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UniTrain®

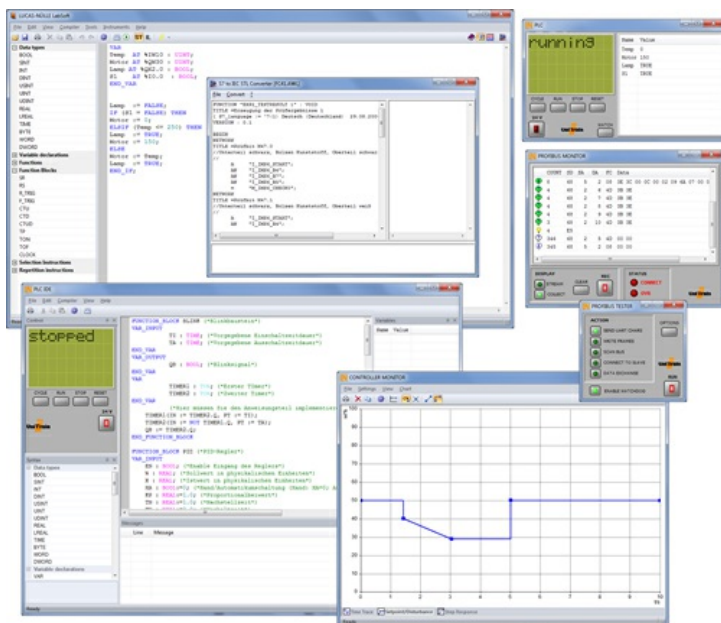
UniTrain is a multimedia e-learning system with integrated, mobile electronics lab for general education and advanced training in electrical engineering and electronics.

UniTrain courses



UniTrain courses

UniTrain industrial process automation courses



UniTrain industrial process automation courses

From closed-loop control of individual systems to flexible automation of entire processes, the various courses convey the fundamental, the principles and the properties of components used in automated processing and production plant with the aid of animations and numerous experiments involving authentic equipment. Multiple experiments cover investigation of controlled systems, determination of step responses and optimisation of control loops. Training also covers the use of useful aids such as Bode and Nyquist plots in authentic experiments.

IPA 2 mixing station



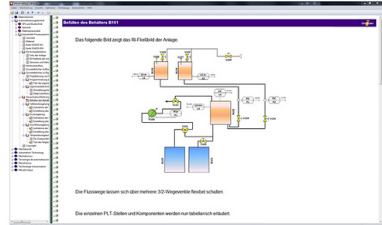
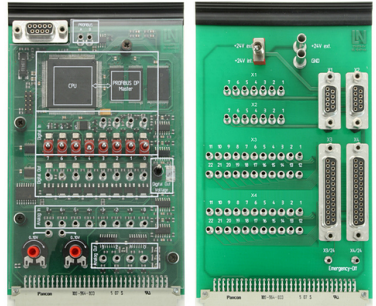
IPA 2 mixing station

The IPA mixing station allows a precise mixing of pre-defined formulations. It is the optimum solution for typical production processes in the most varied of industries. The system's modularity permits diverse configurations to be implemented in a safe laboratory environment.

Training content:

- Setup, wiring and start-up of a process plant
- Selection, application and connection of various sensors
- Measurement of electrical and process variables such as filling level and flow rate
- Formulation control
- Use and connection of measurement transducers
- Setup and operation of control loops
- Analysis of controlled systems and control loops
- Operation of continuous and discontinuous controllers
- Parameterization and optimization of P-, PI- and PID controllers
- Design of open-loop and closed-loop control programs
- Process handling and monitoring
- Inspection, maintenance and repair
- Networking of process plants

List of articles:

Pos.	Product name	Bestell-Nr.	Anz.
1	Course - Process technology: IPA 2 Mixing station <u>Delivery includes:</u> Experiment board with: <ul style="list-style-type: none"> • PLC-card • IMS system connection card • CD-ROM with Labsoft browser and course software <u>Training content:</u> <ul style="list-style-type: none"> • Piping and instrumentation (P & I) diagram • Sensors and actuators for system • Filling level determination • Mixing function • Pumping out function • Cleaning function • Paint reservoir filling function • Course duration: 4.5 h approx. 	SO4204-3F	1
		 	
2	IPA mixing station	LM9551	1

Mixing formulations:

The IPA mixing station allows a precise mixing of pre-defined formulations of two differently coloured liquids. A control system permits accurate dosage and mixing of the components. The finished liquid can be conveyed to a further station. The system's modularity permits diverse configurations to be implemented in a safe laboratory environment.

The mixing station consists of:

- 2 tanks
- 1 reactor vessel
- Plug-in pipe system
- Support frame
- Supply tank
- Sump
- Sensors:
 - Capacitive sensors
 - Flow sensors
 - Filling level sensor with 0...10V analog output

Actuators:

- Pump with safety pressure switch
- 3/2-way process valves
- 2/2-way process valves
- 3/2-way solenoid valve
- Compressed-air maintenance unit with pressure reducer and manometer

Electrical system:

- 3HU supply channel with transformer and controller



- Integrated power supply 24 VDC
- Motor controller with digital and analog control
- IMS connection DSUB 25

Your benefits:

- Hands-on practice thanks to a use of industrial components
- Process engineering sensors for filling level and flow rate
- Can be combined with any open-loop or closed-loop system from industry and vocational education
- Can be expanded using additional IPA stations:
Compact station, filling, corking and uncorking
- Can be integrated into IMS® (Industrial Mechatronic System)
- A flexible plug-in system permits quick adaptation to flow schemes and integration of other components
- Pump control (direct or speed-dependent)
- Manual operation without additional devices, directly via a simulation switch

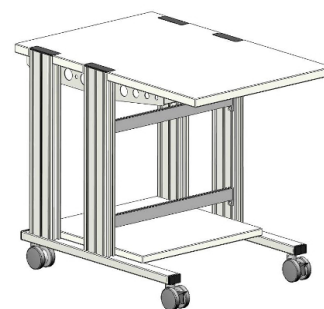
3 Mechatronics aluminium profile carriage without table-top frame

ST7200-3R

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Allows for combinations of Mechatronics sub-systems with a training panel system.

- Sides made of aluminium profiles with integrated grooves for attaching a wide variety of add-on components (e.g. monitor holder, C rails, safety and signalling equipment)
- 2 Brushed natural aluminium profile rails to accommodate A4-sized training panels
- Inward facing brush rails ensure that the training panels are protected and that the plug connections can be interchanged without noise during an experiment.
- Suitable for fitting underneath a 3 HU power supply duct
- The panel frames are fitted with additional accessories for attachment to an aluminium profile mechatronics trolley (extension of aluminium profile to rear)
- The mobile experiment trolley is supplied as a kit and needs to be assembled by customers themselves.
- Aluminium profile rail with integrated grooves for attaching a wide variety of add-on components (e.g. PC holder, extension panels, C rails)
- 4 Swivelling dual casters, 2 with brakes
- Work top, 600 x 30 x 900mm (WxHxD) made of highly compressed multi-layer chipboard conforming to DIN EN 438-1; colour, light grey; with slightly textured 0.8mm laminate coating on both sides (Resopal) conforming to DIN 16926
- Work top frame with impact-resistant protective edging made of 3mm thick coloured plastic, colour RAL 7047
- Coating and adhesives are PV-free
- 5 sockets are embedded in the table top for attaching conveyor belts in 2 different positions
- Switch-isolated plug-board on underside, with 5 sockets
- Height of work top 750 mm



Additionally required:

Pos.	Product name	Bestell-Nr.	Anz.
4	25-pin serial interface cable, Sub-D plug/socket	LM9061	1

25 pin Sub-D connection cable

- Length: 2m
- Connection: 25-pin plug / 25-pin socket
- Pin assignment: 1:1



Additionally recommended

In areas where there are high levels of humidity the membrane dryer with water trap should be used to avoid condensation:

Pos.	Product name	Bestell-Nr.	Anz.
5	Compressor, low-noise	SE2902-9L	1

Extremely quiet compressed air system with compressor motor, thermo switch and automatic pressure switch. Tanks made of special steel with security valve and non-return valve, master pressure gauge, condensation drain, stop valve and maintenance unit

- Motor output: 0.34 kW
- Suction capacity: 50 l/min
- Power consumption at 8 bars: 2.9 A
- Pressure: 8 bars
- Tank capacity: 15 l.
- Noise level: 40 dB(A)/1m
- Operating voltage: 230V AC
- incl. tube and connection set
- Dimensions: 500x410x410 mm (HxWxL)
- Weight: 19 kg



6 Tubing and accessory set for mechatronics systems

LM9670

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Universal tubing and accessory set with the required components and adapters for connecting a compressor to mechatronic systems.

- 1 x Compressor connector with plug-in sleeve 8 mm
- 1 x Plug adapter 6 mm/8 mm
- 1 x Plug adapter 4 mm/6 mm
- 2 x Angle connectors 4 mm
- 5 x T-connectors 4 mm
- 5 x T-connectors 6 mm
- 5 x T-connectors with 6 mm/4 mm adapters
- 20 m polyurethane tubing, 4mm
- 10 m polyurethane tubing, 6mm
- 10 Stoppers for plug connectors 4 mm
- 1 x 3/2 directional control valve, manual, 5 mm



7 IDG3 membrane dryer with rapid coupling and filter AF20 with water trap

LM9671

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Membrane dryer, a reliable, effective and cost-efficient alternative for compressed air drying.

- Compact and light
- No power supply required
- Built-in noise suppressor reduces noise development from venting air
- Non-heating and vibration-free

Air filter, high-quality filter water trap

- Double-sided internal thread 1/4"
- Semi-automatic drainage
- High-quality 50 Micro filtering
- Supplies clean compressed air
- Replaceable filter element
- Compact design

