LUCAS-NÜLLE

SybaLab

The Laboratory Equipment Range from Lucas-Nülle

Contents

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Laboratory Systems for Education and Training

Lucas-Nülle, Changing with the Times

Advances in technology …

Innovative, user-friendly and flexible lab fittings are the answer to the varied demands and rapid changes in research and technology. The lab fittings for professional training facilities are subject to some telling extra demands. They need to take heavy punishment and remain durably robust when exposed to chemicals and physical stresses, while meeting the requirements for good looks plus form and function in the wide variety of situations in which they are employed.

… are having a huge impact on training and education

Economic educational workplaces help to save space and make better use of labs while satisfying legal obligations without adversely affecting the required quality. Lucas-Nülle provides customers with comprehensive advice on developing economic concepts for rooms, with the objective of making education more effective for longer. The SybaLab laboratory furniture range, specially designed for educational purposes, offers every opportunity to integrate Lucas-Nülle's training system into laboratories in optimal fashion to ensure success in education.

Your benefits

- Comprehensive, all-round range of laboratory equipment from lab tables and power supply systems to chairs
- Innovative, user-friendly lab concepts for your individual needs
- Bespoke lab furniture, designed for the needs of education and vocational training
- A workshop range designed using plenty of practical experience and matched to typical applied needs
- From consultation to handover – all from a single source

We Represent Quality

Certification to ISO 9001:2000

The very highest production standards

Lucas-Nülle products are manufactured at our own facilities in Germany.
The complexity and the breadth of our product range are only made possible by having a highly motivated team of skilled, independent and experienced technicians and engineers.
Our manufacturing processes are efficiently controlled by a modern PPS system, which ensures that products can be delivered to the customers just when they want them.

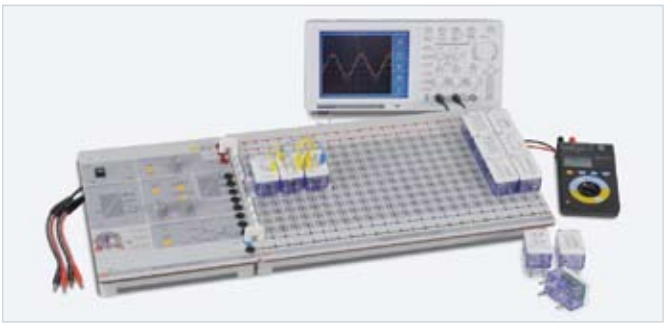
We guarantee quality and set the standards

The company philosophy at Lucas-Nülle regards quality as the cornerstone and key feature of the business.
As well as continually assuring our agreed quality targets by meeting the demands of ISO 9001, a range of other certificates display the proof of our high quality ideals.
They describe procedures, standards and test results to guarantee our customers the quality and reliability of products and services of which they have been assured and which they expect of us.

Educational Concepts to Meet the Ultimate Demands

Lucas-Nülle Training Systems
+ SybaLab Laboratory Equipment
= Guaranteed Educational Success

Fundamentals of electrical engineering and electronics



Electrical wiring installation

Electrical energy technology

Power electronics, electrical machines, drive technology

Communications technology

Control technology

Automotive technology

Automation technology

Microcomputers

Measuring instruments

Electropneumatics, hydraulics

SybaLab

The Laboratory Equipment Range from Lucas-Nülle

SybaLab is a logical supplement to the Lucas-Nülle product range.

The laboratory system with its high-quality SybaPro workplaces, SybaPower power supplies and SybaStore system cabinets rounds off the range of fittings and equipment for fully equipped technological labs.

The SybaWork workplace system provides workbenches and accessories for technical education and perfectly complements the SybaLab range of lab equipment.

SybaPro

Aluminium profile workplace system for the ultimate demands

- Laboratory benches
- Training panel mounting frames/punched hole panels
- Accessories

SybaMobile

Mobile for flexibility

- Mobile experiment and demo stands
- Accessories

SybaPower

Innovative power supplies, testers and measuring instruments

- Sub-distribution panels for rooms
- Power supply ducts
- 3-HU modules

SybaStore

Bespoke storage and cabinet systems for your laboratory

- Cabinets/fitted cupboards
- Under-table cabinets/roll containers
- Locking systems

SybaWork

Workplace systems for workshops

- Workbenches
- Assembly trolleys/chests of drawers
- Vices and accessories

SybaEquip

Furnishing of technical spaces for education

- Chairs
- Boards/projector screens
- Accessories

SybaPlanning

Recommendations and guidelines for fittings and furnishing in rooms for teaching electrical topics

- SybaLab planning tool
- Standards and guidelines
- "Machine lab" planning example

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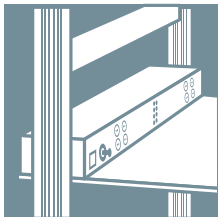
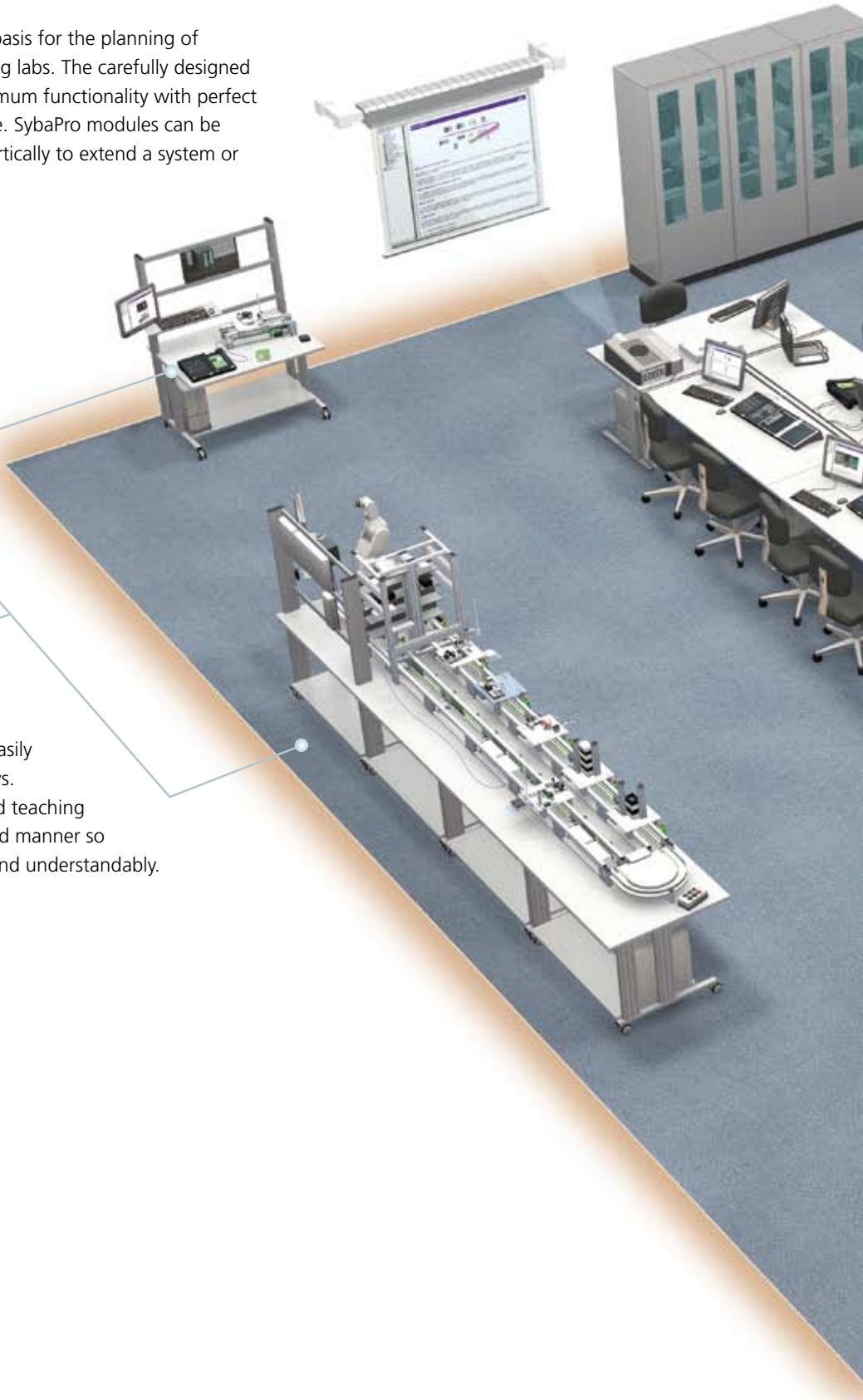
SybaPro



SybaPro

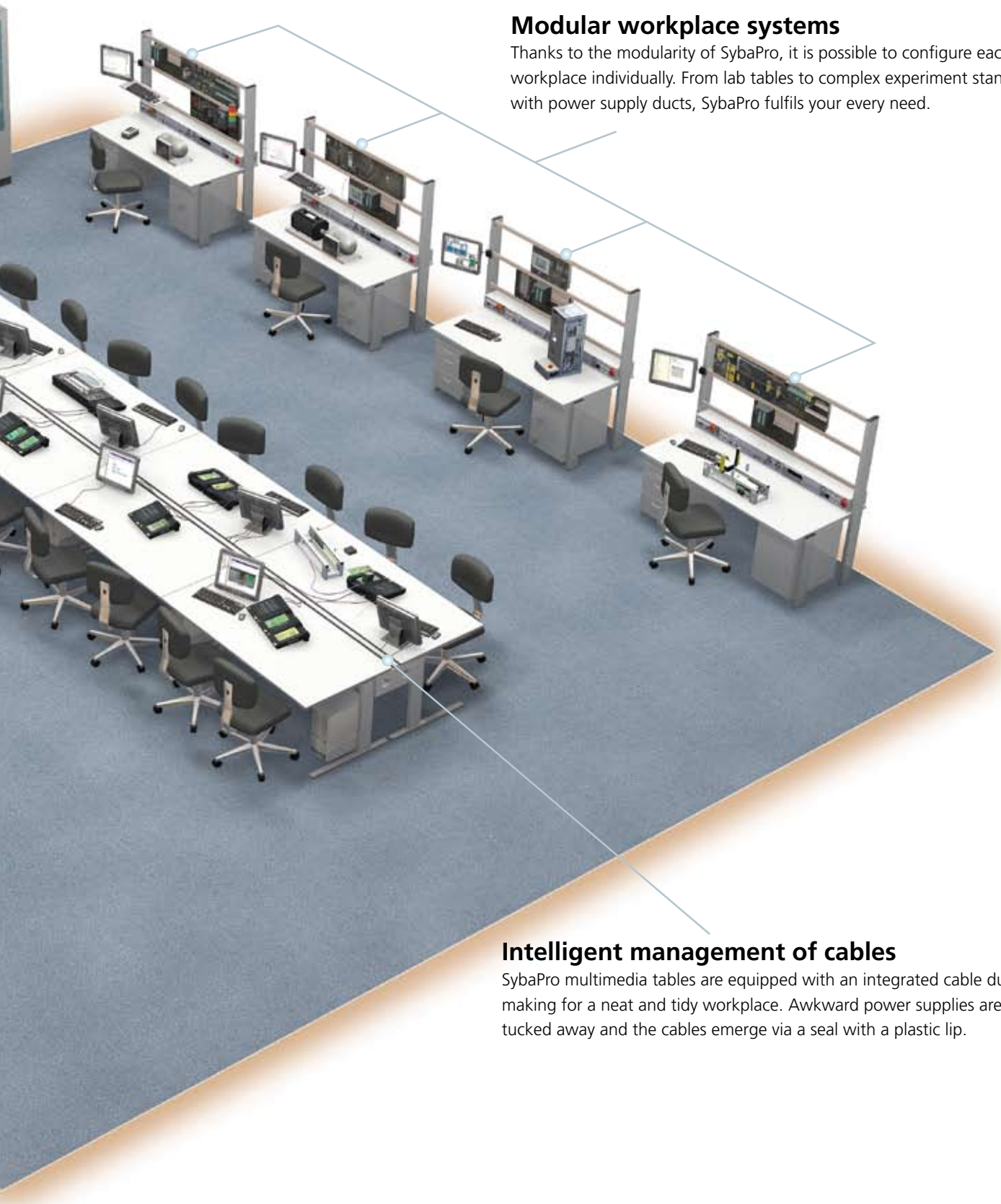
The Laboratory Workplace System for the Ultimate Demands

The SybaPro workplace system forms the basis for the planning of innovative, user-oriented electricity teaching labs. The carefully designed extruded aluminium profiles combine optimum functionality with perfect economy. SybaPro is flexible and adaptable. SybaPro modules can be coupled together both horizontally and vertically to extend a system or can be individually removed.



SybaMobile

Mobile experiment and demo stands are easily moved and can be used in a variety of ways. They allow all kinds of training systems and teaching resources to be set up in a highly structured manner so that knowledge can be presented clearly and understandably.



Modular workplace systems

Thanks to the modularity of SybaPro, it is possible to configure each workplace individually. From lab tables to complex experiment stands with power supply ducts, SybaPro fulfils your every need.

Intelligent management of cables

SybaPro multimedia tables are equipped with an integrated cable duct, making for a neat and tidy workplace. Awkward power supplies are tucked away and the cables emerge via a seal with a plastic lip.

SybaPro

Innovative Workplace Systems Made of Aluminium Profiles

SybaPro is a system for workplaces that meets the highest demands. It combines high-quality materials and modern design with well thought-out functionality.
The SybaPro workplace system can be assembled from modular components and configured for a wide variety of applications. Its wide range of products means that both simple and complex workstations can be equipped for virtually every need.

Special extruded aluminium profiles
- Multi-function extruded aluminium profiles combine optimum functionality with perfect economy
- 8 identical grooves in the extruded aluminium profiles (3 grooves on each broad side and 1 on each narrow side) for mounting standard industrial brackets
- Two separate internal cable channels for wiring

Table frames
- Table legs made of multiple-grooved extruded aluminium
- Integrated height-adjustable feet to compensate for uneven flooring
- Sturdy, continuous rectangular-tube frame with all necessary slots for fitting table legs and under-table cabinets
- Frames have additional cross beam in the middle
- Acid-resistant epoxy-resin coating, approx. 80 µm thick, colour RAL 7047

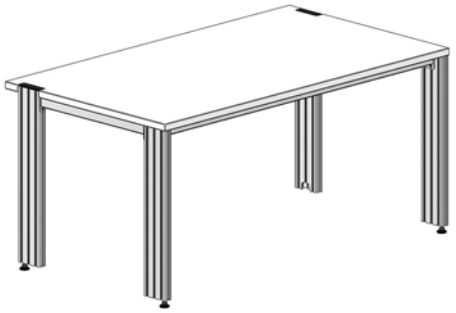
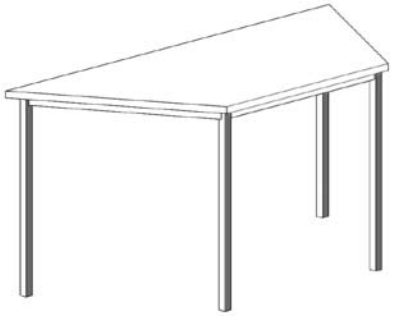
Tabletops
- 30-mm tabletops made of triple-layered, high-quality chipboard conforming to DIN EN 312, emissions class E1
- Laminated using high-pressure laminate board (HPL) conforming to DIN EN 438
- The coating is resistant to a wide variety of chemicals and reagents
- Heat resistant even to liquid solder or the hot spots resulting from soldering irons and lit cigarettes, for example.

A whole range of fittings

Ready-to-assemble elements in standard sizes ensure that your workplaces have all the functional enhancements they need:
- Monitor holders
- PC tower integration
- Training panel mounting frames
- SybaPower consoles or power ducts built into the tables
- Add-on components from an industry-standard assortment

Colours for table legs and drawer handles
- Grey-brown: RAL 8019
- Ruby red: RAL 3003
- Brilliant blue: RAL 5007
- Telegrey: RAL 7047
- Patina green: RAL 6000
- Rapeseed yellow: RAL 1021
- Other colours can be supplied on request

Laboratory Tables

Product illustration	Technical data	W / D / H in mm	Order no.
	**Work tables and lab benches to accommodate power supply ducts and under-table cabinets** • Depth: 800 mm	800 x 800 x 760	ST8031-1A
		1200 x 800 x 760	ST8031-1P
		1500 x 800 x 760	ST8031-1L
		1600 x 800 x 760	ST8031-1B
		1800 x 800 x 760	ST8031-1E
		2000 x 800 x 760	ST8031-1H
	**Work tables and lab benches to accommodate power supply ducts and under-table cabinets** • Depth: 900 mm	900 x 900 x 760	ST8032-1A
		1200 x 900 x 760	ST8032-1P
		1500 x 900 x 760	ST8032-1L
		1600 x 900 x 760	ST8032-1B
		1800 x 900 x 760	ST8032-1E
		2000 x 900 x 760	ST8032-1H
	**Corner tabletop with prop and mounting bracket** • Depths: 800 or 900 mm	800 x 800 x 760	ST8050-1A
		900 x 900 x 760	ST8050-1B
	**Trapezoidal steel table** • Oval steel tubing, 50 x 30 x 2 mm	1400 x 700 x 760	ST8010-7A
		1600 x 800 x 760	ST8010-7B

Conducting Laboratory Tables

ESD Workplace Systems

When planning workstations, considerations of safety in the event of electro-static discharge (ESD) may be a key factor. Electronic components need to be protected against uncontrolled discharge and surfaces need to exhibit the correct resistance. Leakage resistance needs to be maintained too. For ESD-safe workplaces, international standard IEC 61340-5-1 demands upper and lower limits for these resistance values and also specifies that work surfaces need to have good contact with earth. On request, any Lucas-Nülle workplace set-up can be supplied in an ESD-compliant version conforming to DIN EN 61340-5-1.

ESD tabletops

- Typical leakage resistance 106 – 107 ohms in accordance with DIN EN 61340-5-1
- Fine-layered tabletop with 0.2-mm-thick, electrically conducting laminated surface on both sides
- Conductive throughout its volume
- Resistant to solder and heat
- Surrounded with conducting laminate
- 30-mm-thick tabletop

ESD table frames

- Environmentally friendly powder coating conforming to DIN EN 61340-5-1
- The entire table frame is linked by conducting materials
- Earth connection can be made anywhere on the table

Ordering ESD laboratory tables

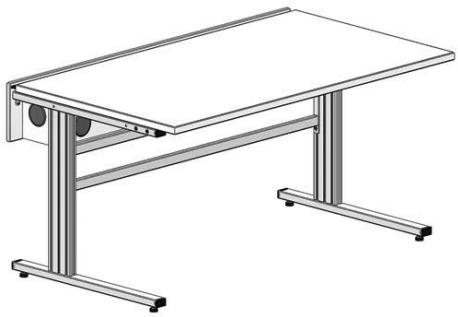
When ordering ESD workplace systems, the letters “ESD” need to be added to the order number.

Example:
- Laboratory table, 1600 x 800 x 760 (ST8031-1B)
- ESD laboratory table, 1600 x 800 x 760 (ST8031-1BESD)

Multimedia Tables

Intelligent Cable Management

Multi-function table with a large cable duct hidden under a movable lid for accommodating socket strips, small power supply transformers as well as IT and mains network cables.
Such tables are particularly well suited for IT purposes or as desktop laboratory workplaces. All leads (monitor, mouse, keyboard, power) can be led out of the plastic lip seal so that they are only exposed for the short distance to the equipment, making for a neat and tidy workplace. The cable duct can be locked by means of a cylinder lock.

Product illustration	Technical data	W / D / H in mm	Order no.
	**Multimedia table with sliding top** • Depth: 800 mm	1500 x 800 x 760	ST8021-2G
		1600 x 800 x 760	ST8021-4G
		1800 x 800 x 760	ST8021-1G
	Multimedia table with sliding top • Depth: 900 mm	1500 x 900 x 760	ST8021-2H
		1600 x 900 x 760	ST8021-4H
		1800 x 900 x 760	ST8021-1H

- Movable tabletop on a ball bearing pull-out with plastic lip seal at the back

- 4 integrated cable outlet sockets in cable duct

- Cables emerge through a seal with a plastic lip

- When the cable duct is not in use, it can be closed using a cylinder lock

- Optional: integrated power supply with 4 x 230-V earthed sockets and double RJ45 socket, CAT 6A (ST8008-8F)

Multi-Function Tables

Laboratory Table with 19“ Power Supply Duct Lowered via Motor

High-quality laboratory benches from the SybaPro range with aluminium profile table legs and integrated power supply ducting that can be lowered into the bench by means of a motor. Accommodating 19“/3-HU inserts and panels.
Compatible with all the add-ons and extensions in the SybaPro system.

Product illustration	Technical data	W / D / H in mm	Order no.
	**Multi-function table** • Depth: 900 mm	1540 x 900 x 760	ST8031-2G
		1640 x 900 x 760	ST8031-2E
		1840 x 900 x 760	ST8031-2H
	Multi-function table for training panel mounting frames • Depth: 900 mm • Training panel mounting frames, see page 22	1540 x 900 x 760	ST8032-2G
		1840 x 900 x 760	ST8032-2H

- Integrated power supply duct to accommodate 3-HU/264, 282 or 324-PU inserts and panels

- 2 buttons for raising/lowering by means of electric motor (controllable from teacher's desk)

- Double sealing lip ensures protection against fingers getting trapped between the tabletop and the console housing

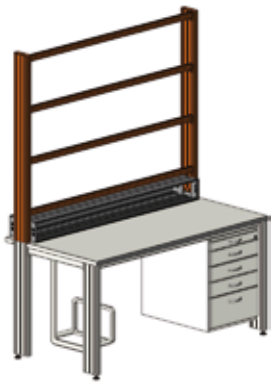
- Pre-wired with power supply bus system for 3-HU inserts or panels
- High-current plug connectors of protective type IP40 as per DIN 40050

- The mechanism to lower the power supply duct allows for rapid alternation between theory and practical lessons

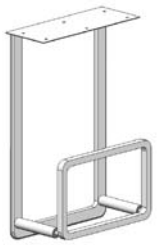
3-HU Power Supply Ducts / Training Panel Mounting Frames / Punched Hole Panels

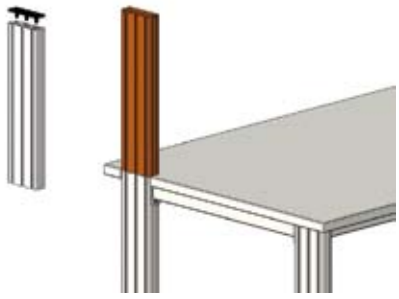
Product illustration	Technical data	W / D / H in mm	Order no.
	**Power supply duct console – SybaPro** • Power supply conduct to accommodate 19"/3-HU training panels and inserts • Body made of low-profile anodised aluminium		
	216 PU (for tables of width 1200 mm)	1120 x 230 x 133	ST8033-1B
	276 PU (for tables of width 1500 mm)	1420 x 230 x 133	ST8033-1A
	300 PU (for tables of width 1600 mm)	1520 x 230 x 133	ST8033-1C
	336 PU (for tables of width 1800 mm)	1720 x 230 x 133	ST8033-1E
	372 PU (for tables of width 2000 mm)	1920 x 230 x 133	ST8033-1G
	**Tabletop power supply duct – SybaPro** • Power supply conduct to accommodate 19"/3-HU training panels and inserts • Body made of low-profile anodised aluminium		
	216 PU (for tables of width 1200 mm)	1120 x 230 x 133	ST8033-2B
	276 PU (for tables of width 1500 mm)	1420 x 230 x 133	ST8033-2A
	300 PU (for tables of width 1600 mm)	1520 x 230 x 133	ST8033-2C
	336 PU (for tables of width 1800 mm)	1720 x 230 x 133	ST8033-2E
	372 PU (for tables of width 2000 mm)	1920 x 230 x 133	ST8033-2G
	**Training panel mounting frame for multi-function tables** • Sides made of rectangular-section steel tubing, 30 x 30 x 2 mm • Natural brushed aluminium profile rails		
	2 levels for 1500-mm table	1460 x 160 x 854	ST8003-2E
	2 levels for 1600-mm table	1560 x 160 x 854	ST8003-2C
	2 levels for 1800-mm table	1760 x 160 x 854	ST8003-2G
	3 levels for 1500-mm table	1460 x 160 x 854	ST8003-2F
	3 levels for 1600-mm table	1560 x 160 x 854	ST8003-2D
	3 levels for 1800-mm table	1760 x 160 x 854	ST8003-2H
	**Punched hole panel for multi-function tables** • L-shaped base of depth: 160 mm • Height above tabletop: 110 mm • Rectangular perforations: 5 x 10 mm • Thickness of lugs: 3 mm • Thickness of steel: 1.5 mm		
	For tables of width 1500 mm	1460 x 160 x 839	ST8003-5D
	For tables of width 1600 mm	1560 x 160 x 839	ST8003-5S
	For tables of width 1800 mm	1760 x 160 x 839	ST8003-5B

Training Panel Mounting Frames / Punched Hole Panels

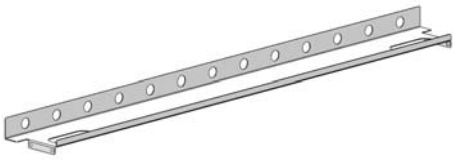
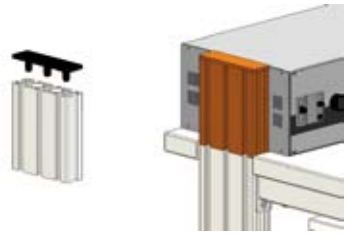
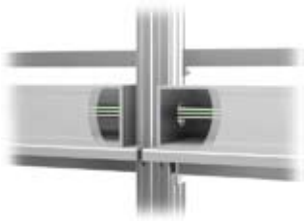
Product illustration	Technical data	W / D / H in mm	Order no.
	**Training panel mounting frames for training panels** • 2 levels • Natural brushed aluminium profile rails with attachment to accommodate training panels matching DIN A4 height • Inward facing brush rails ensure that plug connections can be interchanged silently during experiments	1200 x 120 x 875	ST8003-3F
		1250 x 120 x 875	ST8004-3A
		1500 x 120 x 875	ST8003-3J
		1600 x 120 x 875	ST8003-3M
		1800 x 120 x 875	ST8003-3Q
		2000 x 120 x 875	ST8003-3T
	**Training panel mounting frames for training panels** • 3 levels • Natural brushed aluminium profile rails with attachment to accommodate training panels matching DIN A4 height • Inward facing brush rails ensure that plug connections can be interchanged silently during experiments	1200 x 120 x 1200	ST8003-3Y
		1250 x 120 x 1200	ST8004-3B
		1500 x 120 x 1200	ST8003-3K
		1600 x 120 x 1200	ST8003-3N
		1800 x 120 x 1200	ST8003-3R
		2000 x 120 x 1200	ST8003-3U
	**Perforated metal sheet for suspension between aluminium rails** • Rectangular perforations: 5 x 10 mm • Thickness of lugs: 3 mm • Thickness of steel: 1.5 mm	700 x 2 x 297	ST8003-4V
		900 x 2 x 297	ST8003-4W
	**Interchangeable punched hole panels** • For suspension in existing panel mounting frames with aluminium rails • Rectangular perforations: 5 x 10 mm • Thickness of lugs: 3 mm • Thickness of steel: 1.5 mm	1120 x 20 x 695	ST8003-5Q
		1420 x 20 x 695	ST8003-5M
		1520 x 20 x 695	ST8003-5T
		1720 x 20 x 695	ST8003-5L

Accessories

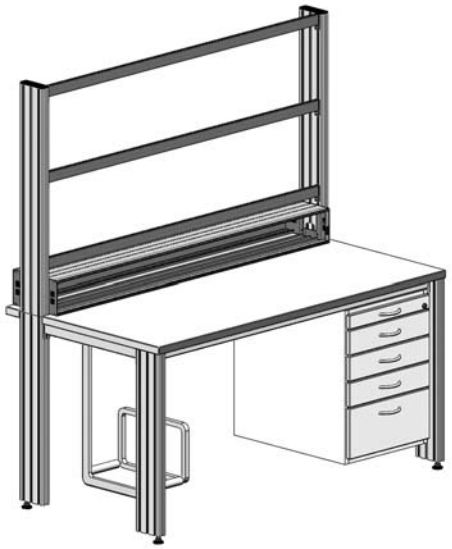
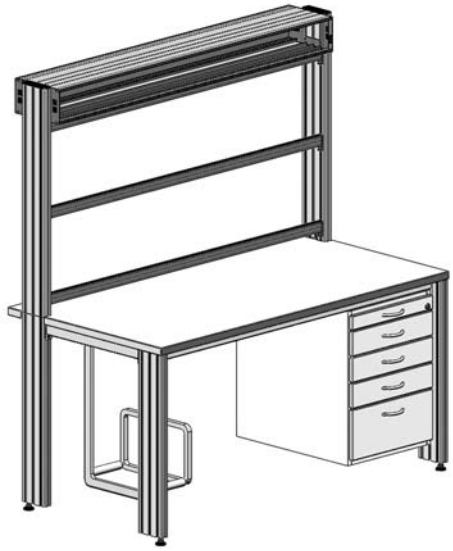
Product illustration	Technical data	W / D / H in mm	Order no.
	**PC holder for laboratory tables** • For attachment to tabletop • Adjustable from 160 to 255 mm • For mounting on either side		ST8010-4U
	**PC holder for multimedia tables** • For attachment to tabletop • Adjustable from 160 to 255 mm • For mounting on either side		ST8010-4V
	**2-part cable outlet socket** • For mounting on tabletop add-ons, table-tops and carrier boards • For mounting to left, right or in the centre		ST8010-4A
	**Power supply unit for multimedia tables** • 4 earthed mains sockets, 230 V • Double RJ45 socket, CAT 6 A • Integrated into cable duct	486 x 135 x 85	ST8008-8F
	**Measurement lead holder** • Accommodates about 50 safety measuring leads • 12 cable guide grooves • Adjustable mounting height on aluminium profiles • Can be attached to left or right • Suitable for mounting on walls • With 2 bolts and tenon blocks		ST8003-8E
	**Monitor and test instrument support platform** • Height adjustable • For mounting on either side • With 4 bolts and tenon blocks • Light grey powder coating, RAL 7047	400 x 400	ST7200-5B

Product illustration	Technical data	W / D / H in mm	Order no.
	**Attachment for TFT monitors** The high-quality mounting rails are designed for attaching monitors or TFT displays to aluminium profiles. A universal joint allows the displays to be turned and tilted in any direction. • VESA standard attachment, 75/100 • Carrying capacity: 12 kg • Supplied with anti-falling device		ST8010-4P
	**Attachment for TFT monitors** • DIN-A4 board with TFT attachment for mounting in H-profile frame • VESA standard attachment, 75/100 • Carrying capacity: 12 kg	228 x 297 x 130	ST8010-4K
	**Attachment for TFT monitors** • Articulated arm with two hinge points • Quick-lock for adjustment to any height on extruded aluminium profile • VESA fastening, 7.5 x 7.5 cm • 2 cable clips • Shelf rails can be loaded with up to 12 kg • Carrying capacity up to 5 kg • Separation can be adjusted to anywhere between 105 and 480 mm		ST8010-4L
	**Holder for computer keyboard and mouse** • Stable, pivoting holder for computer keyboard and mouse • It can be attached at any height to any aluminium furniture component • This allows the keyboard to be operated by a person standing, thus keeping the worktop free for the experiment apparatus • To carry weight up to 4 kg • Board with surface area of 64 x 17.2 cm (suitable for any size of keyboard)		ST8010-4D
	**Aluminium profile extension** To accommodate additional components such as monitor holders etc. For attachment to any aluminium profile table leg.	705 1000 1200	ST8010-4R ST8008-2M ST8008-2Q

Accessories

Product illustration	Technical data	W / D / H in mm	Order no.
	**Cable duct for laboratory tables** • Cable duct with assembly accessories to accommodate wiring and power supplies • Mounting beneath laboratory tabletops • Attachment to aluminium profile • Including assembly accessories	800 x 160 x 80	ST8031-3A
		900 x 160 x 80	ST8031-3B
		1200 x 160 x 80	ST8031-3G
		1500 x 160 x 80	ST8031-3C
		1600 x 160 x 80	ST8031-3D
		1800 x 160 x 80	ST8031-3E
		2000 x 160 x 80	ST8031-3F
	**Side caps for power supply ducts** If no training panels are mounted in the tables, these caps are necessary to cover the sides. • 2 aluminium profile caps, 130 mm		
	Duct cap		ST8003-3D
	For mounting between tables		ST8010-8D
	**Aluminium profile for mounting between two tables** • 1 aluminium profile with cable outlet holes		
	For training panel mounting frames with 1 level	35 x 120 x 550	ST8010-8A
	For training panel mounting frames with 2 levels	35 x 120 x 875	ST8010-8B
	For training panel mounting frames with 3 levels	35 x 120 x 1170	ST8010-8C
	**SybaPro installation duct** • Attached to rear aluminium profile table leg • Suitable for complex connections with more than four wires	700 x 105 x 60	ST8010-8V
	**Floor mounting set for SybaPro laboratory tables** • Set of 2 floor attachment units		ST8010-8S
	**Connecting piece for SybaPro laboratory tables** • Set consisting of 4 grooved nuts and 2 connector pieces		ST8010-8T

Ordering Examples

Product illustration	Technical data	W / D / H in mm	Order no.
	**Laboratory table with power supply and training panel mounting frame**		
	SybaPro laboratory table	1600 x 800 x 760	ST8031-1B
	2-level training panel mounting frame	1600 x 18 x 35	ST8003-3M
	Suspended under-table cabinet with 4 drawers	430 x 600 x 590	ST8007-1B
	SybaPro tabletop power supply duct	1560 x 230 x 133	ST8033-2C
	PC holder		ST8010-4U
	**Laboratory table with power supply duct console and training panel mounting frame**		
	SybaPro laboratory table	1600 x 900 x 760	ST8032-1B
	2-level training panel mounting frame	1600 x 18 x 35	ST8003-3M
	Suspended under-table cabinet with 4 drawers	430 x 600 x 590	ST8007-1B
	SybaPro console power supply duct	1560 x 230 x 133	ST8033-1C
	PC holder		ST8010-4U

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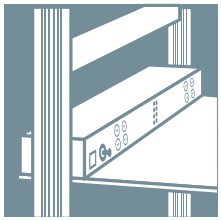
SybaMobile



Mobile Experiment and Demo Stands

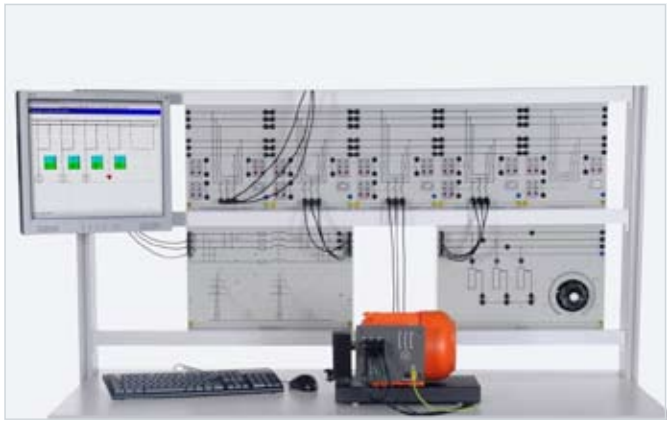
Mobile Experiment and Demo Stands

Mobility Breeds Flexibility

These mobile aluminium profile experiment and demonstration stands are specially designed to accommodate training systems and panels. All Lucas-Nülle training systems can be set up safely and in a structured fashion on experiment and demo stands for teaching from the front of the classroom or for practical experiments. This provides trainees with a modern, educationally appropriate work-place with a desk and multimedia attachments.

- Aluminium profile frame with integrated grooves for attaching a wide range of accessories

- 4 steerable dual casters, two with brakes, for essential mobility



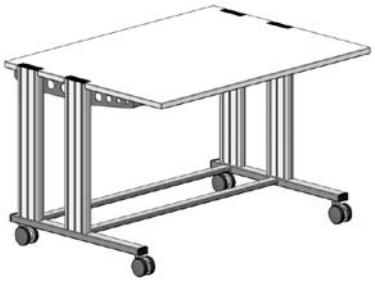
- Natural brushed aluminium profile rails with attachment to accommodate training panels matching DIN A4 height

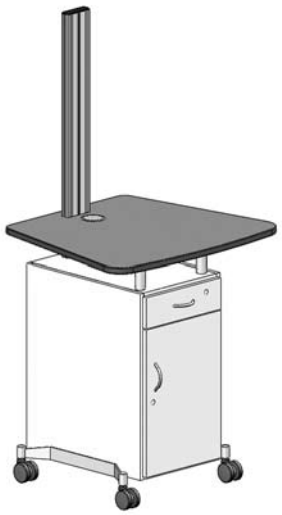
- Necessary power supplied via 5-way plug strip with on/off switch fitted underneath

- A 3-HU power supply duct, which can be configured as desired, supplies the training systems with power

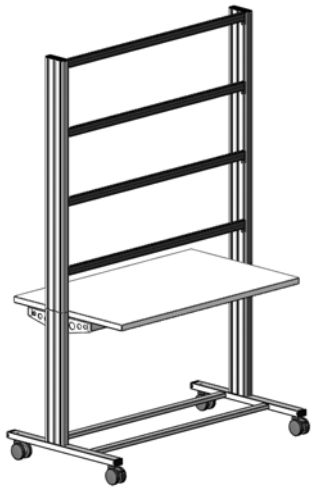
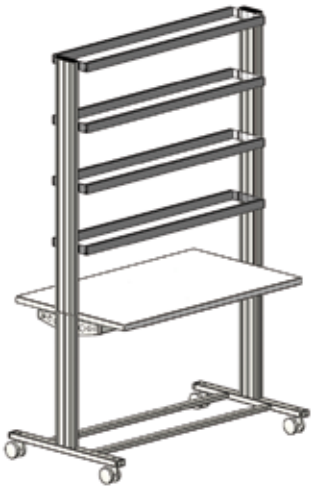
- Chaining them together allows for quite complex experiment platforms to be built

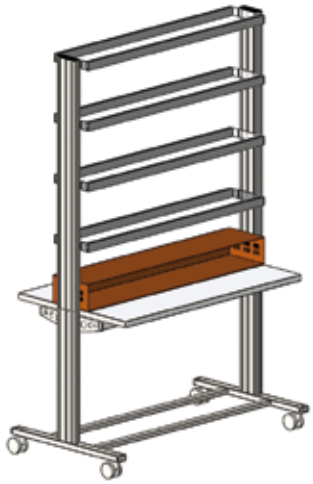
Mobile Experiment and Demo Stands

Product illustration	Technical data	W / D / H in mm	Order no.
	**Mobile IMS® experiment stand** These mobile mechatronics trolleys with aluminium rails that can be lined up alongside one another are specially designed to accommodate mechatronics set-ups with production lines or pallet rotation systems. The trolleys can be cascaded and are equipped with strong tabletop connectors for this purpose.	600 x 900 x 760	ST7200-3R
	**Mobile IMS® experiment stand** These mobile mechatronics trolleys with aluminium rails that can be lined up alongside one another are specially designed to accommodate mechatronics set-ups with production lines or pallet rotation systems. The trolleys can be cascaded and are equipped with strong tabletop connectors for this purpose.	1200 x 900 x 760	ST7200-3U
	**Mobile IMS® experiment stand with training panel mounting frame** These mobile mechatronics trolleys with aluminium rails that can be lined up alongside one another are specially designed to accommodate mechatronics set-ups with production lines or pallet rotation systems. The trolleys can be cascaded and are equipped with strong tabletop connectors for this purpose.	1200 x 900 x 1630	ST7200-3T

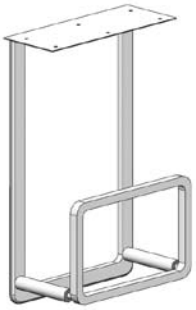
Product illustration	Technical data	W / D / H in mm	Order no.
	**Mobile UniTrain-I experiment stand** Mobile experiment stand with PC cabinet underneath for conducting experiments and demonstrations while standing up. This experiment stand is very well suited to working with the UniTrain-I training system, but can also be used as a mobile PC trolley for instances when other experiments are being performed. • Under-table cabinet with drawer and hinged door to accommodate PCs etc. • Shelf between cabinet and tabletop • Monitor holder for LCD monitors • Two cable ducts between tabletop and cabinet	880 x 780 x 1805	ST7200-3B
	**Mobile InsTrain experiment stand** This mobile, aluminium profile lab trolley is designed especially for the storage of InsTrain training systems. • Height of tabletop: 830 mm	1075 x 700 x 1350	ST7200-3K
	**Mobile workshop and lab trolleys** • Worktop and shelves made of 30-mm-thick chipboard • 0.9-mm Resopal covering • 2-mm-thick PVC laminate edging • Steel-tubing frame, 20 x 40 x 2 mm, plastic coated • 4 steerable rubber casters, 75-mm diameter, 2 with brakes		
		800 x 600 x 750	ST8002-7A
		900 x 600 x 750	ST8002-7C
		1200 x 900 x 750	ST8002-7G

Mobile Experiment and Demo Stands

Product illustration	Technical data	W / D / H in mm	Order no.
	**Mobile laboratory table** Mobile, aluminium profile side table specially designed to accommodate portable training systems. Additional components (e.g. monitor or PC holders, aluminium profile extension) can also be added making it really quick and easy to fit them in to existing workplaces.	1250 x 700 x 760	ST7200-3D
	**Mobile experiment stand, 3 levels** High-quality, mobile experiment and demonstration stand from the SybaPro range with aluminium profile table legs. Compatible with all add-ons and extensions in the SybaPro system.	1250 x 700 x 1955	ST7200-3A
	**Mobile experiment stand, 3 levels, accessible from either side** High-quality, mobile experiment and demonstration stand from the SybaPro range with aluminium profile table legs. Compatible with all add-ons and extensions in the SybaPro systems. The experiment stand is usable from either side and both front and rear can be fitted with equipment.	1250 x 700 x 1940	ST7200-3X

Product illustration	Technical data	W / D / H in mm	Order no.
	**SybaPro 3-HU power supply duct** • Power supply duct to accommodate 19“/ 3-HU training panels and inserts • High-voltage plug connectors • Pre-wired for training panels and inserts • Body made of low-profile anodised aluminium		
	216 PU (for tables of width 1205 mm)	1120 x 230 x 133	ST8033-2B
	222 PU (for tables of width 1250 mm)	1150 x 230 x 133	ST8008-2F
	**1250-mm punched hole panel, interchangeable** • To hang in existing training panel mounting frames • 5 x 10 mm perforations for quick and safe attachment of standard installation materials • Surface powder-coated using RAL 7047	1190 x 30 x 695	ST8003-5Q

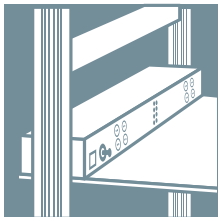
Accessories

Product illustration	Technical data	W / D / H in mm	Order no.
	**PC holder for aluminium profiles** • Height and width adjustable • Adjustable from 160 mm to 255 mm • For mounting on either side • Can be attached to left or right		ST7200-5A
	**PC holder for laboratory tables** • For attachment to tabletop • Adjustable from 160 mm to 255 mm • For mounting on either side		ST8010-4U
	**Measuring lead holder** • Accommodates about 50 safety measuring leads • 12 cable guide grooves • Adjustable height of fitting to aluminium profiles • Can be attached to left or right • Suitable for mounting on walls • With 2 bolts and tenon blocks • Acid-resistant epoxy-resin powder coating		ST8003-8E
	**Platform for monitors or measuring instruments** • Height adjustable • For mounting on either side • With 4 bolts and tenon blocks • Light grey powder coating, RAL 7047	400 x 400	ST7200-5B
	**Mains lead for power supply duct** • Length of cable: 2.5 m		
	230 V		ST7007-1N
	400 V		ST7007-1P
	Cable holder	210 x 65 x 125	ST7007-1R

Product illustration	Technical data	W / D / H in mm	Order no.
	**Attachment for TFT monitors** DIN-A4 board with TFT attachment for mounting in H-profile frame • VESA standard attachment, 75/100 • Carrying capacity: 12 kg	228 x 297 x 130	ST8010-4K
	**Attachment for TFT monitors** The high-quality mounting rails are designed for attaching heavy monitors or TFT displays to aluminium profiles. A universal joint allows the displays to be turned and tilted in any direction. • VESA standard attachment, 75/100 • Carrying capacity: 12 kg • Supplied with anti-falling device		ST8010-4P
	**Attachment for TFT monitors** • Articulated arm with two hinge points • Quick-lock for adjustment to any height on extruded aluminium profile • VESA fastening, 7.5 x 7.5 cm • 2 cable clips • Shelf rails can be loaded with up to 12 kg • Carrying capacity up to 5 kg • Separation can be adjusted to anywhere between 105 and 480 mm		ST8010-4L
	**Holder for computer keyboard and mouse** • Stable, pivoting holder for computer keyboard and mouse • It can be attached at any height to any aluminium furniture component • This allows the keyboard to be operated by a person standing, thus keeping the worktop free for the experiment apparatus • To carry weight up to 4 kg • Board with surface area of 64 x 17.2 cm (suitable for any size of keyboard)		ST8010-4D

LUCAS-NÜLLE

SybaPower



SybaPower

Power Supplies for Rooms Designed for Teaching Electrical Topics

SybaPower is a specially designed system for supplying power in rooms designed for the teaching of electrical topics. Lucas-Nülle can handle the planning for your new training labs from the distribution system for the room to the multi-function mains equipment, while conforming to all the applicable standards and guidelines.

Sub-distribution panel for rooms

The distribution system for the room that is integrated into the teacher's station allows teachers to enable workplaces individually, in groups or all at once from a central location. From the main teaching desk, teachers have all the students and their experiment stands in view at all times, meaning that they can react to any hazards that might arise and cut off the power to the whole laboratory.

Standards and guidelines

Since there is a particularly high degree of risk in classrooms and experimental facilities, the standard VDE 0100, Part 723 "Construction of low-voltage facilities – classrooms with facilities for experiments" specifies some extra requirements for the construction of such rooms.
The "SybaPlanning" chapter starting on page 120 explains the standards and specifications that apply to the planning and fitting out of rooms for the teaching of electrical topics.

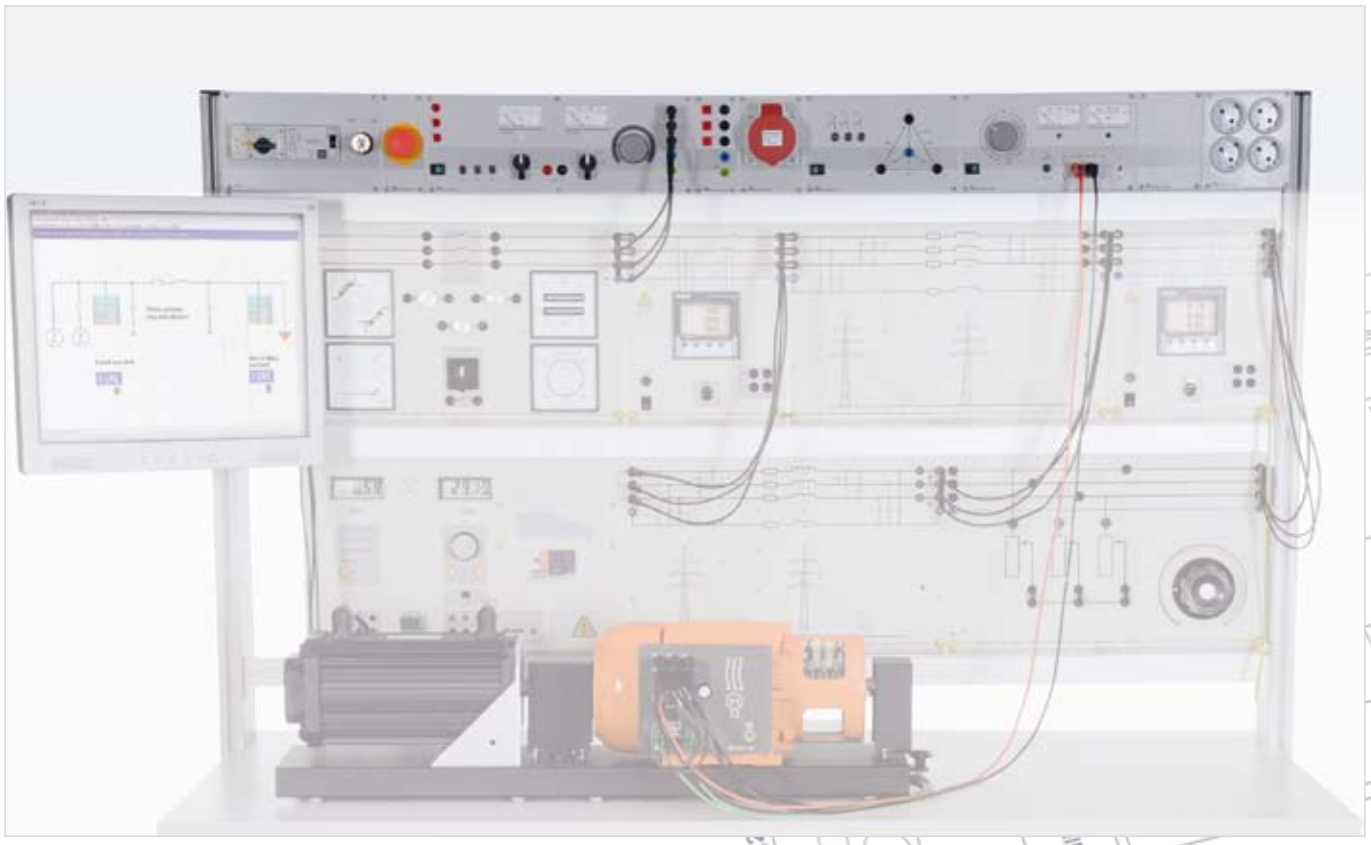
Student experiment tables

The power supply ducts for student experiment tables can be individually equipped on request with just the right supplies, test equipment and measuring instruments to meet your educational needs.

SybaPower

Innovative Power Supplies, Test Equipment and Measuring Instruments for the 19“ Insert System

SybaPower is a highly flexible 19“ equipment system, which can be integrated with any items in the SybaLab lab furniture ranges. Equipment with a wide variety of functions, covering multiple applications and designed for the 19“ panel insert system that is standard across the globe, allows for customised set-ups to be assembled.
The 3-HU modules can be integrated into any suitable 3-HU power supply ducting or piles that conform to the 19“ pattern defined in DIN 41494. The modular design of the system allows for compact equipment set-ups in any power range for any application.

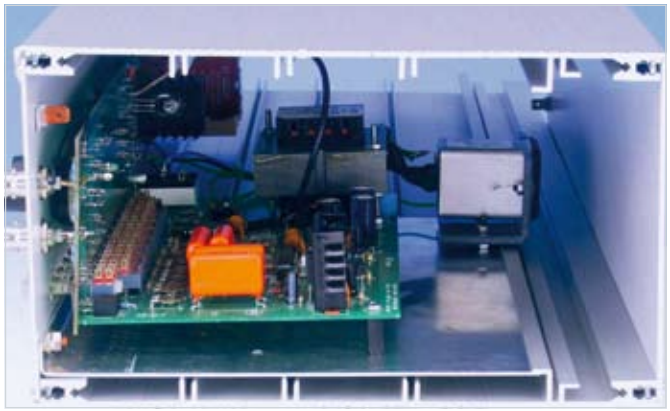


3-HU modules
- Versatile choice of power supplies, testers and measuring instruments designed for 3-HU/19" insert systems
- Easy assembly and simplicity of use
- Front panels made of 3-mm hard aluminium, powder coated on both sides with full-colour, photo-realistic scratchproof printing
- Multi-function display elements of the utmost precision
- Electrical connections made via 4-mm safety sockets
- Clearly structured arrangement of individual modules
- Wide range of applications for research, development, manufacture and education

Power supply ducts
- Panels made from extruded aluminium profiles with corrugated anodised surfaces
- Low profile power channel (console fitting) only 133 mm high for 19"/3-HU inserts
- Base and lid made of anodised E6/EV1 extruded aluminium profiles
- Sides are made of painted sheet steel (colour RAL 7047)
- Console housings can be fitted to any type of SybaPro table
- Suitable for SybaOval, SybaPro console or tabletops in all standard widths

19-inch system
- Internationally used and standardised in DIN 41494
- Ensures easy assembly of 3-HU modules
- SybaPower power supply ducts are sub-divided into PUs as specified by DIN 41494
- Standardised insert height of 133.35 mm

Dimensions for 3-HU modules
- Size units defined in DIN 41494
- Height = 3 height units = 3 HU = 133.35 mm
- Width = 1 partition unit = 1 PU = 5.08 mm



Sub-Distribution Panels for Rooms

Standard Power Distribution for Your Lab

The standard power distribution panel consists of a basic frame with all the necessary electrical components such as main isolating switches, emergency shut-down mechanism, RCDs, line circuit breakers, controls and contactors for individual workgroups. The distributor can supply multiple workgroups with electrical power independently. The distribution box is built into a free-standing under-table cabinet provided for this purpose. All the wires leading to the unit need to be installed by the constructors of the lab.

Product illustration	Technical data	W / D / H in mm	Order no.
	**Power distribution for 4 or 8 groups consisting of the following:** • 1 300-mA RCD • 1 main contactor, 63 A • 1 emergency shut-off mushroom switch • 1 on/off key switch • 1 6-A control circuit breaker • 1 earthed plug socket, 16 A • 3 live conductor indicator lights • 4/8 3-pole circuit breakers, 16 A • 4/8 on/off buttons with indicator lights • 4/8 power contactors • Terminal strips for connecting table groups • Under-table cabinets for distribution to rooms See page 87		
	4 switchable groups	430 x 750 x 688	ST8509-1B
	8 switchable groups	430 x 750 x 688	ST8509-1D

RCD, 300 mA

Fire protection to stop electrical equipment causing the outbreak of fire needs to safely allow for fault current of ≥ 300 mA to be cut off by the use of selective RCDs. An additional 30-mA, type-B RCD for AC and DC at each workstation provides protection for individuals.

Main contactor, 63 A

Power is fed to the distribution system when the key switch is turned on. The main contactor can be shut off with the key switch or by using the emergency shut-off switch.

Emergency shut-off switch

Every experiment station needs to be fitted with a system for shutting off the power in the event of an emergency. Some more detailed information can be found under "Standards and Guidelines" in the SybaPlanning section.

Control circuit breaker, 6 A

Provides protection for the control circuit.

Earthed plug socket

The earth-contact plug socket is not incorporated into the emergency shut-down loop. It can be used as a socket for a PC, for example.

3-pole automatic circuit breakers, 16 A

For quick and safe shut-off of individual groups of workstations in the event of excess current.

On/off switch

For turning on individual groups of workstations. Status is indicated by lamps.

3-pole power contactor

For safe switching of power to individual groups.

Terminal

The wiring of individual groups is connected to the sub-distribution system via terminal strips.

Educational Video Network

Display Monitor Screens to Other Students in Real Time

This educational video network is operated via a teacher's keyboard. A simple press of a button transmits what is being shown on the teacher's screen in real time without delay. The keyboard layout can be individually configured according to the seating arrangements in the classroom.
The only requirement for connecting up the video network is that there are functioning personal computers with DVI video and USB ports for mouse and keyboard at each workstation. There is a free choice of operating system. It is not necessary for the computers to be networked.

The teacher can transmit screens to individual students or groups.

The teacher can transmit screens to all students at once.

Teachers can also receive images from any student's screen.

The screen on any of the students' monitors can be sent to other students.

Teachers can switch off the screen for individual students or all at once.

An integrated projector means that the teacher's or students' screens can also be projected in large format.

Your benefits

- Encourages students to pay more attention
- Gives students more motivation by providing for individual presentation possibilities
- Optimum view even for the back row
- 100% independent of any hardware or software operating systems
- Does not overload networks, no incompatibility problems
- Screens transmitted in real time (no delay) even in large rooms
- Simple operation even for unfamiliar users

3-HU Power Supply Ducts

Individual Layout Possibilities for All Kinds of Applications

Power supply channels are available in tabletop or console versions. If training panel mounting frames are not installed, the tabletop power supply duct needs to be secured to a bench with a 130-mm aluminium profile extension.

Product illustration	Technical data	W / D / H in mm	Order no.
	**SybaPro console power supply duct** • Power supply duct to accommodate 19"/ 3-HU training panels and inserts • Body made of low-profile anodised aluminium		
	216 PU (for tables of width 1200 mm)	1120 x 230 x 133	ST8033-1B
	276 PU (for tables of width 1500 mm)	1420 x 230 x 133	ST8033-1A
	300 PU (for tables of width 1600 mm)	1520 x 230 x 133	ST8033-1C
	336 PU (for tables of width 1800 mm)	1720 x 230 x 133	ST8033-1E
	372 PU (for tables of width 2000 mm)	1920 x 230 x 133	ST8033-1G
	**SybaPro tabletop power supply duct** • Power supply duct to accommodate 19"/ 3-HU training panels and inserts • Body made of low-profile anodised aluminium		
	216 PU (for tables of width 1200 mm)	1120 x 230 x 133	ST8033-2B
	276 PU (for tables of width 1500 mm)	1420 x 230 x 133	ST8033-2A
	300 PU (for tables of width 1600 mm)	1520 x 230 x 133	ST8033-2C
	336 PU (for tables of width 1800 mm)	1720 x 230 x 133	ST8033-2E
	372 PU (for tables of width 2000 mm)	1920 x 230 x 133	ST8033-2G

Planning Aids for Power Supply Ducts

19-inch system

The 19-inch system is standardised across the globe according to DIN 41494 and allows for easy installation of 3-HU modules. The module height is set at 3 HU for a total height of 133.35 mm. SybaPower power supply ducts are standardised in DIN 41494 and sized in partition units, PUs, at 5.08 mm and are specially designed to accommodate 3-HU modules.

3-HU power supply ducts

Configure the power supply ducts for your needs with SybaPower 3-HU modules. Blank units available in all sizes can be used to cover unused slots in the ducts.

For **6 PU**

216 PU – table width: 1200 mm

222 PU – SybaMobile: 1250 mm

276 PU – table width: 1500 mm

300 PU – table width: 1600 mm

336 PU – table width: 1800 mm

372 PU – table width: 2000 mm

Distribution Panels

Product illustration	Technical data	Dimensions	Order no.
	**AC power supply patch panel, 230 V/50 Hz** Insert for power supply with protective equipment • Key switch to enable • Automatic circuit breaker, 16 A • RCD, 10 mA	3 HU/24 PU	ST8008-3C
	Including type-B RCD for AC and DC • RCD, sensitive to AC and DC RCD, 25 A/30 mA	3 HU/30 PU	ST8008-6C
	**AC power supply patch panel, 230 V/50 Hz with key switch, RCD and emergency shut-off** Insert for power supply with protective equipment • Key switch to enable • Automatic circuit breaker, 16 A • RCD, 10 mA • Emergency shut-off button, turn to unlock • 3 safety sockets: L1, N, PE • Indicator light	3 HU/42 PU	ST8008-3A
	Including type-B RCD for AC and DC • RCD, sensitive to AC and DC RCD, 25 A/30 mA	3 HU/42 PU	ST8008-6G
	**Three-phase power supply patch panel, 400 V/50 Hz** Insert for power supply with protective equipment • Key switch to enable • Motor protection circuit breaker, 10 to 16 A • Undervoltage trip • RCD, 30 mA, nominal current 25 A	3 HU/42 PU	ST8008-3D
	Including type-B RCD for AC and DC • RCD, sensitive to AC and DC RCD, 40 A/30 mA	3 HU/42 PU	ST8008-6D
	**Three-phase power supply patch panels 400 V/50 Hz with key switch, motor protection switch, RCD and emergency shut-off** Insert for power supply with protective equipment • Key switch to enable • Motor protection circuit breaker, 10 to 16 A • Undervoltage trip • RCD, 30 mA • Emergency shut-off button, turn to unlock • 5 Safety sockets: L1, L2, L3, N, PE • 3 indicator lights	3 HU/54 PU	ST8008-3B
	Including type-B RCD for AC and DC • RCD, sensitive to AC and DC RCD, 40 A/30 mA	3 HU/54 PU	ST8008-6B

Patch Panels, Emergency Shut-Off Switches

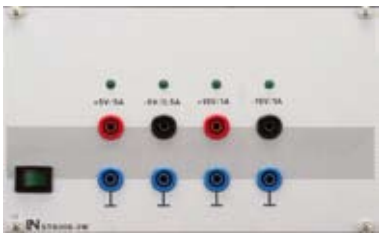
Product illustration	Technical data	Dimensions	Order no.
	**Emergency shut-off button** To shut off power to individual workstations or whole rooms. • Emergency shut-off pushbutton, turn to unlock	3 HU/12 PU	ST8008-3E
	**230-V AC tap** • Single-phase indicator light • 3 safety sockets: L1, N, PE	3 HU/12 PU	ST8008-3F
	**230-V AC tap, switchable** • On/off switch • Single-phase indicator light • 3 safety sockets: L1, N, PE	3 HU/18 PU	ST8008-3Z
	**400-V three-phase tap** • 3-phase indicator lights • 5 safety sockets: L1, L2, L3, N, PE	3 HU/12 PU	ST8008-3G
	**400-V three-phase tap, switchable** • On/off switch • 3-phase indicator lights • 5 safety sockets: L1, L2, L3, N, PE	3 HU/18 PU	ST8008-3Y
	**Central power supply** • Connector module for built-in fuse box • Mains voltage: 3 x 230/400 V, 50 Hz	3 HU/18 PU	ST8008-6A

AC Power Supplies, 1~ / 3~

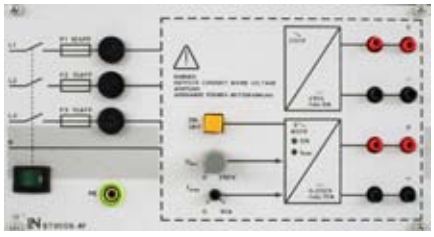
Product illustration	Technical data	Dimensions	Order no.
	**2-way socket panel** • To supply mains-powered devices and consumers • All sockets are connected in parallel • 2 earthed contacts, 230 V/16 A	3 HU/12 PU	ST8008-3X
	**4-way socket panel** • To supply mains-powered devices and consumers • All sockets are connected in parallel • 4 earthed contacts, 230 V/16 A	3 HU/24 PU	ST8008-3J
	**Isolating transformer unit** • Isolating transformer unit, 230 V/1 A to safely isolate electrical devices from the mains connection • Mains connection: 230 V, 50 Hz • Output voltage: 230 V, not earthed • Power consumption: approximately 120 VA • Voltage tap via socket without earth contact • Device protection switch	3 HU/24 PU	ST8008-3Q
	**2-way computer socket panel** • To supply mains-powered devices and consumers • Sockets are connected in parallel and have separate fuses • 2 earthed contacts, 230 V/16 A (red)	3 HU/30 PU	ST8008-4X
	**CEE socket** • To supply appliances and circuits with 3-phase mains power • 1 CEE socket, AC, 400 V/16 A	3 HU/18 PU	ST8008-3H

*All sockets can be supplied with the design specific to the country in question, e.g. USA, France or Switzerland.

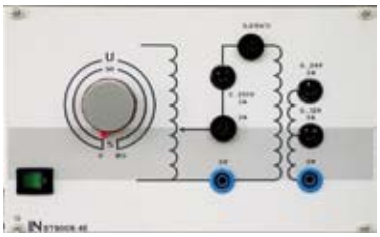
DC Power Supplies

Product illustration	Technical data	Dimensions	Order no.
	**DC power supply unit, 5 V/±15 V** • Outputs: 5 V/3 A; ±15 V/1.5 A • Outputs may all be loaded to their full rated current simultaneously • Voltage deviation: < 0.1%, < 200 µs for changes in load from 0 to 100% • Residual ripple: < 5 mV_{rms} • Frequency range: 47 to 63 Hz • 4 safety measurement sockets • 1 illuminated rocker switch	3 HU/24 PU	ST8008-3V
	**DC power supply unit, ±5 V/±15 V** • Outputs: +5 V/5 A; -5 V/0.5 A; +15 V/1 A; -15 V/1 A • Outputs may all be loaded to their full rated current simultaneously • Voltage deviation: < 0.1%, < 200 µs for changes in load from 0 to 100% • Residual ripple: < 5 mV_{rms} • Electronic overload protection	3 HU/42 PU	ST8008-3W
	**DC power supply unit, 0 to 15 V/5 A** • Adjustable DC voltage 2 x 0 to 15 V • Adjustable DC current 2 x 0 to 2.5 A • Residual ripple ±20 mV (< 0.2%) • Galvanic isolation of all outputs • Voltage output using 4-mm safety sockets • Short-circuit protected feedback voltage assured up to 15-V DC • Overload protected • Series connection of output voltages 0 to 30 V/0 to 2.5 A • Parallel connection of output voltages 0 to 15 V/0 to 5 A	3 HU/42 PU	ST8008-4D
	**Automotive power supply, 13.5 V/37 A** • Mains connection: 100 to 230 V/50 Hz-60 Hz +6%/-10% • Output voltage: DC 13.5 V/max. 37 A • Short-circuit proof switched-mode power supply • Protection class: IP 302 x 4 mm • High-voltage terminals	3 HU/42 PU	ST8008-4W

DC Power Supplies

Product illustration	Technical data	Dimensions	Order no.
	**DC power supply unit, 24 V/2.5 A** • Input voltage: 85 to 264 V • Frequency range: 47 to 63 Hz • Output voltage: 24 V • Output current: 2.5 A • 2 safety measurement sockets • 1 illuminated rocker switch	3 HU/24 PU	ST8008-3U
	**DC power supply unit, 24 V/6 A** • Input voltage: 85 to 264 V • Frequency range: 47 to 63 Hz • Output voltage: 24 V • Output current: 6 A • 2 safety measurement sockets • 1 illuminated rocker switch	3 HU/30 PU	ST8008-4T
	**DC power supply unit, 0 to 30 V/5 A** • Adjustable DC supply: 2 x 0 to 30 V • Adjustable DC supply: 2 x 0 to 2.5 A • Residual ripple: ±20 mV (<0.2%) • Short-circuit protected feedback voltage safe up to 15 V DC • Voltage is tapped via 4-mm safety sockets • Short-circuit protected feedback voltage safe up to 30 V DC • Overload protection • Series connection of output voltages 0 to 60 V/0 to 2.5 A • Parallel connection of output voltages 0 to 30 V/0 to 5 A	3 HU/42 PU	ST8008-4C
	**Regulated DC power supply, 0 to 250 V/10 A** • Stabilised DC power supply with overload protection • Adjustable output voltage via thyristor half bridge • Galvanic isolation between control and load circuits • 3 fuses, 10 A, 250 V • Output voltage 1: 210 V/6 A, fixed DC • Output voltage 2: 0 to 250 V, adjustable DC • Output current: 3 to 10 A (adjustable current limiting) • Mains connection: 230/400 V, 50 Hz	3 HU/48 PU	ST8008-4F

AC/DC Power Supplies

Product illustration	Technical data	Dimensions	Order no.
	**Adjustable low-voltage and SELV supply, AC/DC** Adjustable AC/DC power supplies with continually adjustable AC voltage via rotary variable transformer with subsequent safety transformer and bridge rectifier that can be plugged in or out. • Mains connection: 230 V/ 50 Hz • Bridge rectifier that can be plugged in or out • Outputs: 0 to 14 V/12 A 0 to 27 V/6 A 0 to 250 V/2 A, AC • Outputs: 4-mm safety measurement sockets • Fuses: 2 micro-fuses, 0.8/2 A	3 HU/42 PU	ST8008-4A
	**Adjustable low-voltage and SELV supply, AC** Adjustable AC power supply with continually adjustable AC voltage via rotary variable transformer with subsequent safety transformer. • Mains connection: 230 V/50 Hz • Outputs: 0 to 14 V/12 A 0 to 27 V/6 A 0 to 250 V/2 A, AC • Outputs: 4-mm safety measurement sockets • Fuses: 2 micro-fuses, 0.8/2 A	3 HU/42 PU	ST8008-4E
	**Fixed-voltage stabilised power supply, AC/DC** • Stabilised, fixed DC outputs +15 V/0.5 A -15 V/0.5 A +5 V/1 A • Adjustable voltage: 0 to 15 V/DC • AC outputs: 6, 12, 24, 42 V/1 A • Outputs: 4-mm safety sockets • Mains connection: 230 V/50 Hz	3 HU/48 PU	ST8008-4B

AC/DC Power Supplies

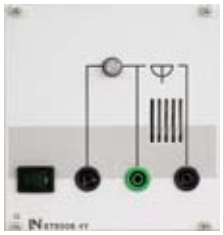
Product illustration	Technical data	Dimensions	Order no.
	**Regulated power supply, AC/DC, 0 to 250 V/1 A** Adjustable AC power supply with continually adjustable floating AC voltage Switchable to DC. • Regulated floating AC supply, 0 to 250 V/1 A • Regulated DC supply, 0 to 250 V/1 A • 1 voltmeter, 0 to 300 V • 1 ammeter, 0 to 1 A • 1 thermo-magnetic equipment circuit breaker • 1 AC/DC changeover switch • 2 safety measurement sockets • Mains connection: 230 V/50 Hz	3 HU/48 PU	ST8008-4K
	**Multi-function power supply** Multi-function, compact power supply which also acts as a function generator and three-phase supply for all basic and advanced experiments in electrical engineering, electronics and digital technology. • Stabilised, fixed voltage: +15 V, -15 V, 1 A each • Stabilised, fixed voltage: +5 V, 1 A • Stabilised, fixed voltage for vehicles: 12 V, 1 A • Stabilised, adjustable voltage: 0 to 30 V, 1 A • AC voltages: 12 V, 24 V, each 200 mA, 50 Hz • Three-phase generator with three-phase outputs and N • Amplitude: 3 x 7/12 V • Current capacity: 3 x 200 mA • Switchable frequency 1 Hz, 50 Hz • Function generator • 0.1 Hz to 500 kHz in 5 ranges • Waveforms: sine, triangle, square, digital • Output voltage: -10 V to 0 to 10 V • Output with attenuation: 10:1 • Current capacity: 300 mA • Short-circuit protected or self-resetting fuses for all outputs • 6 buttons for various functions • 14 LEDs for status indication • Experiment card with console housing 297 x 228 x 100 mm • Illuminated mains switch	3 HU/60 PU	ST8008-6K

Three-Phase Power Supplies

Product illustration	Technical data	Dimensions	Order no.
	**Low-voltage three-phase power supply 23/40 V/50 HZ** • Mains connection: 230 V/50 Hz • Outputs: L1-L2, L2-L3, L3-L1 at 40 V/5 A; L1-N, L2-N, L3-N at 23 V/5 A via 4-mm safety measurement sockets • Protection via equipment circuit breakers	3 HU/42 PU	ST8008-3L
	**Regulated three-phase power supply, 0 to 230/400 V, 8 A** Power supply for continuously adjustable three-phase voltage. • Mains connection: 230/400 V, 50 Hz • Output voltage: 3 x 0 to 400 V, 50 Hz adjustable via 3-phase variable transformer • Output current: 8 A • 4-mm safety measurement sockets (L1, L2, L3, N, PE) • 1 voltmeter, 0 to 250 V (moving iron instrument) • 3 ammeters, 0 to 8 A (moving iron instrument) • 3 phase indicator lights • 1 measuring point selector switch, L1-N, L2-N, L3-N, L1-L2, L1-L3, L2-L3 • 1 button for continuous adjustment of transformer voltage • Fuses: 3 thermo-magnetic equipment circuit breakers Caution: not for use with console equipment	3 HU/60 PU	ST8008-4M
	**Regulated three-phase power supply, 0 to 230/450 V, 2 A** Power supply for continuously adjustable three-phase voltage. • Mains connection: 230/400 V, 50 Hz • Output voltage: 3 x 0 to 450 V, 50 Hz adjustable via 3-phase variable transformer • Output current: 2 A • DC output: 0 to 250 V • Output current: 2 A • 4-mm safety sockets: L1, L2, L3, N, PE, L-, L+ • 1 voltmeter, 0 to 450 V (moving iron instrument) • 1 ammeter, 0 to 3 A (moving iron instrument) • 3 phase indicator lights • 1 measuring point selector switch, L1-N, L2-N, L3-N, L1-L2, L1-L3, L2-L3 • 1 measuring point selector switch, I1, I2, I3 • Fuses: 3 thermo-magnetic equipment circuit breakers	3 HU/72 PU	ST8008-4S

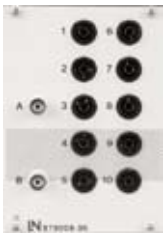
Special Inserts

Product illustration	Technical data	Dimensions	Order no.
	**Variable function generator** Variable function generator (0.02 Hz-2 MHz) which outputs a variety of signals. It can either function as a normal signal generator or as a pulse generator, variable transmitter and frequency counter. The voltage-controlled oscillator ensures high-precision sine, square and triangular waveforms, 0.02 Hz to 2 MHz. • Function generator • Sine, square, triangle, TTL • 50-ohm and 600-ohm outputs • Attenuation: 0 to 20 dB, -40 dB • External amplitude modulation • External sweep function • Frequency range: 0.2 Hz-2 MHz • Output amplitude: 0 V to 20 V_{pp} • Output offset setting: -10 to +10 V, 20 mHz • Frequency counter: microprocessor-controlled • Internal/external input, 4-digit LED display • Max. input voltage: 250 V_{pp} • Operating voltage: 110/120/200/240 VAC; 50/60 Hz	3 HU/48 PU	ST8008-4G
	**RMS digital multimeter** High-quality multi-function multimeter with 4.5 digit display with easy-to-read 15-mm green LEDs. Clearly laid-out controls make it easy to set up the measuring ranges. • 4.5 digit digital display • Max. display: 19 999 • Measuring sequence: 2.5 x per second. • Operating principle: double-edged integral A/D converter • Inputs overload protected • When the range is exceeded, the highest digit flashes • Accurate RMS measurements in AC ranges up to 50 kHz • Safety categories: IEC-1010-1; CAT II 1000 V/ CAT III, 600 V • Power consumption: 10 W max. • Operating voltage: 110/120/200/240 VAC; 50/60 Hz	3 HU/48 PU	ST8008-4J

Product illustration	Technical data	Dimensions	Order no.
	**Three-phase meter** The three-phase meter allows for measurement and display of all the relevant parameters in a mains system. It can measure one, two or three phases. Display and operation both utilise the same LCD display whereby operation is via menu or the integrated Ethernet port. • Measurement of three-phase voltage and current, 3 x 400 V/5 A • Measurement of phase voltages, chained voltages and currents • Determines apparent, active and reactive work, frequency and distortion factors for current and voltage • Large, high-contrast, back-lit graphic display • Digital inputs and outputs which can be configured for any functions • Ethernet port • Demonstration meter for mains operation • Operating voltage: 110 V–230 V, 50/60 Hz	3 HU/36 PU	ST8008-4L
	**Continuity tester** With visual and acoustic indicators for testing connections and for rough testing of resistors, capacitors and coils. The volume is reduced for test objects with higher resistance. • Low-resistance continuity tester, test voltage: 22 V/AC • Visual display • High-resistance continuity tester with acoustic indicator • Common input • Indicator light • Buzzer	3 HU/24 PU	ST8008-4Y
	**Soldering station, 24 V/50 W** The soldering station is particularly suitable for soldering surface-mount devices. Its power output of 80 W allows for unbelievable performance. The temperature of the solder tip is regulated electronically. The maximum temperature is 450°C with a tolerance of ± 2% from the set value. • Nominal voltage: 230 V/50 Hz • Voltage for solder tip (secondary): 24 V/50 Hz (safety transformer) • Temperature range: 50°C to 450°C, continuously adjustable • Max. power output: 80 W • Floating • Digital display • Anti-static solder tip (pencil) • Stand • Illuminated rocker switch • Protection class 1	3 HU/30 PU	ST8008-4V

Special Inserts

Product illustration	Technical data	Dimensions	Order no.
	**Double RJ45 socket, CAT5** • Insert can be configured as desired • Double RJ45 socket • Not wired up	3 HU/18 PU	ST8008-3M
	**RJ45 patch panel for PC networks** • Double RJ45 socket • Screened • CAT5 • Wired up	3 HU/18 PU	ST8008-4N
	**Radio and TV socket panel** • Insert for audio/video signals which can be configured as desired • Aerial socket for radio/TV • 2 BNC sockets	3 HU/18 PU	ST8008-3N
	**Compressed air supply 0 to 10 bar** • Controllable for pneumatics experiments • Manometer, 0 to 10 bar • Pressure control valve, 0 to 10 bar with latching mechanism • 2 self-releasing NW5 rapid connectors	3 HU/24 PU	ST8008-3S
	**Compressed air outlet** • Outlet with NW5 rapid coupling	3 HU/12 PU	ST8008-3T

Product illustration	Technical data	Dimensions	Order no.
	**Laboratory terminal unit** Insert which can be configured as desired. Connection to other workstations via ring circuits makes it possible for all the connected workplaces to be supplied with the same voltage or signals. • 10 x 4-mm safety sockets • Labelled 1 to 10 • 2 BNC sockets • Not wired up	3 HU/18 PU	ST8008-3K
	**8-port patch panel, Cat 5e** • For mounting in tabletop units, worktops or support boards • For mounting to the left, right or in the centre	3 HU/42 PU	ST8008-4U
	**USB hub** • 6-way USB 2.0 high-speed hub	3 HU/30 PU	ST8008-4R
	**PC port panel** • 2 x USB 2.0 • 1 x speaker (line out) • 1 x line in • 1 x mic in • 1 x mouse, PS2 • 1 x COM 1 • 1 x VGA Caution: not for use with console models.	33 HU/36 PU	ST8008-4P
	**Blank panels** • Blank panel for covering unused slots in the duct	3 HU/06 PU	ST8008-5G
		3 HU/12 PU	ST8008-5A
		3 HU/18 PU	ST8008-5B
		3 HU/24 PU	ST8008-5C
		3 HU/30 PU	ST8008-5D
		3 HU/42 PU	ST8008-5E
		3 HU/48 PU	ST8008-5F
		3 HU/78 PU	ST8008-5L

3-HU UniTrain-I Interface and Power Supplies

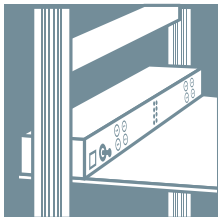
Product illustration	Technical data	Dimensions	Order no.
	**UniTrain-I interface with virtual instruments** Designed as 19" inserts for 3-HU power supply ducts. • Interface: 32-bit processor with memory for measurements • USB and serial ports • Bus so that multiple experimenter units can be connected simultaneously • USB cable • Special cable for linking interface and experimenter units • CD with basic software • Instruction manual	3 HU/PU	ST8008-9A
	**UniTrain-I power supply for 3-HU interface** • Output voltage: 2 x 5 V, 2 x 15 V, 2 x -15 V, 2 x 24 V • Output current: 2 x 1 A, 2 x 0.4 A, 2 x 0.4 A, 2 x 2 A • Input current: 100-250 V AC • Frequency range: 50-60 Hz • 1 illuminated rocker switch	3 HU/24 PU	ST8008-9C
	**UniTrain-I power supply for standard interface** • Includes connecting leads • Output voltage: 2 x 5 V, 2 x 15 V, 2 x -15 V, 2 x 24 V • Output current: 2 x 1 A, 2 x 0.4 A, 2 x 0.4 A, 2 x 2 A • Input current: 100-250 V AC • Frequency range: 50-60 Hz • 1 illuminated rocker switch	3 HU/24 PU	ST8008-9D

3-HU Tabletop Housings

Product illustration	Technical data	Dimensions	Order no.
	**3-HU tabletop housing, 230 V** Tabletop housing to accommodate 19"/3-HU modules allowing SybaPower 3-HU modules to be used for both mobile and desktop systems. • Includes AC power lead • Housing made of aluminium profiles • Fold-away stand • Fitting for attaching 3-HU modules		
		3 HU/24 PU	ST8008-7A
		3 HU/30 PU	ST8008-7C
		3 HU/42 PU	ST8008-7B
		3 HU/48 PU	ST8008-7D
		3 HU/60 PU	ST8008-7K
	**3-HU tabletop housing, 400 V** Tabletop housing to accommodate 19"/3-HU modules allowing SybaPower 3-HU modules to be used for both mobile and desktop systems. • Includes 3-phase power lead • Housing made of aluminium profiles • Fold-away stand • Fitting for attaching 3-HU modules		
		3 HU/48 PU	ST8008-7E
		3 HU/72 PU	ST8008-7F

LUCAS-NÜLLE

SybaStore – Storage System



SybaStore – Storage System

The Lucas-Nülle Storage Concept

SybaStore provides an extremely wide range of storage systems and cabinets. Our challenge is to solve each customer's specific problems.

Fitted cupboards

From individual free-standing cabinets to complete fitted cupboards, technical facilities and laboratories can all be custom fitted.
With familiar cabinet widths of 500 and 1,000 mm, the furniture can be perfectly matched to the size of any room.

Side cabinets

SybaStore side cabinets offer more storage space and can also be used to partition a laboratory.

Under-table cabinets

Under-table cabinets exist in fitted and free-standing versions. They are available with hinged doors and drawers of various heights as needed. The processed chipboard conforms to quality class E1. All under-table cabinets are equipped with safety locks and can be used as lockers.

Roll containers

Roll containers are the ideal mobile storage aid for laboratories. Roll containers are available with hinged doors and drawers of various heights as needed.

SybaStore

Custom Storage and Cabinet Systems for Your Laboratory

SybaStore represents a standard for storage and cabinets that allows high-quality components to be combined in a well thought-out and functioning laboratory.
Our furniture bears the mark of quality. The use of high-quality materials ensures that you can enjoy using them for a long time.
The Lucas-Nülle cabinet system allows for the perfect furnishing for any application. Shelves, drawers, telescopically extending shelves and inserts with recesses can all be added at any time.

Cabinets

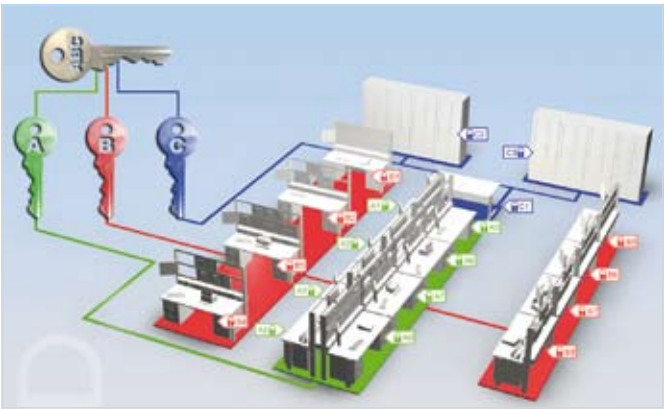
- The cabinets and fitted cupboards are made of 19-mm-thick, highly-compressed, multi-layered fine chipboard with plastic coating on both sides, colour: light grey, RAL 7035, thickness of back wall: 19-mm.
- All outer surfaces are scratch and abrasion-resistant due to crystalline structure.
- The edges of the cabinets are protected with 1-mm plastic edging. The hinged doors have 3-mm edging coloured light grey, RAL 7035.
- The hinged doors are made of 19-mm-thick melamine-resin-coated chipboard like the body but coloured "telegrey", RAL 7047.
- Rows of holes are drilled in a 32-mm grid to accommodate shelves with or without grooved mats or guide slots at the side for trays to accommodate experiment boxes, tool kits and collections of small parts.
- The bases of the cabinets are made of highly compressed, fine multi-layer chipboard with melamine-resin-based plastic coatings on both sides with waterproof lamination and are light grey in colour.

Under-table cabinets

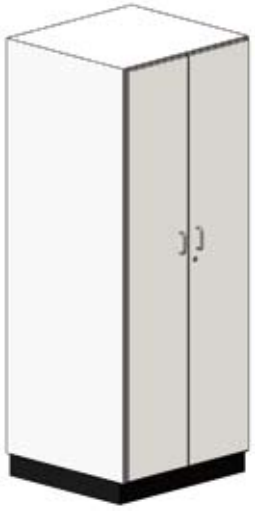
- Drawers are made of metal with rows of slots around the sides. They pull out to 4/5 of the way and are on ball bearings. Various panel heights allow for the use of comprehensive accessories for better organisation, from simple dividers to file registers.
- Under-table cabinets with doors are equipped with one shelf which can be adjusted in height.
- The layout of the interior can be configured as desired. Rows of holes are drilled in a 32-mm grid to accommodate shelves with or without grooved mats or guide slots at the side for trays to accommodate experiment boxes, tool kits and collections of small parts.
- Every under-table cabinet is fitted with a cylinder lock plus simultaneously moving bolts. Handles are made of brushed aluminium.
- Every under-table cabinet is fitted with an interchangeable cylinder

Locks

- Interchangeable cylinder including two keys
- Can be configured as a primary or general locker



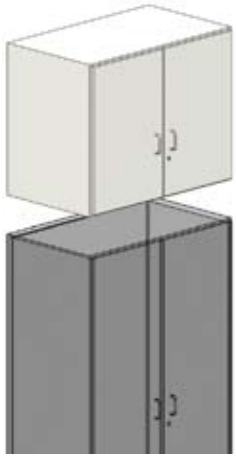
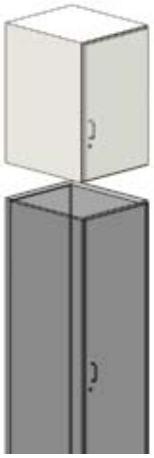
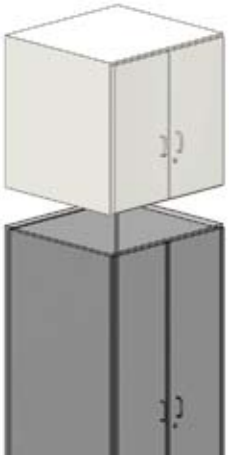
Cabinets with Doors

Product illustration	Technical data	W / D / H in mm	Order no.
	**Cabinet, 1000 mm with 2 hinged doors** • Colour: light grey, RAL 7035 • Doors have 3-mm ABS edging • Side walls have a 32-mm European bracket frame and other slots • Lock	1000 x 600 x 2039	ST8012-8B
	**Cabinet, 500 mm with 1 hinged door** • Colour: light grey, RAL 7035 • Door has 3-mm ABS edging • Side walls have a 32-mm European bracket frame and other slots • Lock		
	Right-hinged door	510 x 600 x 2039	ST8012-8C
	Left-hinged door	510 x 600 x 2039	ST8012-8D
	**Tray cabinet with 2 hinged doors** To accommodate approximately 50 storage trays (in pairs one behind the other) • Colour: light grey, RAL 7035 • Doors have 3-mm ABS edging • Side walls have a 32-mm European bracket frame and other slots • Lock	788 x 735 x 2039	ST8009-8E

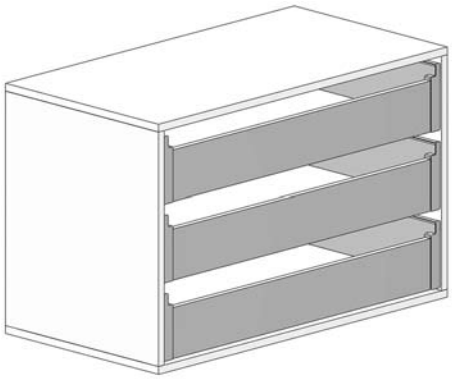
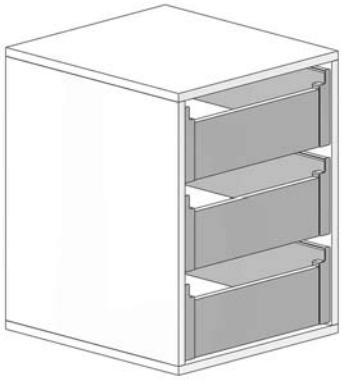
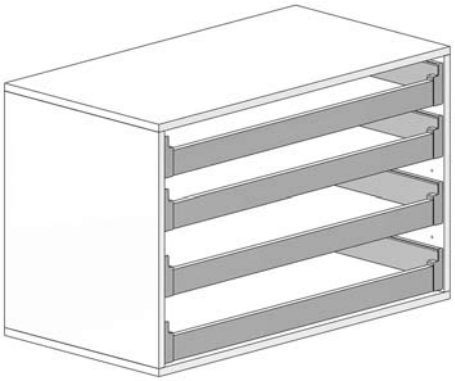
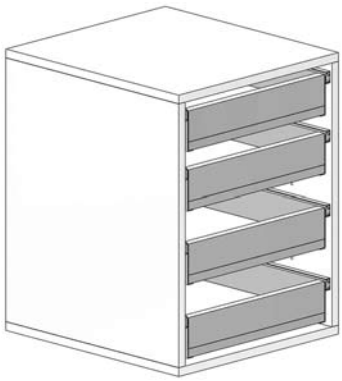
Cabinets with Glass Doors

Product illustration	Technical data	W / D / H in mm	Order no.
	**Cabinet, 1000 mm with 2 hinged doors, 2/3 glazed with glass window** • Colour: light grey, RAL 7035 • Doors have 3-mm ABS edging • Doors are partially glazed with compound safety glass • Side walls have a 32-mm European bracket frame and other slots • Lock	1000 x 600 x 2039	ST8012-8M
	**Cabinet, 500 mm with 1 hinged door, 2/3 glazed with glass window** • Colour: light grey, RAL 7035 • Door has 3-mm ABS edging • Doors are partially glazed with compound safety glass • Side walls have a 32-mm European bracket frame and other slots • Lock		
	Door hinged on the right	510 x 600 x 2039	ST8012-8N
	Door hinged on the left	510 x 600 x 2039	ST8012-8P

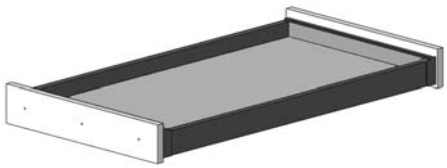
Upper-Level Cabinets

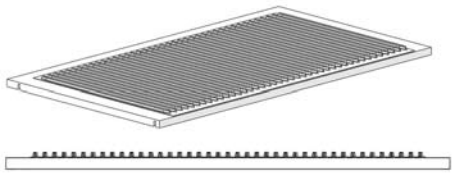
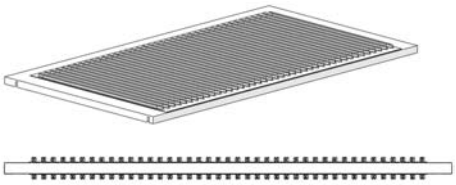
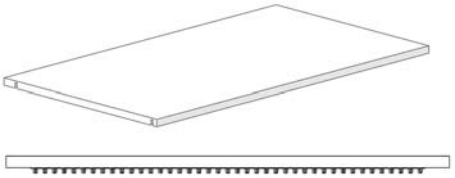
Product illustration	Technical data	W / D / H in mm	Order no.
	**Upper-level cabinet, 1000 mm with 2 hinged doors** • Colour: light grey, RAL 7035 • Doors have 3-mm ABS edging • Side walls have a 32-mm European bracket frame and other slots • Lock	1000 x 600 x 787	ST8012-8R
	**Upper-level cabinet, 500 mm with 1 hinged door** • Colour: light grey, RAL 7035 • Door has 3-mm ABS edging • Side walls have a 32-mm European bracket frame and other slots • Lock		
	Door hinged on the right	510 x 600 x 787	ST8012-8S
	Door hinged on the left	510 x 600 x 787	ST8012-8T
	**Upper-level tray cupboard with 2 hinged doors** • Colour: light grey, RAL 7035 • Doors have 3-mm ABS edging • Side walls have a 32-mm European bracket frame and other slots • Lock	788 x 735 x 787	ST8009-8U

Accessories

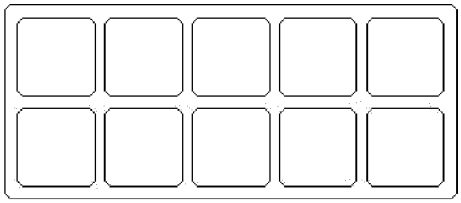
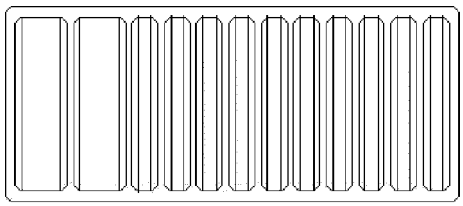
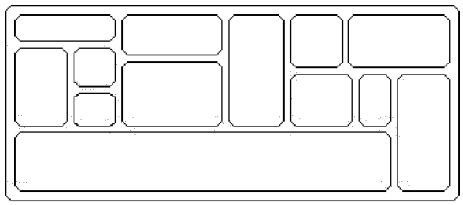
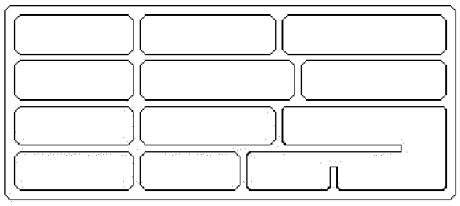
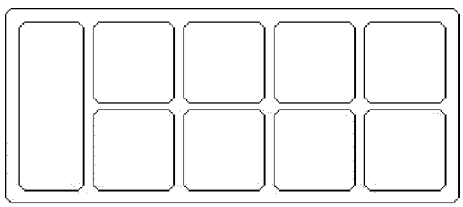
Product illustration	Technical data	W / D / H in mm	Order no.
	**3 x 1000-mm internal drawers** • Colour: light grey, RAL 7035 • 1-mm ABS edging • For installation in existing storage cabinets	960 x 510 x 610	ST8012-9A
	**3 x 500-mm internal drawers** • Colour: light grey, RAL 7035 • 1-mm ABS edging • For installation in existing storage cabinets	470 x 510 x 610	ST8012-9B
	**4 x 1000-mm internal drawers** • Colour: light grey, RAL 7035 • 1-mm ABS edging • For installation in existing storage cabinets	960 x 510 x 610	ST8012-9C
	**4 x 500-mm internal drawers** • Colour: light grey, RAL 7035 • 1-mm ABS edging • For installation in existing storage cabinets	470 x 510 x 610	ST8012-9D

Accessories

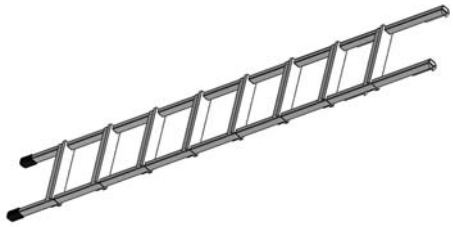
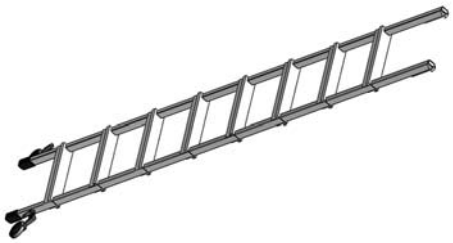
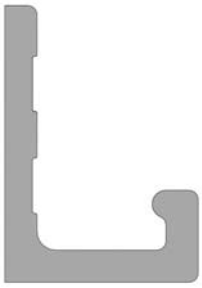
Product illustration	Technical data	W / D / H in mm	Order no.
	**1000-mm drawer to carry approx. 50 kg** • Colour: light grey, RAL 7035 • 1-mm ABS edging • For installation in existing storage cabinets • Guide rails with plastic rollers • With front and rear edging	960 x 510 x 100	ST8012-9E
	**500-mm slide-out shelf to carry approx. 50 kg** • Colour: light grey, RAL 7035 • 1-mm ABS edging • For installation in existing storage cabinets • Guide rails with plastic rollers • With front and rear edging	470 x 510 x 610	ST8012-9F
	**Shelves, 19 mm** • Plastic-coated high-quality 3-layer chipboard		
	Cabinet width: 1000 mm • Loading capacity up to 25 kg	960 x 540 x 19	ST8012-9G
	Cabinet width: 500 mm • Loading capacity up to 25 kg	470 x 540 x 19	ST8012-9H
	Tray cabinet: 750 mm • Loading capacity up to 35 kg	748 x 675 x 19	ST8009-9T

Product illustration	Technical data	W / D / H in mm	Order no.
	**Shelf with grooved mat on one side (top)** • Shelf with grooved mat on one side for fitting in the upper part of a cabinet • Shelf, 19 mm thick • With grooved mat of height 10 mm for storing experiment cards		
	Cabinet width: 1000 mm	960 x 540 x 19	ST8012-9J
	Cabinet width: 500 mm	470 x 540 x 19	ST8012-9K
	**Shelf with grooved mat on both sides** • Shelf with grooved mat on both sides • Shelf, 19 mm thick • With grooved mat of height 10 mm for storing experiment cards		
	Cabinet width 1000 mm	960 x 540 x 19	ST8012-9L
	Cabinet width 500 mm	470 x 540 x 19	ST8012-9M
	**Shelf with grooved mat on one side (bottom)** • Shelf with grooved mat on one side for fitting in the lower part of a cabinet • Shelf, 19 mm thick • With grooved mat of height 10 mm for storing experiment cards		
	Cabinet width: 1000 mm	960 x 540 x 19	ST8012-9N
	Cabinet width: 500 mm	470 x 540 x 19	ST8012-9O

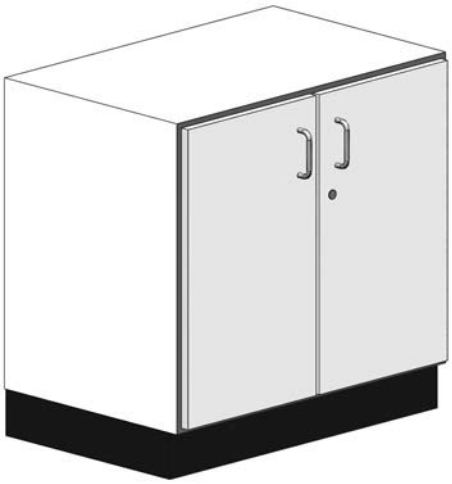
Tray Cabinets – Storage Modules

Product illustration	Technical data	W / D / H in mm	Order no.
	**Storage tray** • With reinforced floor for storing 10 experiment boxes	700 x 310 x 35	ST7004-2B
	**Storage tray** • With reinforced floor for storing plug-in or clip-together components	700 x 310 x 35	ST7004-2F
	**Storage tray** • With reinforced floor for storing commonplace wiring material	700 x 310 x 35	ST7004-2J
	**Storage tray** • With reinforced floor for storing commonplace wiring material	700 x 310 x 35	ST7004-2Q
	**Storage tray** • With reinforced floor for storing 8-HD boards for pneumatics or automotive technology	700 x 310 x 35	ST7004-3B

Accessories

Product illustration	Technical data	W / D / H in mm	Order no.
	**Safety ladder** • Made of light metal • Removable • Suitable for hooking onto ladder rail		ST8009-8Y
	**Mobile safety ladder** • Made of light metal • Removable • Secured against accidental removal • Suitable for hooking onto ladder rail • On rollers with ball bearing		ST8009-8Z
	**Ladder guide rail** • For various types of ladder • Standard length: 1 m • Increases the height of the cabinet by 30 mm When ordering, please state the width of the cabinet to which the rail is to be attached. Maximum size of a single length, 5 m		ST8009-9Y
	**Ladder attachment** • Ladder attachment for fixing to the side of a cabinet for hang-on ladder		ST8009-9Z
	**Clothes rail** • Made of chromed oval tubing with attachment components		
	Cabinet width: 1000 mm	Length: 960 mm	ST8009-9V
	Cabinet width: 500 mm	Length: 470 mm	ST8009-9U

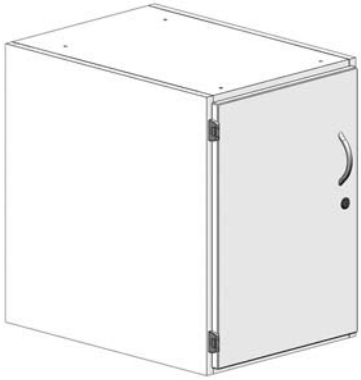
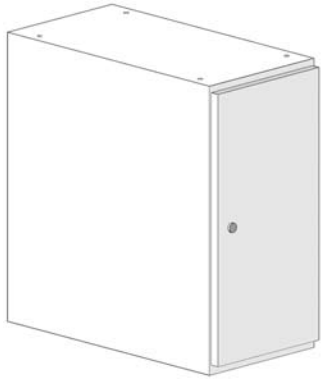
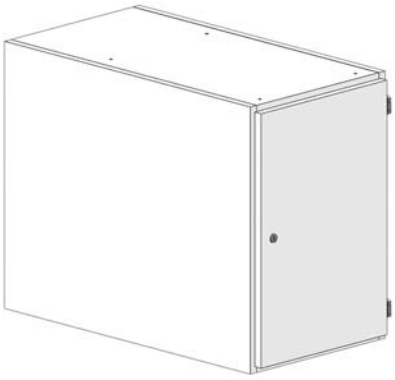
Side Cabinets

Product illustration	Technical data	W / D / H in mm	Order no.
	**Side cabinet with 12 drawers** • With cover panel • Colour: light grey, RAL 7035 • Drawers with 3-mm ABS edgings • 2 x 5 drawers (2 and 3 HU) • 2 x utensil drawers	841 x 600 x 740	ST8009-7D
	**Side cabinet to accommodate storage trays** • With cover panel • Colour: light grey, RAL 7035 • 2 hinged doors with hinges to left and right • Accommodates a maximum of 20 tray inserts	841 x 600 x 740	ST8009-7F
	**Side cabinet to accommodate UniTrain-I courses** • Colour: light grey, RAL 7035 • Accommodates 21 UniTrain-I courses	1120 x 500 x 912	ST8009-7G

Product illustration	Technical data	W / D / H in mm	Order no.
	**Side cabinet, 2 x 12 HU, 2 doors with 1 shelf** • With cover panel • Colour: light grey, RAL 7035 • Door with 3-mm ABS edging • Lock	841 x 600 x 740	ST8009-7A
	**Side cabinet, 2 x 12 HU, 2 doors with grooved mats** • With cover panel • Colour: light grey, RAL 7035 • Door with 3-mm ABS edging • Lock	841 x 600 x 740	ST8009-7B
	**Side cabinet with 8 drawers** • With cover panel • Colour: light grey, RAL 7035 • Drawers with 3-mm ABS edging • 2 x 3 drawers (2, 3, 6 HU) • 2 x utensil drawers	841 x 600 x 740	ST8009-7C

Suspended Under-Table Cabinets

Product illustration	Technical data	W / D / H in mm	Order no.
	**Suspended under-table cabinet with 3 drawers** • 1 utensil drawer • 2 drawers, 2 HU • Central locking	430 x 600 x 290	ST8007-1N
	**Suspended under-table cabinet with 4 drawers** • 1 utensil drawer • 1 drawer, 2 HU • 2 drawers, 4 HU • Central locking	430 x 600 x 588	ST8007-1A
	**Suspended under-table cabinet with 5 drawers** • 1 utensil drawer • 3 drawers, 2 HU • 1 drawer, 4 HU • Central locking	430 x 600 x 588	ST8007-1B
	**Suspended under-table cabinet with 6 drawers** • 1 utensil drawer • 5 drawers, 2 HU • Central locking	430 x 600 x 588	ST8007-1C

Product illustration	Technical data	W / D / H in mm	Order no.
	**Suspended under-table cabinet with 1 hinged door and 1 drawer** • 1 drawer, 2 HU • 1 shelf		
	Door, right-hinged	430 x 600 x 590	ST8007-1D
	Door, left-hinged	430 x 600 x 590	ST8007-1E
	**Suspended under-table cabinet with 1 hinged door** • 1 shelf		
	Door, right-hinged	430 x 600 x 590	ST8007-1F
	Door, left-hinged	430 x 600 x 590	ST8007-1G
	**Suspended under-table cabinet, for PC with 1 hinged door** • For mounting under tabletop on right-hand side • Rear wall features openings top and bottom for insertion of cables and for ventilation • Integrated outlet strip for plugging in a PC		
	Door, right-hinged	290 x 590 x 590	ST8007-1J
	Door, left-hinged	290 x 590 x 590	ST8007-1K
	Without doors	290 x 590 x 590	ST8007-1H
	**Suspended under-table cabinet for tray inserts with 1 hinged door** • Grooved mats on right and left-hand walls to accommodate 9 tray inserts		
	Door, right-hinged	406 x 760 x 590	ST8007-1L
	Door, left-hinged	406 x 760 x 590	ST8007-1M

Roll Containers

Product illustration	Technical data	W / D / H in mm	Order no.
	**Roll container with 4 drawers** • 1 utensil drawer • 1 drawer, 2 HU • 2 drawers, 4 HU • Central locking • 4 casters, 2 with brakes	430 x 580 x 666	ST8007-2A
	**Roll container with 5 drawers** • 1 utensil drawer • 3 drawers, 2 HU • 1 drawer, 4 HU • Central locking • 4 casters, 2 with brakes	430 x 580 x 666	ST8007-2B
	**Roll container with 6 drawers** • 1 utensil drawer • 5 drawers, 2 HU • Central locking • 4 casters, 2 with brakes	430 x 580 x 666	ST8007-2C

Product illustration	Technical data	W / D / H in mm	Order no.
	**Roll container with 1 hinged door and 1 drawer** • 1 drawer, 2 HU • 1 shelf • 4 casters, 2 with brakes		
	Door, right-hinged	430 x 580 x 666	ST8007-2D
	Door, left-hinged	430 x 580 x 666	ST8007-2E
	**Roll container with 1 hinged door** • 1 shelf • 4 casters, 2 with brakes		
	Door, right-hinged	430 x 580 x 666	ST8007-2F
	Door, left-hinged	430 x 580 x 666	ST8007-2G
	**Roll container for tray inserts with 1 hinged door** • Grooved mats on right and left-hand walls to accommodate 9 tray inserts • 4 casters, 2 with brakes		
	Door, right-hinged	430 x 580 x 666	ST8007-2L
	Door, left-hinged	430 x 580 x 666	ST8007-2M

Tabletops

For Placing on Free-Standing Under-Table Cabinets

SybaStore tables with no frames and free-standing under-table cabinets can be used to make up compact workplace systems. Free-standing under-table cabinets can be placed under any SybaLab lab tables (tables with frames) where they provide extra storage space.

Product illustration	Technical data	W / D / H in mm	Order no.
	**Tabletop for table frames and free-standing under-table cabinets** • Highly compressed multi-layered fine chipboard conforming to German Industrial Standard (DIN) 68761 (30 mm thick) • Colour: RAL 7035, slightly textured 0.8-mm-thick coating (Resopal) on both sides conforming to German Industrial Standard (DIN) 16926 • The border of the tabletop is a solid, impact-resistant protective trim made of 3-mm-thick, coloured plastic. • Resistant to chemicals and reagents such as dilute acid and alkaline solutions • Heat resistant	1500 x 800 x 30	ST8009-2B
		1600 x 800 x 30	ST8009-2H
		1800 x 800 x 30	ST8009-2C
		2000 x 800 x 30	ST8009-2J
		1500 x 900 x 30	ST8009-2E
		1600 x 900 x 30	ST8009-2K
		1800 x 900 x 30	ST8009-2F
		2000 x 900 x 30	ST8009-2L
	**Beech tabletops for table frames and free-standing under-table cabinets. Able to withstand heavy mechanical loading.** • Solid beech plywood conforming to German Industrial Standard DIN 68705 (40 mm thick) • Impact resistant and resistant to warping • Oiled surface • All edges and corners smoothed and oiled	1500 x 800 x 40	ST8009-3B
		1600 x 800 x 40	ST8009-3M
		1800 x 800 x 40	ST8009-3C
		2000 x 800 x 40	ST8009-3J
		1500 x 900 x 40	ST8009-3F
		1600 x 900 x 40	ST8009-3K
		1800 x 900 x 40	ST8009-3G
		2000 x 900 x 40	ST8009-3L

Free-Standing Under-Table Cabinets

Product illustration	Technical data	W / D / H in mm	Order no.
	**Under-table cabinet, free-standing with 4 drawers** • 1 utensil drawer • Drawers, 2/4/4 HU (with frames) • Drawers, 3/4/4 HU (without frames) • Central locking		
	Tables with frames	430 x 600 x 690	ST8007-3A
	Tables without frames	430 x 760 x 740	ST8007-4A
	**Under-table cabinet, free-standing with 5 drawers** • 1 utensil drawer • Drawers, 2/2/2/4 HU (with frames) • Drawers, 2/2/3/4 HU (with frames) • Central locking		
	Tables with frames	430 x 600 x 690	ST8007-3B
	Tables without frames	430 x 760 x 740	ST8007-4B
	**Under-table cabinet, free-standing with 6 drawers** • 1 utensil drawer • Drawers, 5 x 2 HU (with frames) • Drawers, 4 x 2/3 HU (without frames) • Central locking		
	Tables with frames	430 x 600 x 690	ST8007-3C
	Tables without frames	430 x 760 x 740	ST8007-4C

Free-Standing Under-Table Cabinets

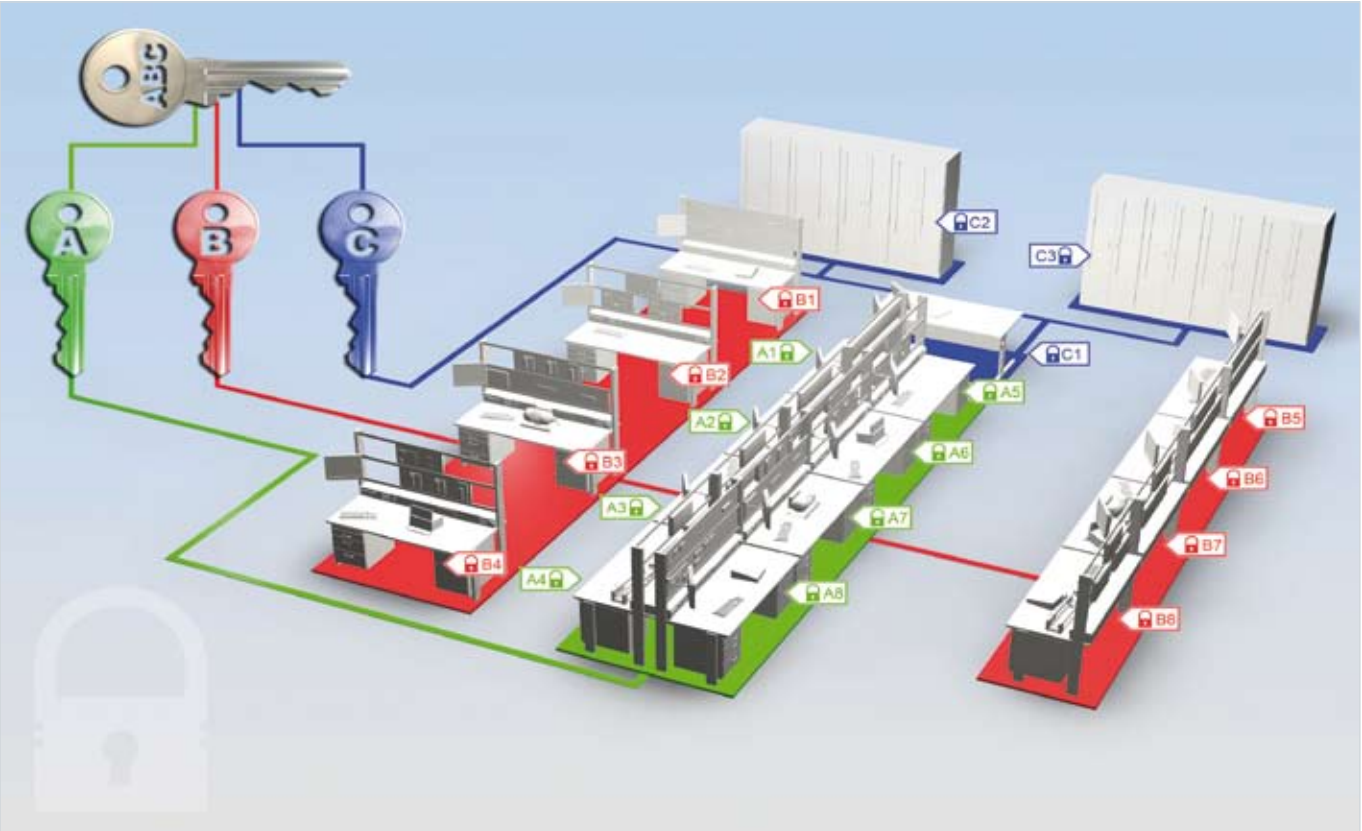
Product illustration	Technical data	W / D / H in mm	Order no.
	**Under-table cabinet, free-standing with 1 hinged door and 1 drawer** • 1 drawer, 2 HU • 1 shelf		
	Tables with frames, door, right-hinged	430 x 600 x 690	ST8007-3D
	Tables with frames, door, left-hinged	430 x 600 x 690	ST8007-3E
	Tables without frames, door, right-hinged	430 x 760 x 740	ST8007-4D
	Tables without frames, door, left-hinged	430 x 760 x 740	ST8007-4E
	**Under-table cabinet, free-standing with 1 hinged door** • 1 shelf		
	Tables with frames, door, right-hinged	430 x 600 x 690	ST8007-3F
	Tables with frames, door, left-hinged	430 x 600 x 690	ST8007-3G
	Tables without frames, door, right-hinged	430 x 760 x 740	ST8007-4F
	Tables without frames, door, left-hinged	430 x 760 x 740	ST8007-4G
	**Under-table cabinet, free-standing, for PC** • Open back for ventilation and running cables • Integrated outlet strip for plugging in a PC		
	Tables with frames, door, right-hinged	290 x 590 x 690	ST8007-3J
	Tables with frames, door, left-hinged	290 x 590 x 690	ST8007-3K
	Tables without frames, door, right-hinged	290 x 760 x 740	ST8007-4J
	Tables without frames, door, left-hinged	290 x 760 x 740	ST8007-4K
	Tables with frames, no doors	290 x 590 x 690	ST8007-3H
	Tables without frames, no doors	290 x 760 x 740	ST8007-4H

Product illustration	Technical data	W / D / H in mm	Order no.
	**Under-table cabinet, free-standing for tray inserts with 1 hinged door** • Grooved mats on right and left-hand walls to accommodate 10 tray inserts		
	Tables with frames, door, right-hinged	406 x 600 x 690	ST8007-3L
	Tables with frames, door, left-hinged	406 x 600 x 690	ST8007-3M
	Tables without frames, door, right-hinged	406 x 760 x 740	ST8007-4L
	Tables without frames, door, left-hinged	406 x 760 x 740	ST8007-4M
	**Under-table cabinet, free-standing for 19“ inserts** • Made to accommodate computers the size of a midi-tower • Made to accommodate 19“ inserts (3 HU total) • Back wall section with ventilation and cable opening • Lockable door		
	Tables with frames	523 x 679 x 684	ST8010-4W
	Tables without frames	523 x 750 x 740	ST8010-4X
	**Under-table cabinet, free-standing for partitioning rooms, with 1 hinged door** • Inspection door on the inside for power units for the laboratory benches		
	Tables with frames, door, right-hinged	430 x 740 x 690	ST8007-3X
	Tables with frames, door, left-hinged	430 x 740 x 690	ST8007-3Y
	Tables without frames, door, right-hinged	430 x 740 x 740	ST8007-4X
	Tables without frames, door, left-hinged	430 x 740 x 740	ST8007-4Y

Locking Systems

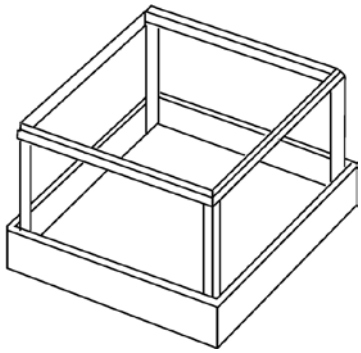
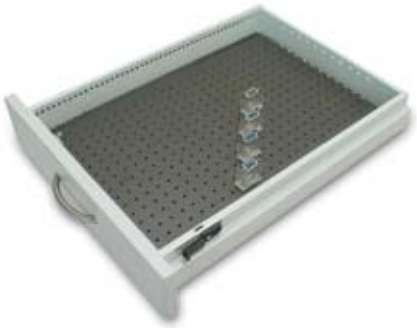
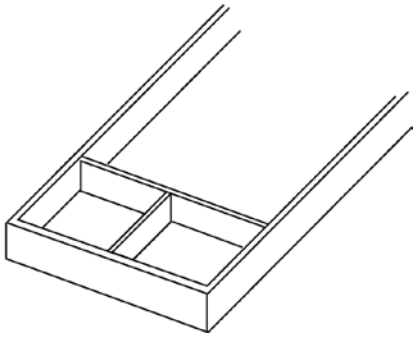
Different Access Schemes for Laboratories

The locks in the SybaStore lab furniture range allow for various different access schemes to be implemented.



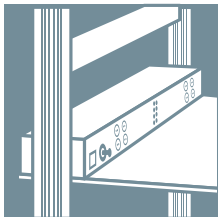
Product illustration	Technical data	W / D / H in mm	Order no.
	**Locking system** Consists of: • 2 main keys • Corresponding key for each additional level • Quantity ordered depends on the number of lock cylinders (20 lock cylinders = 20 x ST8080-9A)		ST8080-9A

Organisation of Drawers

Product illustration	Technical data	W / D / H in mm	Order no.
	**DIN-A4 file hanger rack** • 1 Intermediate ridge • 500 mm deep		ST8080-1A
	**Set of form holders** • Set of 7 with a useful depth of 560 mm • Required height of drawer, 4 HU	300 x 560 x 140	ST8080-1C
	**Storage shelf for drawers 400 x 500 mm (for 19-mm plug-in components)** • Melamine-coated pressed layer plate with holes in a 19-mm grid • Sponge rubber bottom	400 x 500 x 30	ST8080-1X
	**Set of dividers for drawers** This set separates drawers at any position by means of a plug-in slot system. 2 spring levers keep the dividers in place. • Includes: - 2 dividers, 330 x 80 mm (WxH) - 1 divider, 212 x 80 mm (WxH) - 2 dividers, 150 x 80 mm (WxH)		ST8080-1F

LUCAS-NÜLLE

SybaWork



SybaWork

Systematic Design for Optimum Use of Rooms

From rough metalwork to fine assembly, the extreme flexibility makes these benches suitable for any requirements. Consistent systematic design and matching accessories make SybaWork workbenches a successful team.

Integrated power supplies for workplaces
SybaPower power supply ducts are fully configurable for any use of electrical and compressed supplies, as well as tele-communications, PC and network connections.

Mobility and comfort when working
The robust steel-plate design and free-rolling rubber casters on the SybaWork trolleys ensure smooth procedures even under tough conditions.

Well thought-out organisational principle
SybaWork workbench drawers are suitable for miniature components up to the heaviest tools. If necessary, every drawer can be loaded with up to 80 kg. Countless types of drawers, each with central locking as standard, are the mark of a well thought-out organisational principle.

TeamWork workplace
Group working has replaced individual stations in many businesses. This requires a high degree of social skills and team-working ability among technicians. Practising such key skills is made easier by the use of SybaWork TeamWork units.

SybaWork

Workplace Systems for Workshops

Solidness and toughness are the characteristics of the workbenches for workshops, schools and businesses.
With technology changing apace, the requirements made on the modern workbench have developed, too. Users must be able to configure their workplace with flexibility in order to accomplish their work properly.
SybaWork has given a whole new look to the conventional workbench. Countless detailed solutions open up the possibilities for new ways of working and provide systematic support for users. Ergonomics form the cornerstone for productive working.

Tabletops
- Multiplex tabletop, multi-layered beech veneer
- 40 mm thick

Bases
- Made of 80-mm U-shaped profiles with welded base for perforated attachment of dowels
- Additional stability thanks to struts at top and bottom
- Base with and without lugs, 810 mm high

Under-table fittings
- Robust welded steel-plate design, U-profile base
- Withstands evenly distributed loads of up to 500 kg
- 605 mm wide (single unit) with open and closed static versions
- Holes at the side for hooks or accessories

Drawers
- Drawers all run on ball bearings and are protected such that they cannot be pulled out by accident
- Central locking, drawer dimensions: 450 x 600 mm (WxD)
- Loading capacity: 80 kg, drawers can be pulled out to 80%
- Including high-quality handle and interchangeable labelling strips

Doors
- Reinforced with U-shaped edges – no risk of injury!
- Full-width handle with interchangeable labelling strips
- 420 and 570 mm high in right and left-handed versions with central locking

Locks
- Rotating cylinder lock, simultaneous locking for each bench
- Can be fitted for primary locking mechanism

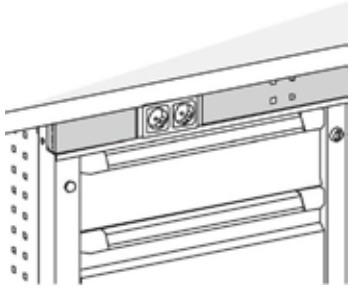
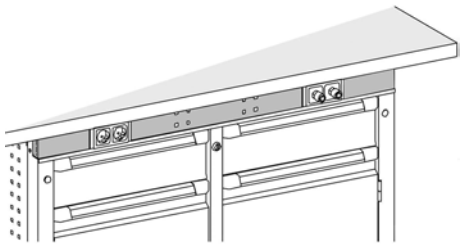
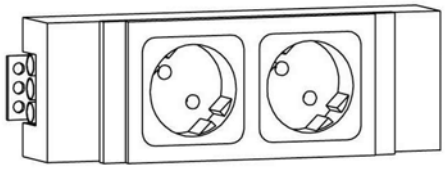
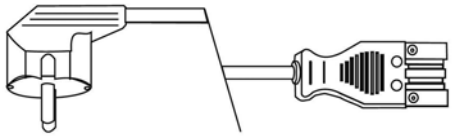
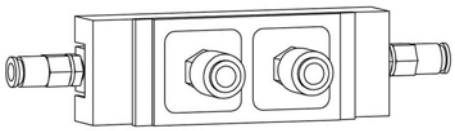
Finish
- Environmentally friendly powder coating
- Oven-fired at 180°C

Workbenches

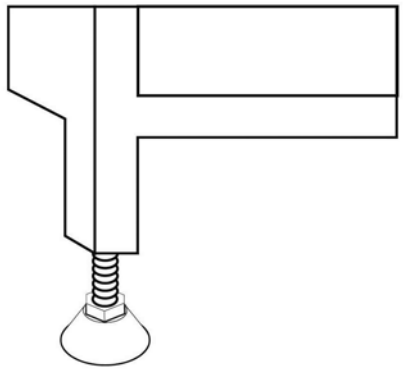
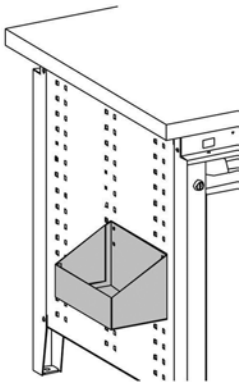
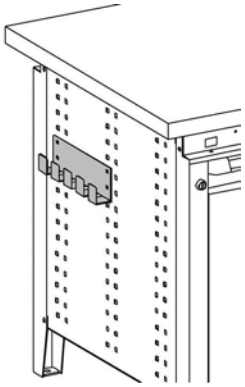
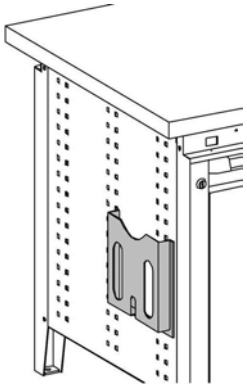
Product illustration	Technical data	W / D / H in mm	Order no.
	**Workbench without drawer**	1520 x 750 x 850	ST8070-1A
	**Workbench with drawer**	1520 x 750 x 850	ST8070-1B
	**Workbench with under-table cabinet** • Function strip optionally includes electricity and compressed air supply	1520 x 750 x 850	ST8070-2A
	**Workbench with under-table cabinet** • 5 drawers (60/90/120/150/150 mm) • Function strip optionally includes electricity and compressed air supply	1520 x 750 x 850	ST8070-2B

Product illustration	Technical data	W / D / H in mm	Order no.
	**Workbench** • 2 under-table cabinets • 3 drawers • 1 door • Function strip optionally includes electricity and compressed air supply	2004 x 750 x 850	ST8070-3A
	**Workbench** • 2 under-table cabinets • 2 x 3 drawers (120/150/300 mm) • Function strip optionally includes electricity and compressed air supply	2004 x 750 x 850	ST8070-3B
	**TeamWork workplace** • 6 under-table cabinets • 40-mm-thick, 6-sided multiplex tabletop, multi-layered beech veneer • 4 drawers (120/3 x 150 mm), ball bearings, drawers cannot be pulled out by accident • Function strip optionally includes electricity and compressed air supply	2690 x 2329 x 850	ST8070-4A
	**TeamWork workplace** • Can be equipped with up to 6 x 96-PU, 3-HU modules • Pre-wired with power supply bus system • Terminal strips for on-site connection • Base and lid profiles made of solid veneered beech board • High-voltage, quick-release plugs	3 HU/6 x 96 PU	ST8070-4B

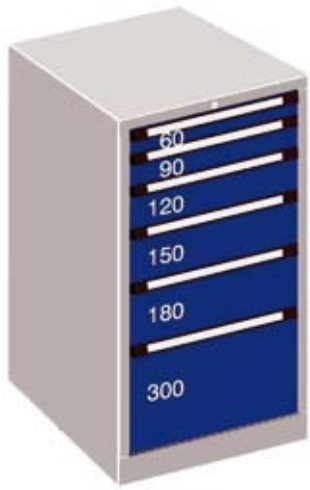
Workbench Function Strip

Product illustration	Technical data	W / D / H in mm	Order no.
	**Function strip for workbenches with one under-table cabinet** • 1 opening for electricity or compressed air	605 x 30 x 60	ST8070-9A
	**Function strip for workbenches with two under-table cabinets** • 2 openings for electricity or compressed air	2000 x 30 x 60	ST8070-9B
	**Earthed plug sockets** • 2 earthed plug sockets for function strip • Suitable for the following countries: D/NL/F/B • Equipment for other countries can be supplied on request		ST8070-9C
	**Cabling for earthed sockets** • 3-m-long leads		ST8070-9D
	**Compressed air feed** • 2 compressed air outlets for function strip • 3-m-long compressed air hose • Accessories and fastenings		ST8070-9E

Accessories

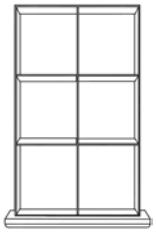
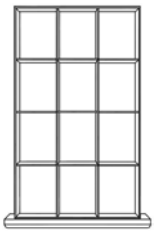
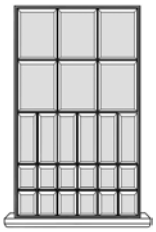
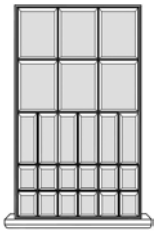
Product illustration	Technical data	W / D / H in mm	Order no.
	**Height adjustment for levelling workbench** • Adjustment range: 28 to 65 mm		ST8070-9K
	**Storage box for side wall** • For insertion in side wall • Colour: light grey, RAL 7035		ST8070-9F
	**Hook rail for side wall** • For insertion in side wall • Colour: light grey, RAL 7035		ST8070-9G
	**Drawing pouch for side wall** • DIN A4, self-adhesive • Colour: light grey		ST8070-9H

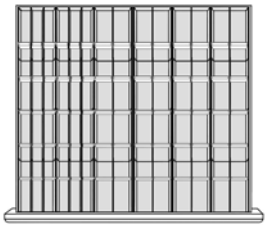
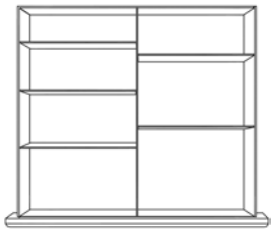
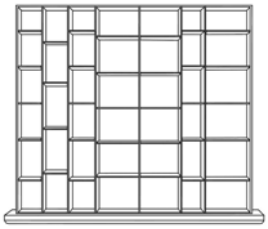
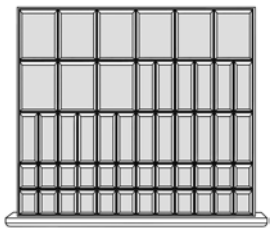
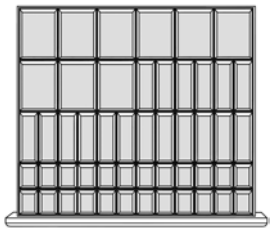
Chests of Drawers

Product illustration	Technical data	W / D / H in mm	Order no.
	**Chest of drawers with 5 drawers** • Stable, welded steel-plate shell • Rotating cylinder lock with central locking • Drawers have ball bearings on steel guides • Half-opening, E80 = 80%, 80 kg loading capacity • Housing and drawers made of 1.00-mm fine sheet metal • Height: 810 mm	565 x 700 x 810	ST8070-7A
	**Chest of drawers with 6 drawers** • Stable, welded steel-plate shell • Rotating cylinder lock with central locking • Drawers have ball bearings on steel guides • Half-opening, E80 = 80%, 80 kg loading capacity • Housing and drawers made of 1.00-mm fine sheet metal • Height: 810 mm	565 x 700 x 810	ST8070-7B
	**Chest of drawers with 6 drawers** • Stable, welded steel-plate shell • Rotating cylinder lock with central locking • Drawers have ball bearings on steel guides • Half-opening, E80 = 80%, 80 kg loading capacity • Housing and drawers made of 1.00-mm fine sheet metal • Height: 1020 mm	565 x 700 x 1020	ST8070-7C

Product illustration	Technical data	W / D / H in mm	Order no.
	**Chest of drawers with 5 drawers** • Stable, welded steel-plate shell • Rotating cylinder lock with central locking • Drawers have ball bearings on steel guides • Fully opening, V100 = 100%, 100 kg load capacity • Housing and drawers made of 1.00-mm fine sheet metal • Height: 810 mm	1015 x 700 x 810	ST8070-7D
	**Chest of drawers with 6 drawers** • Stable, welded steel-plate shell • Rotating cylinder lock with central locking • Drawers have ball bearings on steel guides • Fully opening, V100 = 100%, 100 kg load capacity • Housing and drawers made of 1.00-mm fine sheet metal • Height: 810 mm	1015 x 700 x 810	ST8070-7E
	**Chest of drawers with 6 drawers** • Stable, welded steel-plate shell • Rotating cylinder lock with central locking • Drawers have ball bearings on steel guides • Fully opening, V100 = 100%, 100 kg load capacity • Housing and drawers made of 1.00-mm fine sheet metal • Height: 1020 mm	1015 x 700 x 1020	ST8070-7F

Drawer Inserts

Product illustration	Technical data	W / D / H in mm	Order no.
	**Drawer insert, 565** **with tray recesses** • 12 recessed trays with 9 recesses and 45 recess dividers, 34/46/70 mm • 2 plastic dividers, 225 mm • Height of drawer: 60 mm	450 x 600 x 60	ST8070-9M
	**Drawer insert, 565** **with 6 adjustable compartments** • 1 rail, 600 mm • 4 dividers, 225 mm • For drawer heights 150 and 180 mm	450 x 600 x 150	ST8070-9N
	**Drawer insert, 565** **with 12 adjustable compartments** • 2 rails, 600 mm • 9 dividers, 150 mm • For drawer heights 90 and 120 mm	450 x 600 x 90	ST8070-9P
	**Drawer insert, 565** **with foam rubber insert** • 1 foam rubber insert	450 x 600 x 5	ST8070-9R
	**Drawer insert, 565** **with 24 boxes for small components** • 6 small boxes, 150 x 150 mm • 6 small boxes, 150 x 75 mm • 12 small boxes, 75 x 75 mm • Height of drawer: 60 mm	450 x 600 x 60	ST8070-9S
	**Drawer insert, 565** **with 24 boxes for small components** • 6 small boxes, 150 x 150 mm • 6 small boxes, 150 x 75 mm • 12 small boxes, 75 x 75 mm • For drawer heights 90 and 120 mm	450 x 600 x 90	ST8070-9T

Product illustration	Technical data	W / D / H in mm	Order no.
	**Drawer insert, 1015** **with tray recesses** • 24 recessed trays with 5 recesses and 80 recess dividers 46/70 mm • 1 rail, 600 mm • Height of drawer: 60 mm	900 x 600 x 60	ST8070-9U
	**Drawer insert, 1015** **with 7 adjustable compartments** • 1 rail, 600 mm • 5 dividers, 450 mm • For drawer heights 150 and 180 mm	900 x 600 x 150	ST8070-9V
	**Drawer insert, 1015** **with 42 adjustable compartments** • 6 rails, 600 mm • 40 dividers, 75/100/150/225 mm • For drawer heights 90 and 120 mm	900 x 600 x 90	ST8070-9W
	**Drawer insert, 1015** **with foam rubber insert** • 1 foam rubber insert	900 x 600 x 5	ST8070-9X
	**Drawer insert, 1015** **with 51 boxes for small components** • 9 small boxes, 150 x 150 mm • 18 small boxes, 150 x 75 mm • 24 small boxes, 75 x 75 mm • 1 rail • Height of drawer: 60 mm	900 x 600 x 60	ST8070-9Y
	**Drawer insert, 1015** **with 51 boxes for small components** • 9 small boxes, 150 x 150 mm • 18 small boxes, 150 x 75 mm • 24 small boxes, 75 x 75 mm • 1 rail • For drawer heights 90 and 120 mm	900 x 600 x 90	ST8070-9Z

Assembly Trolleys

Product illustration	Technical data	W / D / H in mm	Order no.
	**Assembly trolley** With 4 drawers (90/120/180/210 mm) • Stable sheet metal body with 3-sided bobbin at the edge, 20 mm high • Oil-tight, ribbed rubber inserts and handles • 2 casters with steering and 2 plain casters • Central locking and pushbutton for unlocking individual drawers – opening one at a time, preventing the whole unit from tipping • Can be rolled under standard SybaWork workbenches • Edging diameter: 125 mm • Body colour: RAL 7035 light grey • Front colour: RAL 5023 horizon blue	565 x 700 x 905	ST8070-6A
	**Assembly trolley** With 5 drawers (60/90/120/150/180 mm) • Stable sheet metal body with 3-sided edging 20 mm high • Oil-tight, ribbed rubber inserts and handles • 2 casters with steering and 2 plain casters • Central locking and pushbutton for unlocking individual drawers – opening one at a time, preventing the whole unit from tipping • Can be rolled under standard SybaWork workbenches • Edging diameter: 125 mm • Body colour: RAL 7035 light grey • Front colour: RAL 5023 horizon blue	565 x 700 x 905	ST8070-6B

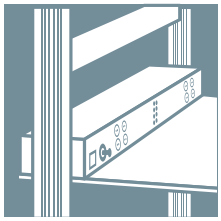
Vices and Accessories

Product illustration	Technical data	W / D / H in mm	Order no.
	**Parallel vice, width: 120 mm** • Forged entirely from steel and unbreakable • Forged jaws • Large clamping depth • Simple central guide adjustable without special tools • Large finished surfaces on all sides ensure precision and durability • Quick-acting and strong thanks to two-way trapezoidal thread • Powder coated • Jaw width: 120 mm • Span length: 150 mm • Depth: 65 mm • Depth for pipes: 16-55 mm approx.		ST8080-2A
	**Height adjustment for parallel vice** • Continuous height adjustment by 300 mm • Rotatable by 360° • Clamped by a lever to prevent accidents		ST8080-2B
	**Height adjustment with fold-away mechanism for parallel vice** • With safety clamp • When not in use, the vice can be folded away under a workbench. • The same equipment also allows for the vice to be adjusted in height by up to 175 mm and rotated by 360°		ST8080-2C


Erste Hilfe

LUCAS-NÜLLE

SybaEquip



SybaEquip

Equipment for Technical Facilities in Education

SybaEquip rounds off the overall SybaLab concept. With useful accessories like chairs, boards and projections screens Lucas-Nülle is your one-stop partner for comprehensive outfitting.

Chairs
All the chairs focus on ergonomics, high-quality, long-lasting covers and individual adjustability. The assortment covers a wide range from rigid models to individually adjustable swivel chairs with shock absorbers, casters, moving backrests and armrests.

Chalk boards
Enamelled steel-plate base plates with a sandwich design and veneered. Thickness of board: 24 mm. The edges of the writing surface have natural anodised aluminium profiles adhered to them in watertight fashion. All corners are edged with rounded plastic caps.

Projection screens
Matt white projection screens for the use of video, graphic or CAD/CAM projection. The reflection properties of the screen are good even up to observation angles of 45° to the right or left of the projection axis and the gain factor is 1:1.

Holders for measuring leads
Organised storage of measuring leads prevents knotting and time-consuming unravelling. For proper storage of leads, various models of suitable lead holders are available in the range.

Training panel mounting frames
Free-standing training panel frames with aluminium profile rails to accommodate training panels of heights matching the DIN-A4 standard. The aluminium profile rails with inward facing brushes allow training panels to be exchanged quickly, quietly and without using tools.

Chairs

Product illustration	Technical data	W / D / H in mm	Order no.
	**Office swivel chair with continuous height adjustment via gas lift** • PAGHOLZ seat, melamine-coated • Continuous height adjustment from 38 to 56 cm by means of a gas lift mechanism with top release • 5-spoke, non-tipping aluminium base with epoxy-resin coating		
	With plastic feet		ST7004-5B
	With casters		ST7004-7B
	**Office swivel chair with continuous height adjustment via gas lift** • Ergonomically designed, shaped WOOD-MARK seat • Melamine-coated seat • Rotating seat • Continuous height adjustment from 40 to 58 cm by means of a gas lift mechanism with top release • 5-spoke, non-tipping aluminium base with epoxy-resin coating		
	With plastic feet		ST7004-5G
	With casters		ST7004-7G
	**Stackable chair with ergonomically designed, shaped seat** • Seat with impressed texturing • Frame made of 20/1.5-mm round tubing with strong seat base • Epoxy-resin coating • Beech seat varnished in natural colours • Plastic feet		ST7004-5L

Product illustration	Technical data	W / D / H in mm	Order no.
	**Steel-tubing chair with ergonomically shaped WOODMARK seat** • Seat with impressed texturing • Oval-tubing frame, 35/1/2 + 2.5 mm, with strong plate to support the sitting surface • Seat frame made of rectangular tubing, 30/15/2 mm • Epoxy-resin coating • Colour: decorative beech • Plastic feet		ST7004-7A
	**Mobile tubing chair with ergonomically shaped PAGHOLZ seat** • Seat with impressed texturing • Round-tubing frame, 25/2 + 2.5 mm, with strong plate to support the sitting surface • Epoxy-resin coating • Beech seat varnished in natural colour • Plastic feet		ST7004-7L
	**Padded swivel chair, continuous height adjustment via gas lift** • Swivel chair with armrests • Padded seat and back • Height adjustment for seat via gas lift, 45–56 cm (approx.) • Black plastic cross-shaped base with casters • Mechanical adjustment for height and inclination of seat back • Height of seat back: 38 cm • Seat and back covered with black plastic		
	Without armrests		ST7004-5M
	With armrests		ST7004-5N

Chalk Boards and Projector Screens

Product illustration	Technical data	W / D / H in mm	Order no.
	**Long wall-mounted chalk board** • Enamelled steel plate with supporting boards glued on in sandwich fashion Thickness of boards: 24 mm • Writing surface, 0.5-mm-thick green enamelled steel plate – for writing on with chalk • Magnetic • Edges are bordered by natural anodised aluminium profile edging and rounded plastic corners • Edging is watertight • With ledge for chalk • No ruling	1000 x 25 x 1000	ST8081-1A
		1500 x 25 x 1000	ST8081-1B
		2000 x 25 x 1200	ST8081-1C
		2500 x 25 x 1200	ST8081-1D
	**Folding chalk board** • See long wall-mounted chalk board • Large grip rails and chalk ledge • 2 ledges for chalk and dusters at the sides made of natural anodised aluminium with flush plastic caps at corners • Chalkdust ledges under side wings • Welded steel-plate design, powder coated • Chain shaft with counterweights • Trolley on 8 nylon casters with ball bearings • Aluminium guide rails for quiet and low-maintenance movement of boards • End position buffered with springs and rubber stoppers	4000 x 25 x 1200	ST8081-2A
		5000 x 25 x 1200	ST8081-2B
	**Projection screen** Matt white projection screens for the use of video, graphic or CAD/CAM projection. • 100% opaque rear coating • Behaviour in case of fire as per DIN 4102 • Even reflective properties at viewing angles of 45° either side of the projector axis • Magnification: 1.1 • Diffusely scattering cloth, type D as per DIN 19045 • Extruded natural anodised aluminium housing • Height of screen can be continuously adjusted via a stopper mechanism that prevents the screen being pulled out beyond its maximum extension • With fastenings for wall mounting		
	Projection screen with winder	1500 x 110 x 1500	ST8081-3A
	Projection screen with winder	2000 x 110 x 2000	ST8081-3B
	Projection screen with motor	1500 x 110 x 1500	ST8081-3F
	Projection screen with motor	2000 x 110 x 2000	ST8081-3G

Product illustration	Technical data	W / D / H in mm	Order no.
	**Whiteboard** • Board with enamel surface • Magnetic • For writing on with marker pens that can be cleaned off with a dry cloth • Includes pen groove • Aluminium frame • Storage shelf • Supplied with attachment set	1800 x 25 x 1200	ST8081-9E
	**Whiteboard, double-sided** • Whiteboard on stand with aluminium frame • Magnetic • For writing on with board markers that can be cleaned off with a dry cloth • Mobile trolley with 4 smooth casters, 2 with brakes • Board can be turned by 360°	1500 x 25 x 1200	ST8081-9F
	**SMART Board** • Interactive whiteboard including projector and projector attachment • XGA projector emitting 2500 ANSI lumen • Very quiet, 28 dB, 8-W speaker • Robust board with melamine resin coating suitable for writing on • Passive electromagnetic resonance technology with writable surface • Serial or USB port	2270 x 25 x 1340	ST8081-4A

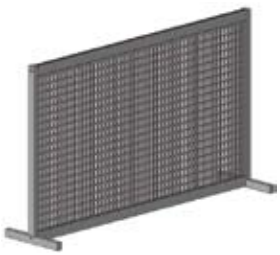
Chalk Boards and Projector Screens

Product illustration	Technical data	W / D / H in mm	Order no.
	**Flipchart** Mobile flipchart, which can be extended by means of two pivoting and locking attachments to hold two additional charts. • Height adjustable • White surface • For writing on with board marker pens • Can be cleaned with a dry cloth		
	Mobile flipchart	700 x 25 x 920	ST8081-9A
	Flipchart pads, 50 pages	650 x 10 x 920	ST8081-9B
	4 x refillable marker pens for flipcharts (blue, green, red, black)		ST8081-9C
	**Chalk, white** • With paper sleeves • Four-sided • Pointed • Contents: 12 lengths of chalk		ST8081-9K
	**6-piece drawing equipment set for blackboards** • Made out of unbreakable and impact-resistant plastic • Storage plate for wall mounting • 1 ruler with decimetre and centimetre scales, 100 cm long with magnetic grip • 1 magnetic protractor • 1 45° magnetic set square • 1 60° magnetic set square • 1 fibreglass pointer baton, 100 cm long • 1 compass with suction base and clamp for chalk		ST8081-9M

Accessories for Technical Facilities

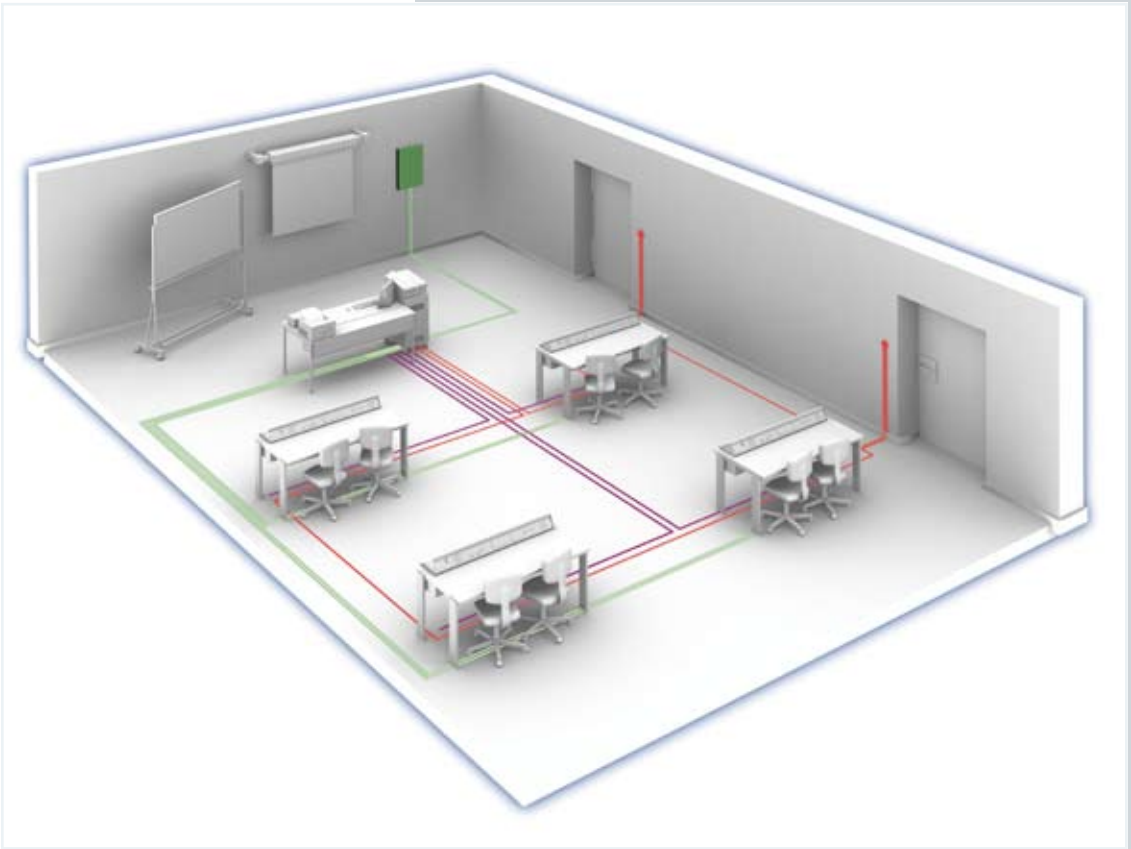
Product illustration	Technical data	W / D / H in mm	Order no.
	**First-aid kit** • First-aid kit for commercial premises with standard contents as per DIN 13 169 • Devised for mobile and stationary use • Wall mounting • Various first-aid items	700 x 180 x 500	ST8081-9J
	**Key cabinet for 36 keys** • Variable height key rails • Doors open by more than 90° • High-quality lock with two keys • Supplied with 6 key fobs	300 x 85 x 300	ST8081-9L
	**Waste bin, 20l** • Volume: 20 l • Colour: black • Material: flame-retardant polystyrene conforming to DIN 4102 B1 • Conical shape • Fire-resistant rim to prevent smouldering	238 x 238 x 340	ST8081-9G
	**Pedal bin, 68 l** • Robust and rust-free • Tight-sealing lid • Rounded corners for easy cleaning and disinfection • Volume: 68.1 l • Material: polythene • Non-deformable • Tough, quiet pedal	502 x 410 x 673	ST8081-9H

Training Panel Mounting Frames and Punched Hole Panels

Product illustration	Technical data	W / D / H in mm	Order no.
	**Experiment frame, 1 level, 30° angle** • Sides consisting of rectangular steel tubing, 30 x 30 x 2 mm • Naturally brushed aluminium profile rails to hold panels of height DIN A4 • Inner brush strips • Depth of base: 300 mm	1230 x 300 x 380	ST8003-1A
		500 x 300 x 380	ST8003-1B
	**Experiment frame, 1 level** • T-shaped base, depth of base: 160 mm • Sides consisting of rectangular steel tubing 30 x 30 x 2 mm • Naturally brushed aluminium profile rails to hold panels of height DIN A4 • Inner brush strips • 2 T-shaped bases	724 x 160 x 400	ST8003-1V
	**Experiment frame, 2 levels** • T-shaped base, depth of base: 160 mm • Sides consisting of rectangular steel tubing 30 x 30 x 2 mm • Naturally brushed aluminium profile rails to hold panels of height DIN A4 • Inner brush strips • 2 T-shaped bases	1160 x 160 x 740	ST8003-1C
		1460 x 160 x 740	ST8003-1S
		1760 x 160 x 740	ST8003-1U
	**Experiment frame, 3 levels** • T-shaped base, depth of base: 160 mm • Sides consisting of rectangular steel tubing 30 x 30 x 2 mm • Naturally brushed aluminium profile rails to hold panels of height DIN A4 • Inner brush strips • 2 T-shaped bases	1160 x 160 x 740	ST8003-1D
		1460 x 160 x 740	ST8003-1T
		1760 x 160 x 740	ST8003-1R
	**Tabletop punched hole panel with T-shaped base** • T-shaped base, depth of base: 300 mm • Rectangular perforations 5 x 10 mm • Thickness of lugs: 3 mm • Thickness of steel: 1.5 mm	1160 x 300 x 745	ST8003-4B
		1460 x 300 x 745	ST8003-4D
		1560 x 300 x 745	ST8003-4F
		1760 x 300 x 745	ST8003-4E

Holders for Measuring Leads

Product illustration	Technical data	W / D / H in mm	Order no.
	**Mobile cable stand** • Steel tubing frame with 5 wheels, colour: RAL 7047 powder coated • 5 casters • Beech board coated on both sides, 40 mm thick • Holds 132 cables	600 x 600 x 1600	ST8003-8A
	**Mobile cable stand** • Mobile cable holder made of rectangular aluminium tubing • Aluminium tubing frame with 4 legs • 4 casters • 2 plastic rails for hanging cables • Holds at least 300 cables	550 x 400 x 1300	ST8003-8B
	**Wall mounting cable storage unit** • For well organised storage of connecting leads • The cable holder is suitable for mounting on walls or cabinets		ST8003-8D



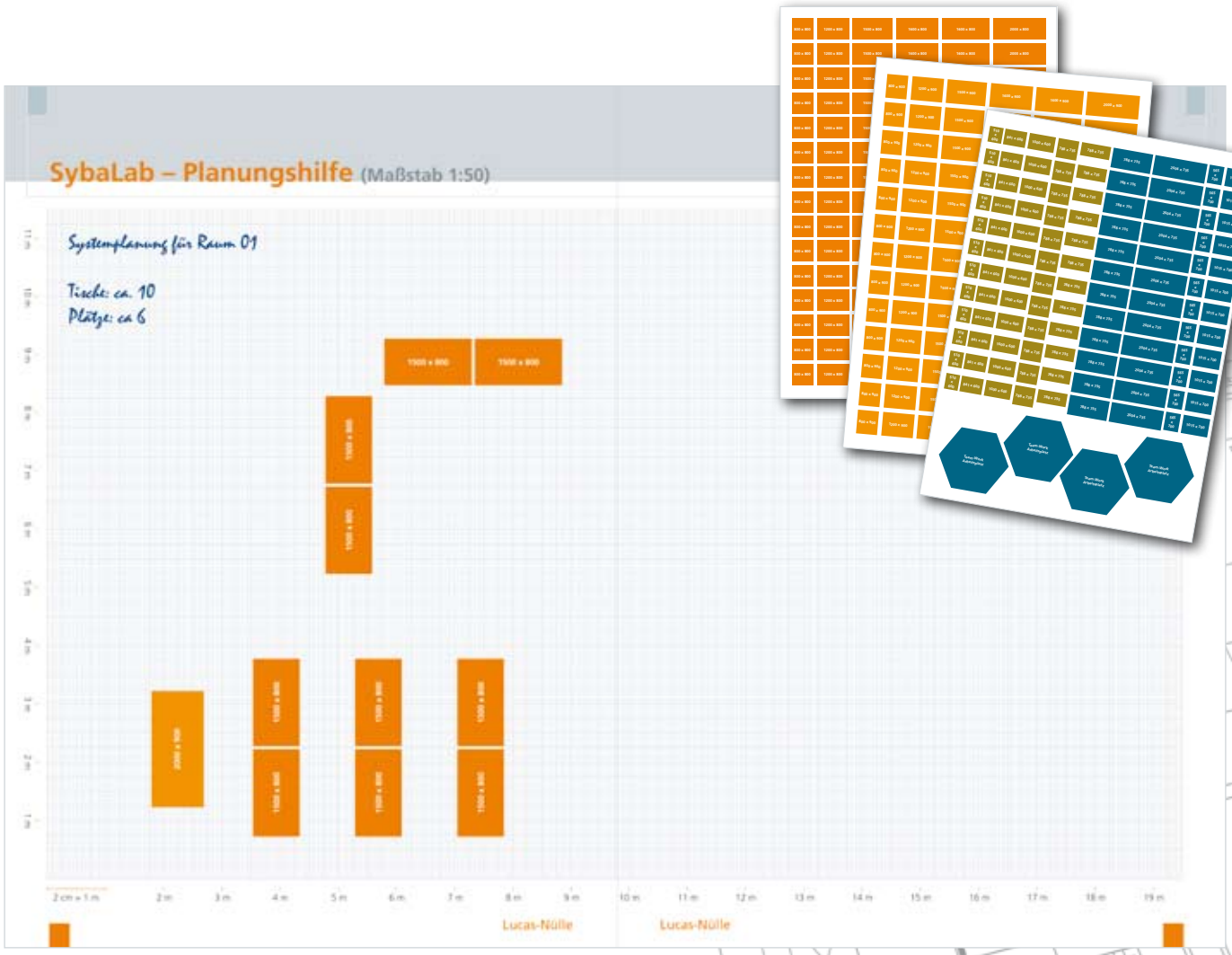
LUCAS-NÜLLE

SybaPlanning

SybaLab Planning Tool

First Step: Planning the Laboratory

The SybaLab planning tool allows you to plan and design your own lab to meet your particular needs and requirements with little effort. It lets you move things around, puzzle things out, try out various sizes and combinations. At the end you can simply attach your desired solution to an order form and send it to Lucas-Nülle.



1. Tear off the SybaLab planning aid at the back of this catalogue.
2. Write down your name, address and contact number on the form.
3. Pop out the appropriately sized furniture from the template.
   - **SybaPro = Orange 800, Orange 900**
   - **SybaStore = Olive green**
   - **SybaWork = Blue**
4. Room sizes of up to 20 x 12.5 m should be sketched on millimetre-squared paper.
5. Place the furniture taking into account the minimum separation between student workplaces (see Standards and Guidelines).
6. Write the desired order no. on the selected templates.
7. Laboratory tables can be equipped with under-table cabinets, training panel frames and power supply ducts as desired (see ordering example on page 27).
8. Plan the layout of your power supply ducts (page 49) taking into account the applicable safety regulations.
9. Remove the adhesive on the back and adhere furniture templates at the desired positions.
10. Use the last page to note down any queries, remarks and notes.

Standards and Guidelines

Standards and Guidelines for Planning and Fitting Out Technical Rooms for Electrical Teaching

During electrical teaching, experimental work and theory are closely bound together. The experimental part often switches between demonstrations and student experiments. This is a key factor in determining the size of rooms and the equipment fitted in them. This planning aid should give those responsible for planning and fitting out technical facilities some tips regarding the proper outfitting and functionality of rooms used for electrical teaching. It is a source of advice for schools and school authorities. As such, it is not binding with regard to the school buildings or the number, size and furnishing of classrooms. It is more a recommendation. Note that the following guidelines only apply in Germany but that they are still used by Lucas Nülle as a basis for their installations anywhere in the world.

Prevention of Accident Guidelines for Schools and Colleges

GUV-V S1

This guideline for the prevention of accidents refers to the design of in-built facilities accessible to students in ordinary educational establishments to ensure they are appropriate for students' use. It also applies to similar buildings and fittings in vocational training establishments.

Floors	
§ 5 GUV-V S1, Para. 1	Note
Floor coverings must have non-slip properties appropriate for use in schools for the type of flooring in question.	The procedure for testing non-slip properties is specified in DIN 51 130 "Testing of floor coverings – Determination of the anti-slip properties – Workrooms and fields of activities with slip danger, walking method – Ramp test".
§ 5 GUV-V S1, Para. 2	Note
In any areas frequented by students, anything they could trip over, including single steps, should be avoided. If individual steps cannot be avoided, they must be clearly distinguished from the adjoining surfaces.	Places where people might trip can be avoided in the following ways: • Door stops or wedges should be placed no more than 15 cm from the wall • Foot mats and floor coverings should be laid flush • Single steps are to be avoided • Where communal showers are provided, they should not have any steps • Any protruding parts of the building's supporting construction should be shielded from surrounding facilities The difference between individual steps and the adjoining surfaces can be highlighted e.g. by the following: • Contrasting colours • Differing material textures • Illumination of the step
§ 5 GUV-V S1, Para. 3	Note
In order to ensure that surfaces are non-slip, measures should be taken in doorways where dirt and water could be left behind.	Dirt and moisture would be sufficiently avoided if, for example, large door mats covering the full width of the doorway are placed at entrances to the buildings. They should be at least 1.50 m wide.

Prevention of Accident Guidelines for Schools and Colleges GUV-V S1

Walls, pillars	
§ 6 GUV-V S1, Para. 1	Note
Surfaces of walls and pillars should be such that there is no risk of injury due to inadvertent contact up to a height of 2.00 m above the floor. If it is not possible to avoid the risk of injury due to inadvertent contact, the degree of risk must be kept to a minimum.	Injuries can be minimised, for example, if the surfaces of walls or pillars have the following properties: • Masonry fully pointed and made of stone with a smooth surface • Concrete masonry with no protrusions • Wood panels with chamfered edges • Fully grouted ceramic tiles • Smooth plaster • Malleable paint or coverings without sharp or rough textures
§ 6 GUV-V S1, Para. 2	Note
Corners and edges of walls and pillars may have no sharp edges up to a height of 2.00 m above the floor.	Ways to avoid corners and edges of walls having sharp edges include the following: • For steel or wood, the edges should be rounded (radius ≥ 2 mm) or appropriately chamfered • For concrete or masonry, edges should be of small angle or rounded • For plaster, rounded corner rails should be used

Glazing and other surfaces transparent to light	
§ 7 GUV-V S1, Para. 1	Note
In any areas frequented by students, glazing or transparent surfaces need to be made of materials that are unbreakable up to a height of 2.00 m above the floor, otherwise they should be protected.	Materials for glazing or other transparent surfaces may be considered unbreakable if, when stressed by impacts or bending (e.g. if someone runs into the pane), no sharp or pointed shards result. When unprotected, glazing should consist of single-pane safety glass or compound safety glass. Wire-reinforced glazing alone is not sufficient to meet the safety objectives. Glazing or other transparent surfaces may be considered to be protected if the following circumstances apply: • Barriers at least 1.00 m high are situated at least 20 cm in front of the glazing or the glass is situated behind flower beds which serve as a protective zone • Windows have railings that are at least 80 cm high and sills at least 20 cm deep • Cupboards and cabinets are located in technical side rooms

Glazing and other surfaces transparent to light	
§ 7 GUV-V S1, Para. 2	Note
Glazing and other surfaces transparent to light should be easily and clearly recognisable to students.	Examples of how glazing and other transparent surfaces can be made obvious include the following: • Coloured stickers • Cross bars • Guard rails • Window railings • Texturing or colouring of glass surfaces

Barriers	
§ 8 GUV-V S1, Para. 1	Note
Any areas frequented by students that are between 0.30 m and 1.00 m above another surface and are not included as part of terraced seating so that there is a risk of falling, must be guarded with barriers.	Examples of how such areas can be protected include the following: • Barriers (banisters or railings) • Flower beds or troughs • Benches • Clear labelling or marking Any areas frequented by students that are more than 1.00 m above another surface in schools are covered by local building regulations relating to preventing students falling and in the prevention of accident guidelines titled "General guidelines" (GUV-V A 1, formerly GUV 0.1), though this applies to heights over 1.00 m only.
§ 8 GUV-V S1, Para. 2	Note
Barriers must be safely designed in accordance with their use in schools. It must be impossible for students to slide down them, climb on them, sit on them or stand objects on them.	Barriers are safely designed, for example, if they have gaps no wider than 12 cm in at least one direction and the distances between the barriers and the surfaces being guarded are no greater than 4 cm. Ways to avoid misuse by students: • Sliding is eliminated if the distances between the inner banister in a stairwell and the outer banister and the stairway walls are no greater than 20 cm. Otherwise, the banisters should be designed in such a way that there are suitable design elements that break up the line at regular intervals, although attached balls and spikes are not permitted • Climbing can be eliminated if ladder-like design elements are avoided • It will not be possible to sit or put things on the railing if no suitable surfaces are provided

Prevention of Accident Guidelines for Schools and Colleges GUV-V S1

Stairs, ramps	
§ 9 GUV-V S1, Para. 1	Note
Stairs and ramps must be designed to be safe and suitable for use in schools.	Examples of how this can be achieved include ensuring that the steepness accords with a size of step given by 2 s + a = 59 cm to 65 cm (s = height of step, a = depth of step surface, see DIN 18 065), whereby the height of the step may be no less than 17 cm and the depth of the step surface no less than 28 cm. In order to reach the safety objective for stairs that curve, the minimum depth of the step surface may be no less than 23 cm and no greater than 40 cm, as measured at a distance of 1.25 m from the stair string on the inside. For stairs that are seldom used, it is permissible to diverge from these measurements. Ramps in hallways are considered safe if the gradient is no steeper than 6%. For stairs, the instructions for schools in the trade association data sheet "Floors in workplaces and working areas where slipping may occur (GUV-R 181, formerly GUV 26.18)" should be observed. The edges of stairs should be chamfered or slightly rounded.
§ 9 GUV-V S1, Para. 2	Note
Stairs must be easily distinguishable.	This might be achieved by marking or illumination, for example.
§ 9 GUV-V S1, Para. 3	Note
Both stairways and ramps should have handrails on both sides, which provide something secure for students to hold on to all along their length. It should be impossible to get caught on the rails.	This might be achieved by ensuring, for example, that handrails do not have open ends or extending stairway banisters onto the landings. Examples of ways to ensure that handrails are safe to hold on to include: • Ensuring that they are easy to reach for all people needing them • Ensuring they are easy to grip
§ 9 GUV-V S1, Para. 4	Note
Any open areas under landings or stairways which provide a passageway of less than 2.00 m should be secured if they are accessible to students to prevent the risk of injury to those walking beneath them inadvertently.	Guarding open areas under landings or stairways might be achieved, for example, by the use of furnishings or barriers.

Doors, windows	
§ 10 GUV-V S1, Para. 1	Note
The doors to a room should be laid out in such a way that students are not endangered by the door opening outwards.	Ways to achieve this include the following: • Doors open into rooms • Doors are recessed in niche. Doors opening outwards may not protrude at their greatest extent more than 20 cm into an escape. This includes the door handles • Doors are placed at the end of a corridor • Doors for rooms used by more than 40 people or where there is an elevated risk of fire (e.g. chemistry labs, workshops) should open in the direction of an escape route

Doors, windows	
§ 10 GUV-V S1, Para. 2	Note
Windows must be designed in such a way that they present no risk of injury to students when opening or closing or when they are held open.	This can be achieved, for example, in the following ways: • Tilting and hinged window panes are secured so that they cannot fall down • The degree to which hinged windows open should be limited by a suitable mechanism • Handles for turning or tilting should have a securing mechanism • Fittings for sliding windows should have a braking mechanism so that no part of a person can get trapped in them. There must, however, be no restriction to the windows' functioning for the purpose of ventilation
§ 10 GUV-V S1, Para. 3	Note
Handles, levers and locks must be designed and laid out in such a way that they present no risk of injury to students when used properly.	Safe design and layout can be achieved, for example, in the following ways: • Handles and levers are rounded and placed at least 2.5 cm from the adjacent edge • Levers for emergency release can be turned from the side or designed as a rocker mechanism • Levers for skylights are recessed into window niches or are situated more than 2.00 m above the floor • Handles and levers can be operated from a safe place

Furnishings	
§ 11 GUV-V S1, Para. 1	Note
Corners, edges and any hooks lower than a height of 2.00 m above the floor on furniture located in areas frequented by students should be designed or secured in such a way that there is no risk of injury to the students.	Risk of injury can be avoided if corners, edges and hooks on furniture, whether fitted or movable, are either rounded (radius ≥ 2 mm) or appropriately chamfered. Cloakroom hooks should be rounded or screened off.
§ 11 GUV-V S1, Para. 2	Note
Furniture should be placed and any moving parts designed in such way that they present no risk of injury to students when used properly.	Risk from furniture can be avoided if care is taken to ensure that essential routes inside a room are not constricted. Examples of ways to prevent students getting trapped in the moving parts of a furnishing include the following: • Safety distances are sufficient as per DIN EN 294 and DIN EN 349 • Protection conforming to DIN 31 001-1
§ 11 GUV-V S1, Para. 3	Note
Boards in classrooms should be safe in design, attachment and location.	Boards are considered safe in design, attachment and location, for example, if the instructions in the GUV information document "Safe boards in classrooms" (GUV-SI 8016, formerly GUV 26.2) are obeyed.
§ 11 GUV-V S1, Para. 4	Note
Students should be provided with chairs and tables appropriate to their build and in keeping with the latest technological developments.	This requirement would be fulfilled, for example, if the instructions in DIN ISO 5970 and in GUV information document "Correct seating posture in schools" (GUV-SI 8011, formerly GUV 20.52) were followed.

Prevention of Accident Guidelines for Schools and Colleges GUV-V S1

Lighting using artificial light	
§ 12 GUV-V S1, Para. 1	Note
Any places frequented by students in buildings must be provided with sufficient artificial light appropriate to their use in schools.	Lighting in a building is considered sufficient if it conforms to DIN 5035-4. Reference is also made to the AMEV standards body's lighting 2000 recommendation. Light switches should be easily accessible and distinguishable and should be located close to entrances and exits. They are considered easy to distinguish, for example, if light switches are provided with a self-illuminating safety light in any rooms not lit by sunlight.

Unauthorised access, escape routes	
§ 21 GUV-V S1, Para. 1	Note
It should be possible for rooms used for technical purposes to be secured.	Rooms are secured against unauthorised access, for example, if all the doors to the room can be locked and no handles are provided on the side facing a thoroughfare (e.g. a hallway).
§ 21 GUV-V S1, Para. 2	Note
If rooms used for technical purposes have an elevated fire risk, there must be at least two safe escape routes from them.	This objective can be achieved if the rooms with elevated fire risk (e.g. chemical labs, woodwork rooms) have convenient exits as widely separated as possible. A suitably labelled and designed window may also be permissible as a second exit if it represents a safe escape route. Doors used for escape routes should open in the direction of escape and it should be possible to open them from inside at any time without any other aids.

Electrical systems	
§ 22 GUV-V S1, Para. 1	Note
In rooms used for technical purposes and containing student desks and/or demonstration stands, the electrical wiring should be installed to a standard matching the latest state of the art for this type of area.	For the installation of electrical wiring, the state of the art is defined in DIN VDE 0100-723, including the amendments included in E DIN VDE 0100-723/A1 Amendments A 1.

Floors in rooms used for technical purposes	
§ 23 GUV-V S1, Para. 1	Note
Floors in rooms used for technical purposes and where hazardous substances may be used should be designed in such a way that such substances are prevented from penetrating the floor.	Penetration of floors by hazardous substances in classrooms, preparation facilities or assembly rooms of this kind can be avoided if the floor coverings are impermeable, sealed at all joints and resistant to the corrosive materials falling onto them.
§ 23 GUV-V S1, Para. 2	Note
In rooms used as workshops or for teaching of technical subjects, the floor should remain effectively non-slip even if covered in dust.	Floors that have suitable non-slip properties even if covered in dust include the following: • Unsealed industrial parquet flooring (wooden flooring) • Unsealed screed The requirement is also fulfilled, for example, if the instructions in the data sheet "Floors in workplaces and working areas where slipping may occur (GUV-R 181, formerly GUV 26.18)" are obeyed.

Transport of materials	
§ 24 GUV-V S1, Para. 1	Note
It must be possible to transport equipment and materials safely between classrooms, assembly rooms and store rooms.	Safe transport of equipment and material can be achieved, for example, by the following: • Transport routes should be as short as possible and free of steps or thresholds • Suitable assistance can be used (e.g. mobile lab trolleys)

Workplaces in technical facilities	
§ 25 GUV-V S1, Para. 1	Note
In any rooms used for teaching science, suitable measures need to be taken to prevent any risk to students when performing experiments at lab benches or tables.	This can be achieved, for example, if the distance between the teacher's desk and the students' tables is at least 1.20 m or a suitable protective window is provided.
§ 25 GUV-V S1, Para. 2	Note
The distances between students' tables or workbenches should be such that students do not get in each others' way during practical experiments or work.	Students getting in each others' way can be prevented, for example, if there is a minimum distance of 0.85 m between the tables or workbenches or at least 1.50 m if the students are working back to back.
§ 25 GUV-V S1, Para. 3	Note
Furniture fitted with fixed piping and/or wiring for gas and electricity must be secured in such a way that the pipes or wires cannot be broken.	Fixed gas or electricity supplies attached to furniture are considered unable to break away if the furniture (e.g. students workbench) is firmly attached to the wall or floor.
§ 25 GUV-V S1, Para. 4	Note
In rooms used for teaching computer studies, workplaces used by students should be set up according to the latest state of the art.	This requirement is fulfilled, for example, if the instructions in the GUV information document "Safe and fit using PCs in school" (GUV-SI 8009, formerly GUV 20.48) are followed.

Unauthorised use of machines and other equipment	
§ 27 GUV-V S1	Note
In rooms used for technical purposes, it must be possible for machines and other equipment, to which students are not permitted access or are not allowed to use except under instruction and supervision, to be secured.	Machines and other equipment are safely secured, for example, if the machines each have safety switches or they are located in special lockable rooms.

First aid	
§ 28 GUV-V S1	Note
Those responsible for an establishment are obliged to ensure that effective first-aid facilities for students are provided in suitable quantity.	This can be achieved if the instructions in the data sheet "First aid in schools" (GUV-SI 8065, formerly GUV 20.26) and the relevant specifications in GUV regulations "Dealing with hazardous substances when teaching lessons" (GUV-SI 2003, formerly GUV 19.16) are obeyed.

DIN / VDE

Construction of Low-Voltage Installations – Classrooms with Facilities for Experiments

DIN/VDE 0100 is a wide-ranging standard, which contains general specifications on the construction of low-voltage installations with nominal voltages up to 1000 V.

Since classrooms with experiment facilities have a high hazard risk, VDE 0100, Part 723 "Construction of low-voltage installations – Classrooms with facilities for experiments" makes additional specifications to cover the protection of people and goods during experiments and exercises using electrical energy. This is to ensure that even electrically inexperienced users can be reliably protected when using voltages that are dangerous to the touch.

Our recommendations and guidelines for planning, installation and outfitting of electrical facilities combine the key aspects of VDE 0100, especially Part 723 and provide explanations of them.

Construction of low-voltage installations – Classrooms with facilities for experiments

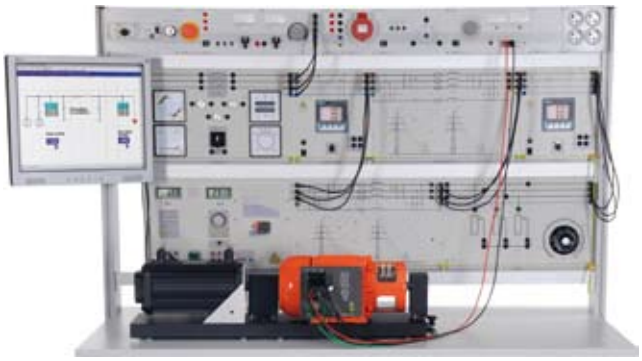
DIN VDE 0100-723

VDE 0100, Part 723 **must be** observed when constructing experimental facilities in which voltages dangerous to the touch may be used if the following conditions apply:

- There is incomplete protection against direct contact
- Only basic insulation is in existence
- Screw or crimp connectors are in use

Example:
Technical materials such as contactors, switches etc. on top-hat rails; InsTrain

DIN VDE 0100-723

Construction of low-voltage installations – Classrooms with facilities for experiments	
DIN VDE 0100-723	
VDE 0100, Part 723 does not need to be applied when fitting out classrooms with facilities for experiments if the voltages used are dangerous to come into contact with under the following circumstances: • Complete protection against direct contact can be guaranteed at all times • Appliances are connected via fixed connections or plugs that prevent direct contact, e.g. safety experiment leads are used	VDE 0100, Part 723 does not need to be applied when fitting out classrooms with facilities for experiments if the only voltages used are safe to come into contact with. Conditions: • Power supplies conforming to safety classes I, II or III • Voltages used in experiments exclusively conform to SELV or PELV standards Use of UniTrain-I system or the plug-in system for experiments is entirely sufficient for most normal classrooms.
Example: Training panel system	**Example:** UniTrain-I system, plug-in system
	

We nevertheless recommend that all experiments using dangerous contact voltages be conducted in rooms conforming to VDE 0100, Part 723, even if protection against contact is in place.

DIN VDE 0100-723

Protection against direct contact – Protection by insulation of active components	
DIN VDE 0100-723, Para. 723.412.1	Note
For single-pole connections, sockets with full protection against contact should be fitted (lab sockets, safety sockets).	In order to meet the standard, all training systems must be fitted with safety sockets.

Protection against direct contact – Additional protection via RCDs	
DIN VDE 0100-723, Para. 723.412.5	Note
If TN or TT systems are used to supply power to experiment facilities, the circuits must contain one or more RCDs with a rated differential current IΔN < 30 mA. These RCDs must be of type B.	When installing low-voltage systems, some combinations of electronic appliances could lead, in the event of a fault, to smooth DC and high-frequency AC fault currents arising, which may not be detected by conventional type-A circuit breakers. To ensure the safety of persons and prevent fire, it is therefore essential to use RCDs sensitive to all types of current, which can detect fault currents across the full width of a broad band of frequencies liable to occur in the system and, if necessary, shut off the power in the event of a fault.

Protection against direct contact – Protection via automatic shut-down of power	
DIN VDE 0100-723, Para. 723.413.1.1.1	Note
If the experiments being conducted are of a type that requires a power supply without RCDs, e.g. measurement of loop resistance, this circuit needs to be constructed in such a way that turning on the power can only be achieved by means of an isolating mechanism which can be secured against unauthorised activation.	The switches must have a mechanism for protecting against unauthorised activation (e.g. a key switch). The position of the switches and how they are switched must be clearly detectable. Switches should be laid out in such a way that students can be kept in view when the switches are being turned on.

Disconnection and switch-on – Disconnection	
DIN VDE 0100-723, Para. 723.462	Note
Experiment facilities must have the capability for all their active conductors (including the neutral conductor) to be disconnected from the power via an isolating mechanism, e.g. via the RCDs required in 723.412.5.	Power may be switched on or off individually, in groups or all at once from a central location. The state of the switch should be visible to teachers leaving the room. The central disconnection switch should not include the power for lights, appliance sockets (for vacuum cleaners etc.) or computers etc.

Disconnection and switch-on – Emergency procedure	
DIN VDE 0100-723, Para. 723.464	Note
Every experiment facility must be equipped with a mechanism for switching it off in the event of an emergency. In addition, an off switch at each exit is also a minimum requirement. If an emergency shut-off control (e.g. a mushroom switch) is used to disconnect in the event of an emergency, the control should operate one or more disconnectors.	Facilities for shutting down machines in the event of an emergency (emergency stop) may also be needed in addition. If emergency shut-off may lead to other hazards (e.g. loss of power to lights or computers), the affected circuits should not be switched off as well. There is obliged to be one mushroom switch at the teacher's desk, one at each student experiment station and at each of the laboratory's exits. There are no specifications for the distances between emergency shut-off switches. The need for additional mushroom switches to meet the local requirements (e.g. visibility, number of mobile experiment trolleys) should be determined on the basis of expert measurements. Emergency shut-down facilities need to be easily accessed quickly and without risk.

Labelling – General	
DIN VDE 0100-723, Para. 723.514.1	Note
All power supplies not part of the experiment facilities, which are nonetheless applicable for experiments (RCD, emergency shut-off facilities), must be labelled, for example as follows: "Suitable for experiments".	It must be easily distinguishable which sockets can be used for experiments.

Planning Example

"Machine Lab"

A "machine lab" serves as an example for the planning and outfitting of economical educational laboratories meeting all the legal requirements.

To ensure proper use of LUCAS-NÜLLE lab fittings, the following installation instructions should be observed. All figures refer to minimum requirements and recommendations.

Teacher's station (x 1)

- ST8032-1E – SybaPro laboratory table (1800 x 900 x 760 mm)
- ST8033-1E – 3-HU power supply duct (336 PU)
- ST8003-3D – Cap for end of power duct
- ST8007-3Y – Under-table cabinet, floor standing for partitioning
- ST8509-1D – Power distribution unit for 8 groups
- ST8007-3A – Under-table cabinet, floor standing with 4 drawers
- ST8010-8S – Floor mounting for SybaPro lab tables
- ST8008-6B – 3-phase power panel, 400 V/50 Hz (key switch, motor protection circuit breaker, AC/DC RCD, emergency shut-off) (54 PU)
- ST8008-3J – 4-way socket panel unit (24 PU)
- ST8008-4C – DC power supply, 0 to 30 V/5 A (42 PU)
- ST8008-4S – Controllable 3-phase power supply unit, 0 to 230/450 V/2 A (72 PU)
- ST8008-4L – 3-phase meter (36 PU)
- ST8008-5E – Blank panel 42 PU (x 2)
- ST8008-5C – Blank panel 24 PU

Student practical workplace (x 8)

- ST8032-1E – SybaPro lab table (1800 x 900 x 760 mm)
- ST8033-1E – 3-HU power supply duct (336 PU)
- ST8007-1A – Suspended under-table cabinet with 4 drawers
- ST8003-3Q – Experiment frame, 2 levels
- ST8010-4U – PC holder for lab tables
- ST8010-4K – Holder for TFT monitors
- ST8010-8S – Floor mounting for SybaPro lab tables
- ST8008-6B – 3-phase power panel, 400 V/50 Hz (key switch, motor protection circuit breaker, AC/DC RCD, emergency shut-down) (54 PU)
- ST8008-3J – 4-way socket panel unit (24 PU)
- ST8008-4C – DC power supply 0 to 30 V/5 A (42 PU)
- ST8008-4S – Adjustable 3-phase power supply, 0 to 230/450 V/2 A (72 PU)
- ST8008-4L – 3-phase meter (36 PU)
- ST8008-5E – Blank panel 42 PU (2 x)
- ST8008-5C – Blank panel 24 PU

Student theory workplace (x 8)

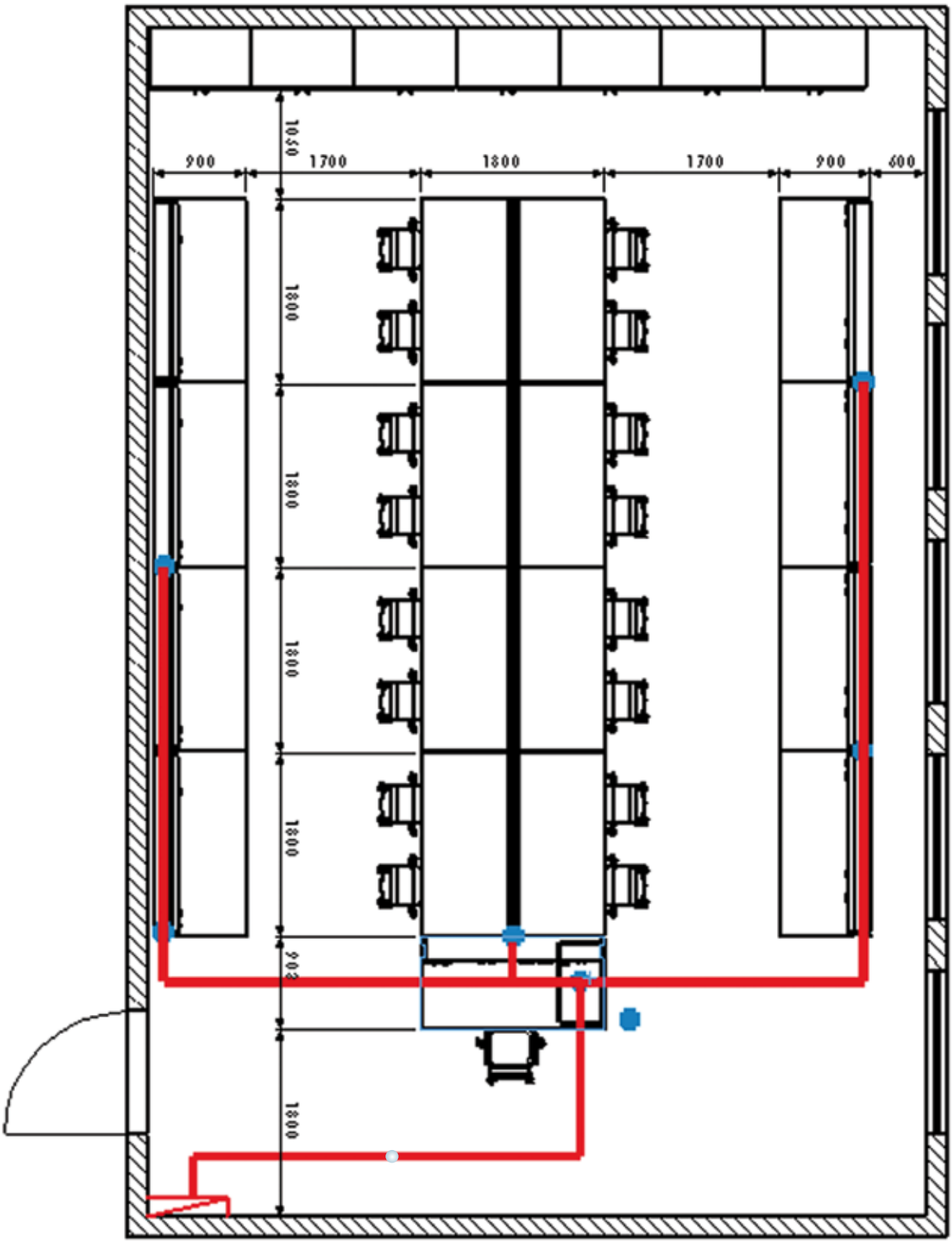
- ST8021-1H – SybaPro multimedia table (1800 x 900 x 760 mm)
- ST8010-4V – PC holder for multimedia table
- ST8008-8F – Power supply for multimedia tables (4-way plug strip, network socket)

Accessories for technical facilities

- 4 x ST8012-8M – Cabinet with 2 hinged doors, with glass window (1000 x 600 x 2039 mm)
- 4 x ST8012-8R – Upper-level cabinet with 2 hinged doors (1000 x 600 x 787 mm)
- 4 x ST8012-9C – 4 internal drawers, 1000 mm
- 12 x ST8012-9G – Shelf for cabinet, 1000 mm
- 4 x ST8009-9Y – Ladder guide rail
- 1 x ST8009-8Z – Movable safety guide rail
- 1 x ST8009-9Z – Ladder attachment
- 2 x ST8009-7G – Side cabinet to accommodate UniTrain-I courses
- 1 x ST8081-2A – Folding chalk board 4000 mm
- 1 x ST8081-3B – Projector screen 2000 x 2000 mm
- 1 x ST7004-7G – Office swivel chair with casters (teachers)
- 16 x ST7004-5N – Swivel chair with armrests and casters (students)

Planning Example

“Machine Lab”



Existing mains feed (in the building)

Student practical workplace (x 8)
- Feed via cable duct on left rear table leg
- 5 x 2.5 mm² NYM (feed to power supply duct)
- 3 x 1.5 mm² NYM (emergency shut-off loop)
- 3 x 2.5 mm² NYM (PC supply, not connected to emergency shut-off loop)
- Network cables, CAT5

Theory workplace
- Feed via cable duct on left rear table leg
- 3 x 2.5 mm² NYM (PC supply, not connected to emergency shut-off loop)
- Network cables, CAT5

Sub-distribution
- Feed for sub-distribution box, 5 x 10 mm² NYM, using in-building circuit breaker rated at 63 A

Wiring (in building)

- Wires are laid in ducting in the floor (red lines)
- Outlets from the floor to the room's sub-distribution box and to the marked places at the lab tables
- For ease of installation, wires should extend at least 2.5 m from the floor outlets
- Detailed instructions for the wiring of lab tables can be found under "Wiring possibilities"

Separation between workplaces

- A distance of at least 1.50 m must be maintained between all of the students' theory and practice stations

Power distribution unit, for 8 groups

- 1 fault-current circuit breaker 300 mA
- 1 main fuse
- 1 emergency shutdown latching pushbutton
- 1 on-off key switch
- 1 controller fuse for the control circuit, 6 A
- 1 earthed socket, 16 A
- 3 external conductor indicator lights
- 8 16-A 3-pole circuit breakers
- 8 on-off buttons with indicator light
- 8 power isolators
- Terminal strip for connecting table groups

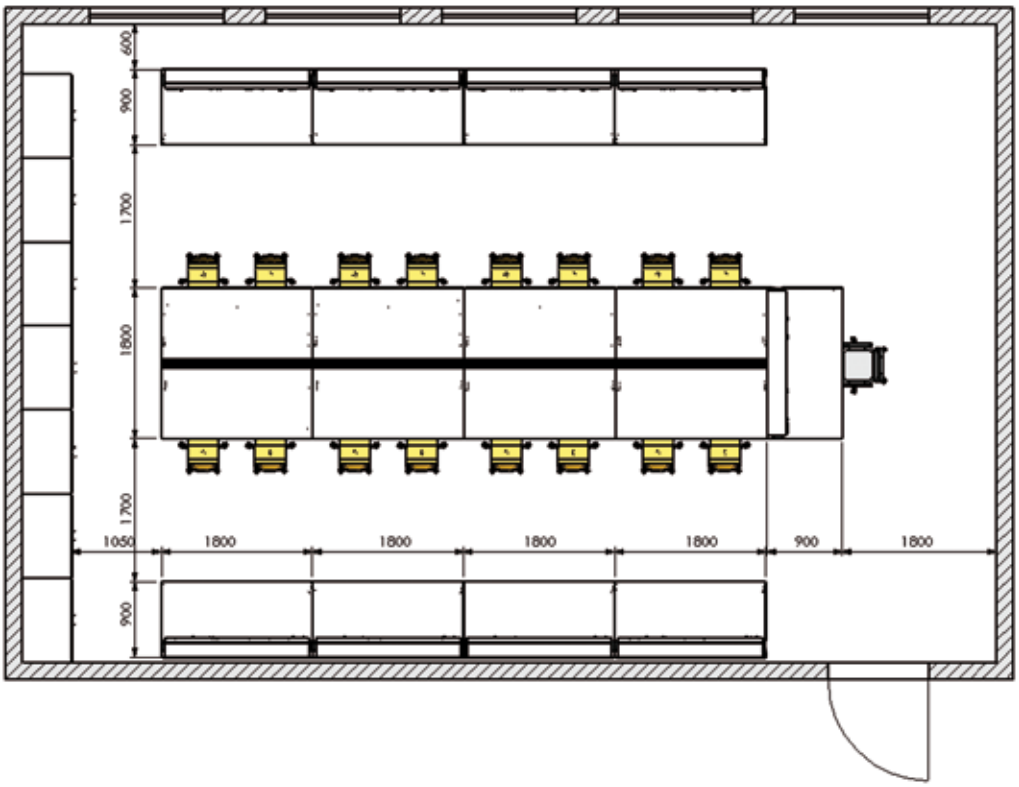
Emergency shutdown capability

- Switches (red mushroom buttons on highly contrasting yellow) at the teacher's workplace, at each student workplace and at the outputs
- The emergency shut-off equipment works in normally energised mode, i.e. if the power supply to the emergency shut-off fails, all circuits in the room are automatically de-energised for the purpose of experiments
- The switching equipment cannot be switched on after shutting off until the key switch is turned back on

- The building's architects or the planning office hold responsibility for general lighting, the distribution boxes, sockets etc. in the building itself
- If computer networks, antennae or other similar fittings are to be installed, at least two separate conduits will be needed for separate installation of data control and network wiring to ensure problem-free operation
- Floor outlets must be designed in such a way that it is not possible for moisture to enter the ducting where wires emerge from them
- The wires leading from floor or wall outlets should be at least 2.5 m long to ensure flexibility for the subsequent wiring. Wiring is installed by the building's electrician
- To ensure safety of people and of technical equipment, all the applicable regulations and standards for schools and laboratories need to be observed
- The tables can optionally be provided with power individually or in groups. For reasons of flexibility, we recommend that the tables are each supplied individually. This means that each table needs a separate feed (5 x 2.5 mm² NYM, even if the connection is single phase). The feed comes for the room's sub-distribution box and is protected by a line circuit breaker in the box. Even if the connection is single phase, we recommend using 5-wire feeds to simplify any later enhancement of the system

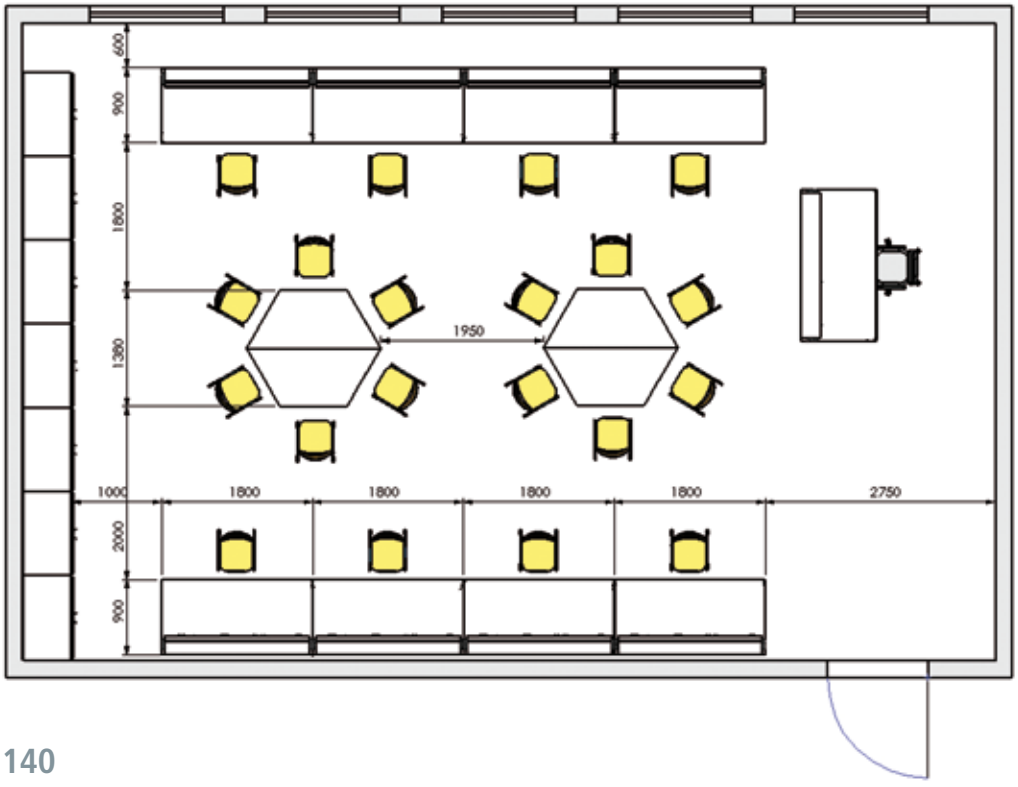
Possible Room Layouts

UniTrain-I and Practical Laboratory



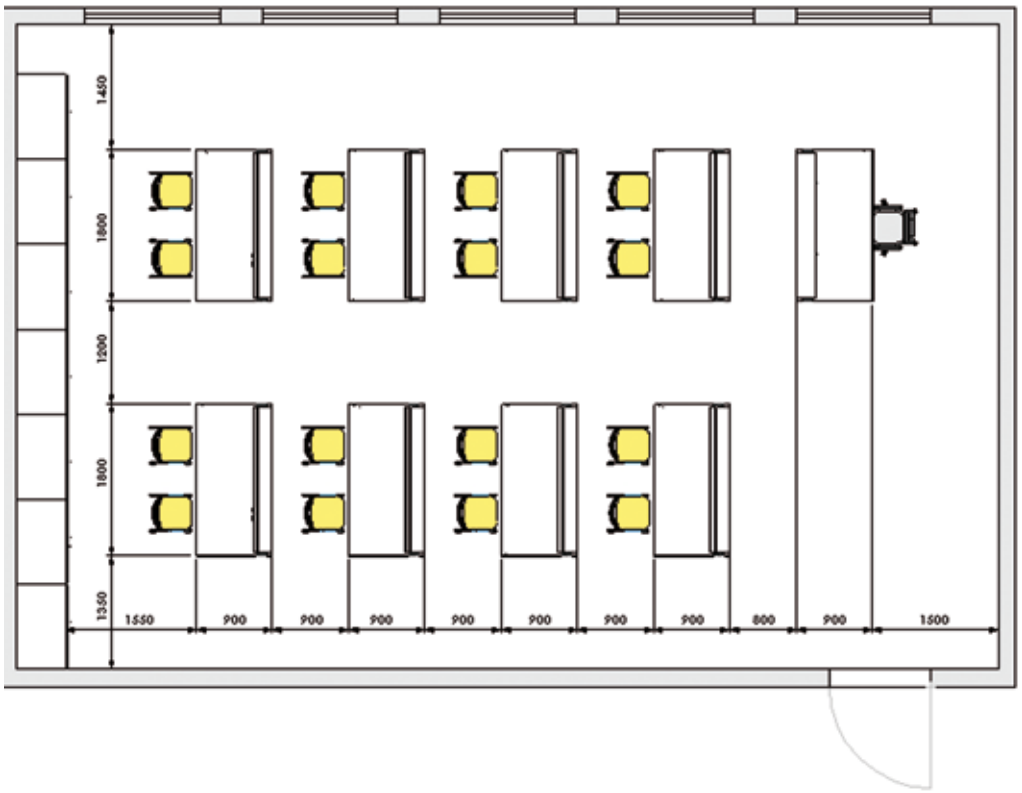
- 8 multimedia tables each with 2 sets of UniTrain-I equipment
- 8 lab tables with training panel frames and power supply ducts for complex experiment set-ups

Theory and Practical Laboratory



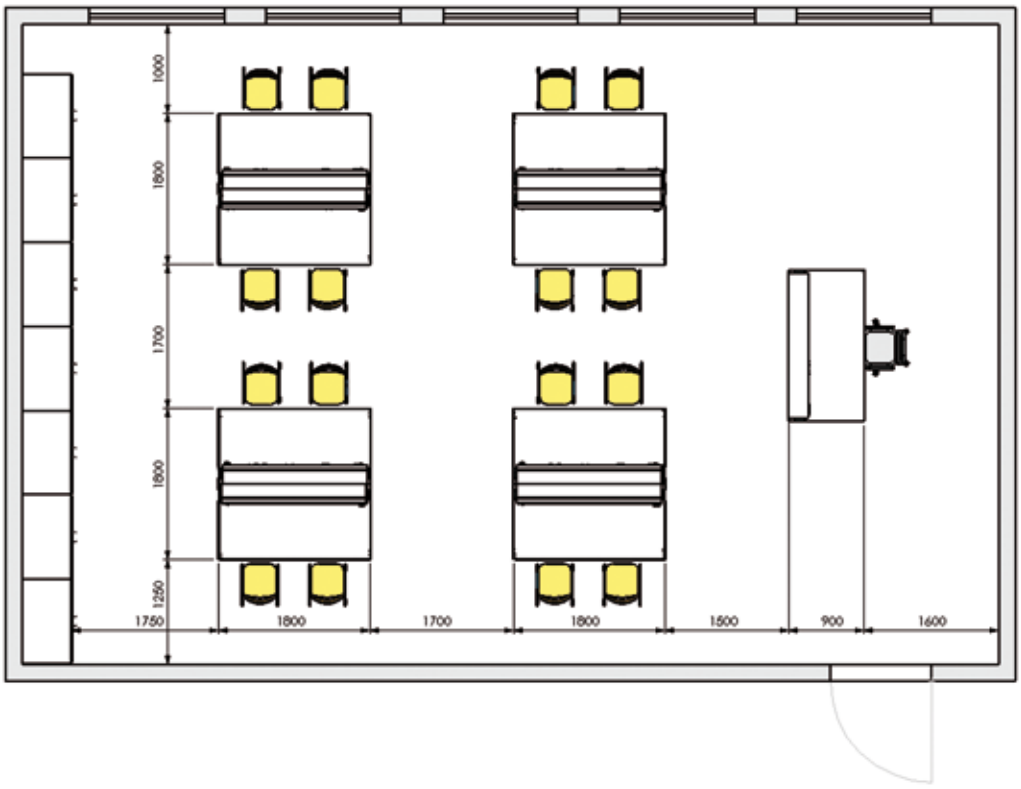
- 8 lab tables with training panel frames and power supply ducts for complex experiment set-ups
- 2 table islands for theory lessons

Multi-Function Laboratory



- 8 multi-function tables allowing rapid changeover from theory to practice in the lab

Practical Laboratory



- 8 lab tables with experiment frames and power supply ducts provide the basis for successful conducting of experiments

Wiring for Lab Tables

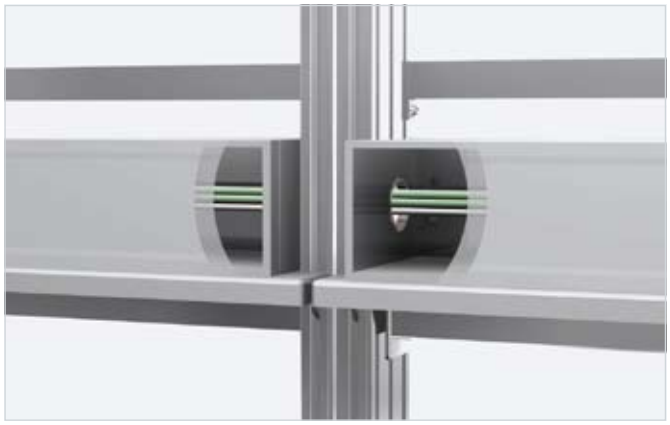
Intelligent Cable Management

The aluminium profile legs of SybaPro lab tables have two separate cable conduits inside, in which cables can be laid in such a way that they are safe and protected from damage. If multiple tables are put together in rows, the cables can be connected from table to table via the power supply ducts.

If more than four wires are needed for the feed to the table, installation can be made easier by another cable conduit that can be attached to the aluminium profile legs. The following pages describe all the ways of wiring the tables in order to facilitate planning of cable routes.

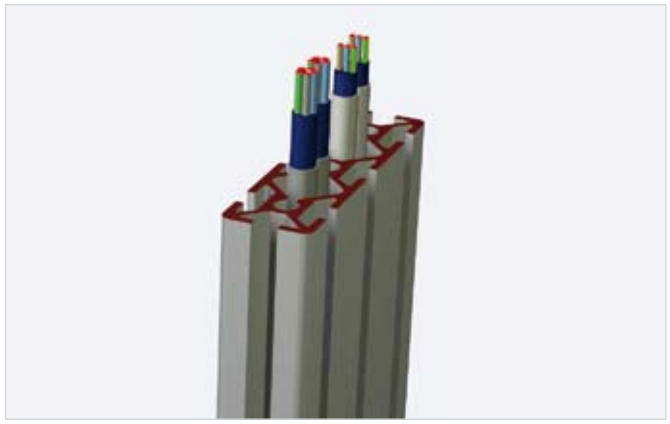
1. Floor outlet

2. Wall outlet



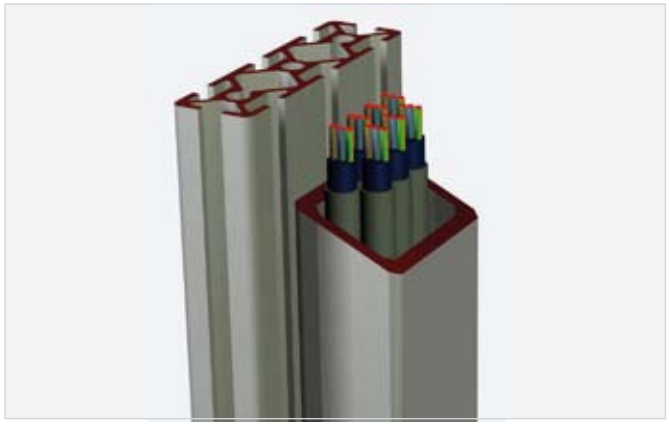
3. Table-to-table installation

- Use special aluminium profiles (see page 26)



4. Aluminium profile table leg

- Max. 2 x 2 wires



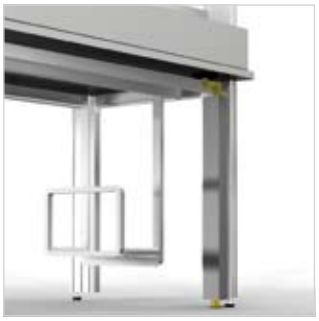
5. Installation using additional conduit

- For more than four wires

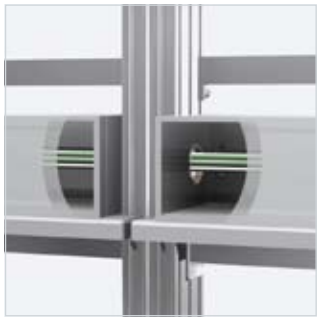
Wiring for Lab Tables

Lab Tables with Tabletop Power Supply Ducts

- Up to 4 wires can be run via the aluminium profile table leg to the power supply duct



- If more than four wires are needed, the additional conduit along the leg needs to be used

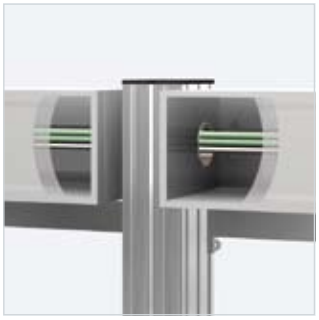


- For installation of multiple lab tables in a row, use aluminium profiles with holes drilled for wiring

- Wires can lead from a wall outlet into the power supply ducting (height of wall outlet: 800 mm)

Lab Tables with Console Power Supply Ducts

- Wiring is laid via the aluminium profile table legs (max. 4 wires). It is not possible to use an additional conduit



- For installation of multiple lab tables in a row, use aluminium profiles with holes drilled for wiring

- Wires can lead from a wall outlet into the power supply ducting (height of wall outlet: 1560 mm)

Wiring for Lab Tables

Multimedia Table

- Wires are laid in the conduit along the aluminium table leg but not directly via the aluminium-profile leg

- Installation of multiple lab tables in a row

- Wires can lead from a wall outlet into the power supply ducting (height of wall outlet: 650 mm)

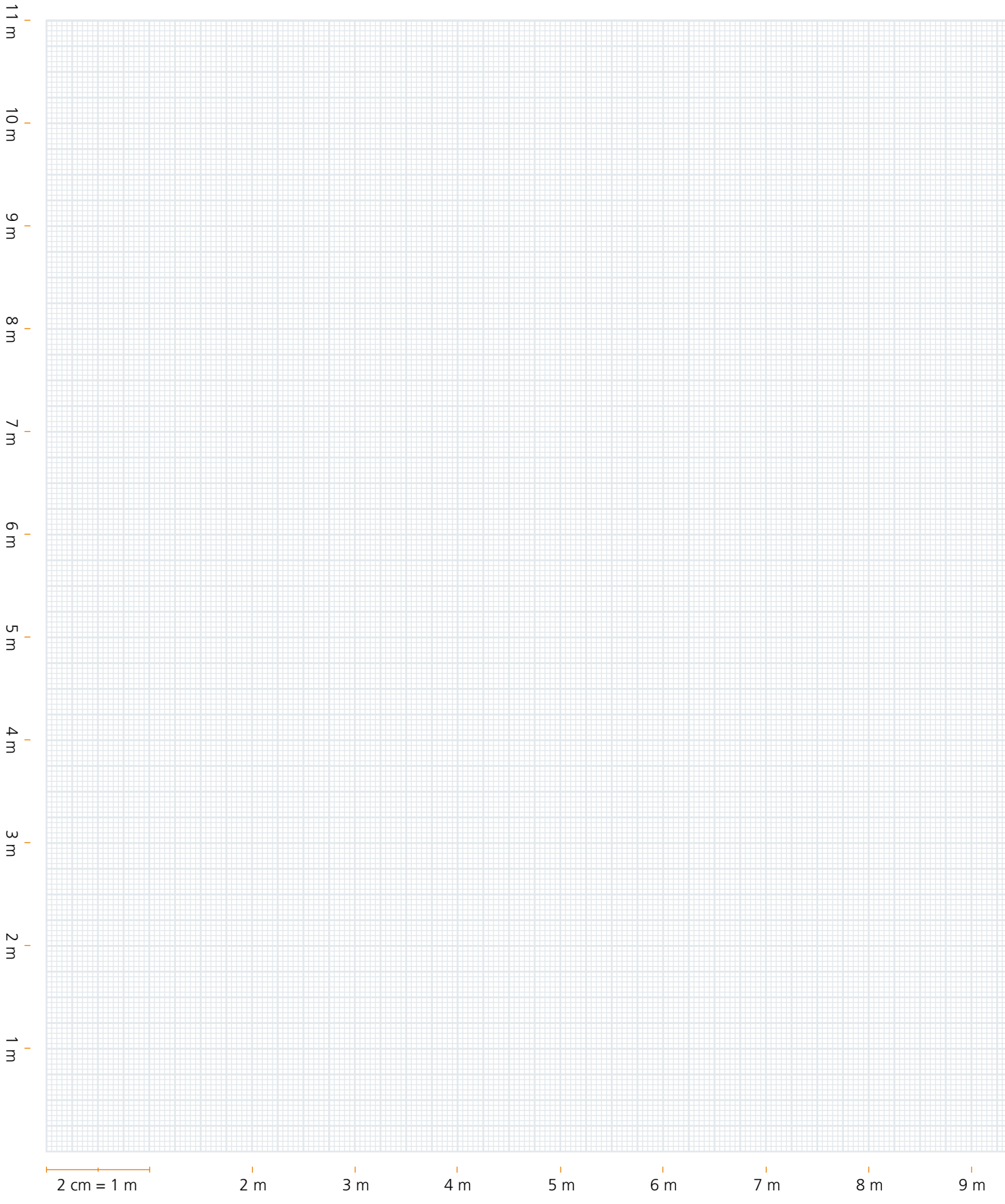
Multi-Function Table

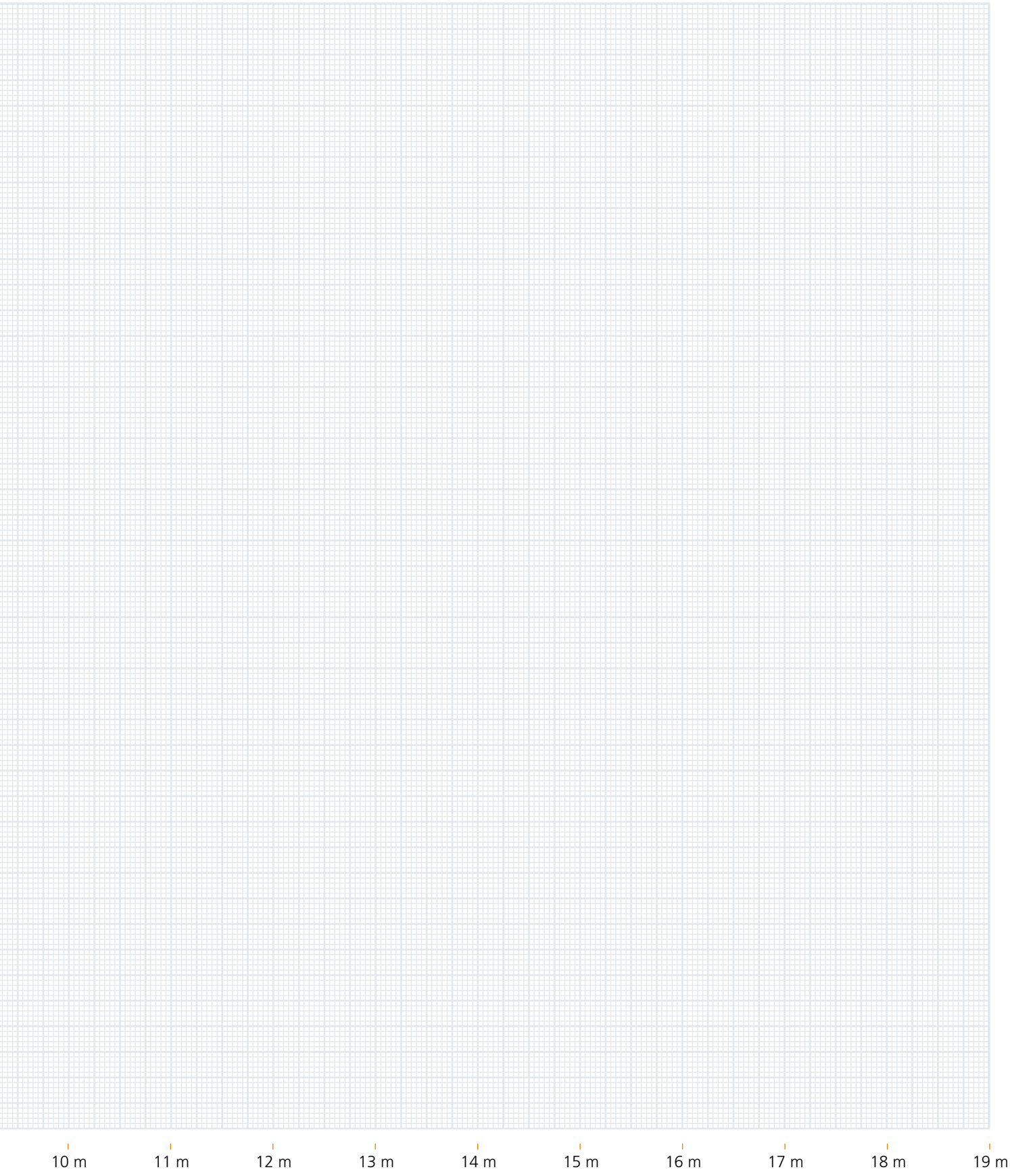
- Wires are laid in a conduit next to one of the aluminium table legs but not directly via the aluminium-profile leg

- Installation of multiple lab tables in a row

- Wires can lead from a wall outlet into the power supply ducting (height of wall outlet: 450 mm)

SybaLab – Planning Aid (scale 1:50)

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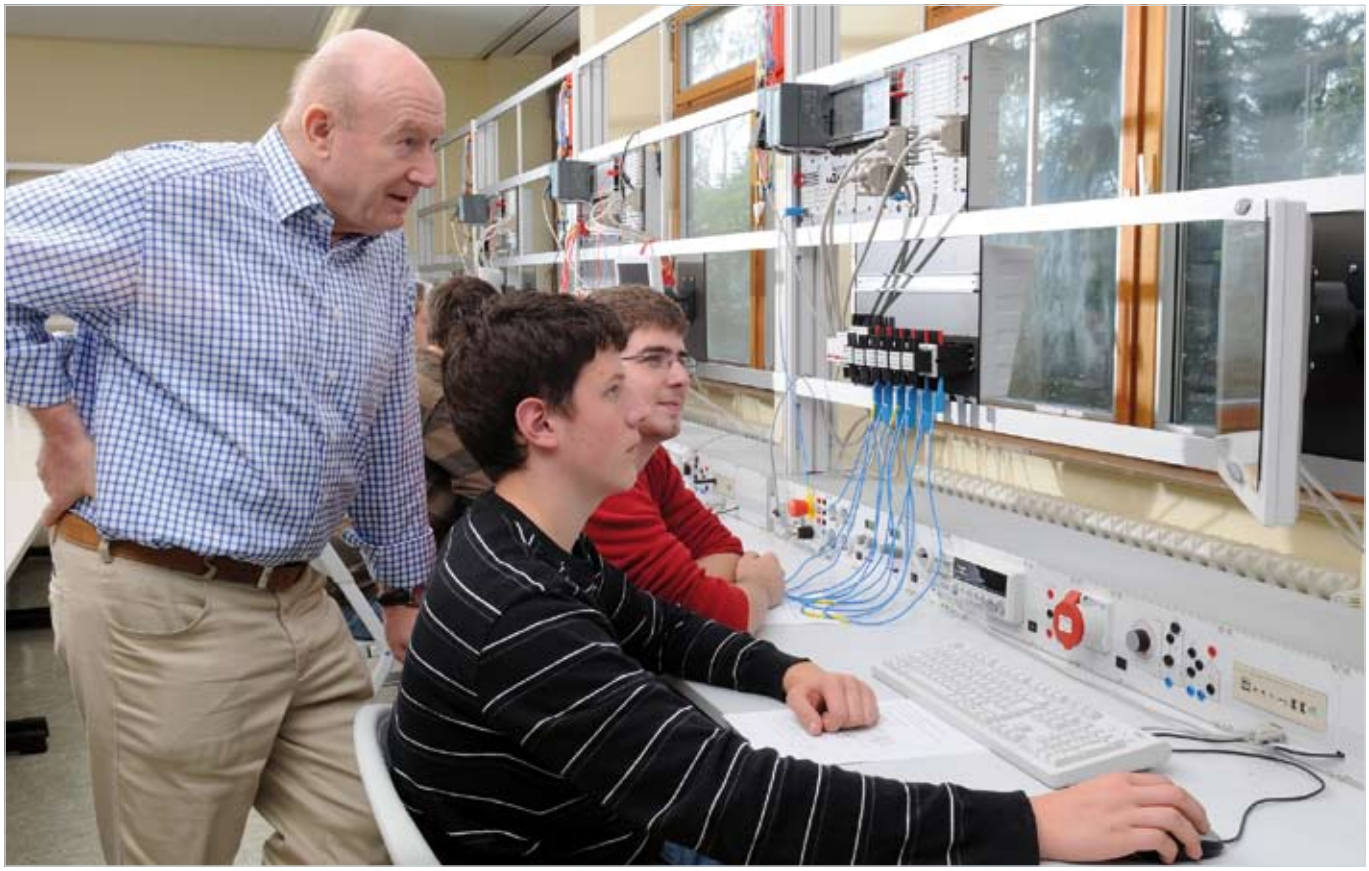
Key Product Advantages

Keeping Customers Satisfied



Joachim Petry, director of studies and head of the electricity teaching department at the Wittlich vocational college talks about his experience with Lucas-Nülle lab equipment:

"Our vocational training has to keep up with ever-increasing educational demands arising from technological innovations in order to give our student body of about 1,800 people the best start in their careers. That is why we think it is important to explain new technologies clearly in our lessons. For this we require laboratories that are up with the latest state of technology. We were quite conscious of this necessity and that was the decisive reason for extensive new investment in a large electrical laboratory, which can be used for multiple functions by our vocational students and trainees.

After an intensive search for the right manufacturer, we decided on Lucas-Nülle GmbH. The key factor in this choice was that Lucas-Nülle also provides the lab equipment appropriate to its training systems and was able to give us support in planning an economic room layout.

The first experiences of teaching there have already indicated that we have made a good choice.

The new Lucas-Nülle-equipped lab allows us to teach everything from the basics of electrical engineering to complex applications in electronics and automation in a way that is hands-on. The high degree of usage by our technical classes provides convincing proof that the laboratories are designed in a way that is highly user-friendly. In day-to-day teaching we are continually finding that the training systems are ideally integrated with the lab fittings, which encourages our students to work and reduces the burden on the teachers."

The Whole is Greater than the Sum of its Parts

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Lab Systems

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