjustable)/PNP, normally open</li> <li>• Laser sensor</li> <li>• Fastening material</li> </ul>		
Pos. 3	1,00	<p><b>Stopper, simple, with valve</b></p> <p>8046324</p> <p>Stopper module, complete with single-acting pneumatic cylinder with valve and mounting accessories for a guide rail and connecting cable.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• Stroke: 10 mm</li> </ul>		
		 <p>Picture similar</p>		
Pos. 4	1,00	<p><b>PA workpiece set</b></p> <p>554301</p> <p>To fill liquids into the MPS PA Bottling station. The workpieces are compatible with the MPS stations. For example, the pot in the Pick&amp;Place station can be sealed with the lid.</p> <p><b>The set comprises</b></p> <ul style="list-style-type: none"> <li>• 6 housings black</li> <li>• 6 housings red</li> <li>• 6 housings silver</li> <li>• 6 housings transparent</li> <li>• Diameter outside D = 40 mm</li> <li>• Height H = 25 mm</li> <li>• Volume V = 15 ml</li> <li>• 24 lids black</li> </ul>		
		 <p>Picture similar</p>		
Pos. 5	1,00	<p><b>MPS A4 assembly board</b></p> <p>8035612</p> <p>The assembly board is used to mount the various terminals or other components that can be mounted on the H-rail. There are two levels with a height of approx. 95 mm available. The board can be installed in any A4 mounting frame in the MPS trolley or in the lab table. The board can also be hung in the trolley or attached to the profile plate or the intermediate shelf in the MPS trolley. The board is fully assembled.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• Dimensions (H x W x D): 279 x 314 x 40 mm</li> </ul> <p><b>Scope of delivery</b></p> <ul style="list-style-type: none"> <li>• Assembly plate</li> </ul>		
		 <p>Picture similar</p>		

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		<ul style="list-style-type: none"> <li>• 2 H-rails, 240 mm long</li> <li>• Cable ducts</li> </ul>		
Pos. 6	2,00	<p><b>Digital I/O terminal (SysLink)</b> 8025736</p> <p>The I/O terminal is the central unit of the MPS SysLink concept. It is used to wire eight digital inputs and eight digital outputs which are connected to a socket. Contact is established via spring-loaded terminals. LEDs are fitted on the input and output terminals which make it easy to monitor the switching status and enable systematic troubleshooting. The terminal can be mounted on an H-rail.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• 24 V/0 V terminals</li> <li>• Inputs: 8</li> <li>• Outputs: 8</li> <li>• Spring-loaded terminal: 0.2 – 1.5 mm<sup>2</sup></li> <li>• 24-pin IEEE socket (SysLink)</li> <li>• Status LEDs</li> <li>• Dimensions (W x D): 68 x 77 mm</li> </ul> <p><b>Scope of delivery</b></p> <ul style="list-style-type: none"> <li>• Terminal with H-rail mounting</li> </ul>	 <p>Picture similar</p>	
Pos. 7	1,00	<p><b>Analog I/O terminal</b> 8025737</p> <p>Analogue signals are routed to a special analogue terminal with a 15-pin Sub-D socket. It is used to wire four analogue inputs and 2 analogue outputs which are connected to a socket. Contact is established via spring-loaded terminals. LEDs are included on the input and output terminals which make it easy to monitor the status and enable systematic troubleshooting. The terminal can be mounted on an H-rail.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• 24 V/0 V terminals</li> <li>• Current inputs: 4</li> <li>• Current outputs: 2</li> <li>• Voltage inputs: 4</li> <li>• Voltage outputs: 2</li> <li>• Spring-loaded terminal: 0.2 – 1.5 mm<sup>2</sup></li> <li>• 15-pin Sub-D socket</li> <li>• Status LEDs</li> <li>• Dimensions (W x D): 68 x 77 mm</li> </ul> <p><b>Scope of delivery</b></p> <ul style="list-style-type: none"> <li>• Terminal with H-rail mounting</li> </ul>	 <p>Picture similar</p>	
Pos. 8	1,00	<p><b>Consumables Set 1 WS - MPS Distribution Pro Station D</b> 8177837</p> <p>Consumables – Set adapted to the station MPS Distribution Pro Station D for the stacking magazines, module conveyor, the stopper cyl. (PN 8046324), dig. I/O</p>		no photo






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		(8025736) and analogue I/O (8025737) modules. The set enables training and preparation for the WorldSkills mechatronic tasks.		
<b>Part 2: 1 – 1,5 hrs. training</b> Tasks: Maintaining and optimizing with further components				
Pos. 9	1,00	<b>LED Light Tower</b> 549843  LED light tower with 3 signal lights (red, yellow, green) with a base, a connecting cable of approx. 2 meters and mounting material. The service life of the light tower is 50,000 hours.		Picture similar
Pos. 10	1,00	<b>Flow sensor</b> 8173544  Flow sensor, 2 – 200 l/min, analogue Flow sensor on Quick-Fix safety and quick mounting system for profile plates <b>Technical data</b> <ul style="list-style-type: none"> <li>• Rotatable, 90° detenting</li> <li>• M12x1 connector, 5-pin</li> <li>• Cable with M12 x 1 socket and open end</li> <li>• safety plug</li> <li>• Switching output, 2 x PNP</li> <li>• Analogue output 0 – 10 V</li> <li>• Operating voltage range 12 – 30 V DC</li> <li>• Switching element function, selectable</li> <li>• Switching function freely programmable</li> <li>• Flow measurement range 2 – 200 l/min</li> <li>• Quick action mounting system Quick-Fix</li> </ul>		Picture similar







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## Supplemental WorldSkills Mechatronics training equipment

Improve the performance with add-on supplies

<b>Useful accessories</b>				
Make use of all available features for a holistic training				
Pos. 11	1,00	<p><b>MPS trolley (700 x 700, without height adjustment)</b></p> <p>541139</p> <p>The trolley makes an MPS station a compact and mobile unit. The station is easy to mount on the trolley. The EduTrainer Universal, size 1, can be inserted and the emergency stop board connected. Appropriate through-holes in the side and rear panels enable orderly routing of cables. The front side is equipped with mountings for panels. The trolley is supplied complete with twin castors.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• Height (including castors, to bottom edge of profile plate): 750 mm</li> <li>• Width: 700 mm</li> <li>• Depth: 700 mm</li> </ul>		Picture similar
Pos. 12	1,00	<p><b>MPS trolley (700 x 700, with height adjustment)</b></p> <p>8106687</p> <p>The station is easy to mount on the trolley. Appropriate through-holes in the side and rear panels enable orderly routing of cables. The symmetrical design of the trolley means that there are mounting options on both sides for the control panel, the intermediate shelf and for drawers. A lifting column can be integrated in the center of the trolley to facilitate ergonomic work on the profile plate. There is space for the assembly board for the electrical connections and the PLC rack on both sides of the trolley. The profiles for DIN A4 mounting allow additional EduTrainer units to be used on the trolley. An optional attachable door protects the equipment inside.</p> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>• Dimensions (H = including castors to top edge of trolley x W x D): 750 x 350 x 700 mm</li> </ul> <p><b>Scope of delivery</b></p> <ul style="list-style-type: none"> <li>• Trolley including castors</li> <li>• Intermediate shelf</li> </ul> <p>Type: 700 x 700, with height adjustment</p>		Picture similar
Pos. 13	1,00	<p><b>Simulation box, digital/analog</b></p> <p>526863</p> <p>The digital/analog simulation box additionally allows the simulation and display of analogue signals (0 – 10 V). The simulation box is supplied without connection cables.</p> <p>The following connection cables are recommended for flexible application:</p> <ul style="list-style-type: none"> <li>• I/O data cable, parallel: Order no. 034031 (e.g. SimuBox with SPS EduTrainer or EasyPort)</li> <li>• Analogue cable, parallel: Order no. 529141 (e.g.. SimuBox with EasyPort)</li> </ul>		Picture similar

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		<ul style="list-style-type: none"> <li>Analogue cable, crossover: Order no. 533039 (e.g. SimuBox with MPS Analog-Terminal)</li> <li>I/O data cable, crossover: Order no. 167197</li> </ul> <p><b>Two modes of application are possible:</b></p> <ul style="list-style-type: none"> <li>Simulation of inputs for testing of a PLC program.</li> <li>Setting of outputs (with separate 24 V supply) in order to operate a process.</li> <li>The cable required for this purpose is included in the scope of delivery. The simulation box contains a SysLink socket. The box additionally allows the simulation and display of analogue signals (0 – 10 V).</li> </ul> <p><b>Note:</b> The simulation box is supplied without connection cables.</p>		
Pos. 14	1,00	<p><b>I/O data cable SysLink, crossover</b> 167106</p> <p>I/O data cable with SysLink connectors (IEEE 488), crossover For connection of I/O's (SysLink) to the EasyPort. Sys-Link-cable, for connection of EduTrainer with EasyPort length 2.5 m, incl. power supply for EasyPort.</p>		Picture similar
Pos. 15	1,00	<p><b>Analog cable, crossover</b> 533039</p> <p>Analogue cable, crossover (EasyPort with actual PLC and/or SimuBox) 2 m</p>		Picture similar
Pos. 16	1,00	<p><b>Rubber feet</b> 158343</p> <p>For non-slip, protective mounting of profile plates on tabletops of any type. Set (4 pieces).</p> <ul style="list-style-type: none"> <li>Natural rubber, color does not rub off upon contact</li> <li>Abrasion resistant quality</li> <li>Color: grey, similar to RAL 7001</li> <li>Rubber foot with M6x8 plus M6 nut</li> <li>Set consists of 4 pieces</li> </ul>		Picture similar

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<p><b>Festo LX - a perfect match</b> Combine your hands-on training with digital learning</p>				
Pos. 17	1,00	<p><b>F-LX (25 users / 1 year)</b> 8133287</p> <p>Festo LX – Basic Access Subscription The Festo Learning Experience, Festo LX, is an online portal that has a responsive design and can be used on a PC, laptop, Mac, mobile phone or tablet. The portal is already populated with courses from Festo Didactic. These courses are split into learning modules so they can be rearranged or modified. There is a mix of stand-alone courses and courses that use learning equipment in order to make it easy to carry out the practical and technical exercises. Festo LX has an overview of the courses that use hardware equipment so it is easy to see which courses are carried out using equipment or the devices that are required for a course. The Festo Learning Experience portal allows content to be created using a built-in editor tool. It is flexible since it allows existing courses to be modified or edited by adding, removing and rearranging content. Moreover, it also allows learning groups to be managed and content to be assigned to the students. LXP-25U-1Y</p>		
		 <p>Picture similar</p>		