



	Temp Min	15,56 C	Date	XX-XX-XXXX
	Temp Max	33,94 C	Time	XX:XX
	Temp Ambient	32,13 C	Job	WW25D76

Educational Solutions

Catalog 2022

se.com/fr/edu

Life Is On

Schneider
Electric



Electrification and digitization

The fight against climate change and the revival of activity, particularly industrial activity, are two pillars defined by the state to build the France of tomorrow.

The electrification of our energy uses promotes their decarbonization, and the digital transition at work today is the foundation of energy efficiency.

These profound changes in our country, while beneficial, will require new and additional skills.

Preparing tomorrow's global players for these vital changes is our collective responsibility.

Electrification

x 2
global energy capacity
by 2040

+ 80 %
new capacity in
renewable energy by
2040

2016
Global investment in
electricity surpasses
oil and gas for the first
time in 2016

30 %
fleet will be powered
by electricity by 2040

Digitalization

x 10
Ten times more new
devices connected
than people by 2022

+ 25 %
combined annual
growth rates of IP
traffic from year to year

+ 40 %
productivity by
2035 through new
automation techniques

And because we at Schneider Electric design, produce and implement innovative solutions for safe, efficient, reliable and clean energy, we have designed educational solutions for you to help you impart this knowledge.

Schneider Electric, a major French industrial actor and strongly implanted in the hexagon

- 30 manufacturing plants,
- more than 16 400 employees, 1 000 alternates and 700 annual trainees,
- 3 logistics centers,
- 4 research and development sites with 2500 engineers and technicians,
- 28 trade agencies.



Residential
Individual
or collective



Buildings
offices, health,
shops, hotels



Industry
food, metals, water,
machinery



Data Center
server rooms



Energy
production, distribution,
distribution, securing of the
electro-sensitive industry

First user of our solutions on our industrial and tertiary sites, we can share our experience with you the new skills needs expected by the labor market on the electrical and automation trades.

Intency, Schneider Electric's new building is the

demonstrator of its know-how

It is a cluster of technologies and common sense, based on three pillars:
Human, digital and sustainable development.

Guided tour, the way to go!



Schneider Electric Transforms its Vaudreuil site in

display case of the industry of the future

It is the demonstration of a successful digital transformation of an industrial site. Its clients can visit the site for a better understanding of the impact of the Industry of the Future

Presentation



Educational Solutions



Industrial production

Selection criteria	B2
Compact production lines	B6
IOT Supervision	B10
Augmented reality	B14
Communication	B15
Automation	B18
Human / machine interface.....	B28
Machine detection and security	B29
Motor start	B33
Variable speed and axle control.....	B37

Smart building and smart grid

Selection criteria	C2
SmartGrid	C4
Energy efficiency	C5
Domestic	C9
Electric vehicle.....	C17
Electrical installation	C19

Electrical distribution and energy

Selection criteria	D2
Electrical safety	D6
Installation wiring	D11
Protection of property and persons	D16
Energy quality.....	D19
Energy production.....	D22

Digital

Selection criteria	E2
Augmented reality	E4
Cybersecurity	E5
Industrial production simulation.....	E6
Simulation of residential buildings.....	E7

Additional offer

Operational parts	F2
Accessories	F8

Index

Reference Index	G1
-----------------------	----



Industrial production

Selection criteria	B2
Compact production lines	B6
IOT Supervision	B10
Augmented reality	B14
Communication	B15
Automation	B18
Human / machine interface.....	B28
Machine detection and security	B29
Motor start	B33
Variable speed and axle control.....	B37

Selection criteria

Industrial production

Different types of educational solutions

Pack

Business skills training through student projects.

Modular bench

Learning concepts and knowledge.

Model

Implementation of advanced technologies.

System

Complete understanding of a business environment.

Level 3

Understanding
and Use

Study and
realization

Maintenance
and evolution

Compact production lines

Smart Productis			
Smart Assemblis			

IOT Supervision

Models	IOT supervision development			
	Study of industrial supervision			
	Augmented Reality Development			
Packs	Communication add-ins			
Modular bench	Industrial communication			
Model	Industrial communication			

Automation

Packs	Automation Software			
	Initiation machines			
	Machine automation (architecture)			
	Industrial automation			
	Industrial automation (architecture)			
Modular bench	Automation			
Systems	Automatic parts sorting			
Benches	Level control study			
	Package sorting			
Pack	Congestion project WorldSkills			

Human / machine dialog

Packs	Human-machine dialog displays			
	RFID Add-in			

Level 4 Vocational Training	Level 5 Advanced Vocational Training	Level 6+ Engineer and University	Page
Understanding and Use Study and realization Maintenance and evolution	Understanding and Use Study and realization Maintenance and evolution	Understanding and Use Study and realization Maintenance and evolution	

■	■	■	■	■	■	■	■	■	B6
■	■	■	■	■	■	■	■	■	B8

				■	■	■	■	■	B12
	■			■					B13
				■	■	■	■	■	B14
					■	■		■	B15
	■	■							B16
				■	■		■	■	B17

					■	■		■	B18
	■	■			■	■		■	B19
					■	■		■	B20
					■	■		■	B21
				■	■	■	■	■	B22
	■	■							B23
				■	■		■	■	B24
				■	■		■	■	B25
				■	■		■	■	B26
	■	■	■						B27

	■	■			■	■		■	B32
	■	■			■	■		■	B33

Selection criteria

Industrial production

		Level 3		
		Understanding and Use	Study and realization	Maintenance and evolution
Modular benches	RFID deck			
	Safety of machinery			
	Machine security non-material barrier			
Pack	Motor Start			
Modular bench	Motor Start			
Bench	Motor Start			
Packs	Electronic starters			

Variable speed and axle control

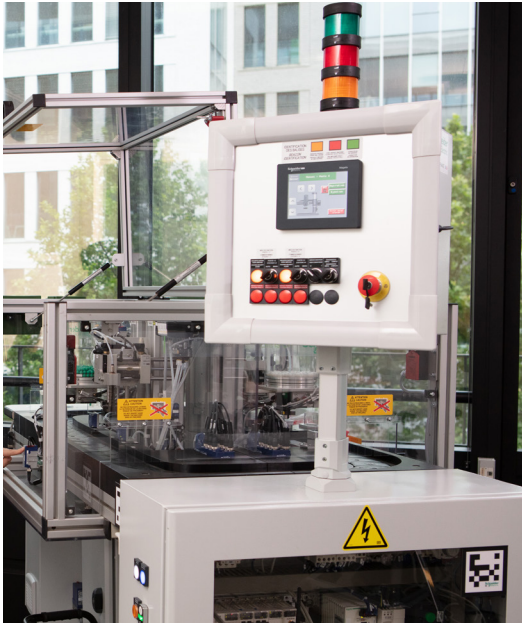
Packs	Speed switches			
	Servo motors			
	Linear axes			
Model	Training controllers			
Benches	Speed change with motor			
	Charging bench for training controller			
Modular bench	Controller Discovery Altivar 320			
Pack	Automatic machines (advanced architectures)			

	Level 4 Vocational Training			Level 5 Advanced Vocational Training			Level 6+ Engineer and University			Page
	Understanding and Use	Study and realization	Maintenance and evolution	Understanding and Use	Study and realization	Maintenance and evolution	Understanding and Use	Study and realization	Maintenance and evolution	
	■	■								B34
	■	■								B35
	■	■								B36
				■	■		■	■		B37
	■	■								B38
				■	■		■	■		B39
	■	■			■	■		■	■	B40

	■	■			■	■		■	■	B41
				■	■		■	■		B42
				■	■		■	■		B43
				■	■		■	■		B44
				■	■		■	■		B45
				■	■		■	■		B46
	■	■								B47
				■	■		■	■		B48

Compact production lines

Smart Productis



References

Bottles filling station for Productis	MD1AE903
Bottles capping station for Productis	MD1AE904
Cyber Smart Productis	MD1AE905CYB
IoT Productis Box	MD1AE905IOTB
Productis Sensor Batch	MD1AE905IOTC
Smart Productis 2 x M580	MD1AE905M5802P
Increased Reality Productis	MD1AE905RA
AR Smart Productis without tablet	MD1AE905RAST
CAMM Productis	MD1AE905SUPG
Renovation Productis to Smart	MD1AER905
Rental Productis 1 month	MD1AL905
Productis Digital Twins	MDSIMAE9

Do you have any questions about this offer?

Our team can help you.
Scan or click on the QR code:



Presentation

Smart Productis is a packaging line for the pharmaceutical or agri-food industry designed specifically for the apprenticeship of trades related to industrial processes.

The system may consist of:

- 2 filling stations,
- 2 stoppers for managing multi-batch productions.

This educational equipment offers a modular and scalable solution designed for training in industry 4.0 trades.

Benefits

Smart Productis provides access to industry 4.0 intelligence through 5 options to build a customized educational solution:

- Augmented reality
- Virtual reality
- Cybersecurity
- Performance monitoring (IIoT)
- CAMM.
- Autonomous TOR Transmitter (Xiot)
- 4G remote maintenance



Composition of your solution

Augmented reality

Augmented Reality applications developed on Schneider Electric's teaching equipment allow the performers to perform their tasks more securely and efficiently thanks to the immediate visualization of the machine's states and guided procedures.

Features:

- Performing maintenance, adjustment and logging procedures in a guided manner,
- Real-time visualization of machine states: operation, efficiency, production,
- Visualization of machine components and virtual security zones
- Access to documentation,
- Follow-up of the operations carried out and sharing between the various stakeholders.

Virtual Reality

Virtual reality enables users of Schneider Electric's educational facilities to get trained safely thanks to its immersive environment that reproduces reality. The machine's digital twin makes it possible to test out changes to the program on a computer before they are implemented on the machine.

Features:

- Guided or autonomous learning of operating procedures (modes of operation),
- Control or visualization of machine states through the link between the Twin and the Machine,
- Testing the changes to the program and the machine settings with the help of the digital twin.

Cybersecurity

Cybersecurity is an essential component of industry 4.0, which intricately connects all equipment to internal and external networks. Schneider Electric's teaching equipment makes it possible to study various protection devices (hardware and software) in the context of industrial production.

Features:

- Simulation of cyber-threats with prefabricated scripts
- Visualizing the effects of attacks on the HMI,
- Analyzing the communication frameworks or threads with WireShark software
- Programming the protection features of the Modicon M580 and the StormShield SNI40 firewall,
- Wiring of the internal and external network connections.

Performance Tracking (IIoT)

Thanks to the Connected Objects (IIoT) technology, advanced control of industrial processes is possible. Distributed as closely as possible to the strategic points of the installation, these communication sensors continuously collect the functional parameters and other data that are essential for the control and maintenance of the teaching equipment of Schneider Electric.

Features:

- Monitoring the status of and measurements of all connected sensors,
- Creating indicators from individual data and monitoring dashboards,
- Alarm configuration based on the sensor statuses and smartphone notifications
- Access to conditional maintenance by configuring thresholds on sensor data,
- Possibility of registering the sensors on the Schneider Electric server (Telemecanique Cloud Infrastructure) to configure alarms.

CAMM

The Computer-Aided Maintenance Management (CAMM) option provides an easy-to-use and efficient tool for optimizing preventive and curative maintenance operations of industrial processes.

Features:

The Lina Maintenance software allows you to discover all the functionalities of a CAMM system:

- Dashboard editing
- Equipment tracking,
- Organization of work,
- Inventory and procurement management,
- Archiving of documents and procedures.



► Download complete interactive documentation of Smart Products.



► View Smart Productis video



Compact Smart Productis production line



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- Pro PLP Level (Production Line Driver)

Recommended training



For updating your knowledge

GREENBLT

Lean Green belt:

Diagnose performance and extending the

production flows

Scan or click on the QR code

Compact production lines

Smart Assemblis



Presentation

Smart Assemblis is a modular automated assembly line of mechanical components designed to discover and understand the benefits of industry 4.0.

Its flexibility allows you to tailor solutions to your needs and respond to them.

The 11 suggested items make it possible to put together a complete automated line consisting of 3 to 10 items, while offering the possibility of independent use.

Benefits

Smart Productis provides access to industry intelligence 4.0 through five options that help in structuring a customized educational solution:

- Augmented reality (AR),
- Virtual reality (VR),
- Cybersecurity,
- Supervision,
- CAMM,
- Performance monitoring (IIot),
- Smart Store (Ipicking),
- Change of ranges,
- Autonomous TOR transmitter (Xiot),
- 4G remote maintenance.



Composition of your solution

Augmented reality

Augmented Reality applications developed on Schneider Electric's teaching equipment allow the performers to perform their tasks more securely and efficiently thanks to the immediate visualization of the machine's states and guided procedures.

Features:

- Carrying out maintenance, adjustment and commissioning procedures in a guided manner,
- Real-time visualization of machine states: operation, efficiency, production,
- Visualization of machine components and virtual security zones
- Access to documentation,
- Follow-up of the operations carried out and sharing between the various stakeholders.

Virtual Reality

Virtual reality allows users of Schneider Electric's educational facilities to train safely thanks to its immersive environment that reproduces reality perfectly. The machine's digital twin makes it possible to test out changes to the program on a computer before they are implemented on the machine.

Features:

- Guided or autonomous learning of operating procedures (modes of operation),
- Control or visualization of machine states through the link between the Twin and the Machine,
- Testing the changes to the program and the machine settings with the help of the digital twin.

Do you have any questions about this offer?

Our team can help you.
Scan or click on the QR code:



Cybersecurity

Cybersecurity is an essential component of industry 4.0, which intricately connects all equipment to internal and external networks. Schneider Electric's teaching equipment makes it possible to study various protection devices (hardware and software) in the context of industrial production.

Features:

- Simulation of cyber-threats with prefabricated scripts
- Visualizing the effects of attacks on the HMI,
- Analyzing the communication frameworks or threads with WireShark software
- Programming the protection features of the Modicon M580 and the StormShield SNI40 firewall,
- Wiring of the internal and external network connections.

Supervision

The Supervision option allows you to get familiarized with digital tools for monitoring, in real time, the operating and production parameters of industrial processes in order to significantly improve operational productivity.

Features:

- Execution of production orders,
- Monitoring of machine states and modes of operation,
- Monitoring the actuator and sensor states of all stations in the line,
- Production performance visualization
- Diagnostics in case of failure,
- Communication network administration.

CAMM

The Computer-Aided Maintenance Management (CAMM) option provides an easy-to-use and efficient tool for optimizing preventive and curative maintenance operations of industrial processes.

Features:

The Lina Maintenance software allows you to discover all the functionalities of a CAMM system:

- Dashboard editing
- Equipment tracking,
- Organization of work,
- Inventory and procurement management,
- Archiving of documents and procedures,
- Visualization of energy consumption.



► Download complete interactive documentation of Smart Assemblis.



Compact production line Smart Assemblis



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- Pro PLP Level (Production Line Driver)

Recommended training



For updating your knowledge

GREENBLT

Lean Green belt:
Diagnose performance and extending the production flows
Scan or click on the QR code

The industry of the future: Schneider Electric's vision



The concept

- Everyone is talking about it without ever fully understanding what is at stake, or even imagining the consequences it could have for the way companies function. In any case, the factories of the future will have to meet new challenges in terms of competitiveness, performance and respect for the environment.
- To do this, they have new means which are as much levers of competitiveness (technologies, methods, work organization patterns, etc.) as they open up incredible prospects.

Factory of the Future, Industry 4.0, Connected Industry

- Factory of the Future is a response to several simultaneous transitions: in terms of energy, ecological, digital, organizational and societal. Each of these transitions uses many new technologies or modes of organization that are coming of age, are in the process of development or design.
- The aim is to continue modernizing the production tool and to support companies in transforming their business models, their organizations, their design and marketing methods, in a world where digital tools are blurring the lines between industry and services.

In concrete terms, what does this factory of the future look like?

- It is built on the foundations of the present-day factory:
- the investments already committed will not be called into question,
- the focus is on the new levers of competitiveness that represent the 5 keys of the smart factory.

Mass production customization

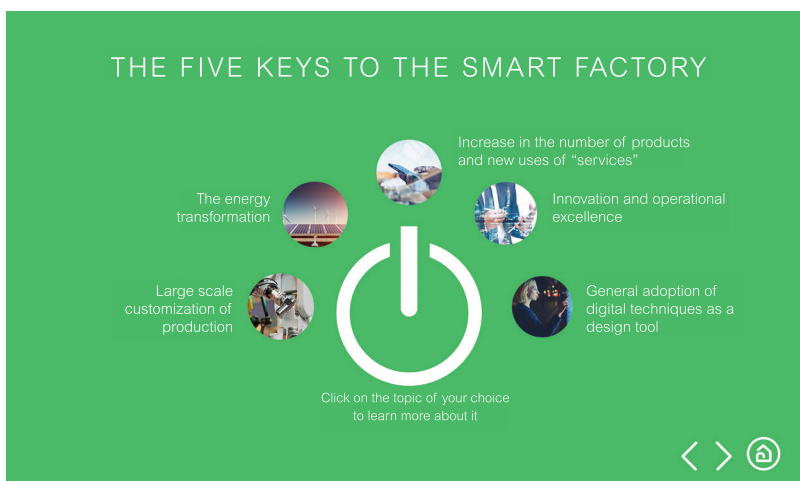
Today, the industrial sector must be able to respond to the acceleration and personalization of consumer expectations:

- on the one hand, it must deal with variable market conditions, in particular as regards the availability of resources,
- on the other hand, at the other end of the chain, the consumer now has access to an unlimited offer, everywhere and in real time.

Where products were once standardized, we must now be able to meet specific and precise needs.

The energy transition

The energy transition is now an essential component of industrial performance. The cost of energy has a strong impact on the cost of products. Added to this is the tension over access to energy resources and the environmental factor, with the need to reduce the carbon footprint.



INDUSTRIAL LIFE CYCLE AND DIGITAL CONTINUITY



Upgrading of products and new uses "services"

Innovation and new technological capabilities represent an opportunity to regain color in the markets and to set oneself apart with more innovative, higher-end products. It is also an opportunity for transforming customs and sometimes even for creating new business models. The rise in the range of new products is a good way to rebuild your image in a changing world.

Innovation and operational excellence:

One of the challenges for the industry of tomorrow is to shorten the cycle from product design to market roll-out with an impeccable level of quality.

For industrial managements, this means:

- Strengthening R&D investments,
- Improving the flexibility of manufacturing tools,
- Training teams in new production methods.

In summary: gaining in intelligence and agility.

Widespread adoption of digitalization as a structuring tool:

New technologies offer opportunities for reinventing the plant and paving the way for a new industry based on:

- the digital revolution: embedded sensors, connected machines and products, Internet of things, virtualization,
- new materials: composites, nanomaterials, etc.,
- new production techniques: additive manufacturing, cobotics, augmented reality, etc.

Industrial life cycle and digital continuity

Our proposals:

1. Customer Relationship

- A generalization of the personalized offer that requires rethinking the organization of production.
- A customer at the heart of the value chain, throughout the entire industrial life cycle.
- A substitution of product marketing by usage marketing with widespread use of virtual experience before the actual market roll-out.

2. Design

- 3D modeling.
- Digital simulation.
- Process Life Management (PLM).
- Virtual reality.

3. Execution and Operations

- Process automation.
- Speed change.
- Start and Stop system.
- Robotics.
- Human Machine Dialog.
- Web Client Monitoring.
- Automated machines.

4. Maintenance

- Conditional maintenance.
- Augmented reality.
- Collaborative maintenance.

5. Training and new working methods

- Immersive virtual simulation.
- Energy management.

New digital technologies for the industry of the future:

- Cloud,
- Big Data
- Cybersecurity,
- Micro data center
- Internet of things.

IOT Supervision

Model | IOT supervision development [new]

Learning goals

- Transform industrial equipment by integrating connected objects.
- Develop or modify a product and process monitoring application using the measured data.
- Build control maps and analyze the data.

Presentation

- The Industrial Internet of Things (IIOT) is at the heart of modern industry. Measuring and analyzing product and process characteristics makes it possible to take quick and sound decisions and to anticipate and predict failures.
- IOT enables production and maintenance technicians to make safe and environmentally responsible decisions.
- This equipment enables the design and implementation of all IIOT applications:
 - Installation and connection of measurement sensors,
 - Real-time visualization of machine and process states
 - Development and presentation of statistical analysis control maps.

Description

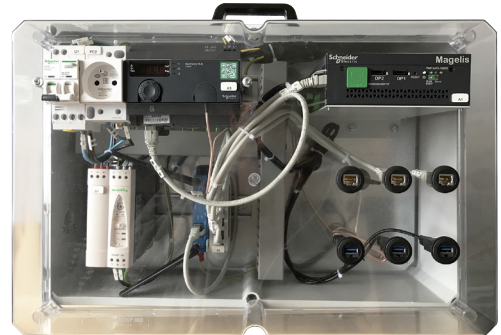
- The IIOT development kit includes the following:
 - One WiFi server PC (screen and keyboard not included),
 - Ecostruxure Machine SCADA Expert development software (training not included: see suggestion at the bottom of the page),
 - One Ecostruxure Machine Scada Expert Builder license. (the cloud or local license must be renewed annually: click [here](#)),
 - Open source software Node-RED,
 - a Zigbee receiver for coupling wireless measurement sensors.
- The sensor pack is to be ordered separately. It includes:
 - Control devices,
 - All-or-nothing receivers,
 - Sensors for measuring temperature and electrical quantities.
- An Android or iOS tablet for operation can be provided as an option.

References

IIOT development kit		MD4STPKDEVIOT ⓘ
Sensor Pack for IIOT Development		MD4STPKDEVIOTCAPT ⓘ
Tablets for operation	Android	MD1ACTABA ⓘ
	iOS	MD1ACTABI ⓘ

The +

- Scalable industrial solution that can be adapted to suit all your systems.
- Use in development and operations.



IIOT development kit

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CIRA (automatic regulation of industrial controls)
- BTS CRSA (design and realization of automatic systems)

Recommended training



For updating your knowledge

[PRGSCA](#)

Programming with EcoStruxure Machine SCADA Expert or BLUE Open Studio
Scan or click on the QR code

IOT Supervision

Model | Study of industrial supervision IOT & AR [new]

Learning goals

- To understand the benefits of connected industrial systems for production and maintenance.
- Perform functional product & process analysis of a continuous furnace.
- Connect wireless measurement sensors.
- Understand the principle of statistical control maps.
- Operate a connected through oven and visualize drifts.
- Find the optimum (environmentally responsible) operating point of the equipment.

Presentation

- The supervision of the production and operating states of industrial equipment associated with AR (augmented reality) constitutes the foundation of modern industry. These techniques enable more production of better quality and at lower cost while optimizing the amounts of energy used.
- The purpose of this model is to sensitize to and raise awareness among future maintenance technicians and production process pilots of these new technologies.

Description

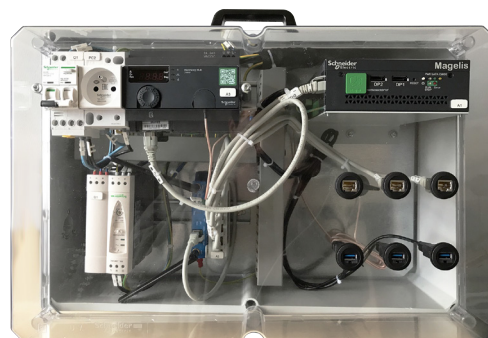
- The IIOT and AR operating kit includes:
 - a WIFI server PC (screen and keyboard not included),
 - pre-developed supervision applications and augmented reality applications,
 - a Zigbee receiver for coupling wireless measurement sensors.
- The operational part simulating an automated continuous furnace is sold separately. It includes:
 - Control devices,
 - All-or-nothing receivers,
 - Sensors for measuring temperature and electrical quantities.
- An Android or iOS tablet for operation can be provided as an option.

References

Industrial Internet of Things (IIOT) and AR (augmented reality) operating kit	MD4STPKDID 
Automated passage (through) furnace	MD4STPKDIDPOP 
Tablets for operation	Android
	iOS
	MD1ACTABA 
	MD1ACTABI 

The +

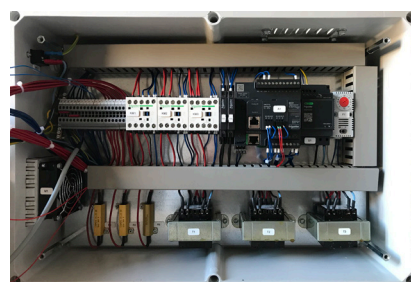
- Pre-developed IIOT (Industrial Internet Of Things) and AR (augmented reality) applications.
- Possibility of integrating IOT and AR development.
- Transportable secure model.



Industrial Internet of Things (IIOT) and AR (augmented reality) operating kit



Automated continuous furnace (front)



Automated continuous furnace (interior)

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- BTS CIRA (automatic regulation of industrial controls)

Recommended training



For updating your knowledge
TPM
Total Productive Maintenance
Ensure equipment availability
Scan or click on the QR code

Augmented reality

Model | Augmented Reality Development [new]

Learning goals

- Transform teaching equipment by integrating the possibilities of augmented reality.
- Developing or modifying an augmented reality application.

Presentation

- Reality is at the heart of the industry of the future. It allows maintenance and operations technicians to work more efficiently on their tasks and to intervene under conditions of optimum safety.
- This equipment makes it possible to design and implement all the accessible applications, thanks to augmented reality:
 - Rendering useful documentation accessible from dynamic links and QR codes,
 - Alerting to hazards through image recognition and measurement feedback,
 - Real-time access to the operational and monitoring data of the equipment,
 - Guiding stakeholders in maintenance and operations.

Description

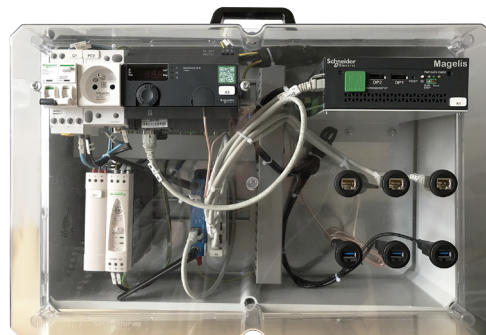
- The augmented reality application development kit includes:
 - One WiFi server PC (screen and keyboard not included),
 - Ecostruxure Augmented Operator Advisor development software (training not included: see suggestion at the bottom of the page),
 - an Ecostruxure Augmented Operator Advisor Builder license (the cloud or local license must be renewed annually: click [here](#)),
 - Ecostruxure Operator Terminal Expert runtime software (used for its drivers),
 - One Ecostructure Operator Terminal Expert Runtime license,
 - One Zigbee receiver for coupling wireless measurement sensors.
- An Android or iOS tablet for operation can be provided as an option.

References

Augmented reality application development kit		MD4STPKDEVRA 
Tablets for operation	Android	MD1ACTABA 
	iOS	MD1ACTABI 

The +

- Industrial and scalable solution that can be adapted to suit all your systems.
- Can be used in development and operations.



Augmented reality application development kit

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CIRA (automatic regulation of industrial controls)
- BTS CRSA (design and realization of automatic systems)

Recommended training



For updating your knowledge
AOADEV
Programming with EcoStruxure
Augmented Operator Advisor
Scan or click on the QR code

Communication

Packs | Communication Add-ins

Learning goals

- Programming industrial communication.
- Study and implement a distributed input/output system.

Presentation

These packs make it possible to complete an automatic pack and to discover the use of distributed input/output devices of the Advantys type and their different modes of communication on bus and network.

Description

Modbus connector

- 1 16E / 16S module installed on Modbus.
- 1 8-way Modbus distribution frame.
- 4 Modbus cords of 1 m.
- 1 TeSys U motor start on Modbus.
- 1 24 VDC 1.2 A power supply.
- 1 energy meter on Modbus.

CANopen Connectivity

- 1 8 I/O module installed on CANopen.
- 1 CANopen 4-way splitter.
- 5 1 m CANopen cords.
- 1 CANopen Sub-D/RJ45 cord.
- 1 24 VDC 1.2 A power supply.
- 1 0.18 kW 230 V controller.
- 1 programming cable.

Ethernet connector

- 1 16E / 16S module on Ethernet.
- 1 5-port switch.
- 4 RJ45/RJ45 cords.
- 1 24 VDC 1.2 A power supply.
- 1 0.18 kW controller with Ethernet card.
- 1 programming cable.
- 1 Modbus/Ethernet gateway.

References

I/O Packs	on the Modbus bus	MD1APCM
	on the CANopen bus	MD1APCC
	on the Ethernet network	MD1APCE

The +

- Predefined package.
- Cost effective.



I/O pack on Modbus

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CIRA (automatic regulation of industrial controls)
- BTS CRSA (design and realization of automatic systems)

Recommended training



For updating your knowledge

APETH

Ethernet

General knowledge and programming
Scan or click on the QR code

Communication

Modular bench | Industrial communication

Learning goals

- Configuring an industrial field network.
- Diagnosing a communication error.
- Scheduling.
- Defining a communication architecture.
- Choosing a communication medium.

Presentation

Industrial automation solutions are relying increasingly on communication networks and field buses.

This modular offer allows you to quickly realize a communication configuration with the most commonly used protocols: Ethernet TCP/IP, CANopen, serial Modbus...

Description

This bench consists of the modules below. You can also purchase each module separately (à la carte offer).

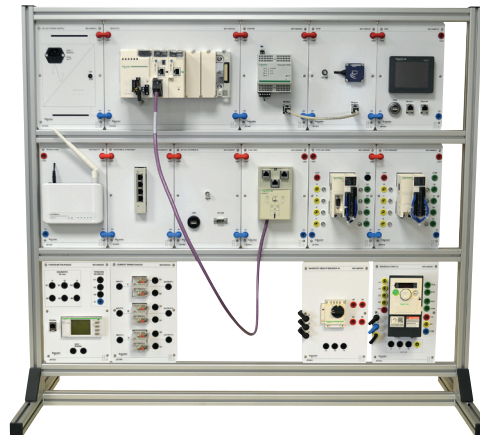
Designation	Quantity	References
Support structure	1	MD1AM000
3.5" touch display module	1	MD1AM0019
RFID sensor module	1	MD1AM0021
Ethernet Gateway module	1	MD1AM0054
Remote I/O module on Ethernet	1	MD1AM0020
M340 self-contained module	1	MD1AM0024
Ethernet switch module	1	MD1AM0025
RS232 Frame viewing module	1	MD1AM0027
Remote I/O module on CANopen	1	MD1AM0053
CANopen junction box module	1	MD1AM0036
Magnetic protection module	1	MD1AM1004
Central measurement module	1	MD1AM2003
3 I.T module	1	MD1AM2004
WiFi router module	1	MD1AM2010
24 VDC power supply module	1	MD1AM4001
Altivar 0.18 kW 230V CANopen controller module	1	MD1AM5001

References

Industrial communication modular bench	MD1AMLCOM
--	-----------

The +

- Fast and secure implementation.
- Robust wiring on safety sockets.
- Scalable solution.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- RISC + SSHT Pro SN (digital systems) Level

Recommended training



For updating your knowledge
APETH
Ethernet
General knowledge and programming
Scan or click on the QR code

Communication

Model | Industrial communication [new]

Learning goals

- Connecting a bus or network.
- Configuring an industrial field network.
- Diagnosing a communication error.
- Programming an exchange using Unity Pro software.
- Defining a communication architecture.
- Choosing a communication medium.

Presentation

Automation solutions are relying increasingly on communication networks and field buses. These configurations allow you to work with the most common protocols: Ethernet, CANopen, Modbus...

The pre-wired on-grid solution makes it possible to reproduce an industrial automation installation with the different communications between sensors, controllers and actuators.

Description

Different versions of pre-wired grids are offered:
Ethernet Version

- 1 Modicon M580 Ethernet controller.
- 1 UA OPC Ethernet communication module
- 2 I/O simulators.
- 1 Modicon M221 controller.
- 1 switch.
- 1 color touch display.
- 1 Ethernet remote I/O module.
- 1 controller for Ethernet communications.
- 1 0.37 kW brushless motor
- 1 Ethernet RFID sensor.
- 1 Zigbee hub.
- 1 power supply and protection box.

Modbus + CANopen + Ethernet version

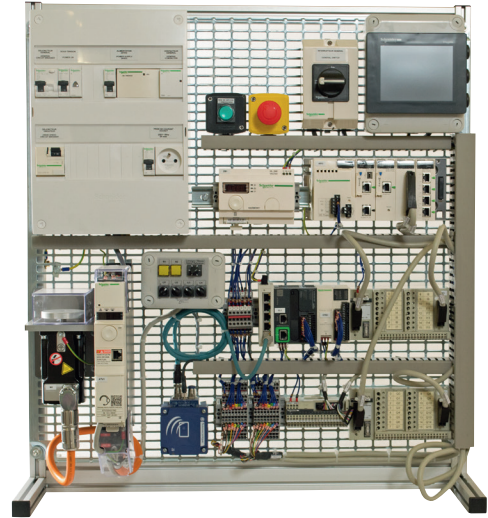
- 1 Ethernet communication module.
- 1 Modicon M340 CANopen Ethernet controller.
- 2 I/O simulators.
- 1 switch.
- 1 color touch display.
- 1 Ethernet remote I/O module.
- 1 CANopen remote I/O module.
- 1 controller for Ethernet communications.
- 1 0.37 kW brushless motor.
- 1 Modbus RFID sensor.
- 1 communicating measuring station.
- 1 Modbus RS485/TCP/IP gateway.
- 1 power supply and protection box.

References

Communication plates	Ethernet	MD1AE58E 
	CANopen Ethernet Modbus	MD1AE34MEC

The 

- Ready to use solution.
- Scalable solution.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- BTS SN (digital systems)

Recommended training



For updating your knowledge

APETH

Ethernet
General knowledge and programming
Scan or click on the QR code

Automation

Pack | Software Automation & HMI dedicated teaching [new]

Learning goals

- Programming and operating industrial control and display devices such as controllers and HMIs.

Presentation

- Schneider Electric enables training institutions to acquire industrial software at preferential prices
- Schneider Electric's offer consists of 2 packs containing all automation software for one and all HMI software for the other
- The 2 packages include a subscription to the online services offered by Schneider Electric: <https://xsl.se.com/public/>

Descriptive

Automation software packs

- If you have had a subscription contract to PL7, Unity or EcoStruxure Control Expert, you will need the update pack
- If you have never had a Schneider Electric automation software contract, then you will need the basic package
- The 2 packages contain the following software:
 - Ecostruxure Control Expert (ex Unity),
 - PL7 PRO + Advantys STB,
 - Ecostruxure Machine Expert (ex SoMachine),
 - Ecostruxure Machine Expert Basic (ex SoMachine Basic),
 - Unity Diff, Twido suite, Zelio soft and Zelio com.
- Updates do not require an earlier version on your workstation.
- If in doubt, consult your local support.

HMI software packages

- If you have a subscription contract for Vijeo Designer, you will need the update pack.
- If you have never had a Schneider Electric HMI software contract, you will need the basic package.
- The 2 packages contain the following software:
 - Ecostruxure Termina Expert,
 - Vijéo Designer Classic and Lite.
- Updates do not require an earlier version on your workstation.
- If in doubt, consult your local support.

References

Automation Pack	Update	FSACSFRCDEAPIXL 
	Basic	FSACSFRCDEAPIXL 
HMI packages	Update	FSACSFRCDEHMI 
	Basic	FSACSFRCDEHMI 

The +

- Permanent Establishment Licenses.
- 1 year updates included.
- Access to online XLS resources.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- RISC + SSHT Pro SN (digital systems) Level

Recommended training



For updating your knowledge
PRODECENCY
Programming with EcoStruxure Control Expert
Scan or click on the QR code

Automation

Packs | Initiation Machines

Learning goals

- Study and implement different types of machines (controllers).
- Programming a robot with SoMachine Basic and SoMachine.

Presentation

This offer introduces you to the programming of the Modicon M221 and M241 programmable controllers as well as to the industrial communication buses and networks of Modbus, CANopen and Ethernet. Depending on the version chosen, the user will be able to discover the different types of programming and the different communication functions.

Description

Modicon M221 Pack

- 1 Modicon M221 24E/16S TOR controller, 2E analog and Ethernet port.
- 1 Ethernet cable.
- 1 PC/API USB cable.
- 1 simulation terminal block.
- 1 SoMachine Basic software + tutorial on USB key.

Modicon M241 controller pack with analog I/O

- 1 Modicon M241 with 14E/10S TOR, Ethernet and CANopen ports.
- 1 analog 4E/2S module.
- 1 programming cable.
- 1 Ethernet cable.

Modicon M241 Ethernet Controller Pack

- 1 Modicon M241 with 24E/12S TOR, Ethernet port
- 1 switch.
- 1 programming cable.
- 1 Ethernet cable.

References

Modicon M221 Pack	MD1AP21
Modicon M241 Analog Pack	MD1AP41A
Modicon M241 Ethernet Pack	MD1AP41E

The +

- Cost effective.
- Predefined package.
- Initiation support.



Modicon M221 Pack



Modicon M241 Analog Pack

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- BTS CRSA (design and realization of automatic systems)
- RISC + SSHT Pro SN (digital systems) Level

Recommended training



For updating your knowledge

SOMA1

Development with EcoStruxure Machine Expert (basic)
Scan or click on the QR code

Learning goals

- Study and implement different types of machines (controllers).
- Programming a robot with SoMachine basic and SoMachine.
- Implementing an automation architecture.

Presentation

This offer makes it possible to realize an automation architecture for an industrial machine with programmable logic controllers Modicon M221, M241 and M258 as well as for the implementation of industrial communication buses and networks Modbus, CANopen and Ethernet. Depending on the versions, the user will be able to discover the different types of programming, different communication functions.

Description

Modicon M221 with display, machine safety and motor start

- 1 Modicon M221 24 E/16 S TOR with Ethernet port.
- 1 analog 4E/2S module.
- 1 Ethernet cable.
- 1 motor start module + 9 A contactor and motor circuit breaker.
- 1 safety module + one emergency shutdown LP.
- 1 3.5" Ethernet color touch display.
- 1 24 VDC / 3 A power supply.
- 1 input simulation terminal block.

Modicon M241 controller pack with display and controller

- 1 Modicon M241 with 14E/10S TOR, Ethernet port and CANopen.
- 1 5.7" color touch terminal.
- 1 24 VDC 3 A power supply.
- 1 0.18 kW 230 V controller.
- 1 CANopen junction box + CANopen cable.
- 1 programming cable.
- 1 display/control cable.
- 1 controller/control cable.

Add-ins for Modicon M221 and M241

- 1 analog 4E/2S module.
- 1 motor-start module, 9 A contactor and motor-circuit breaker.
- 1 machine safety module with emergency stop LP.
- 1 3.5" Ethernet color touch display.
- 1 WiFi terminal.

Modicon M258 performance controller pack with display and controller

- 1 Modicon M258 with 26E/16S, CANopen master port and Ethernet port.
- 1 5.7" color touch terminal.
- 1 24 VDC 3 A power supply.
- 1 0.18 kW 230 V controller.
- 1 CANopen junction box + CANopen cable.
- 1 programming cable.
- 1 display/control cable.
- 1 controller/control cable.

References

Modicon Packs	M221 complete with HMISTU, safe, TeSys U	MD1AP21C
	M241 with HMISTU display and Altivar 320 controller	MD1AP241STU
	M258 with HMISTU display and Altivar 320 controller	MD1AP258STU
Add-ins for Modicon M221 or M241 Packs		MD1AP21P

The +

- Solutions adopted by machine manufacturers.
- One connection point and one single application.
- Solutions Tested - Validated - Documented.



Add-in Pack



Display, safety and motor start package

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- BTS CRSA (design and realization of automatic systems)
- RISC + SSHT Pro SN (digital systems) Level

Recommended training



For updating your knowledge

LEX32

Motion control and linear axes - Lexium 32
Scan or click on the QR code

Automation

Packs | Industrial Automation

Learning goals

- Study and implement different types of machines (controllers).
- Programming a robot with Unity Pro.
- Implement industrial communication.

Presentation

This offer provides training in the programming of the Modicon M340 programmable logic controller as well as in the implementation of the Modbus, Ethernet and CANopen industrial communication networks and buses.

Depending on the versions, the user will be able to discover the different types of programming, and different communication and regulation functions.

Description

Modicon M340 Modbus mini pack

- 1 Modicon M340 Modbus + USB processor.
- 1 230 V power supply.
- 1 16E module with screw terminal.
- 1 16S relay module with screw terminal.
- 1 rack 4 expandable slots.
- 1 USB/PC to PLC cable.

Modicon M340 Modbus Pack

- 1 Modicon M340 Modbus + USB processor.
- 1 230 V power supply.
- 2 16E modules with screw terminal block.
- 1 16S relay module with screw terminal.
- 1 rack 8 expandable slots.
- 1 USB/PC to PLC cable.

Modicon M340 Modbus + Ethernet Pack

- 1 Modicon M340 Modbus + USB + Ethernet + one 8 MB memory card.
- 1 230 V power supply.
- 1 16E module with screw terminal.
- 1 16S relay module with screw terminal.
- 1 rack 8 expandable slots.
- 1 USB/PC to PLC cable.

Modicon M340 Modbus + Ethernet + CANopen Pack

- 1 Modicon M340 Modbus processor + CANopen + USB + one 8 MB memory card.
- 1 Ethernet module
- 1 230 V power supply.
- 1 16E module with screw terminal.
- 1 16S relay module with screw terminal.
- 1 rack 8 expandable slots.
- 1 USB/PC to PLC cable.

Control add-on

- 1 4E analog insulated module + terminal block.
- 1 isolated 2S module + terminal block.

References

Modicon M340 Packs	Modbus mini	MD1AP34MN
	Modbus	MD1AP34M
	Ethernet Modbus	MD1AP34ME
	CANopen Ethernet Modbus	MD1AP34MEC
Control add-on		MD1AP34R

The +

- Predefined package.
- Cost effective.



Modbus Single Pack

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BP SN (Digital Systems) RISC + SIT
- BTS CRSA (design and realization of automatic systems)
- BTS CIRA (automatic regulation of industrial controls)

Recommended training



For updating your knowledge

UP340B

Programming - Modicon M340
(EcoStruxure Control Expert, basic)
Scan or click on the QR code

Learning goals

- Programming a robot with Unity Pro.
- Implement a communicating automation architecture.

Presentation

These packs enable the realization of complete architectures of high performance automation as used in industrial processes.

Description

Modicon M340 x 5 and HMI x 5 Pack

- 2 controllers with Ethernet and CANopen ports.
- 3 controllers with Ethernet and Modbus ports.
- 3 Ethernet modules.
- 5 x 16 E modules.
- 5 x 16 S modules .
- 5 x 24V DC power supplies.
- 5 x 5.7" Magelis color touch displays with Ethernet and Modbus ports.
- 1 Altivar controller 0.75 kW mono + 1 x 750 W brushless motor.
- 1x 9 A Lexium servo-controller + 1x 0.9 Nm 3000 rpm closed loop brushless motor.
- 1 Modbus energy meter.

Modicon M580 Pack

- 1 M580 processor with 3 Ethernet ports of which 2 are real-time.
- 1 230 V power supply.
- 1 16E module + screw terminal block.
- 1 16S relay module + screw terminal.
- 1 rack with 8 expandable slots, X bus and Ethernet bus.

Modicon M580 Ethernet Architecture Pack

- 1 Modicon M580 processor, 3 Ethernet ports of which 2 are real-time.
- 2x 230 V power supplies .
- 2x 16E modules + screw terminals.
- 2X 16S relay modules + screw terminals.
- 1 real-time Ethernet offset module.
- 1 rack with 8 expandable slots, X-bus, Ethernet bus.
- 1 rack with 4 expandable slots, X-bus, Ethernet bus.

References

Pack of 5 Modicon M340 and HMI	MD1APPFM34
Modicon M580 Pack	MD1AP58EE
Modicon M580 Ethernet Architecture Pack	MD1AP58EA

The +

- End-user solution in the agri-food, energy and fluid management sectors.
- PL7 import compatibility.
- Advanced Ethernet services.
- Energy measurement.



Modicon Pack

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- BTS CIRA (automatic regulation of industrial controls)

Recommended training



For updating your knowledge

UP340B

Programming - Modicon M340
(EcoStruxure Control Expert, basic)
Scan or click on the QR code

Learning goals

- Study and implement an automation architecture:
 - programming,
 - communication with controllers, communicating motor starters...
 - control functions.
- Discover industrial communication networks and buses (Modbus, CANopen, Ethernet).
- Study human/machine dialog terminals.

Presentation

This offer possible to build automation architectures very quickly by connecting the various modules using secure cords. It makes it possible to discover programmable controllers, and enables communication between controllers and displays. Each box or module corresponds to one component or one automation function. You can also purchase each module separately as well as modular operating components.

Description

Each box or module corresponds to one component or one automation function. You can also purchase each module separately, as well as modular operating parts.

Composition

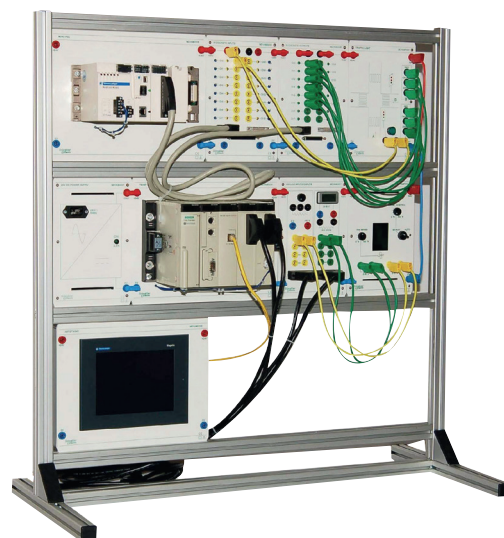
Modicon M221 Modular Bench	1	MD1AML221
Support structure	1	MD1AM000
Module 16 TOR inputs with flat cables	1	MD1AM0005
16 output TOR module with flat cables	1	MD1AM0006
Display module	1	MD1AM0019
M221 Module	1	MD1AM0032
24 VDC power supply module	1	MD1AM4001
Machine control module	1	MD1AM7002
Modicon M340 Modular Bench	1	MD1AMLMR
Support structure	1	MD1AM000
M340 module with 1 card 16 inputs, 16 outputs	1	MD1AM0003
Module 16 TOR inputs with flat cables	1	MD1AM0005
16 output TOR module with flat cables	1	MD1AM0006
Display module	1	MD1AM0016
Ethernet switch module	1	MD1AM0025
24 VDC power supply module	1	MD1AM4001
Machine control module	1	MD1AM7002

References

Modular benches	Modicon M221	MD1AML221
	Modicon M340	MD1AMLMR

The +

- Fast and secure implementation.
- Robust wiring on safety sockets.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- RISC + SSHT Pro SN (digital systems) Level
- BTS CRSA (design and realization of automatic systems)

Recommended training



For updating your knowledge
IFA
 Components of an automated system
 Scan or click on the QR code

Automation

System | Automatic parts sorting

Learning goals

- Scan the system.
- Analyze the identification technologies.
- Study the start and stop modes (GEMMA).
- Study linear measurement systems.
- Study the weighing sensor.
- Program a 0-10 V and 4-20 mA signal.
- Configure the system.

Presentation

This equipment simulates an industrial system of automatic sorting of parts according to several criteria: material type, weight, dimensions. The system offers three modes of operation: automatic, step by step and manual. The dialog terminal enables the visualization of the measurement results and the calibration of the analog measuring device. Programming software (not provided) allows you to customize the operation, and to view the Grafset cycle and the data tables dynamically.

Description

Operating part

- 1 belt conveyor equipped with a geared motor.
- Double action pneumatic cylinders.
- 1 photocell.
- 1 inductive sensor.
- 2 capacitive sensors.
- 1 analog 0-10 V stroke sensor.
- 1 analog weighing sensor 4-20 mA.
- 12 pieces to sort according to the criteria:
 - type of material (plastic or metal),
 - part weight,
 - dimensions and shape (presence of hole and/or groove).

Control Part

- 1 Modicon M340 programmable logic controller.
- 1 dialog terminal.
- 4/2 bistable electropneumatic interfaces.
- Control relay.

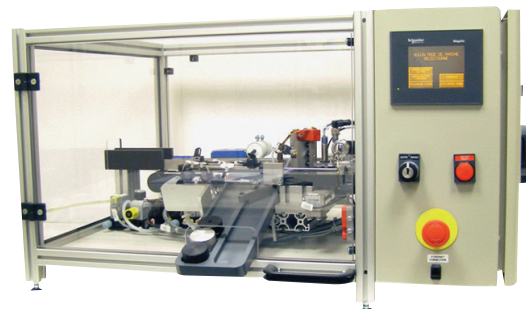
References

Automatic coin sorting system

MD1AE955MR

The +

- Study of TOR and analog sensors.
- Compact equipment.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- Level Pro MSPC (maintenance of connected production systems)

Recommended training



For updating your knowledge

IFA

Components of an automated system
Scan or click on the QR code

Automation

Bench | Study of the regulation of levels

Learning goals

- Study the behavior of a regulation system with or without pure delay.
- Understand the precision and stabilization parameters of a process.
- Study simple, cascading or feed forward loops:
 - P, PI, PD, PID with digital output
 - ON/OFF two TOR output states,
 - ON/OFF three output states
 - hot/cold with digital outputs,
 - split-range with digital outputs,
 - IMC (model regulator) with digital output,
 - digital feed-forward (predictive controls).

Presentation

This bench makes it possible to study a control system like those encountered in continuous industrial processes. The objective is to regulate a water level and a water flow under different conditions/system disturbances. The bench consists of 2 columns of water:

- one for the tank,
 - the other for visualizing the controls.
- Three pumps are installed in the base to ensure the functions of filling, emptying, and perturbation of the system. A valve at the top of the reservoir makes it possible to operate in a stable or non-integrating system.

Description

Composition

- 1 operating part consisting of 2 columns of water.
- 3 filling, draining and perturbation pumps.
- 1 control part with M340 controller.
- 1 Magelis terminal for the control, parameterization and visualization of curves.
- 1 set of pressure sensors, flow sensors and level sensors.
- 1 set of measuring points or controls for 3 pumps.

Characteristics

- Monolithic structure
- Power supply: 230 V / 270 VA
- Dimensions (H x L x P): 700 x 780 x 450 mm
- Weight: 46 kg

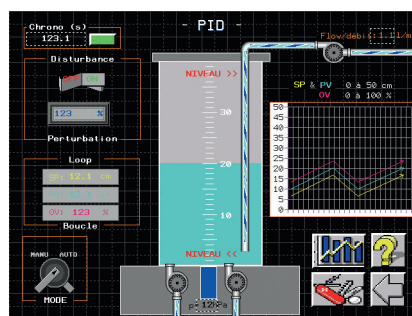
References

Level control study bench

MD1AE885



- Compact system.
- Setting up the different control loops.
- Touch screen operation with curve plotter.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CIRA (automatic regulation of industrial controls)
- Electrotechnical BTS

Recommended training



For updating your knowledge
UP340B
 Programming - Modicon M340
 (EcoStruxure Control Expert, basic)
 Scan or click on the QR code

Automation

Bench | Package sorting

Learning goals

- Implementing the automated management and control of a sorting system.
- Study and implement a CANopen bus.
- Study Ethernet network communication.
- Implement a database.
- Study the exchange of information between API and PC.

Presentation

The TAPIRIS bench simulates an automated parcel sorting station. Packages are represented by cubes with a label containing a bar code and geometric shapes. After passing under an optical reader, they are removed onto one of the three trays.

Sorting generates a database that can be used in several ways:

- the Web server embedded in the Ethernet coupler of the controller,
- the Web Designer software to create custom html pages in the web server,
- OPC/OFS data server software with Excel and Visual Basic.

Communication between the mat and the automatic plate is ensured through a CANopen bus.

Description

Operating part

- 1 automatic parcel loading station.
- 1 conveyor belt of length 1.4 m.
- 1 180 W geared motor.
- 1 Altivar control set (controller?).
- 4 photo-electric cells for detecting the passage of packages.
- 1 bar code detector for package identification.
- 2 jack evacuation stations.
- 1 set of packages with identification tags.

Control Part

- 1 Modicon M340 Modbus controller, CANopen.
- 1 Ethernet coupler.
- 1 dialog-operator terminal.

References

Package sorting system	Operations part	MD1AE854TC
	Control part	MD1AE858MR

The +

- Data usage with the OPC server.
- Implementation of a Web site.



TAPIRIS operating part



TAPIRIS Command Part

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- BTS SN (digital systems)

Recommended training



For updating your knowledge

APETH

Ethernet
General knowledge and programming
Scan or click on the QR code

Learning goals

- Installation and connection.
- Commissioning.

Presentation

• The bottling project packs bring together different Schneider-Electric components that are commonly used in machines and industrial environments. It makes it possible to study the protection and starting of the motors, the detectors and the system of buttons (keys). It is monitored through a color touch display and incorporates an Ethernet communication interface.

This teaching equipment makes it possible to evaluate each candidate based on the WorldSkills France 2015, section "industrial control":

- installation and wiring element of power and control circuits,
 - testing and commissioning of relay wiring and logic,
 - API installation and I/O wiring,
 - pre-commissioning testing,
 - program testing and commissioning,
 - Modicon M340 controller and HMI configuration,
 - Changes to the electrical diagram.
- The bottling line pack is accompanied by a choice of 6 complementary building site packs that facilitate an understanding of connected technologies:
1. Wiring and control of a 24 V AC motor using a 1-way electronic starter.
 2. Wiring and control of a 24 V ac motor using a 2-way electronic starter.
 3. Wiring and control of a 24 V DC motor using a variable speed drive, control by potentiometer 1 direction of rotation.
 4. Wiring and control of a 24 V DC motor using a variable speed drive with M221 controller.
 5. Wiring of an additional machine safety device with 24 V DC control.
 6. Zigbee radio control and consumption measurement (metering).

Description

Composition

- Installation and connections with electrical box, buttons, motor start, safeguards, API and HMI.
- Sensors and actuators.
- Biometric sensor and Ethernet I/O remote module for fiber optics (only with the bottling project).
- Pathways.
- Screen printing representing the installation.
- Candidate file.

References

Material and business record industrial control for bottling		MD1APPWS6 n
24 V AC motor control pack	1 direction of rotation	MD1APPWSC1 n
	2 directions of rotation	MD1APPWSC2 n
24 V DC motor control pack	Variable speed	MD1APPWSC3 n
	variable speed and controller	MD1APPWSC4 n
	and machine security	MD1APPWSC5 n
	Zigbee radio control	MD1APPWSC6 n

The +

- Low cost: machine symbolized on transfer.
- Wide field of study.



Compacting pack



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Level Pro MSPC (maintenance of connected production systems)

Automation

Panel | HMI and PLC

Learning goals

- To program a PLC with Unity Pro
- To study the display unit
- To program the HMI terminal with Vijeo Designer
- To operate the terminal
- To manage breakdowns via feedback from the terminal

Presentation

The console consists of a Modicon M340 PLC whose logic I/Os are on surface plate. Inputs and outputs are connected from an outside operational part in form of push buttons, limit switches and the indicators respectively. The analogue I/Os are placed remotely in the form of female connectors. The male connectors are pre-wired. A Magelis display unit enables operator dialogue.



Description

Composition

Description	Quantity
M340 Ethernet PLC	1
Discrete inputs hardwired on switches	16
Discrete outputs hardwired on double-recess plugs	16
Analog inputs on double recess plugs	4
Voltage and current analog output, on double-recess plugs	1
Voltage and current analog output, on double-recess sockets	1
5.7" HMISTU Ethernet colour touch screen terminal	1
24 VDC 4 A power supply on sockets	1
- set of programming cables for the PLC and display unit	
- set of cables with round male connectors and flying leads	
Software license	1

References

Training kit for HMI + PLC

AET-P01-HPL

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Advanced vocational training, Engineering and University

Automation

Panel | SCADA and Industrial Communication

Learning goals

- PLC communication protocols
- PLC and HMI programming
- Software to design supervision system
- Alarms and report management
- Variety of graphics and animations
- Extensive data and event logging
- Realtime and historical trending
- Wizards for screen development
- Communication - Multidrop, One to One, Modern, Ethernet, TCP/IP
- Extensive tags and database management
- Script based excel report generation
- Advance component library
- Open data based connectivity
- OLE for process control (OPC Client)

Description

Composition

- M340 PLC
- M221 PLC
- Multifunction relay
- Speed drive
- Unmanaged hub switch
- Magelis 7" TFT screen
- Magelis 5"
- Indicators
- Push buttons
- System mounted on castors

References

SCADA and Industrial communication panel

AET-P01-SCA

The +

- Industrial communication protocols - Ethernet TCP/IP, CANopen, MODBUS serial etc.
- SCADA application



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Advanced vocational training, Engineering and University

Automation

Sensor Case

Learning goals

- Finding out about the various technologies used in industrial detection:
 - Photoelectric detectors (barrier, reflex, fiber optics, background obliteration, etc.)
 - Inductive and capacitive sensors for detection of various materials,
 - Detection of rectilinear or angular movement via position switches.
- Implementing sensors.
- Making adjustments.
- Setting up a detection chain



Plate with case and power supply box

Presentation

These detection workshops are designed to study the principles of industrial detection. The various types of sensors and targets proposed are representative of the equipment found in an industrial environment. The power supply box is equipped with indicator lights to show the states of the sensors. The grooved plate and the case of accessories can be used to quickly mount, remove and position the sensors and the targets, and to measure the distances and angles of detection

Description

Grooved Aluminium support plate

- X axis: travel 600 mm.
- Y axis: length 460 mm

Contents	Quantity
Limit switch Plastic	1
Limit switch, metal end Plunger with elastomer boot 1 NO + 1 NC PG11	1
Limit switch plastic thermoplastic roller lever 1 NO + 1 NC PG-11 cable	1
Limit switch thermoplastic roller lever plunger Horizontal action in 1 direction 11 NO + 1 NC PG-11 cable entry	1
Inductive sensor M18 sensing distances 8 mm 1 NO length 62 mm	1
Inductive sensor M18 sensing distances 8 mm PNP length 62 mm	1
Inductive sensor M18 sensing distances 8 mm	1
Capacitive Proximity sensor M18 sensing distances 5 mm	1
Photo Electric sensor sensing distance 30 m thru beam need a transmitter	1
Photo Electric sensor sensing distance 30 m thru beam need a transmitter	1
Photo electric sensor nominal sensing distances 1 m defuse	1
Photo electric fibre amplifier	1
Plastic fibre optic for sensor 3 m long	1
Fibre optic Amplifier	1
Reflector	1

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Vocational Training

Automation

Sensor Case

Case of accessories

Contents	Quantity
Fast-opening vices with fine screw tightening system.	2
Cam with 15°, 30°, 45°, and 90° angles.	1
1 set of steel, aluminium or brass targets for the inductive sensors	1
set of colour reflecting targets made of aluminium, cardboard, reflecting strip, 1 glass, mirror, neutral.	
1 set of reflectors	1
set of metallic/non-metallic labels.	1

Power supply box with regulator

- 0-24 V variable direct current power supply (powering the sensors).
- Sensor connections via safety sockets.

References

Sensor Case	AET-K01-SEN
-------------	-------------

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Vocational Training

Human / machine dialog

Packs | Man-machine dialog displays

Learning goals

- Study and implement different types of touch terminals.
- Discover the Vijeo Designer software.
- Initiation into supervisory functions.

Presentation

This offer presents the different types of touch screen graphics terminals of the Magelis HMISTU and XBTGTO range as well as the programming software Vijeo Designer.

Description

Magelis HMISTU Compact Display Pack

- 1 touch terminal, 5.7" display, 32MB memory, 1 com RS232/485 port, 1 Ethernet port, 2 USB ports, 22mm hole mounting.
- 1X 1.8m HMI/PC programming cord.
- 1 Modicon M340 HMI/API cord.
- 1 HMI/TSX API cord.
- 1 x 24 V DC, 1.2 A power supply.
- 1 Vijeo Designer software for HMI display.

Magelis HMIGTO Advanced panel optimum display pack

- 1 touch terminal, 10.4" display, 96MB memory, 1 com RS232 port, 1 com RS485, 2 USB and 1 Ethernet port.
- 1 x 24 V DC, 3A power supply.
- 1 Modicon M340 HMI/API cord.
- 1 HMI/TSX API cord.
- 1 light column on USB.
- 1 4GB memory card.
- 1x 1.8m HMI/PC programming cord

References

5.7" HMI Display Pack	MD1APHMI855
10.4" HMI Display Pack	MD1APHMI10V2

The +

- Cost effective.
- Predefined package.



HMI Controller Pack



HMI GTO

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- Level Pro MSPC (maintenance of connected production systems)

Recommended training



For updating your knowledge
VJDS
 HMI - Magelis and Vijeo Designer
 Scan or click on the QR code

Machine detection and security

Pack | RFID Add-in

Learning goals

- Understand RFID data transmission technology.
- Implement Modbus/TCP communication between stations and an automation architecture.

Presentation

RFID packs allow you to study and implement an application for access control, identification and traceability.

Each station has a network address with read/write access. Addressing is carried out very easily using a badge that is supplied with the pack. The data is stored in the badge or in the label presented.

Description

Modbus RFID Pack

- 2 Modbus RTU stations 40x40 mm.
- 1 Modbus/Ethernet gateway.
- 1 switch 5 Ethernet ports.
- 10 EEPROM badges.
- 2 station configuration badges.
- 1 set of cables.

References

Modbus RFID Pack

MD1APPFRFID

The +

- Cost effective.
- Predefined package.



Modbus RFID Pack

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- RISC + SSHT Pro SN (digital systems) Level
- BTS CRSA (design and realization of automatic systems)

Machine detection and security

Modular bench | RFID Card Set

Learning goals

- Understand RFID data transmission technology.
- Know the communication mechanisms between Modbus/TCP and IT equipment:
 - Addressing a read/write station,
 - Data calculation, 16-bit encoding,
 - Writing encoded data into a badge,
 - Reading a coded badge,
 - Parsing a 16-bit response.
- Visualization of the Modbus lines or threads.
- Interactive card games.
- Programming on Windows and JavaScript on Magelis.

Presentation

This offer allows you to discover RFID transmission technology based on an interactive card game. It also enables you to learn about the communication between the IT equipment using Modbus/TCP. The computer connection can be wired or wireless for viewing the threads and the data transmitted on the bus.

Description

The basic offer includes the following elements. The games and learning applications are provided on CD, along with an Android app for tablet. You can also purchase each module separately (à la carte offer).

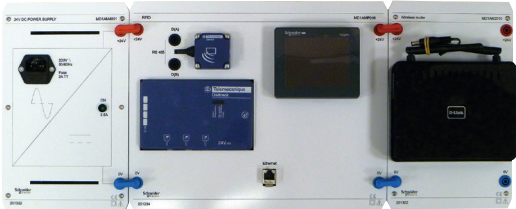
Modules	
Designation	References
Support structure	MD1AM000
WiFi router module	MD1AM2010
24 V power module	MD1AM4001
RFID module with display	MD1AMP016

References

RFID Modular Bench	MD1AMLRFID
--------------------	------------



- Application for reading threads on tablet.
- Fast and secure implementation.
- Fun aspect of the equipment.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- RISC + SSHT Pro SN (digital systems) Level
- Level Pro MSPC (maintenance of connected production systems)

Machine detection and security

Modular benches | Safety of machinery

Learning goals

- Study machine safety categories and determine risk levels.
- Implement the appropriate security arrangements in accordance with current standards.
- Learn about scalable security features:
 - Emergency stop surveillance,
 - Monitoring of safety switches,
 - Monitoring of coded magnetic switches,
 - zero speed control by association with a key safety switch.

Presentation

The modular machine safety offer comprises two parts: a control part in the form of a modular structure and an operating part on a panel. The aim is to reproduce the safety chain by wiring safety switches, Preventa modules and line contactors. All of this makes it possible to study safety categories 3 and 4. The operating part comprises two rotating parts protected by removable grilles and safety end-of-travel.

Description

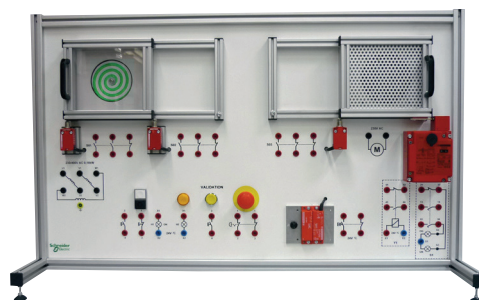
Designation	Quantity	Ref.
Support structure	1	MD1AM000
Emergency Shutdown Surveillance Security Module	1	MD1AM9001
Safety module for monitoring emergency stop and position switch	1	MD1AM9002
Universal security module	1	MD1AM9025
Timing monitoring module	1	MD1AM9004
Zero speed monitoring module	1	MD1AM9005
Timing monitoring module	1	MD1AM9006
24V DC / 2.5A power module	1	MD1AM4001
Magneto-thermal circuit breaker module	1	MD1AM1015
Contactor module	3	MD1AM1008

References

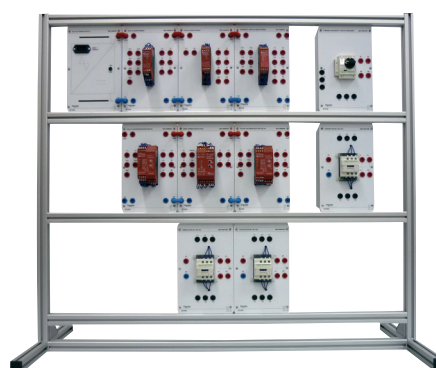
Modular machine safety bench	MD1AMLSECU
Machine safety operating part	MD1AMP011

The +

- Fast and secure implementation.
- Robust wiring on safety sockets.



Security operating part



Modular safety bench

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- Level Pro MSPC (maintenance of connected production systems)

Machine detection and security

Modular bench | Security machine immaterial barrier [new]

Learning goals

- Study and implement a machine security architecture based on non-hardware barrier sensors.
- Discovering and wiring PREVENTA security modules.
- Studying and wiring photoelectric light barriers.
- Configure using SoSafe software .

Presentation

- The offer of modular non-material machine security barriers consists of a control part in modular form and a security module with non-material barriers.
- The safety module for non-material barriers can be mounted on the 2 meter conveyor ref. MD1AMP024 (optional) to automatically move objects in front of gates.

Description

Designation	Quantity	Ref.
Support structure	1	MD1AM000
24 VDC power supply module	1	MD1AM4001
Emergency stop fist safety module	1	MD1AM9015
Safety module safety switch	2	MD1AM9017
Safety module push button reset	1	MD1AM9018
Light beacon safety module	1	MD1AM9019
Coded magnetic switch safety module	1	MD1AM9020
Preventa 8 input 2 output controller security module	1	MD1AM9021
Preventa 8 input 2 output security plug-in	1	MD1AM9022
IP Ethernet diagnostic interface security module	1	MD1AM9023
Security module non-material barriers	1	MD1AMP036
TI24 connector cords for bus connection	3	A9XCAH06
1.8m USB PC connector cable	1	BMXXCAUSBH018
CD-ROM - Sensors XUSL Safety Light Curtains	1	

References

Batch of machine safety modules - non-material barrier	MD1AMLSECUMA ⓘ
Motorized conveyor - 2 meters	MD1AMP024 ⓘ

The +

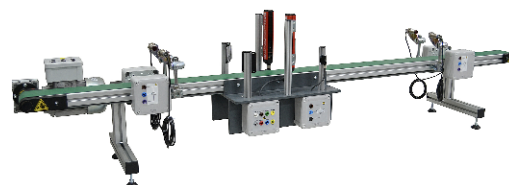
- Simple and robust implementation.
- Secure wiring.



Modular batch and operating part of an non-material barrier



Motorized conveyor 2 m



Non-material barrier installed on the conveyor

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- Level Pro MSPC (maintenance of connected production systems)

Motor start

Packs | Motor Start

Learning goals

- Study and implement the various motor start-up schemas:
 - Separation or sectioning,
 - Control or switching,
 - Short circuit protection,
 - Overload protection.
- Know the equipment and implementation differences.
- Make power control equipment.

Presentation

This assembly allows electromechanics to design, assemble, wire and troubleshoot power control equipment.

Description

Base pack

- 1 platinum kit with wiring accessories.
- 1 24 V DC power supply kit.
- 1 set of protections and contactors for realizing:
 - 1 x 1.5 kW direct starter,
 - 1 x 1.5 kW direct starter-inverter,
 - 1 1.5 kW starter star-triangle with 1 or 2 directions of operation

TeSys U Add-on

- 1 kit for making a 1.5 kW direct starter.
- 1 integrated, modular direct starter-inverter with low implementation.

Variable speed (controller) add-on

- 1 Altivar 1.5 kW speed controller.
- 1 progressive starter.
- SoMove software.

References

Basic motor starter hardware package	AET-K01-MSP
TeSys U add-on hardware pack	AET-K01-MST
Motor starter hardware VV add-on kit	AET-K01-MSD

The +

- Complete set predefined for all motor starter types.
- Cost effective.



Ref. Pack AET-K01-MSP



Ref. Pack AET-K01-MST



Ref. Pack AET-K01-MSD

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Vocational Training

Motor start

Modular benches | Motor Start

Learning goals

- Study and implement the various motor start-up schemes.
- Know the appliances and their different implementations.

Presentation

Modular motor-start benches allow quick implementation of the components of a power control equipment and the electromechanical control of motor-starter units that are to be studied. These components are mounted on housings and connected to double-well plugs.

Description

Composition

400 V 0.18 kW modular motor-start bench - ref. MD1AMLDM

Support structure	3	MD1AM000
TeSys U Starter Module	1	MD1AM1001
Magnetic circuit breaker module	1	MD1AM1002
Magneto-thermal circuit breaker module	1	MD1AM1003
Switch-disconnector module	1	MD1AM1005
Fuse disconnecter module	1	MD1AM1006
Thermal relay module	1	MD1AM1007
Contactor module	3	MD1AM1008
Switch-inverter module	1	MD1AM1009
Progressive starter module	1	MD1AM1018
Timed Auxiliary Module	1	MD1AM1012
Machine control module	1	MD1AM7004
24V DC 2.5A power module	1	MD1AM4001

400 V 0.75 kW modular motor-start bench - ref. MD1AMLDM3

Support structure	1	MD1AM000
TeSys U Starter Module	1	MD1AM1001
Magnetic circuit breaker module	1	MD1AM1002
Magneto-thermal circuit breaker module	1	MD1AM1020
Switch-disconnector module	1	MD1AM1005
Fuse port disconnecter module	1	MD1AM1006
Thermal relay module	1	MD1AM1021
Contactor module	3	MD1AM1008
Switch-inverter module	1	MD1AM1009
Progressive starter module	1	MD1AM1018
Timed Auxiliary Module	1	MD1AM1012
Machine control module	1	MD1AM7004
24V DC Power Module	1	MD1AM4001

Optional learning motors:

- 230/400 V or 400/690 V motor, see page F5

References

400 V modular motor-start benches	0.18 kW	MD1AMLDM
	0.75 kW	MD1AMLDM3

The +

- Fast and secure implementation.
- No risk of deterioration of the components.



Ref. Bench MD1AMLDM

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge



Speed switches: Basic knowledge
Scan or click on the QR code

Motor start

Bench | Motor Start

Learning goals

- Implement commonly used schemas:
 - direct start,
 - startup star-triangle,
 - two-way start,
 - Start with electronic starter.
- Combine power control components:
 - switch,
 - disconnecter,
 - contactor,
 - thermal relay,
 - TeSys U controller
- Measure voltages and currents in the circuit.
- Calculate torques, forces and energies.
- Learn about safety and protection.

Presentation

The motor start bench allows you to study the different electromechanical and electronic motor start schemes.

These could comprise the following:

- Basic components: Vario switches, LS1D disconnectors, LC1/LC2 contactors, Class 10 LRD thermal relays,
- Hardware that offers specific features: GV2 motor-circuit breakers, Integral 18 starters, TeSys U integrated motor-starters, Altistart ATS01 progressive starter-retarders.

Description

The bench is mounted on a chassis with blocking wheels and has 2 autonomous and independent working faces with industrial components connected to safety sockets:

- 1 automatic side for power circuit analysis and connection,
- 1 manual side for analysis and connection of power and control circuits.

The lower part contains:

- 2 groups (230 V AC 185 W motor and 190 V DC 280 W generator),
- 2 adjustable load rheostats,
- 1 voltmeter,
- several ammeters on each motor phase and load,
- 1 set of secure cords.

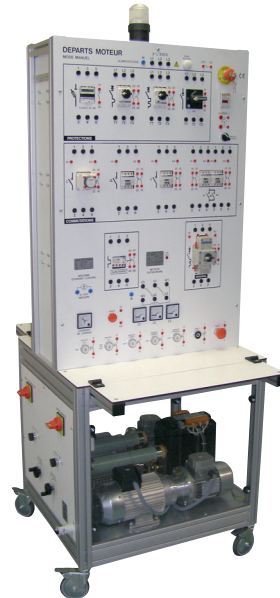
References

Motor start-up bench

MD1AA540

The +

- Mobile equipment.
- Two faces can be used simultaneously.
- Secure and robust wiring.



Manual side



Automatic side

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- Electrotechnical BTS

Recommended training



For updating your knowledge

VVI

Speed switches: Basic knowledge
Scan or click on the QR code

Motor start

Packs | Electronic starters

Learning goals

- Study and implement electronic motor starts.
- Set up (parameterize) an electronic starter.
- Implement industrial Modbus or Ethernet communication.



- Cost effective.
- Predefined full set.

Presentation

These three packs make it possible to understand different types of electronic starter-retarders: Altistart 01, Altistart 22 and Altistart 48. The Altistart ATS01 starter is designed for simple applications such as conveyors. It runs the motor in 2 phases. The Altistart ATS22 starter is designed for pumping, ventilation and compression applications. It runs the motor in 3 phases. It incorporates the bypass command sequence and motor protection. It communicates in Modbus. The Altistart ATS48 is designed for pumping, ventilation, compression and high torque applications. It runs the motor in 3 phases. It integrates many advanced functions like on-the-fly recovery, smoke removal, automatic restart etc. It communicates in Modbus.

Description

The packs consist of the following:

- Altistart 01
 - 1 6 A / 230-400 V starter.
 - 1 TeSys U motor starter with protection unit for 1.1 to 4 kW motors.

- Altistart 22
 - 1 15 A / 230-400 V starter.
 - 1 TeSys GV3L magnetic circuit breaker.
 - 1 line switch.
 - 1 SoMove software.
 - 1 PC link cord.

- Altistart 48
 - 1 17 A / 230-400 V starter.
 - 1 TeSys GV3L magnetic circuit breaker.
 - 1 line switch.
 - 1 Ethernet gateway.
 - 1 Modbus network branch cable.
 - 1 SoMove software.

References

Electronic starter packs	ATS01 with TeSys U	MD1APATS01
	ATS22	MD1APATS22
	ATS48	MD1APATS48



Altistart Pack 01



Altistart 22

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- Electrotechnical BTS

Recommended training



For updating your knowledge
WVI
Speed switches: Basic knowledge
Scan or click on the QR code

Variable speed and axle control

Packs | Speed switches

Learning goals

- Study and implement electronic motor starts.
- Set up (parameterize) an electronic controller.
- Use SoMove software.
- Implement industrial Modbus or Ethernet communication.

Presentation

The compact Altivar ATV320 is a controller designed for machine applications with many business functions (auto-tuning, machine safety). It is powered by 230 V single-phase or 400 V three-phase. It communicates in Modbus and CANopen.

The Altivar ATV930 is a high-end controller that integrates a web server. It accepts all types of motors. It is powered by 230 V single-phase or 400 V three-phase and has communication ports in Modbus, CANopen and Ethernet.

The Altivar ATV320 book is a vertical format controller that saves space in electrical cabinets. It is powered by single-phase 230 V or three-phase 400 V. It communicates in Modbus and CANopen.

Description

The packs consist of the following:

Altivar 320 Compact

- 1 1.5 kW single-phase or three-phase controller.
- 1 USB stick with technical documents and SoMove software.
- 1 PC link cord.

Altivar 930

- 1 1.5 kW single-phase or three-phase controller.
- 1 USB stick with technical documents and SoMove software.
- 1 PC link cord.

Altivar 320 book

- 1 1.5 kW single-phase or three-phase controller.
- 1 USB stick with technical documents and SoMove software.
- 1 PC link cord.

References

Altivar 320 controller pack	230 V - single phase - 1.5 kW	compact format	MD1APATV320CM
		Book format	MD1APATV320BM
	400 V - three-phase - 1.5 kW	compact format	MD1APATV320CT
		Book format	MD1APATV320BT
Altivar 930 controller pack	230 V - single phase - 1.5 kW		MD1APATV930M
	400 V - three-phase - 1.5 kW		MD1APATV930T

The +

- Cost effective.
- Predefined full set.



Altivar 320 Pack



Altivar 930

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- Electrotechnical BTS

Recommended training



For updating your knowledge

VI

Speed switches: Basic knowledge
Scan or click on the QR code

Variable speed and axle control

Packs | Servo-motor

Learning goals

- Make the technical choices concerning speed / positioning / size.
- Study the mechanical calculation of an axis.
- Implement products.
- Set (parameterize) the axis with SoMove software.
- Implement CANopen bus.

Presentation

These packs allow you to execute a project on an axis control application. The Lexium 32 single-phase and three-phase servo-controllers are to be associated with a brushless motor of the BMH or BSH type.

Description

Lexium 32 servo-controller pack

- 1 Lexium 32 3 A single-phase or 1.5 A three-phase servo-controller.
- 1 CANopen communication card.
- 1 set of power cables and control cables.
- 1 PC/ATV32 programming cord.

Lexium Pack 32 with motor

- 1 single-phase 9 A Lexium 32 servo-controller.
- 1 CANopen communication card.
- 1 brushless BSH 0.8 N.m 250 W, 3000 rpm motor.
- 1 set of cables.

Motor integrated Lexium 32i package

- 1 brushless BMI 2.2 N.m 700 W 3200 rpm motor with Lexium 32i.
- 1 CANopen communication card.
- 1 set of cables and accessories.

References

Servo-controller packs	Lexium 32	single-phase	MD1APLX32M
		three-phase	MD1APLX32T
	Lexium 32i and BSH servo-motor		MD1APMTLX32
Servo-motor pack	Lexium 32i integrated with the motor		MD1APMTLXI

The +

- Cost effective solutions
- Predefined sets.



Lexium 32 servo-controller pack

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

LEX32

Motion control and linear axes - Lexium 32
Scan or click on the QR code

Variable speed and axle control

Packs | Linear axes

Learning goals

- Make the technical choices concerning speed / positioning / size.
- Study the mechanical calculation of an axis.
- Implement products.
- Set up axes with SoMove software.
- Implement CANopen bus.
- Manage end-of-line security.
- Perform an original take and a manual control of type JOG.
- Discover automated motion control, synchronize axes.

Presentation

The one axis or two axis packs make it possible to produce a machine with robotic movements. They are composed of one or more axes with linear displacement, with toothed belt drive and roller guides. The packs are delivered with mounted brushless motors.

Description

Linear Axis Pack with Motor

- 40 x 40 mm profile.
- 1000 mm stroke, 2 end of line sensors PNP.
- Payload 4 kg, speed 2 m/s, acc. 15 m/s².
- 0.4 kW, 6000 rpm, DC 0.8 N.m. BSH-05 brushless motor,
- Planetary reducer 1:3.
- Motor mounted on the right, reversible on the left.

Linear axle pack with motor and controller

Idem Linear Axle Pack above with the following in addition:

- Lexium 32M Servo-controller
- CANopen communication 0.35-0.4 kW 1.8-1.5 A.

2-axis XY robot with motors

- 40 x 40 mm profile.
- Stroke 350 x 350 mm (adaptable to demand).
- 4 end of travel sensors PNP.
- Payload 5 kg, speed 2 m/s, acc. 15 m/s².
- BSH brushless motors mounted on the right.

2-axis XY robot with motors and controllers

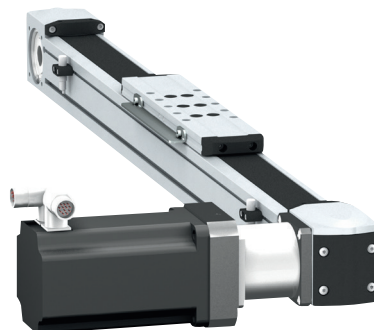
- 1.5A / 230V mono
- Lexium Motion Controllers.

References

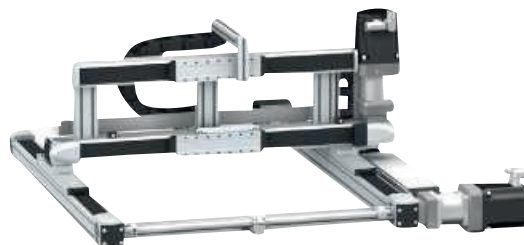
Linear Axis Packs	with motor	MD1APMTPAS
	with motor and controller	MD1APMT32PAS
2 axis robots	with motors	MD1APMTMAX2
	with motors and controllers	MD1APMT32MAX2

The +

- Predefined sets.
- Pre-assembled solutions.
- Free SoMove software.



Linear Axis and Motor Pack



2-axis Cartesian robot with motors

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

LEX32

Motion control and linear axes - Lexium

32

Scan or click on the QR code

Variable speed and axle control

Model | training controllers

Learning goals

- Discover the basic principles of a variable speed drive (controller).
- Study and implement a controller.
- Operate terminal and controller functions:
 - visualization,
 - adjustment,
 - configuration...

Presentation

Speed controllers are supplied in a kit to power three-phase learning motors or the charging bench for learning controllers. They are to be connected to the network by secure cords.

Description

Altivar 320 pack

- A single-phase or three-phase 0.18 or 0.75 or 1.5 kW / 230 V controller.
- A set of safety cords.
- SoMove parameterization software,
- Power from 0.55 to 4 kW and voltage 400 V on demand.

Altivar 930 box

- A 0.75 to 4 kW / 230 V single phase variable speed drive or controller or 0.75 to 5.5 kW 400 V three phase controller.
- A set of safety cords.
- SoMove parameterization software,
- Other powers on request.

Charging bench for training controller

- see page B46

Optional learning motors:

- 230/400 V or 400/690 V motor, see page F5

References

Learning controller boxes Altivar 320	230 V single phase	0.18 kW	MD1AA320W02M2
		0.37 kW	MD1AA320W04M2
		0.55 kW	MD1AA320W06M2
		0.75 kW	MD1AA320W07M2
	230 V three-phase	0.18 kW	MD1AA320W02M3
		0.37 kW	MD1AA320W04M3
		0.55 kW	MD1AA320W06M3
		0.75 kW	MD1AA320W07M3
Altivar 930 training controller set	230 V three-phase	0.75 kW	MD1AA930W07M3
		1.5 kW	MD1AA930W15M3
		2.2 kW	MD1AA930W22M3
		3 kW	MD1AA930W30M3
		4 kW	MD1AA930W40M3
	400 V three-phase	0.75 kW	MD1AA930W07N4
		1.5 kW	MD1AA930W15N4
		2.2 kW	MD1AA930W22N4
		3 kW	MD1AA930W30N4
		4 kW	MD1AA930W40N4
	5.5 kW	MD1AA930W55N4	

The +

- Ready-to-use controller.
- Secure and robust wiring.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- BTS CIRA (automatic regulation of industrial controls)
- BTS CRSA (design and realization of automatic systems)

Recommended training



For updating your knowledge



Speed switches: Basic knowledge
Scan or click on the QR code

Variable speed and axis control

Bench | Speed change with motor

Learning goals

- Control an asynchronous motor.
- Learn how a controller works.
- Implement an electronic controller:
 - motor wiring,
 - control wiring,
 - standard settings.

Presentation

This bench makes it possible to study and implement the control of an asynchronous motor with brake. The synoptic includes measurement points upstream and downstream of the controller, as well as internal points on the DC bus. The power and control sequence is pre-wired on double-well bushings. Secure cords are provided with the bench.

Description

- 1x 0.37 kW 230 V Altivar controller.
- 1 0.37 kW asynchronous motor.
- 1 powder brake coupler.
- Pre-wired general protection and control sequences.
- 1 synoptic with measuring points.
- 1 set of secure cords.

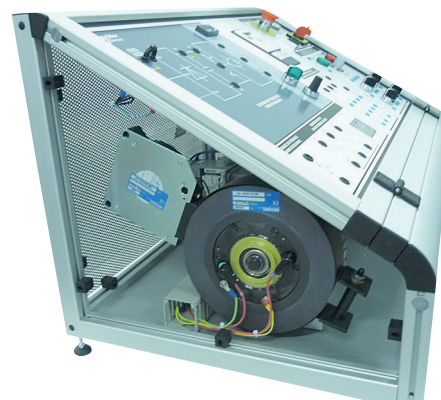
References

ATV speed change bench with powder brake

MD1AA580FP

The +

- Access to the internal measuring points of the controller.
- Robust wiring on safety sockets.
- Adjustable brake for resistance torque.



Powder brake view

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- BTS CRSA (design and realization of automatic systems)

Recommended training



For updating your knowledge



Speed switches: Basic knowledge
Scan or click on the QR code

Variable speed and axle control

Bench | Training controller charging bench

Learning goals

- Discover the different types of mechanical loads: pump, fan, lift, conveyor...
- Work on different types of torque: constant, linear, quadratic, hyperbolic, manual.

Presentation

With the charging bench, it is possible to study the different types of torques encountered in industrial applications or buildings, in particular constant, linear, quadratic and hyperbolic torques. It enables manual control of a resistant torque.

To do this, the bench incorporates two motors coupled face to face. One is driven by the internal speed controller, the other by a controller external to the bench.

The Altivar 320 control module makes it possible to operate only in open loop mode, while the Altivar control module 930 also has servo-control functions.

The bench is control by means of the controller boxes (2 references to choose).

Description

Charging bench for training controller

- 1x 370 W motor with encoder, driven by Altivar internal controller.
- 1x 180 W / 230-400 V motor with encoder, driven by an external controller or a box controller.
- 1 brake resistance.
- 1 mechanical brake.
- 1 synoptic with:
 - measurement points,
 - 6 fault switches,
 - command inputs,
 - rotary knobs and potentiometers.

References

Charging bench for training controller		MD1AA595
Training controller boxes	ATV320 0.37 kW 230 V mono	MD1AA320W04M2
	ATV930 0.7 kW 230 V mono	MD1AA930W07M3

The +

- Study of all types of drive pairs.
- Compatible with all types of controllers.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- BTS CRSA (design and realization of automatic systems)

Recommended training



For updating your knowledge

VMEX

Speed switches

Basic knowledge

Scan or click on the QR code

Variable speed and axle control

Modular bench | Learn about Altivar 320 controller

Learning goals

- Wire and implement a speed controller.
- Set up a speed controller.
- Wire and implement a three-phase motor.

Presentation

- The modular offer allows you to understand the principles and to implement them in an educational and secure way
- The Altivar 320 speed controller package makes it possible to understand the advantages of variable speed for driving industrial motors, and to implement the ATV320 speed controller safely.

Optional learning motors:

- 230/400 V or 400/690 V motor, see page F5

Description

Designation	Quantity	Ref.
Support structure	1	MD1AM000
ATV320 module - 0.18 kW - 230 V	1	MD1AM5001
ATV Control Module	1	MD1AM7001
Three-phase 4 A magnetic protection module	1	MD1AM1004

References

Modular bench Altivar 320	MD1AMLATV320
---------------------------	---------------------

The **+**

- Scalable modular solution.
- Secure solution.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Level Pro MSPC (maintenance of connected production systems)
- RISC + SSHT Pro SN (digital systems) Level

Recommended training



For updating your knowledge

VMEX

Speed switches

Basic knowledge

Scan or click on the QR code

Variable speed and axle control

Packs | Automatic machines (advanced architectures)

Learning goals

- Study and program an axis control.
- Programming and using a controller with integrated man-machine interface.

Presentation

These packs enable training in the programming and use of functions encountered in industrial machines: Motion control with Modicon LMC, simple machine control with Magelis controller display. The user will discuss the various basic functions, programming, communication and regulation functions.

Description

Modicon LMC058 Motion Controller Pack and Lexium 32 Servo Drive

- 1 Modicon LMC058 motion controller with 26E/16S TOR, Ethernet port and 2 CANopen ports.
- 1x 7.5" color graphics terminal.
- 1 24 VDC 3 A power supply.
- 1 Lexium 32 servo controller (500 W - 3 A).
- 1 programming cable.
- 1 CANopen cable.
- 1 controller cable.

References

LMC058 + LXM32 Motion Controller Pack

MD1AP058LX



- Solutions adopted by machine manufacturers.
- One connection point and one single application.
- Solutions Tested - Validated.



Motion controller pack

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- Electrotechnical BTS

Recommended training



For updating your knowledge

SOMA1

Development with EcoStruxure Machine Expert (basic)
Scan or click on the QR code



Smart building and smart grid

Selection criteria C2

SmartGrid C4

Energy efficiency C5

Domestic C9

Electric vehicle.....C17

Electrical installationC19

Selection criteria

Smart building and smartgrid

Different types of educational solutions

Pack

Business skills training through student projects.

Modular bench

Learning concepts and knowledge.

Model

Implementation of advanced technologies.

System

Complete understanding of a business environment.

Level 3

Understanding
and Use

Study and
realization

Maintenance
and Evolution

Energy efficiency

System	CityGrid			
Modular bench	Energy efficiency of ventilation	■		
Models	Energy efficiency of ventilation			
	Ventilation with speed controls			
	Energy efficiency	■		

Domestic

Model	KNX	■		
	KNX Mini Building			
Modular benches	KNX discovery			
	KNX Pro			
	KNX energy efficiency			
Packs	KNX	■	■	
	VDI 19"	■	■	
Modular bench	Measurement of building energies	■	■	

Electric vehicle

System	Charging terminal for electric vehicle			
--------	--	--	--	--

Facilities and networks

Packs	3D Mini Cell Box	■	■	
	Appliances	■	■	■
	Control by pilot wire	■	■	
Modular benches	Residential	■	■	
	Residential and small tertiary			
Packs	Connected Habitat	■	■	■
	GTL complete RT2012	■	■	
	Measurement in the habitat RT2012			
	Wireless home renovation			
	Energy efficiency controls			
Campus Electrician [new]				

Level 4 Vocational Training	Level 5 Advanced Vocational Training	Level 6 Engineer and University	Page
Understanding and Use Study and realization Maintenance and Evolution	Understanding and Use Study and realization Maintenance and Evolution	Understanding and Use Study and realization Maintenance and Evolution	

										C4
	■			■				■		C5
	■			■				■		C6
				■				■		C7
	■									C8

	■									C9
				■				■		C11
	■	■		■	■					C12
	■	■		■	■					C13
	■	■		■	■					C16
	■	■		■	■					C17
	■	■		■	■					C18
	■	■		■	■					C19

	■	■		■	■		■	■		C20
--	---	---	--	---	---	--	---	---	--	-----

	■	■								C21
	■	■	■							C22
	■	■								C23
	■	■								C24
	■	■		■	■					C25
										C26
	■	■	■	■	■	■				C27
	■	■	■	■	■	■				C28
	■	■	■	■	■	■				C29
	■	■	■	■	■	■				C30
	■	■	■	■	■	■				C31

SmartGrid System | CityGrid

Learning goals

- Study and understand an intelligent SMART GRID network.
- Implement city-wide energy management.
- Analyze the factors that influence energy consumption and production: time of day, weather conditions, renewable energy...
- Manage the balance between consumption and production to avoid "blackout".
- Analyze and understand the architecture of the components that enable the management of a SMART GRID.
- Master communication between the various players in the simulation game to achieve the objectives.

Presentation

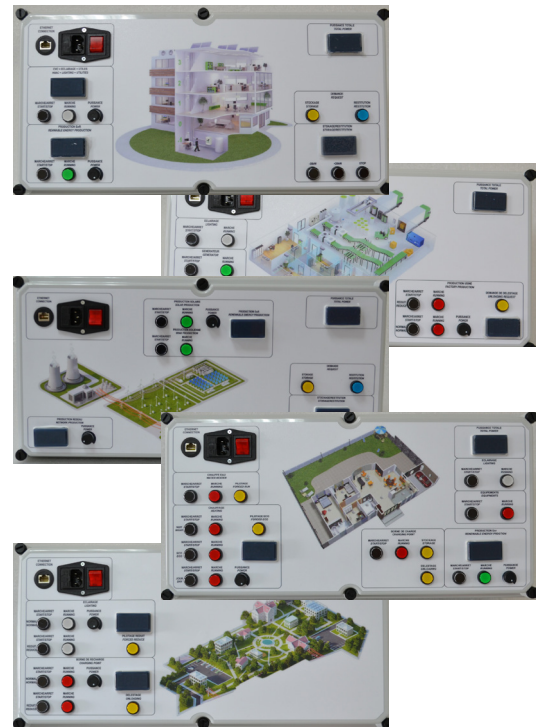
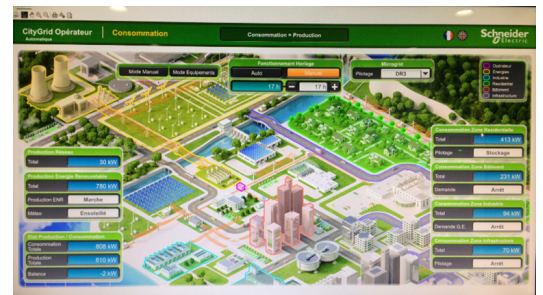
- The CityGrid system consists of 6 desks.
- Five of them model the functioning of a city composed of different areas that represent typical patterns of consumption or production:
 - residential area: consumption of 50 houses with electric heating, self-production EnR and EV charging terminal,
 - tertiary area: office building consumption with thermal storage and self-production EnR,
 - industrial area: consumption of a plant with 2 production lines in operation and a generator,
 - infrastructure area: street consumption of a neighborhood with public lighting and EV charging stations,
 - renewable energy production area: production by photovoltaic EnR and wind turbines plus grid.
- The final workbench is the operator responsible for managing the needs and resources required for overall operation:
 - it constantly visualizes the consumption/production balance of all the zones, sends storage or load shedding requests DR. (requests/answers), imposes weather conditions, time, language (French, English).
 - it can also choose the mode of operation (automatic, manual, connected) and implement scenarios.
- The automatic mode offers 3 scenarios taking place in winter, lasting one day during the week, the 24-hour cycle is reduced to 30 minutes: without DR, DR without EnR or DR with EnR.
- The manual mode provides 1 scenario and 1 hour during which each zone captures its consumption or production values. The operator recognizes the imbalance and asks each zone to consume more (storage) or consume less (restitution, load shedding, erasure) in order to restore balance. If the balance is not achieved, the results will be a 'blackout'.
- The equipment mode works like the manual mode but with the CityGrid connected to existing teaching equipment through GRIDBOX boxes, or simulation cases (one per area).

References

CityGrid mounted in 6 mobile desks		MDGCGCITY
CityGrid Kit		MDGCGCITYKIT
Kit for interfacing with real teaching equipment		MDGCGGRIDBOX
Simulation boxes	tertiary zone	MDGCGSIMUBUILD
	energy area	MDGCGSIMUENR
	industrial area	MDGCGSIMUIND
	infrastructure area	MDGCGSIMUIINFRA
	residential area	MDGCGSIMURES

The +

- Available as a console version or as a kit to be mounted (preloaded components).
- Group work with 6 small groups.
- Can be interfaced with existing educational facilities.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C - HBD (home automation and interconnected buildings)

Energy efficiency

Modular bench for energy efficiency in ventilation

Learning goals

- Demonstrate an energy efficiency solution.
- Measure U/I network and motor according to the energy chain.
- Use a measuring center:
 - energy measurements,
 - comparison of consumption.
- Set the variable drive to suit the energy saving law.

Presentation

This modular bench makes it possible to demonstrate the energy savings that can be achieved in a ventilation installation.

The comparison is made between an electromechanical control by contactor and an electronic control with a controller.

The ventilation rate is adjusted by means of a diaphragm or by variable speed (controller).

Description

Composition

- 1 support structure ref. MD1AM000.
- 1 magnetic protection module ref. MD1AM1004
- 1 thermal relay module ref. MD1AM1007
- 1 switch module ref. MD1AM1008
- 1 central measuring module PM ref. MD1AM2003
- 1 module 3 TI 50 / 5 A ref. MD1AM2004
- 1 Ethernet gateway module with web server ref. MD1AM2029
- 1 Altivar module ref. MD1AM5001
- 1 controller module controller ref. MD1AM7001
- 1 motor starter control module ref. MD1AM7004
- 1 24 VDC power module ref. MD1AM4001
- 1 motorized fan with column and bale ref. MD1AMP014
- 1 USB/RJ45 cable for connection to the controller.
- 1 RJ45/RJ45 cable for connection to the gateway.
- SoMove parameterization software.

Characteristics

- Power supply: 230 V / 0.18 kW
- Support structure:
 - dimensions (H x L x P): 910 x 1030 x 400 mm
 - Weight: 6.5 kg
- Modules:
 - dimensions (H x L x P): 245 x 150 x 70 mm
 - Weight: 0.7 kg

References

Modular bench ventilation energy efficiency

MD1AMLATVEE

The +

- Low noise ventilation equipment.
- Recovery of operating data on PC.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C - HBD (home automation and interconnected buildings)
- RISC + S5HT Pro SN (digital systems) Level

Recommended training



For updating your knowledge



Speed switches: Basic knowledge
Scan or click on the QR code

Energy efficiency

Ventilation energy efficiency case

Learning goals

- Demonstrate an energy efficiency solution.
- Measure U/I network and motor according to the energy chain.
- Use a measuring center:
 - energy measurements,
 - comparison of consumption.
- Set the variable drive to suit the energy saving law.

Presentation

This suitcase makes it possible to demonstrate the energy savings that can be achieved in a ventilation or pumping installation. The comparison is made between an electromechanical control by contactor and an electronic control with a controller. The ventilation rate is controlled by a diaphragm or speed controller.

Description

Composition

- 1 measuring station,
- 1 direct departure circuit breaker / contactor,
- 1 departure via Altivar 0.18 kW,
- 1 direct switch/controller,
- 1x 0.18 kW fan,
- safety socket measurement points,
- 1 Ethernet gateway with web server,
- 1 USB/RJ45 cable for connection to the controller,
- 1 RJ45/RJ45 cable for connection to the gateway,
- SoMove parameterization software.

Characteristics

- Power supply: 230 V / 0.18 kW
- Dimension (H x W x D): 830 x 500 x 390 mm
- Weight: 27 kg

References

Ventilation energy efficiency case

MD1ATVEE

The +

- Low noise ventilation equipment.
- Understanding the benefits of speed control.
- Recovery of operating data on PC.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C - HBD (home automation and interconnected buildings)
- MEEC Pro Level (Electrical and Connected Environments)

Recommended training



For updating your knowledge



Speed switches
Basic knowledge
Scan or click on the QR code

Energy efficiency

Ventilation with variable speed control case

Learning goals

- Study the characteristics of a centrifugal fan.
- Perform flow measurements and power consumption measurements.
- Show the contributions of variable speed to energy savings.
- Study ATC with energy recovery.
- Calculate head losses.
- Check facility EMC levels.
- Use ECO2 software to calculate economic data.

Presentation

This bench makes it possible to study the ventilation installation of a tertiary building, and to calculate the return on investment of a controller using the software ECO8.

The fan is driven by an electromechanical sequence or by a pump/ventilation specific controller. The flow rate is regulated mechanically by means of a valve. An air flow sensor at the top of the chimney allows you to compare the different settings.

Description

- Bench mounted on chassis with locking wheels.
- 1x 0.75 kW motorized fan,
- 1 electrical box with protections and controls.
- 1 Altivar controller with remote viewing.
- 1 measuring station with current transformers.
- 1 pressure controller with its diaphragm probes.
- SoMove software for parameterizing the controller.
- ECO2 software for calculating the depreciation.

Characteristics

- Power supply: 400 V AC / 0.75 kVA
- Dimensions (H x L x P): 2500 (1850 chimney row) x 1200 x 850 mm
- Weight: 133 kg

References

Ventilation bench with variable speed Altivar 630

MD1AA750A63

The +

- Mobile equipment.
- Sound trap to reduce noise.
- Demountable chimney for handling.



Bench with Altivar 630

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C - HBD (home automation and interconnected buildings)
- Electrotechnical BTS

Recommended training



For updating your knowledge
VMEX
Controllers
Diagnostics and Maintenance
Scan or click on the QR code

Energy efficiency

Model | Energy efficiency

Learning goals

- Implement energy monitoring of equipment.
- Use and set up a central measurement unit:
 - draw up a consumption balance,
 - implementing optimization solutions,
 - monitoring the results of energy saving actions over time,
 - know the state of its installation.

Presentation

This electrical box is used to measure, record and track power consumption to determine the energy efficiency of equipment. It is placed between the single or three-phase network and the equipment to be measured which may be real or educational. A switch allows you to choose between three modes of use:

- on a single-phase 16 A industrial plug,
- on a three-phase 16 A industrial plug,
- in external measurement mode, by connection with cords and clamps for busbars.

The consumption data is accessible on the power server via an RJ45 socket located in front of the cabinet.

Description

Composition

- 1 Universal Panel Server.
- 1 Modbus three-phase measuring station.
- 1 Modbus single-phase energy meter.
- 1 single-phase RF sensor for iC60.
- 1 three-phase RF sensor for iC60.
- 1 four-phase RF sensor for iC60.
- 3 amperimetric clamps 250/5 A.
- 1 set of cords with crocodile clips.
- 1 cable equipped with a 2P+T 16 A plug.
- 1 cable equipped with a 3P+T 16 A plug.
- 1 socket socket 2P+T 16 A.
- 1 socket socket 3P+T 16 A.
- 1 adapter industrial plug 16 A /domestic 16 A.
- Circuit breaker protection.

Characteristics

- Power supply: 230 or 400 V AC / 16 A max
- Dimensions (H x L x P): 720 x 570 x 400 mm
- Weight: 17 kg

References

Energy Efficiency Box

MDG99140

The +

- Robust mobile equipment.
- Easy implementation between the sector and the equipment to be measured.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C HBD (home automation and interconnected buildings)

Recommended training



For updating your knowledge

MEEB

Control the energy efficiency of the building
Scan or click on the QR code

Domestic Model | KNX

Learning goals

- Understand and master the management of lighting and roller shutters with the KNX bus:
 - lighting function in TOR,
 - variable lighting control,
 - centralization of control,
 - electric roller shutter control,
- Discover the ETS software tool for the design and commissioning of a KNX project.

Presentation

The KNX case allows you to set up the basic functions of a KNX installation. The synoptic of the suitcase depicts an apartment with two lighting zones, and a rolling shutter simulated by LEDs.

Description

Composition

- 1 lighting actuator module TOR.
- 1 lighting variation module.
- 1 module for roller shutter.
- 1 USB/PC interface module.
- 1 TCP IP interface module.
- 1 ETS software license.

Characteristics

- Power supply: 230 V single phase / 15 VA
- Dimensions (H x L x P): 150 x 460 x 340 mm
- Weight: 5 kg

References

KNX case

MD1AVKNX

The +

- Initiation to KNX.
- Fast implementation without wiring.
- KNX application preloaded.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

KNXC

KNX System

KNX Certification

Scan or click on the QR code

Domestic

Home Automation Panel

Learning goals

- Analyzing the functionalities and principles of a home automation installation on KNX bus.
- Fitting and connecting the componenets.
- Configuring the system according to various scenarios.
- Grasping the concepts of energy efficiency.

Presentation

The KNX bench is designed to discover the home automation solutions for the residential and the commercial installations. The bench is made up of KNX products that are commonly used. The KNX modules are programmable and offers controllable network. The control functions improve comfort, security and flexibility for the occupant and owners. The system is complete, open and scalable.

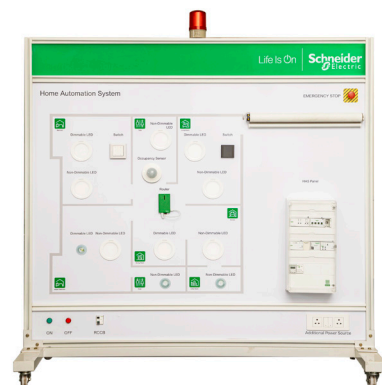
Description

Composition

- 1 Resi9 box with 3 rows
- 1 10 A 30 mA ground-leakage circuit breaker
- 1 KNX bus power supply
- 1 USB interface
- 1 Multi-function pushbutton unit with 2 buttons
- 1 Multi-function pushbutton unit with 8 buttons
- 1 Presence detector with infrared receiver
- 1 Switching actuator with 4 outputs
- 1 Dimming actuator with 4 outputs
- 2 ETS5 Lite software program, 1 license
- 1 USB programming lead
- 1 10 m EIB cables for KNX bus
- 1 Set of KNX connectors and terminal strips
- 1 Accessories Kit

References

Smart Home Automation - KNX Panel	AET-P01-HAS
Smart Home Automation - Kit	AET-K01-HAS



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Advanced vocational training, Engineering and University
- Vocational Training

Domestic

Model | KNX Mini Building

Learning goals

- Discover KNX communication (address, frame, function group).
- Implement temperature and brightness control.
- Discover SysML analysis of a system.
- Demonstrate the improvement of the KNX network on lighting and heating.
- Evaluate the power and power consumed in different scenarios.

Presentation

The KNX mini-building model is designed to implement lighting and heating control functions in a tertiary building and therefore to enable energy management. The equipment comprises 3 zones:

- the meeting room: thermal control with a radiator, a regulating module with temperature sensor, a fan, a halogen spot,
- the lounge: light regulation with a dimmable halogen spot, a roller shutter, a presence sensor,
- outside: exterior of the building with an exterior lighting block.

A touch screen allows you to work on different operating scenarios and to measure the energy consumed. The KNX modules of the modular offer can be connected to this model to extend the functionality.

Description

Lounge area

- 1x 12V halogen spot with dimming.
- 1 presence and brightness detector.
- 1 double key push button.
- 1 concealed roller shutter.

Outside area

- 1 single push button.
- 1 LED light slab.
- 1 touch screen.

Meeting room area

- 1x 12V halogen spot.
- 1 fan.
- 1 single push button.
- 1 thermostat with remote temperature sensor.
- 1 electric heating of 100W.
- 1 switchboard.
- 1 WiFi router.
- 1 ETS software license.

Characteristics

- Power supply: 230 V / 1.75 kVA
- Dimensions (H x L x P): 580 x 1010 x 570 mm
- Weight: 47 kg

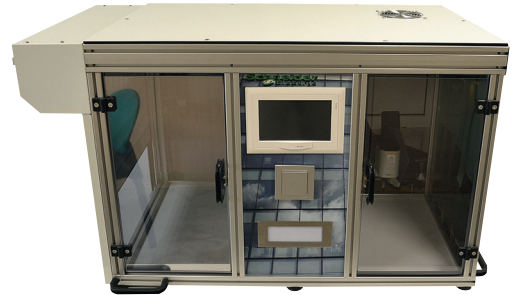
References

Mini-building model KNX MINIBAT

MDG993EBMB



- A single system for studying simple functions and KNX regulation.
- Remote tablet control.
- Possible extension of the KNX bus.



Front



Back

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

KNXC

KNX System

KNX Certification

Scan or click on the QR code

Domestic

Modular bench | KNX discovered

Learning goals

- Analyze the functionality and principle of a home automation installation on a KNX bus.
- Install and connect components.
- Perform system setup according to different scenarios.
- Understand the concepts of energy efficiency.

Presentation

This modular bench is intended for the parameterization of the most common KNX functions such as on-off switching for lighting, heating, controlled outlets, lighting variation, roller shutter control. The bench can be controlled remotely by smartphone, thanks to the IP module and wireless router. It can be supplemented by real operational parts such as the optional roller shutter.

Description

Composition

- 1 support structure ref. MD1AM000.
- 1 single reference protection module MD1AM2001.
- 1 bus power module ref. MD1AM3001.
- 1 module with 4 outputs TOR ref. MD1AM3003.
- 1 light controller module ref. MD1AM3005.
- 1 USB interface module ref. MD1AM3007.
- 1 IP controller module ref. MD1AM3049.
- 1 actuator module roller shutters ref. MD1AM3008.
- 1 module double push Artec ref. MD1AM3009.
- 1 pusher module 4 thermostat M-Plan ref. MD1AM3017.
- 1x 24 V power module ref. MD1AM3032.
- 2x 15 W lamp modules ref. MD1AMP004.
- 1 module electric shutter ref. MD1AMP007.
- 1 wireless router module ref. MD1AM2010.
- ETS software.
- USB cable for programming.

The modular bench can be augmented with:

- other modules,
- learning roller shutter ref. **MD1AAVOLETR** see Page F7.

Characteristics

- Power supply: 230 V AC / 10 A
- Support structure:
 - dimensions (H x L x P): 910 x 1030 x 400 mm
 - Weight: 6.5 kg
- Modules:
 - dimensions (H x L x P): 245 x 150 x 70 mm
 - Weight: 0.7 kg

References

KNX Modular Bench Discovery

MD1AMLKNXC

The +

- Use of digital tools to control a home automation application.
- Fast and secure implementation.
- Robust wiring on safety sockets.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C HBD (home automation and interconnected buildings)

Recommended training



For updating your knowledge

KNXC

KNX System

KNX Certification

Scan or click on the QR code

Domestic

Modular bench | KNX Pro

Learning goals

- Analyze the functionality and principle of a home automation installation on a KNX bus.
- Install and connect components.
- Perform system setup according to different scenarios.
- Understand the concepts of energy efficiency.

Presentation

This modular bench makes it possible to implement typical functions of a tertiary building or a hotel, such as lighting variation, infrared remote control, thermostat, card reader, roller shutter.

The homeLYink function allows you to monitor the entire installation. It can be supplemented by real operational parts such as the optional roller shutter.

Description

Composition

- 1 support structure ref. MD1AM000.
- 1 Wiser for KNX IP controller module ref. MD1AM3049.
- 1 single reference protection module MD1AM2001.
- 1 bus power module ref. MD1AM3028.
- 1 module with 4 outputs TOR ref. MD1AM3003.
- 1 module 4 inputs 230 V ref. MD1AM3004.
- 1 light controller module ref. MD1AM3005.
- 1 light controller module 1-10V ref. MD1AM3042.
- 1 USB interface module ref. MD1AM3061.
- 1 actuator module roller shutters ref. MD1AM3008.
- 1 motion detection module Argus ref. MD1AM3013.
- 1x 24 V power module ref. MD1AM3032.
- 1 card reader module hotel ref. MD1AM6031.
- 1 KNX 3-way energy measuring module ref. MD1AM3048.
- 1 double push button module ref. MD1AM6017.
- 2x 15 W lamp modules ref. MD1AMP004.
- 1 module electric shutter ref. MD1AMP007.
- 1x 42 W halogen or LED lamp module ref. MD1AMP009.
- 1x 20 W lamp module + balast 1-10 V ref. MD1AMP022.
- 1x IR remote control.
- 2x ETS software license.
- 1 USB cable for programming.

The modular bench can be augmented with:

- other modules,
- learning roller shutter ref. [MD1AAVOLETR](#) see Page F7.

Characteristics

- Power supply: 230 V AC / 10 A
- Support structure: 910 x 1030 x 400 mm - 6.5 kg
- Modules: 245 x 150 x 70 mm - 0.7 kg

References

KNX Pro Modular Bench

[MD1AMLKNXPRO](#)

The +

- Use of digital tools to control a home automation application.
- Fast and secure implementation.
- Robust wiring on safety sockets.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C
- HBD (home automation and interconnected buildings)

Recommended training



For updating your knowledge
[KNXADV](#)
KNX System
Advanced KNX Certification
Scan or click on the QR code

Domestic

Learning goals

This training bench provides an understanding of the following:

- To know the analog and IP CCTV system. Different types of cameras, lens, cable types, POE switches etc.
- To know different types of recording, storage calculation, analytics
- To configure CCTV VMS software and integrate cameras for live viewing and recording playback.
- To know different types of speakers, amplifier selection, zoning concept.
- To know access control basics like card technologies, reader type, locks, tailgating, antipassback etc.
- To configure access software, create personnel, access rights and its working.
- To integrate access software with CCTV VMS so that live viewing can be seen on access alarm.
- To carry preventive and corrective maintenance of system.

Description

Composition

- 1 Bullet camera - IP - 1.3mp HD video, 1/3" CMOS, Lens 4mm - 1Nos
- 1 Dome camera - IP - 2mp, 1/3" CMOS, 4mm
- 1 4 channel NVR - 4CH video, 1CH audio, HDMI/VGA resolution, 1SATA (4 TB)
- 1 8 port 10/100 switch with 4 port POE (53W)
- 1 WB box HDMI cable
- 1 1TB harddisk
- 1 Accessories
- 1 2 door intelligent true TCP/IP networkable access controller
- 1 Power supply 12VDC - 5 Amps
- 1 Access control software - Licensed security management software
- 1 Card readers proximity
- 1 Card readers smart
- 2 L brackets
- 2 U brackets
- 2 Z brackets
- 2 Electronic lock
- 2 Exit push button
- 2 Access card proximity
- 2 Access card smart
- 2 EDR Emergency door release
- 1 19 inch LCD display with HDMI and VGA input
- 1 Accessories - 6U rack
- 50 CAT 6 cable
- 50 2 core 1.0 Sq.mm unarmored cable
- 50 8 core 0.75 Sq.mm unarmored cable
- 1 Activation indicator at top
- 1 4P 25A 300mA RCCB
- 4 Emergency STOP
- 1 Power OFF Red
- 1 Power ON Green
- 3 6A Socket
- 6 6A Switch
- 3 3 Module cover plate
- 2 2 Module plate for CCTV and access
- 1 Contactor

References

CCTV and Access control panel	AET-P01-CCA
CCTV and Access control kit	AET-K01-CCA

Competencies covered

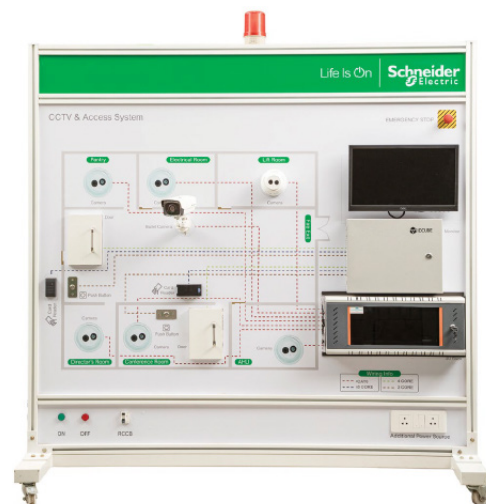
- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Advanced vocational training, Engineering and University
- Vocational Training

The +

- CCTV, access control system installation and programming.
- Fire alarm system installation and programming and public address.



Domestic

Fire Alarm and Public Address

Learning goals

This training bench provides an understanding of the following:

- To study the various standards and regulations relating to a fire safety system.
- To know different types of devices and detectors and wiring types.
- To configure the program FA panel for addressing and logic writing.
- To install and configure graphical software and integrate with BMS software.
- to carry preventive and corrective maintenance of system.

Description

Composition

- 1 Bullet camera - IP - 1.3mp HD video, 1/3" CMOS, Lens 4mm - 1Nos
- 1 Dome camera - IP - 2mp, 1/3" CMOS, 4mm
- 1 4 channel NVR - 4CH video, 1CH audio, HDMI/VGA resolution, 1SATA (4 TB)
- 1 8 port 10/100 switch with 4 port POE (53W)
- 1 WB box HDMI cable
- 1 1TB harddisk
- 1 Accessories
- 1 2 door intelligent true TCP/IP networkable access controller
- 1 Power supply 12VDC - 5 Amps
- 1 Access control software - Licensed security management software
- 1 Card readers proximity
- 1 Card readers smart
- 2 L brackets
- 2 U brackets
- 2 Z brackets
- 2 Electronic lock
- 2 Exit push button
- 2 Access card proximity
- 2 Access card smart
- 2 EDR Emergency door release
- 1 19 inch LCD display with HDMI and VGA input
- 1 Accessories - 6U rack
- 50 CAT 6 cable
- 50 2 core 1.0 Sq.mm unarmored cable
- 50 8 core 0.75 Sq.mm unarmored cable
- 1 Activation indicator at top
- 1 4P 25A 300mA RCCB
- 4 Emergency STOP
- 1 Power OFF Red
- 1 Power ON Green
- 3 6A Socket
- 6 6A Switch
- 3 3 Module cover plate
- 2 2 Module plate for CCTV and access
- 1 Contactor

References

Fire alarm and Public address panel	AET-P01-FAP
Fire alarm and Public address kit	AET-K01-FAP



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Advanced vocational training, Engineering and University
- Vocational Training

Domestic

Modular bench | KNX energy efficiency

Learning goals

- Analyze the functionality and principle of a home automation installation on a KNX bus.
- Install and connect components.
- Perform system setup according to different scenarios.
- Understand the concepts of energy efficiency.

Presentation

This bench enables the implementation of KNX solutions meeting the requirements of RT2012, i.e. ensuring active energy efficiency and comfort.

It consists of the functions for lighting regulation, heating regulation, consumption measurement, weather station, which will generate energy savings thanks to an optimization of the settings.

This set can be supplemented by real operational parts such as the optional roller shutter.

Description

Composition

- 1 support structure ref. MD1AM000.
- 1 single reference protection module MD1AM2001.
- 1 bus power module ref. MD1AM3028.
- 1 module with 4 outputs TOR ref. MD1AM3003.
- 1 module with 2 outputs ref. MD1AM3045.
- 1 light controller module 2 channels ref. MD1AM3053.
- 1 USB interface module ref. MD1AM3061.
- 1 actuator module roller shutters ref. MD1AM3008.
- 2x 4 multifunction modules M-Plan push buttons ref. MD1AM3019.
- 1 presence and brightness detector module IR ref. MD1AM3014.
- 1 multifunction display module ref. MD1AM3056.
- 1 DALI gateway module ref. MD1AM3020.
- 1x 24 V power module ref. MD1AM3032.
- 1 homeLynk IP controller module ref. MD1AM3049.
- 1 WiFi module ref. MD1AM2010.
- 1 weather station module ref. MD1AM3057.
- 1 servomotor module for valve ref. MD1AM3034.
- 1x IR remote control.
- 2x 15 W lamp modules ref. MD1AMP004.
- 2x 50 W lamp module ref. MD1AMP009.
- 1 module electric shutter ref. MD1AMP007.
- 1 multi-address DALI lighting module ref. MD1AMP025.
- 1 central measuring module PM ref. MD1AM2003.
- 1 KNX 3-way energy measuring module ref. MD1AM3048.
- 1x 3 TI module 50 / 5 A ref. MD1AM2004.
- 1 USB cable for programming.
- 2x ETS software licenses

The modular bench can be completed with other modules.

Characteristics

- Power supply: 230 V AC / 10 A
- Support structure: 910 x 1030 x 400 mm - 6.5 kg
- Modules: 245 x 150 x 70 mm - 0.7 kg

References

KNX Energy Efficiency Modular Bench

MD1AMLKNXEE

The +

- Use of digital tools to control a tertiary application.
- Multifunction: piloting, programming, telemetry.
- Multiprotocol: KNX, Modbus, DALI.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge
KNXADV
KNX System
Advanced KNX Certification
Scan or click on the QR code

Domestic Packs | KNX

Learning goals

- Analyze the functionality and principle of a home automation installation on a KNX bus.
- Install and connect components.
- Perform system setup according to different scenarios.
- Understand the concepts of energy efficiency.

Presentation

The packages in this offer allow you to create KNX educational facilities within your premises, and to implement them in your 3D teaching cells. These can be complemented with functions such as weather sensor, clock, CO2 sensor, energy meter, Modbus gateway, web coupler or smartphone access.

Description

2 main packs and 1 add-on are available:

Primary Packs	Pack discovery	Pack roller shutter and 7 inch screen	Add-on remote supervision
3-row Resi9 box	1	1	-
10 A 30 mA Differential circuit breaker	1	1	-
KNX Bus Power	1	1	-
USB-KNX Interface	1	1	-
Multifunction push button 2 keys	1	1	-
Room thermostat	1	-	-
MD1AAKNXVR 4-Key Multifunction Push Button	1	-	-
MD1AAKNXVR 8-Key Multifunction Push Button	1	-	-
Presence detector with infrared receiver	1	1	-
Mixed actuator 8 outputs	1	1	-
2-output variation actuator	1	1	-
ETS Software License	1	1	-
USB programming cable	1	1	-
PIC cables for KNX 10 m bus	1	1	-
KNX connector set and terminal blocks	1	1	-
IP Router	-	1	-
Multitouch Screen	-	1	-
KNX / DALI Gateway	-	1	-
Wiser for KNX Controller	-	-	1
Touch pad	-	-	1
WiFi Adapter	-	-	1
24 V power supply	-	-	1
Single phase energy meter	-	-	1
1 ETS license	-	-	1

References

KNX Pack discovered	MD1AAKNXD
KNX Roller Shutter and 7-inch Screen Pack	MD1AAKNXVR
KNX Remote Monitoring Add-in Pack	MD1AAKNXLSS

The +

- Introduction to home automation functions.
- Create and manage scenarios.
- Actual wiring of a KNX installation.



KNX Pack discovered

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrician CAP
- BTS FED (home energy fluids) option C
- HBD (home automation and interconnected buildings)

Recommended training



For updating your knowledge
KNXC
 KNX System
 KNX Certification
 Scan or click on the QR code

Domestic

Pack | VDI 19"

Learning goals

- Identify and select hardware (ASI, switch, outlets).
- Mount VDI bays, wire RJ45 connectors.
- Perform IP addressing of the switch.
- Identify, mix and test the installation.
- Study different VDI networks depending on office location.

Presentation

The 19-inch VDI pack is designed for studying VDI functions encountered in industrial or tertiary installations. It highlights the general organization of a VDI network. The pedagogy is based on a real specification: the CCTP of an office building.

Description

Composition

- 1x 19" OPB 12U fixed chassis 646 x 600 x 500, glass door.
- 1 rear shutter plate for 12U 19" OPB cabinet.
- 1 shutter plate with air vents top.
- 1 shutter plate with brush seal bottom part.
- 1 sliding panel with 24 RJ45 FTP STP ports.
- 1 TELECOM sliding panel 50 ports on 2 rows.
- 1 panel 8 sockets FR 230 V / 16 A, interr. brightness protected.
- 2 guide panels cords with 4 rings.
- 2 UPS rack pack kits.
- 1 fixed depth shelf 250 mm load 15 kg.
- 3 metal spacer panels.
- 3 rings for vertical organization of cords.
- 1 DLINK switch 24 Ethernet ports manageable 10/100 BASETX.
- 1 APC SmartUPS 1500 VA.
- 1 set of 24 RJ45 shutter blades blue.
- 1 set of 24 shutter panel RJ45 green.
- 1 set of 10 grounding kits for 19" panel.
- 1 stripping tool for connecting LSA connectors.
- 24x 1m cords, RJ45/RJ45 category 6, F/UTP shielding.
- 24x RJ45 category 6 FTP connectors.

Characteristics

- Power supply: 230 V
- Dimensions (H x L x P): 800 x 600 x 600 mm
- Weight: 12 kg

References

19" VDI box pack

MD1ALVDIC19



- The +
- Pre-defined full set.
 - Cost effective.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrician CAP

Learning goals

- Apply RT 2012: measure, understand, act.
- Implement communication buses and networks.
- Set up the web server to define consumption indicators.
- Create energy tracking curves

The +

- Fast and secure implementation.
- Secure and robust wiring.
- No software installation required.

Presentation

The bench simulates the electrical energy and water consumption of a building, as well as environmental data such as indoor temperature. This data is collected by the Universal Panel Server. Its integrated web server makes it possible to present them for local or remote viewing.

Description

Composition

- 1 support structure ref. MD1AM000.
- 1x 24 VDC power module ref. MD1AM4001
- 1 Panel Server Universal Module ref. MD1AM2031.
- 1 Modbus distribution module ref. MD1AM0011.
- 1 central measuring module ref. MD1AM2003.
- 1 module with 3 current sensors ref. MD1AM2004.
- 1 temperature acquisition module ref. MD1AMP018.
- 1 water meter module ref. MD1AMP017.

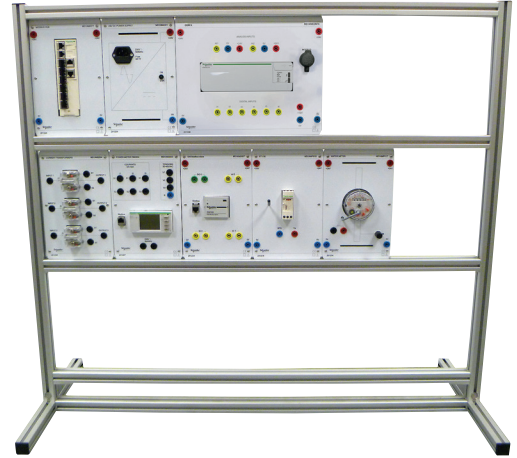
Characteristics

- Power supply: 230 V AC / 60 W
- Support structure:
 - dimensions (H x L x P): 910 x 1030 x 400 mm
 - Weight: 6.5 kg
- Simple modules:
 - dimensions (H x L x P): 245 x 150 x 70 mm
 - Weight: 0.7 kg
- Dual modules:
 - dimensions (H x L x P): 245 x 300 x 70 mm
 - Weight: 1.4 kg

References

Modular offer for measuring building energies

MD1AMLEEX



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C
- HBD (home automation and interconnected buildings)
- Pro MEEC Level (Electrical Connected Environments)

Electric vehicle

System | Charging terminal for electric vehicle

Learning goals

- Preparing a construction site
- Installing and connecting a charging station
- Test installation
- Parameterizing the power
- Parameterizing the power limiting and delayed start functions

Presentation

The terminal is used to charge an electric vehicle in the apartment or small building. The components supplied as a kit allow the cabinet to be wired with power management. The installation will be tested with the test tool. Load operation will be simulated with a simulation kit.

Description

Composition

- Smart Wallbox terminal with 1 T2 plug + 1 home plug
- 10 RFID badges
- 32 A mono 7 kW (residential) or 22 kW (tertiary) protection
- Energy management components: energy meter, time switch, off-peak switch
- 1 or 2 row waterproof case

Option

- Pedestal for 1 or 2 Smart Wallbox terminals
- Simulation box vehicle presence + mono and sorting cables
- Test Tool (Installer)
- Static or dynamic energy management box for installations up to 5 load points

References

Load terminals	residential (mono)	MDGVE050M
	small tertiary (sort)	MDGVE050T
Pedestal for 1 or 2 load terminals		MDGVE050P
Simulation boxes vehicle presence + cable	mono + sort	MDGVE050C
Test Tool (Installer)		EVA1SADS
Energy management box		MDGVELMS

The +

- Contextualization in a residential installation.
- Operation possible without electric vehicle.



Stand-up charging station



Test Tool



Energy management box

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- BTS Fluides Énergies Domotique Option C DBC (home automation and connected buildings)

Recommended training



For updating your knowledge

IRVEQ2

Tertiary charging station infrastructure
- IRVE and EV/ZE Ready 1.4 P2
certification
Scan or click on the QR code

Electrical installation

Pack | 3D Mini Cell Box

Learning goals

- Install and Connect
- Configure and configure with Bati-Rési Suite
- Edit Installation
- Testing and provisioning
- Communicate with your customer through the MIE3C application

Presentation

This hardware pack allows you to start working on 3D cells. It corresponds to the equipment prescribed for a T1 apartment according to the latest edition of the NFC15100. The protective devices to be installed in the cabinet use combable technology (screw connection). The MIE3C application (my installation in 3 clicks) makes it possible to very quickly produce a complete estimate of an electrical installation for a house or an apartment conforming to the standard NF C 15-100 (electrical panel, communication box...).

Description

Composition

- Electrical panel:
 - 1 box 2 rows of 13 modules,
 - 2x 40 A - 30 mA differential switches,
 - 1x 2 A circuit breakers,
 - 2x 10 A circuit breakers,
 - 3x 16 A circuit breakers,
 - 2x 20 A circuit breakers,
 - 1x 32 A circuit breakers,
 - 1 modular socket,
 - 1x 10 kA lightning arrester,
 - accessories.
- Equipment:
 - 2 back and forth,
 - 2 power outlets,
 - 1 double back and forth,
 - 1 push button,
 - 1 RJ45 socket,
 - 6 boxes 1 airtight station,
 - 1 center box (ceiling) with DCL (light connection device),
 - 1 wall-mounted bracket with DCL,
 - 10 sheath plugs,
 - 1 bell saw,
 - 1 plotting tool.

References

3D Mini-Cell Box Pack

MDG9912

The +

- Cost effective.
- Scalable hardware package.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Facilities and networks

Packs | Equipment

Learning goals

- Install and connect.
- Acquire the gestures of the professional.
- Edit an installation.
- Communicate with your client.

Presentation

These hardware packs complement your 3D Cell Home Installations and Networks with a set of appliances from one of the following ranges:

- recessed installation for new installations: Odace,
- projected installation for renovation: Alrea,
- projecting installation for renovation or new installation in gray premises (cellar, garage...): Mureva Styl.

These aim at equipping several cells, in resupply or acquisition.

Description

Odace recessed gear pack (ref. MDG99UTO)

- 25 push-pull switches.
- 25 simple push buttons.
- 10 double push buttons.
- 25x 2P + T 10/16 A outlets.
- 15 RJ45 outlets.
- 5 controls for roller shutters.
- 5 cable outlets 20 A.
- 10 DCL (connection device for lighting).
- 200 air-tight mounting boxes ø 67 mm depth 40 mm.
- 50 meters of ICA flexible ducts.

Alréa protruding equipment pack (ref. MDG99UTR)

- 20 single switches.
- 20 push-pull switches.
- 10 simple push buttons.
- 20 double push buttons.
- 20 2P+T 10/16 A outlets.
- 5 RJ45 outlets.
- 10 simple TV outlets.
- 100 finishing frames.
- molding and accessories.

Pack Waterproof equipment Mureva Styl (ref. MDG99UTE)

- 10 double to and fro.
- 20 back and forth light.
- 20 simple push buttons.
- 20 double push buttons.
- 20 illuminated double push buttons.
- 10 2P + T 10/16 A outlets.
- ICT tube assembly and branch boxes.

References

Odace recessed gear pack	MDG99UTO
Alréa protruding equipment pack	MDG99UTR
Mureva Styl Waterproof Equipment Pack	MDG99UTE

The +

- Cost effective.
- Scalable hardware package.



Odace Equipment Pack

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Facilities and networks

Pack | Control by pilot wire

Learning goals

- Install and Connect
- Configure and set up
- Edit Installation
- Testing and provisioning
- Communicating with your customer

Presentation

This package allows you to implement products using pilot wire technology:

- on the one hand, for a small home automation involving the centralized control of the lighting and roller shutters with the pilot wire PlusLink®. This technology makes it possible to parameterize using the commands directly.
- on the other hand, for heating management with a built-in thermostat. Easy to wire, just install an extra wire as a complement to the traditional wiring.

Description

Composition

Odace + central lighting and roller shutters:

- 2 roller shutter controls,
- 4 electronic switches for all loads,
- 1 standard controller,
- 2 group commands,
- 1 general order,
- 1 protective aid.

Odace Heating Management Equipment:

- 1 touch screen thermostat with pilot wire.

Installation and finishing accessories:

- 10 airtight boxes ø 67 mm depth 40 mm,
- 10 finishing plates 1 white post.

Feasible Functions

- scenarios for roller shutters and/or lighting,
- local, group and general commands (can be set directly from commands)
- memorizing lighting environments and roller shutter openings/closures.

Characteristics

- Odace + appliances:
 - color: White
 - screw fastening
- The protective aid to be used when the Odace + controls are protected by several circuit breakers. This enables automatic cutting of the pilot wire.
- The thermostat comes with a probe for a heated floor.

References

Control package by pilot wire

MDG99ODACP

The +

- Cost effective.
- Introduction to home automation functions.
- Creation and management of scenarios by simple extended support.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Facilities and networks

Modular benches | Residential

Learning goals

- Implement a distribution board.
- Studying and wiring the components:
 - single/double ignition, back and forth, power outlet,
 - serial/parallel connection.
- Studying and wiring the components of the T3/T4 package:
 - remote switch,
 - programmable time switch.

Presentation

The residential modular bench allows for rapid study and implementation of the components of a residential electrical installation.

The modules are complementary, ranging from the simplest functions in a housing to the most complex.

The composition may be supplemented by energy efficiency modules: see sub-section "Components for modular benches and accessories".

Description

Modules		Modular benches	
Designation	Reference	Batch T1 / T2	Batch T3 / T4
Support structure	MD1AM000	1	1
Circuit breaker module + counter	MD1AM6001	1	-
10 A Circuit breaker module	MD1AM6002	3	1
16 A Circuit breaker module	MD1AM6003	1	1
Inter Module diff. 16 A / 30 mA	MD1AM6004	2	2
Inter Module diff. 20 A / 30 mA	MD1AM6005	1	-
Remote switch module	MD1AM6006	-	1
Center code remote switch module.	MD1AM6007	-	1
Inter Module programmable timetable	MD1AM6008	-	1
Modular contactor module	MD1AM6009	-	1
Inter Module come and go	MD1AM6014	5	2
Push button module	MD1AM6015	-	6
Dual BP module	MD1AM6017	-	1
16 A plug module	MD1AM6018	4	2
15W lamp holder module	MD1AMP004	4	5

The modular benches can be supplemented with other modules: see chapter "Modules and accessories".

Characteristics

- Power supply: 230 VAC
- Dimensions (H x W x D) and weight:
 - structure: 1030 x 910 x 400 mm - 6.5 kg
 - modules : 245 x 150 x 70 mm - 0.7 kg

References

Residential modular bench T1/T2	MD1AM6121
Residential modular bench T3/T4	MD1AM6122

The +

- Fast and secure implementation.
- Robust wiring on safety sockets.



T1/T2 Modular Bench

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Facilities and networks

Modular bench | Residential and small tertiary

Learning goals

- Optimize energy consumption by using suitable components: programmer, twilight switch, timer, time switch...
- Understand the concepts of energy efficiency.
- Studying and wiring the components of the RPT package: remote switch with LP indicator, timer with advance notice, twilight switch.
- Study and wire the components of the RPT EE package: motion detector, thermostat with offset probe.

Presentation

The modular "Residential and small tertiary" benches make it possible to study the energy management in a relatively complex electrical installation, of the residential or small tertiary type.

The energy saving and optimization aspects can be illustrated on the heating and lighting functions.

Description

The modular bench is available in two versions:

Modules		Modular benches	
Designation	Reference	RPT	TOR EE
Support structure	MD1AM000	1	1
Circuit breaker module + counter	MD1AM6001	-	1
10 A Circuit breaker module	MD1AM6002	1	2
16 A Circuit breaker module	MD1AM6003	4	2
Inter Module diff. 16 A / 30 mA	MD1AM6004	-	1
Inter Module programmable timetable	MD1AM6008	-	1
Contactor module	MD1AM6009	4	2
Timer module	MD1AM6010	2	2
Intertwilight Module	MD1AM6012	1	1
1-port ballast module	MD1AM6013	1	1
Inter Module come and go	MD1AM6014	-	2
Push button module	MD1AM6015	-	2
Light push button module	MD1AM6016	3	3
16 A plug module	MD1AM6018	-	2
Motion detector module	MD1AM6036	-	1
Timer module with notice	MD1AM6020	1	-
Ambient sensor module	MD1AM6029	-	1
Thermostat module	MD1AM6030	-	1
15W lamp holder module	MD1AMP004	-	4
Instructed radiator operating part	MD1AMP010	-	1

The modular benches can be supplemented with other modules: see chapter "Modules and accessories".

Characteristics

- Power supply: 230 V / 2 kVA
- Dimensions (H x W x D) and weight:
 - structure: 1030 x 910 x 400 mm - 6.5 kg
 - modules : 245 x 150 x 70 mm - 0.7 kg

References

Residential and small tertiary modular bench	MD1AM6123
Modular bench for residential and small tertiary "energy efficiency"	MD1AM6130

The +

- Fast and secure implementation.
- Robust wiring on safety sockets.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- BTS FED (home energy fluids) option C
- HBD (home automation and interconnected buildings)
- Electrician CAP

Facilities and networks

Pack | Connected Habitat

Learning goals

- Install and Connect
- Configure and set up
- Edit Installation
- Testing and provisioning
- Customer communication (demo)
- Use the Resiclic and MIE3C encryption tools and calculate the cost of a construction site

Presentation

This packaged set of products makes it possible to simulate the cases encountered by installers in the case of new dwellings (or rehabilitation), in particular buildings. It is used to produce a GTL with electrical switchboards for the residential scenario in accordance with RT2012 and NF C 15-100, open on new services to users.

This pack consists of:

- 4 boxes: arrival, distribution, communication, home automation,
- a batch of traditional equipment and KNX.

It performs the following functions in the 3D cell equivalent to a T1:

- lighting control (on/off and variation),
- control of roller shutters, power outlet and heating,
- energy measurement,
- Alarm management
- VDI distribution.

Description

- Arrival box: control panel and circuit breaker.
- Distribution box:
 - Resi9 chute and box,
 - 1x 30 mA differential switch
 - 2x 30 mA differential switches AC type,
 - 16 plug-in circuit breakers: 1x 32 A, 4x 20 A, 5x 16 A, 3x 10 A, 3x 2 A,
 - 1 lightning arrester,
 - 2 power outlets,
 - 1 Wiser measuring station, 5 TC with Ethernet connectivity.
- 2TV grade communication box:
 - 6 departures (RJ45 ports),
 - switch manual mixing,
 - coaxial distributor,
 - WiFi router,
 - DTI and DTIO.
- Home cabinet:
 - lighting controls TOR (4), Variation (2), Shutters (2), Heating (1), Ventilation,
 - Wiser for KNX IP controller (supervision, scheduling, KNX and EnOcean compatible).
- Traditional appliances: 10 power outlets, 3 push-pull, 3 RJ45 outlets,
- KNX appliances: 5 push buttons 2 keys, 3 push buttons 1 key, 2 temperature sensors, 1 camera.
- Airtight fitting boxes.

References

Connected Home Pack

MDG99ETAB

The +

- Connected to smartphone/tablet tools.
- RT2012 compliant.
- Positioning against an actual project.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Facilities and networks

Pack | GTL complete RT2012

Learning goals

- Install and connect.
- Configure and set up.
- Edit an installation.
- Testing and provisioning
- Communicate with your client.

Presentation

This hardware pack enables training in the implementation of a projecting of technical housing sheath (GTL).

The GTL, sockets and switches will be mounted on partitions or in a 3D cell.

The assembly makes it possible to carry out a residential electrical installation in accordance with RT2012 and NF C 15-100.

It can be completed with equipment, an FTTH riser ...

Description

Composition :

- a chute kit,
- a control panel and its circuit breaker
- a distribution box:
 - 1 box 2 rows of 13 modules and its accessories (transparent door, document door...),
 - 2x 40 A 30 mA differential switches ,
 - 5 circuit breakers (1 x 2 A - 1 x 10 A - 2 x 16 A - 1 x 20 A),
 - 1 lightning arrester,
 - 1 modular socket,
 - connecting combs,
 - 1 counter RT2012 Wiser Link and its IP connection module,
- 1 communication box grade 2 with a box or optical converter slot:
 - 1 switch,
 - 1 DTIO (optical connection),
- Odace equipment and their white finishing plate:
 - 2 fiber optic sockets and their SC APC through-hole,
 - 4 RJ45 outlets,
 - 1 coaxial TV jack,
 - 4 back and forth,
 - 2 power outlets,
 - 25 airtight boxes,
 - 1 projecting junction box.

This pack can be augmented with:

- an Odace equipment pack (ref. [MDG99UTO](#)) see page C22
- one control pack per pilot wire (ref. [MDG99ODACP](#)) see page C23

References

Housing Technical Sheath Pack RT2012

[MD1ALFOGTL1](#)

The +

- 1 integrated e-learning prof access 1 year.
- RT2012 measurement system connected in Ethernet for access via smartphone or tablet.
- Fiber optic connection possible in the communication box.



GTL Pack



GTL Example

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Learning goals

- Install and connect.
- Configure and set up.
- Edit an installation.
- Test and implement.
- Communicate with your client.

Presentation

This hardware pack fits easily into any residential electrical switchboard. It can complement an existing electrical box in the 3D cell. It enables the implementation of an energy measurement solution:

- measurement of electricity consumption for the 5 uses referred to in Article 23 of the RT2012 thermal regulation,
- remote data access via smartphone or computer, with SMS or email alarm management and gas and water consumption metering.

Description

Composition:

- 1 Wiser Link meter and its five 80 A current transformers,
- 1 IP connection module for remote information retrieval,
- pulse counting modules from counters gas/fuel oil, thermal energy, hot water or cold water (with pulse output):
 - a wired solution,
 - a wireless solution consisting of a transmitter and a receiver.

Characteristics

- Power supply: 230 V
- Wiser Link counter:
 - width: 10 steps of 9 mm
 - interface: 2 LEDs, LCD, 5 push buttons
- Wired metering module:
 - width: 3 steps of 9 mm
 - power supply by association with the Wiser Link counter

Wireless receiver:

- width: 2 steps of 9 mm
- power supply by association with the Wiser Link counter
- Wireless transmitter:
 - ATEX certified
 - to be wired to the pulse output of the meter

References

Wiser Link energy measurement package

MDG99WISLK

The +

- Equipment for wiring training.
- Ethernet connection for access via smartphone or computer.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- BTS FED (home energy fluids) option C HBD (home automation and interconnected buildings)

Facilities and networks

Pack | Wireless home renovation

Learning goals

- Implement and parameterize this pack as part of an educational project to simulate a dwelling.
- Look for solutions to improve comfort.

Presentation

This pack consists of products using wireless Zigbee technology. It makes it possible to:

- move a simple control back and forth,
- create a new light spot without pulling a cable for controls,
- centralize the control of roller shutters.

Description

Pack composition:

- 1 WiFi / zigbee gateway for all devices of the Wiser system,
- 1 push button / actuator TOR 10 A Wiser with white finishing plate,
- 1 push button / actuator roller shutters 4 A Wiser with white finishing plate,
- 1 push button / controller 150 VA Wiser with white finishing plate,
- 1 heating actuator 16 A Wiser.

References

Wireless home renovation package

MDG99ODACE

The +

- Create back and forth without jobs or dust.
- Easy to implement.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Facilities and networks

Pack | Energy Efficiency Controls

Learning goals

- Install and Connect
- Configure and set up
- Edit Installation
- Testing and provisioning
- Communicating with your customer

Presentation

This hardware pack makes it possible to implement equipment to energy savings:

- lighting control,
- heating control,
- hourly rate management.

It allows you to carry out up to 5 improvement activities related to active energy efficiency.

Description

Composition

- External motion detector.
- Presence detector.
- CE Contactor for off-peak hour.
- Programmable time switch.
- Twilight switch.
- Thermostat 2 FIP zones.
- Click Delimiter: it shall keep under constant surveillance the notifications that appear on exceeding the rate emitted by the EDF electronic meter on the bus information.

References

Energy Efficiency Controls Package

MDG99CDEE

The +

- Cost effective.
- Scalable hardware package.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Craftsman Electrician Campus

In the service of education [new]



Presentation

The objective of the Campus Artisan Electricien offer is to learn the basic principles of the electrician's profession through professional support for students throughout their studies.

To do this, we offer:

- individual access to the Schneider Electric Digital Campus for electricians,
- 3 Resi9 hardware kits for 3 skills to be developed.

Each year, the offer provides access to:

- practice exercises,
- skills assessment,
- professional documentation (prescription booklet, renovation guide, etc.),
- E-design software,
- Schneider Electric monthly e-magazine,
- E-learning certification,
- ...

Benefits

Hand-holding of students

with a training by a visiting professional.

A training manual in the repositories

with a student progression.

Manufacturer's products

for current and future residential buildings.

An offer that contributes to the development of skills for the following courses:

- MELEC Pro Level
- Digital System Pro Level (VDI Offer)
- Electrician CAP

Do you have any questions about this offer?

Our team can help you.

Scan or click on the QR code:



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Pack Composition by Level

Level 1

Digital Campus Support:

- guide NF C 15-100,
- Level 1 practice:
 - TP installation of hardware Distribution table,
 - Rési9 apartment T1 with electric heating,
 - TP wiring,
 - TP commissioning of the installation,
 - TP Maintenance.

Hardware Kit:

- 1 single-phase control panel,
- 1 branch circuit breaker,
- 1 box,
- 2 differential switches,
- 5 modular circuit breakers,
- 2 pluggable system splitters,
- 1 vertical comb for XE differential switch.

Level 2

Digital Campus Support:

- prescription booklet,
- E-Design software,
- Level 2 practice:
 - TP HC contactor installation + power outlets in the existing installation
 - TP wiring,
 - TP commissioning of HC contactor,
 - TP Maintenance.

Hardware Kit:

- Combined circuit breakers + contactors.

Level 3

Digital Campus Support:

- Residential renovation guide,
- business development training: understanding customer needs, support proposals, master commercial components...
- Level 3 practice:
 - VDI Integration Pack TP,
 - TP wiring.

Hardware Kit:

- 1 2TV Grade Box Essential.

References

14 access to Campus digital level 1 to 3	basic kit	MDCAE3LOT 
	lightning arrester option	MDCAE3LOTP 
24 access to Campus digital level 1 to 3	basic kit	MDCAE5LOT 
	lightning arrester option	MDCAE5LOTP 
chute kit		MDCAELOTG 





Electrical distribution and energy

Selection criteriaD2

Electrical safetyD6

Installation wiring D11

Protection of property and persons D16

Energy quality..... D19

Energy production..... D22

Selection criteria

Electrical distribution and energy

Different types of educational solutions

Pack

Business skills training through student projects.

Modular bench

Learning concepts and knowledge.

Model

Implementation of advanced technologies.

System

Complete understanding of a business environment.

Level 3

Understanding and Use
Study and realization
Maintenance and Evolution

Electrical safety

System	Clearance / Authorization	■		
Models	Clearance / Authorization			
	BS Clearance / Authorization	■		
Bench	Clearance / Authorization	■		
Model	Wiring for intermediate certification	■	■	
System	High voltage HTA	■		

Installation wiring

Models	TGBT cabinet	for CAP	■	■	■
		for CAP and Bac pro	■	■	■
		for Bac Pro and BTS			
	TGE Cabinet				
	TGBT to TGE upgrade kit				

Protection of property and persons

Model	Study of TLS and selectivity	■	■	
Bench	Study of earth-connection patterns			
	Study of protection selectivity			

Energy quality

Benches	Study of reactive energy compensation			
	Study of electromagnetic disturbances			
	Study of harmonic disturbances			

Energy production

Modular bench	Solar power generation	■	■	
Benches	Micro power plant for isolated site			
	Photovoltaics and wind for isolated site			
	EnR Production Study			
Model	Photovoltaic production simulation [new]			
Bench	Solar water pumping			

Level 4 Vocational Training	Level 5 Advanced Vocational Training	Level 6 Engineer and University	Page
Understanding and Use Study and realization Maintenance and Evolution	Understanding and Use Study and realization Maintenance and Evolution	Understanding and Use Study and realization Maintenance and Evolution	

■		■		■					D4
■				■					D6
■				■					D7
■				■					D8
■	■			■	■				D9
■				■			■		D11

■	■	■		■	■	■		■	■	■	D12
■	■	■									D13
■	■	■		■	■	■					D14
				■	■	■		■	■	■	D15
				■	■	■		■	■	■	D16

■	■										D17
■	■			■	■						D17
■	■			■	■						D19

				■	■			■	■		D20
				■	■			■	■		D21
				■	■			■	■		D22

■	■										D23
■	■			■	■						D24
■	■			■	■						D24
■	■			■	■						D25
	■	■			■	■					D26
■	■			■	■						D27

Electrical safety

System | Enabling

Learning goals

HABILIS System

- Study an industrial system.
- Understand logging issues.
- Perform practical work corresponding to professional tasks.
- Train in authorization interventions: B1V, B2V, BC, BE, BR, BS according to NF C18-510.
- Identify components
- Analyze risks.
- Intervene near live nude room.
- Make adjustments.
- Perform maintenance and troubleshooting in the electrical cabinet.

Augmented reality

- Identify components
- Use augmented reality (AR) tools.
- Pass instructions.
- Perform a safe maintenance procedure.
- Implement Zigbee wireless communication.

Presentation

HABILIS System

This authorization system simulates mixing equipment that is used in the agri-food industry. It replicates a process that requires business continuity. The purpose of this equipment is to put the student in a situation that calls for intervention on industrial equipment. The student will have to apply the procedures for securing the electrical clearance.

Augmented reality

Augmented reality is an enhanced view of the real physical world where virtual elements are juxtaposed on the actual scene views. It provides dynamic, contextual information to onsite workers. It works on the basis of image recognition or TAG. It allows students to re-visualize safety instructions through videos on VAT, safety equipment, intervention procedures.

Augmented reality requires the automation option of the system Physical Authorization (HABILIS) to operate (ref. [MD1AA516MR](#) or [MD1AA516SO](#))

Cabinet and control box

- Wheeled electrical cabinet with brake.
- 1 disconnector with external locking control.
- 1 lockable circuit breaker.
- Power distribution by bar set protected by removable screen.
- Control and signaling circuits in 24 V.
- 3 returnable and departures with padlock option:
 - 1 motor starter with speed controller assisted by an inverter,
 - 1 motor starter cover (contactor-inverter),
 - 1 starter heating.
- 1 free slot for mounting and wiring an additional circuit.
- 1 UPS.

Characteristics

- Power supply:
400 V AC - 3P+N+T - 1 kVA
- Dimensions : 1970 (without tag during transport) / 2160 (with tag) x 860 x 670 mm
- Weight: 186 kg

The +

- Industrial equipment certification.
- Clearance in the presence of a rescued circuit.
- Use in automation systems.
-
- Speeds up operator training.
- Improves operator security.
- Reduces maintenance time.
- Reduces production downtime.



Cabinet



Mixer

Mixer

- 1x 90 W motor-operated tank cover opening/closing mechanism.
- 1x 90 W motor operated mixing blade.
- 1 resistance heating.
- Inductive and end-of-stroke sensors required for proper operation

Characteristics

- Power supply: from cabinet
- Dimensions (H x L x P): 600 x 600 x 600 mm
- Weight: 43 kg

Automation console

- 1 dialog terminal.
- 1 M340 or M221.

Characteristics

- Power supply: 220 V AC
- dimensions (H x L x P): 1150 x 340 x 430 mm
- Weight: 15 kg

AR Server and Application (Augmented Reality)

In front of a closet, without opening the door, augmented reality allows one to:

- see the device status, the value of API variables,
- have access to documents, videos, and Internet links,
- make a rapid diagnosis without logging,
- Detect operational anomalies,
- perform energy measurement using the Smartlink gateway (by reference)
- provide access to other measurements such as temperature measurements through the ZBRN (IIoT) gateway

Composition

- 1 HMI PC server.
- 1 "Augmented Operator Advisor" app for iOS or Android.
- 1 application for HABILIS authorization system.
- 1 WiFi access point.
- 1 ZigBee wireless energy measuring point to be installed (as per reference).
- 1 Ethernet / ZigBee gateway (as per reference).

Equipment to order separately

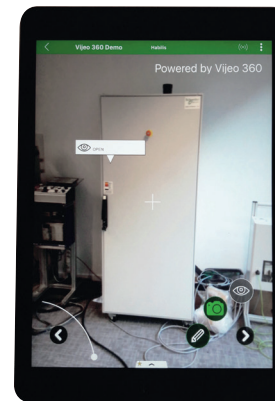
- Safety Response Kit ref. [MD1AA518](#) see Page F8.

References

HABILIS cabinet and control box	MD1AA513
Mixer	MD1AA514
Automation console	Modicon M340 MD1AA516MR
	Modicon M221 MD1AA516SO
AR Server and Application	without measurement MD1SAA50
	with wireless energy measurement via SmartLink MD1SAA5
	with wireless energy measurement via ZBRN MD1SAA5Z



Automation console



Augmented Reality of the cabinet



Augmented reality of the mixer

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

[AOADEV](#)

Programming - EcoStruxure Augmented Operator Advisor
Scan or click on the QR code

Electrical safety

Model | Entitlement

Learning goals

- Understand and identify BT electrical risks.
- Identify components
- Analyze risks.
- Intervene near live nude room.
- Make settings/adjustments and troubleshoot.
- Prepare for low voltage electrical clearance: B0, B1V, BE and BS according to NF C 18-510.

Presentation

The suitcases are intended for the training of non-electricians, such as painters, plumbers, air conditioning installers... They make it possible to address electrical risks on elementary tasks under low voltage. The two cases are complementary and simulate electrical installations of the tertiary and industrial type.

Description

- The first suitcase has 2 domestic outlets and 1 lighting outlet, for carrying out verification, locking, connection and replacement operations.
- The second suitcase connects to the first. It is based on Motor starting. It makes it possible to perform interventions in the presence of voltage.

Characteristics

- Power supply: 230 V AC / 3 A
- Suitcase 1:
 - dimensions (H x L x P): 450 x 460 x 290 mm
 - Weight: 10 kg
- Suitcase 2:
 - dimensions (H x L x P): 450 x 460 x 290 mm
 - Weight: 12.5 kg

Equipment to order separately

- Safety Response Kit ref. [MD1AA639](#) see Page F8.

References

Set of 2 VALHABILIS security cases

[MD1AA630](#)

The +

- Mobile and compact equipment.
- Developed for the preparation for electrical clearance of building systems.



Clearance / AUTHORIZATION cases



Safety Response Kit

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrotechnical BTS

Recommended training



For updating your knowledge

[SEBT](#)

Low voltage general procedures, work and logging
Scan or click on the QR code

Electrical safety

Model | BS Entitlement

Learning goals

- Perform routine electrical procedures on low-voltage installations.
- BS Preparation: Perform the clearance tasks according to NF C 18-510.



- Cost effective.

Presentation

This kit allows simple electrical tasks such as the identical replacement of a lamp or a fuse, for the BS clearance. It complements older generations (marketed before the evolution of the regulations defining the BS) of the following equipment:

- VALIDATION security case ref. MD1AA630
- HABILIS Enabling System ref. MD1AA513.

Description

Package Composition

- 1 cable outlet protected by a 10 A circuit breaker, designed to be replaced by a 2P+T socket.
- 1 start lighting protected by a 10 A fuse holder.
- 1 socket for lamp replacement operation.

Supplied Accessories

- Set of 5 2P+T outlets.
- 1 lamp.
- Fuses.
- 2 logging devices.

Characteristics

- Power supply: 230 V AC / 10 A
- Dimension (H x W x D): 230 x 300 x 120 mm
- Weight: 2.5 kg

References

BS Clearance Box

MD1AA638



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Recommended training



For updating your knowledge

SEBT

Low voltage general procedures, work and logging
Scan or click on the QR code

Electrical safety

Bench | Entitlement

Learning goals

- Understand and identify BT electrical risks.
- Identify components
- Analyze risks.
- Intervene near live nude room.
- Make settings/adjustments and troubleshoot.
- Perform wiring operations (non-wired version)
- Prepare for low voltage electrical clearance: BO, B1V, BR, BS according to NF C 18-510.

Presentation

This bench was developed to prepare electricians for electrical clearance on equipment reproducing a tertiary environment and industrial.

The bench has two independent faces: a housing/tertiary face and an industry face.

The bench is offered in two versions: mounted and not wired, or mounted and wired.

Description

- The bench is mounted on a chassis with locking wheels.
- Housing-tertiary:
 - electrical switchboard,
 - 2 electrical outlets,
 - 1 lamp,
 - BAES,
 - technical housing sheath,
 - EDF plate,
 - modular cabinet.
- Industry side:
 - industrial box,
 - motor start plate,
 - 2-way control box,
 - electric motor,
 - ball screw actuating two ends of travel,
 - 1 emergency shutdown case.

Characteristics

- Power supply: 400 V AC 3P+N+T / 16 A
- Dimension (H x W x D): 1800 x 1100 x 700 mm
- Weight: 100 kg

Equipment to order separately

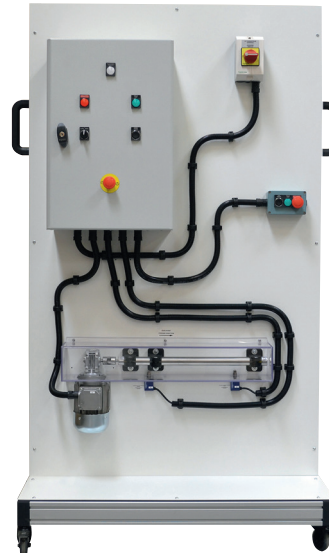
- Safety Response Kit ref. [MD1AA639](#) see Page F8.

References

Enabling bench with motor and ball screw	MD1AAHABILAV
Enabling bench with motor and ball screw, non-wired	MD1AAHABILAVNC

The +

- Real-life.
- The two faces can be used simultaneously.
- Developed for the preparation for electrical clearance of building systems.



Industry side



Housing-tertiary side

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrotechnical BTS

Recommended training



For updating your knowledge

[SEBT](#)

Low voltage general procedures, work and logging
Scan or click on the QR code

Learning goals

- Set up the measurement center.
- load the test program into the machine.
- Test general operation.
- Unwired version for:
 - Implementing components according to plan
 - wiring power and control components,
 - wiring Ethernet components
 - setting up the measuring center,
 - loading the test program into the machine,
 - testing the general operation.

Presentation

The wiring plates reproduce the control and power circuits of a 2-carriage conveyor system. They serve as a medium for intermediate certification on the two professional units UP1 (preparation for the realization of an electrical installation) and UP2 (verification of the operation of an electrical installation).

These plates are available in non-wired version (kit to be assembled) and cable-mounted version. They can only be used after being installed in a containment cabinet. The control plate produced by the student may be connected to various operating parts (motors, resistors, etc.) by means of an industrial connector.

Description

Composition

- 1 wiring board.
- 1 power terminal block.
- 1x 24 V AC transformer.
- 1x 24 VDC power supply.
- 1 set of protective circuit breakers.
- 1 disconnecter.
- 1 switch-disconnector.
- 1 quadrupole busbar.
- 1 switch.
- 1 switch-inverter.
- 1 magneto-thermal circuit breaker.
- 1 motor departure TeSys U with Modbus port.
- 1 TM211 controller with Ethernet port and Modbus.
- 1 measuring station with 3 TIs.
- 2 control boxes with buttons and lights.
- 1 connecting terminal block for end of travel boxes and contacts.
- 5 end of travel contacts.

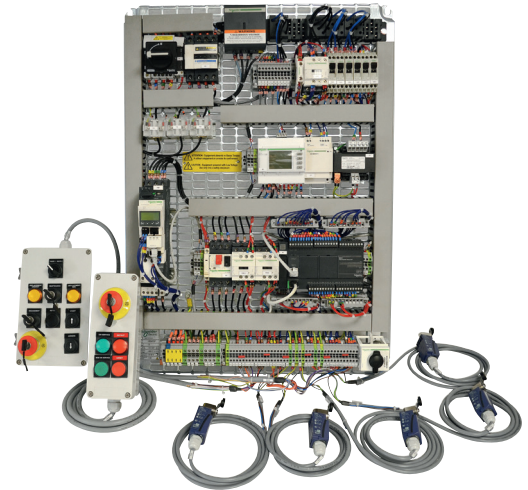
Optional learning motors: see chapter "Modules and accessories".

References

Intermediate certification plate BAC PRO wired	MD1AAPCBP
BAC PRO Intermediate Certification Plate	MD1AAPCBPNC

The +

- Plate specially designed for intermediate level V certification.
- Choice of wired or non-wired version.
- Can be mounted in a containment cabinet.



Containment cabinet-mounted plate with training motors

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

SEBT

Low voltage general procedures, work and logging
Scan or click on the QR code

Electrical safety

Power and control cabinet enclosure with PLC wiring and sensors

Learning goals

- To configure the power meter
- To load the test program in the PLC
- To test general operation
- With the non-wired version, you can:
 - Install components as per the drawing
 - Wire up the power and control components
 - Wire up the Ethernet components
 - Configure the power meter
 - Load the test program in the PLC
 - Test general operation



Description

Composition

- 1 wiring panel
- 1 power incomer terminal block
- 1 x 24 VAC transformer
- 1 x 24 VDC power supply
- 1 set of circuit breakers
- 1 isolating switch
- 1 switch disconnector
- 1 x 4-pole busbar system
- 1 contactor
- 1 changeover contactor
- 1 thermal magnetic circuit breaker
- 1 TeSys U motor starter with Modbus port
- 1 Twido PLC with Modbus port
- 1 power meter with 3 CTs
- 2 control boxes with buttons and indicators
- 1 terminal block for connecting the boxes and limit switches
- 5 limit switches

References

Power and Control cabinet enclosure with PLC wiring and sensors

AET-K01-PNC

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Advanced vocational training, Engineering and University

Electrical safety

System | High voltage HTA

Learning goals

- Discover an HTA installation and its various components.
- Identify risks.
- Operate and manipulate an HTA job.
- Discover the different types of cuts.
- Perform maintenance operations (fuses...).
- Apply safety requirements C18-510.
- Prepare for HTA clearance.

Presentation

The purpose of this equipment is to provide training in the procedures and interventions performed on HTA structures. For educational reasons, these equipment are powered by 400 V while enjoying the same functionalities as in 20 kV. The transformer is supplied without oil and without windings. The standard offer consists of two IM cells, a QM cell and an HTA/BT transformer. Other combinations are also possible (e.g. 1 IM + 1 QM with transformer, 1 IM + 1 QM without transformer...). TGBT is available as an option for the interlock chain.

Description

IM switch cell

- 1 set of 400 A tripolar bars.
- 1 switch-disconnector + earth disconnector with cut-off under SF6.
- 1 CIT manual control.
- 3 voltage presence indicators.
- 3 connection pads for unipolar dry cable.

Motorized QM combined switch-fuse cell

- 1 set of 400 A tripolar bars.
- 1 switch-disconnector + earth disconnector with cut-off under SF6.
- 1x 24 VDC motorized control.
- 1 set of 3x 24 kV Solefuse fuses.
- 1 protection Sepam series 20.
- 1 HTA/transfo/TGBT C4 Profalux lock.

Supplied accessories

- Connection cables.
- Safety accessories batch: perch, VAT, stool, gloves, fire extinguisher...

Options

- 100 kVA HTA/BT oil type transformer.
- TGBT with detachable and interlocking circuit breaker.
- Primary/secondary injection case for protection release tests.

Characteristics

- Cells 2 IM + QM: 2400 x 1125 x 950 mm - weight: 480 kg
- Transformer: 1400 x 940 x 720 mm - weight: 300 kg
- TGBT: 2310 x 1000 x 530 mm - weight: 214 kg

Installation and commissioning at the customer's premises are not included and must be quantified by our services: contact us.

References

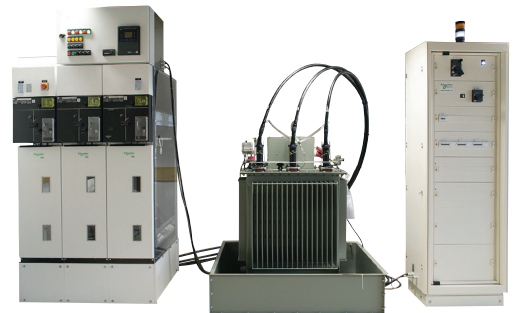
100 KVA transformer for learning	MDGHTATRF
TGBT with detachable circuit breaker + 3 starts + cables	MDGHTATGBT
Locking device for HABILIS cabinet	MDGHTAHBLIS
Primary/Secondary Injection Case	MDGHTAINJ
Additional IM cell	MDGHTAIM
HTA configuration: IM + QM + security accessories + cables	MDGHTAIMQM

The +

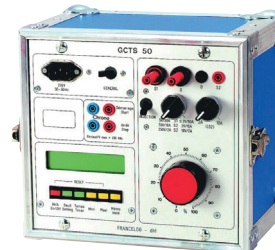
- Behavior of the HTA equipment in reality.
- Complete sentence sequence up to TGBT.



SM6 QM cell



Overview with transformer and TGBT



Primary/Secondary Injection Case

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

SEHT

General procedures, works and logging in low voltage and HTA
Scan or click on the QR code

Installation wiring

Models | TGBT cabinet for CAP

Learning goals

- Perform wiring and clearance tasks with busbar intervention.
- Identify components
- Perform wiring tasks according to the rules of the art.
- Mechanical and electrical control of the wiring.
- Connect an educational system for energy measurements.

Presentation

This TGBT cabinet makes it possible to carry out the wiring operations of a low voltage switchboard.

It has a rear access door with a key different from the front door, in order to avoid electrical risks.

The cabinet is delivered assembled with the components mounted in place, not wired or already wired depending on the version.

A set of accessories and a set of tools are offered for wiring operations.

Description

Cabinet composition

- 1 differential circuit breaker NS160.
- 1 switch with visible cut-off.
- 1 set of Linergy BW bars.
- 1 measuring station with 3 TIs.
- 1 emergency stop device on the cabinet.
- 6 departures (circuit breakers + Vigi blocks + contactors):
 - 1 x 10 A - 2P - 30 mA - curve C,
 - 1 x 16 A - 2P - 30 mA - curve C,
 - 1 x 32 A - 2P - 30 mA - curve C,
 - 1 x 32 A - 3P - 30 mA - curve C,
 - 1 x 50 A - 4P - 30 mA - curve C,
 - 1 x 63 A - 4P - 30 mA - curve C.
- 2 modular plug.
- On/off push buttons with signage for departure control.
- 1 light beacon indicating power on.
- power connection terminals.
- 2 BT/BT transformers.

Characteristics

- Power: 400 V AC - 3P+N+T - 63 A max.
- Dimensions (H x L x P): 2310 (with beacon) x 1000 x 530 mm
- Weight: 214 kg

Tools and accessories to order separately

- Lot of accessories: wires, lugs, tips and sheaths.
- Tool kit: screwdriver, pliers, 6-sided key set.

References

TGBT cabinet for CAP	cord	MD1AA720
	non-wired	MD1AA720NC
Lot of TGBT cabinet wiring accessories for CAP		MD1AA728
TGBT cabinet tooling kit for CAP		MD1AA729

The +

- Cabinet identical to the actual TGBTs.
- Power to real systems.
- Power and control wiring activity.



Cabinet



Accessory set



Tool kit

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrician CAP
- Pro MEEC Level (Electrical Connected Environments)
- Electrotechnical BTS

Recommended training



For updating your knowledge

G2

Electrical distribution equipment
Scan or click on the QR code

Installation wiring

Model| TGBT cabinet for CAP and Bac pro

Learning goals

- Identify components
- Perform wiring tasks.
- Set up and check.
- Set up a measurement center.

Presentation

This cabinet makes it possible to carry out the wiring of electrical equipment, using the example of a model. It comprises the following:

- a high-performance TGBT which is mounted without wiring, with the power supply simulated by a cable end on a lower part of the cable path,
- a standard TGBT, mounted and wired in our workshops, powered by Canalis connector.

Description

Composition

- 1x 125 A general switch.
- 1x 63 A general circuit breaker .
- 1 central measuring unit at the head of departures.
- 1 divisional lighting circuit breaker.
- 1 lighting departure by Canalis.
- 1 departure security lighting.
- 1 power circuit breaker.
- 1 Heating start with energy metering.
- 1 water heater.
- 1 motor departure.
- 1 departure access control.

Characteristics

- Power: 400 V AC - 3P+N+T - 63 A max.
- Dimensions (H x L x P): 1930 (1800 without tag) x 900 x 880 mm
- Weight: 170 kg

References

TGBT cabinet for CAP Pro

MD1AA725



- Stallion side, elevation side.
- Feed possible.
- Easy to move system.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrotechnical BTS

Recommended training



For updating your knowledge
G2
Electrical distribution equipment
Scan or click on the QR code

Installation wiring

Models | TGBT cabinet for Bac Pro and BTS

Learning goals

- Analyze TGBT functions.
- Identify constituents.
- Perform TGBT commissioning and maintenance.
- Configure and set up the communication network.
- Record a departure.
- Study the UPS.
- Prepare for electrical clearance.



- Mounted, wired, tested and validated by Schneider Electric.
- Remote supervision.

Presentation

This cabinet is designed for the discovery and implementation of the different technologies used in a TGBT: source inverter, measuring center, inverter, automatic, load shedding...

It allows the distribution and control of electrical energy on a teaching platform. A controller centralizes information over Modbus and/or Ethernet links.

Description

Composition

- 1 Prisma P cabinet with sheath.
- 1 normal/standby power supply by 100 A disconnector switches.
- 1 NS160N reversing circuit breaker with protection relay.
- 1 remote control with BA automatic source inversion.
- 2 sets of bars.
- 2 control relays phases RCP.
- 1 voltage control relay RCU.
- 10 departures:
 - 3 x 25 A - 4P - 30 mA - curve C - without ballast,
 - 16 A - 1P+N - 30 mA - curve C - without ballast,
 - 10 A - 1P+N - 30 mA - curve C - without ballast,
 - 25 A - 4P - 30 mA - curve C - with ballast,
 - 2 x 25 A - 3P - 30 mA - curve D - without ballast,
 - 16 A - 1P+N - 30 mA - curve C - with ballast,
 - 10 A - 1P+N - 30 mA - curve C - with ballast.
- Acti9 Smartlink communication system.
- 1 M340 or M221 PLC with server web coupler and HTML pages.
- 1 UPS 1 kVA.
- 1 general measuring station.

Characteristics

- Power: 400 V AC - 3P+N+T - 63 A max.
- Dimension (H x W x D): 2540 (2110 without tag) x 1260 x 530 mm
- Weight: 260 kg

Options for ordering separately

- Measuring kit with meters.
- Measuring kit with radio frequency measurement sensors

Installation and commissioning

- If necessary, contact us for a quote.

References

TGBT cabinet for Bac pro and BTS	with Modicon M221	MD1AA780SO
	with Modicon M340	MD1AA780MR
Reactive energy compensation package for TGBT cabinet for Bac pro and BTS LEVELS		MD1AA739
Measuring kit with meters		MD1AA786
Measuring kit with radio frequency measurement sensors		MD1AA787
IT Network Island		MD1AA710



TGBT cabinet

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrotechnical BTS

Recommended training



For updating your knowledge
G2
Electrical distribution equipment
Scan or click on the QR code

Installation wiring

Models | TGE Cabinet

Learning goals

- Study the equipment.
- Implement and record departures.
- Study Ethernet and Modbus communication.
- Study RT2012.
- Implement data driven energy efficiency actions.
- Manage Alarms and Preventive Maintenance

Presentation

This TGE (energy management board also called Smart panel) incorporates the latest technologies in energy-efficient electricity distribution.

It comes with the RT2012 "Analyses and Solutions" guide and Schneider Electric's energy efficiency white paper.

A version to be edited by you will be offered as part of an educational project.

Description

Composition

- Prisma P cabinet with sleeve.
- Active 9Smartlink Ethernet communication system.
- Compact NSX head breaker with Ethernet interface.
- Communication interface for modular products (circuit breakers, meters...).
- 6 departures:
 - 1 x 25 A - 3P+N - 30 mA - curve C with RCA remote control
 - 1 x 16 A - 1P+N - 30 mA - curve C with iCT switch
 - 1 x 10 A - 1P+N - 30 mA - curve C with iTL remote switch
 - 1 x 25 A - 3P+N - 30 mA - C curve Reflex
 - 1 x 25 A - 3P - 30mA - C curve Reflex
 - 1 x 10 A - 1P+N - 30mA - C curve Reflex
- Tetrapolar energy meter with impulse on start 1
- Single-phase energy meter with impulse on start 2
- Single-phase PowerTag on start 3
- Tetra-polar PowerTag on Start 4
- Three-phase PowerTag on start 5
- Single-phase PowerTag on start 6

Features

- Information gathering and departure control.
- Measurement and control of energy consumption.
- Real-time control by touch screen.
- Web pages embedded in products with display on PC.
- Remote viewing of operating screens by tablet application.

Characteristics

- Power supply: 400 V AC - 3P+N+T - 63 A max.
- Dimensions (H x L x P): 2080 x 900 x 250 mm
- Weight: 250 kg

References

TGE Cabinet	MD1AA790SP
TGE cabinet kit	MD1AA790SPK

The +

- Full integration of RT2012.
- Driving from a tablet.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Installation wiring

Model| Box for the evolution of a TGBT in TGE

Learning goals

- Organize the operation in context.
- Perform an installation.
- Choose a technical solution.
- Implement measurement tools.
- Interpret indicators, measurement results and tests.

Presentation

This box allows you to transform a TGBT into a TGE (energy management table) thanks to the measurement of energy on different departures. It is installed near the TGBT and is to be completed with a measurement kit that is to be installed in the TGBT.

3 solutions are proposed for visualizing the electrical consumption.

These configurations make it possible to install measurement equipment in the TGBT.

Configuration 1: MD1AA786 + MD1AA787

The supervision is performed with a computer connected to the TGBT.

Configuration 2: MD1AA788 + MD1AA787

Supervision is carried out by a Magelis FDM128 terminal, and a WiFi terminal allows the screens to be monitored remotely by a smartphone.

Configuration 3: MD1A785 + MD1AA786+ MD1AA787

The supervision is carried out via a computer or on a WiFi tablet.

Measurement box for TGBT

Composition

- 1 EcoStruxure Panel Server Universal
- 1 waterproof Kaedra box 1 row.

Characteristics

- Power: 230 V single phase 30 VA
- Dimensions (H x L x P): 280 x 448 x 160 mm
- Weight: 5 kg

Measuring kit with energy meters

- 1 single-phase counter 63 A - direct measurement - pulses.
- 1 single-phase meter 63 A - direct measurement - Modbus.
- 1 three-phase counter 63 A - direct measurement - pulses.
- 1 three-phase counter 63 A - direct measurement - Modbus.
- 1 three-phase meter - separate TI measurement - Modbus.
- 3 TI 100/5 A.

Measuring kit with radio-frequency measuring sensors

- 1 Smartlink radio frequency Ethernet interface
- 2 sensors for iC60 - 1P+N.
- 2 universal sensors - 3P+N.
- 1x 24 VDC power supply and protective circuit breaker.

Measurement display kit

- Front-side display modules for tables for Enerlin'X FDM128 low voltage circuit breakers.
- Ethernet switch.

References

Measurement box for TGBT	MD1AA785
Options	
metering kit	MD1AA786
Measuring kit with radio-frequency measuring sensors	MD1AA787
measurement display kit	MD1AA788

The +

- Adaptable to any type of TGBT.
- Measurement by wireless meters or sensors
- WiFi communication with a smartphone.



Measurement box and measuring kit

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Protection of property and persons

Model | Study of TLS and selectivity

Learning goals

- Study the different ground connection patterns.
- Study the usefulness and functioning of safeguards.
- Choose the most appropriate protection for an installation.
- Determine fault currents.
- Study ampere and chronometric selectivities.

Presentation

This kit is intended for the study of the protection of people and property in an Earth Link Scheme (TLS) facility type TT.
The equipment consists of different electrical protection devices and resistors to simulate the human body or different equipment connected to the network.

Description

Package Composition

- 1 isolation transformer.
- 1 set of resistors.
- 1 Vigirex differential relay.
- 1 circuit breaker with voltage-emitting trip device.
- 1 circuit breaker with differential 300 mA.
- 1 circuit breaker with differential 30 mA.
- 1 push button to create the defect.
- 1 general protection circuit breaker.
- 1 power cable.

Accessories to be ordered separately

- Set of 4 mm secure cords.

Characteristics

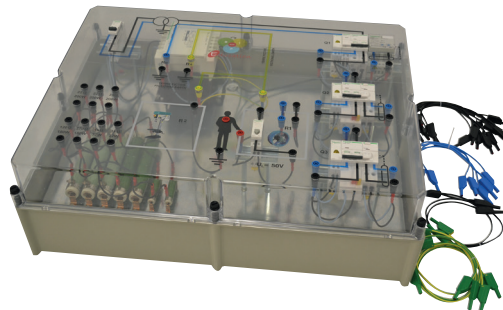
- Power supply: 400 V / 250 VA
- Dimension (H x W x D): 240 x 720 x 600 mm
- Weight: 20 kg

References

A2E SLT and selectivity study kit	MD3BPSLTSC
Bundle of connecting cords	MD1AMLCORDONS

The +

- Compact equipment.
- Cost effective.
- Robust wiring on safety sockets.



SLT box + bundle of cords

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Recommended training



For updating your knowledge

G3

Design of an electrical installation BT -
Standard NF C 15-100
Scan or click on the QR code

Protection of property and persons

Study bench for grounding schemes

Learning goals

- Study the different ground connection patterns: TN, TT and IT.
- For each type of SLT, apply the protection standards for a BT electrical distribution.
- Apprehend the search for defects.

Presentation

These benches are designed for studying different schemas for linking to earth (SLT):

- neutral regimes TN and TT on one side,
- IT neutral regime on the other.

Receptors are simulated by charges implanted in the lower part of the bench. Two versions are available:

- the IM400 version allows for automatic defect detection,
- the IM20 version allows the defect to be checked manually.

Description

Ground-connection diagram study bench

- The benches are mounted on a chassis with blocking wheels.
- Bench composition:
 - 1 distribution architecture summary,
 - 3 single or three-phase receivers representing an individual person,
 - protection by magnetothermal and differential circuit breakers,
 - differential switches and contactors,
 - 1 permanent isolation controller for IT (IM400 type) or IM20),
 - IFL12 locator integrated into the structure (on IM400 version).
 - resistors and power transformers in the lower part.
- Supplied accessory: 1 set of secure cords

Fault Search Kit

• To be ordered with the IM20 version ground connection schematics bench.

• Composition:

- XP15 ammeter clamp,
- 1 XGR leakage current generator,
- 1 mobile XRM receiver.

Characteristics

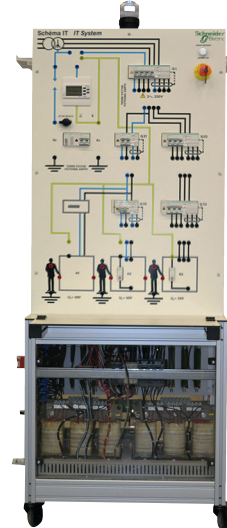
- Power supply: 400 V / 4 kVA
- Dimension (H x W x D): 1950 x 770 x 600 mm
- Weight: 152 kg

References

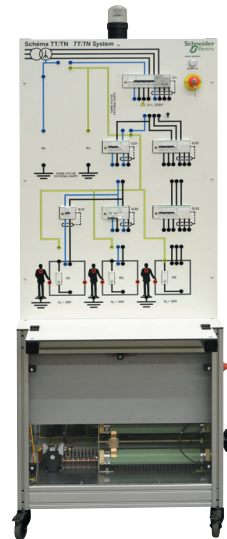
SLT (IM400) Ground Binding Pattern Tank	MDG99603
SLT (IM20) Ground Binding Pattern Tank	MDG99605
Fault search kit for STL IM20 study bench	MDG99609

The 

- The two sides can be used simultaneously.
- 1 single equipment for the 3 neutral speeds.
- Secure and robust wiring.



IT Side



TT + TN side



Fault Search Kit

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Recommended training



For updating your knowledge

G3

Design of an electrical installation BT - Standard NF C 15-100
Scan or click on the QR code

Protection of property and persons

Bench | Study of the selectivity of protection

Learning goals

- Use an adjustable differential relay with separate torus.
- Analyze the causes and effects of short-circuit currents (calculation modes, choice of safeguards/protection).
- Study the principles of operation of an MCB (trip curves, cut-off power).
- Use and plot the trigger curve for a given size.
- Implement selectivity between upstream and downstream protections.
- Simulate situations of total selectivity, partial selectivity and non-selectivity.
- Study the concepts of selectivity at 2 or 3 stages (consequences and effects on a facility).
- Choose the impedance of the fault loop by variable value selfs.
- To present in a simplified manner the arc cut-off at very low voltage.
- Limit short-circuit current.

Presentation

This bench is designed for studying and implementing two strategies for the selectivity of protection in low voltage distribution:

- ammeter selectivity,
- and chronometric selectivity.

Two isolation transformers limit the energy involved in the intentional defects required for the study.

Description

- The bench is mounted on a chassis with locking wheels.
- Composition:
 - 2 synoptic panels: ammeter selectivity and chronometric selectivity,
 - circuit breakers with different trip curves (B, C or D),
 - 2x 230 V / 48 V AC insulation transformers in the lower part,
 - 1 set of selfs (for amperometric selectivity),
 - 1 rheostat (for chronometric selectivity).
- Supplied accessory: 1 set of secure cords.

Characteristics

- Power supply: 230 V / 3.2 kVA
- Dimension (H x W x D): 1850 x 730 x 620 mm
- Weight: 150 kg

References

Protection selectivity study bench

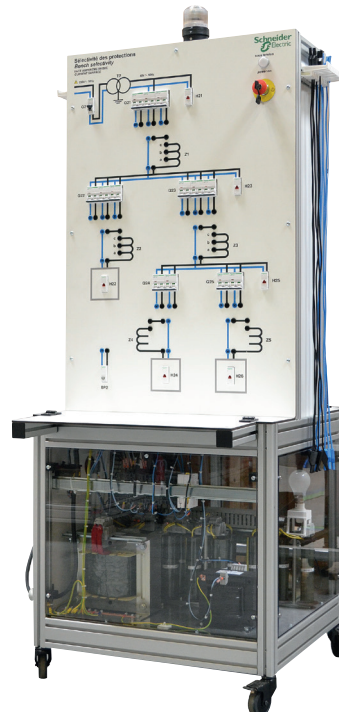
MDG99610

The 

- The two sides can be used simultaneously.
- Only 1 equipment for the 2 types of selectivity.
- Secure and robust wiring.



Timing side



Amperometric side

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- electrotechnical BTS

Recommended training



For updating your knowledge

G3

Design of an electrical installation BT - Standard NF C 15-100
Scan or click on the QR code

Learning goals

- Measuring the power factor on linear and non-linear loads:
 - influence of line lengths,
 - remedies for power factor correction.
- Highlight the pull currents associated with capacitor switching: measurement and reduction.
- Highlight overloads on capacitors (antiresonance) related to harmonic phenomena.

Presentation

This box is representative of a reactive energy compensation installation. It has the following functions:

- phase-shifting linear loads for factor variation power of the installation,
- varimetric measurement system,
- step-based reactive energy compensation system capacitors controlled by the varimetric relay,
- static contactor for suppressing the ringing current connected to the capacitors,
- a system of non-linear charges for demonstrating antiresonance phenomena related to harmonic circulations in capacitors,
- corrective device with antiresonance inductor.

Note: the performance of the measurements and practical work requires the use of a universal RMS type controller or specific instruments (harmonic analyzer).

Description control box

- 1 synoptic panel.
- 1 VarPlus Logic measuring system.
- 1 set of 3 capacitors.
- 1 set of 3 selfs.
- Measurement points on the right side.

Characteristics

- power supply: 230 V AC - 3.2 kVA
- dimensions (H x L x P): 950 x 700 x 370 mm
- Weight: 70 kg

Description lamp box

- 3 controller controlled 500 W halogen lamps.

Characteristics

- dimensions (H x L x P): 420 x 800 x 300 mm
- Weight: 18 kg

Description of the trolley

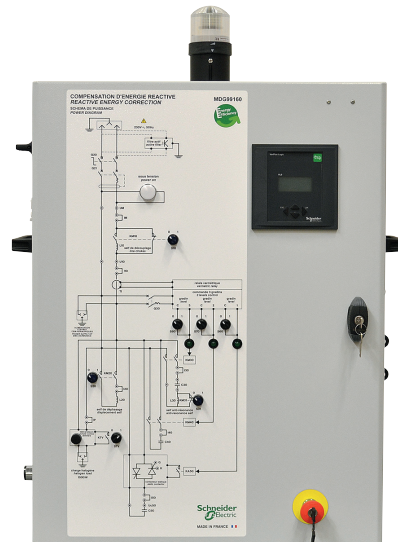
- Its castors facilitate the handling of the reactive energy study cabinet.

References

REACTIVE ENERGY COMPENSATION STUDY BOX CER + LAMP BOX	MDG99160
Trolley for ERC reactive energy compensation study cabinet	MDG99169

The +

- Compact system for REB study.
- Use in applied physics.
- Secure measurement points.



REB Study Package



Study box on trolley

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

G3

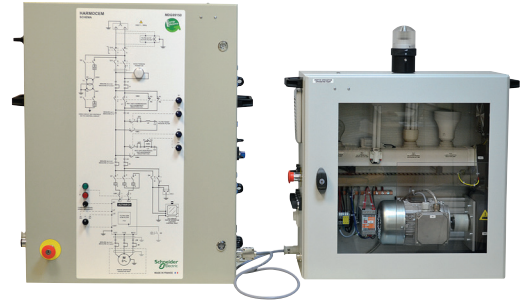
Design of an electrical installation BT - Standard NF C 15-100
Scan or click on the QR code

Learning goals

- Identify harmonics linked to different receptors.
- Identify disturbances related to the co-existence of low/high currents (CEM).
- Measure radiated and conducted EMF.
- Implement the appropriate solutions according to the wiring rules.

The +

- Use in applied physics.
- Secure measurement points.



HARMOCEM Bench

Presentation

This bench comprises two boxes that allow make it possible to reproduce the phenomena of electromagnetic disturbances encountered in an industrial environment, and to assess the performance of the solutions used.

The proposed measurements and practical work require the use of a spectrum analyzer (HF) and harmonics analyzer (BF).

The bench consists of 2 boxes.

Order box

- Synoptic selection of the components to be implemented.
- 1 set of 3 selfs.
- 1 set of 3 capacitors.
- Speed controller.
- Filters, compensators, selfs, capacities.
- Measurement points.

Characteristics

- Power supply: 230 V AC - 1.5 kVA
- Dimensions (H x L x P): 810 x 700 x 350 mm
- Weight: 60 kg

Load box

- Non-linear loads: controllers, lamps, fluorescent tubes...
- 1 asynchronous motor with load.
- Cords and probes.

Characteristics

- Power supply: 230 V AC - 1.5 kVA
- Dimensions (H x L x P): 750 x 700 x 330 mm
- Weight: 42 kg

Trolleys

- 1 set of 2 trolleys:
 - one with a lockable drawer for the control cabinet,
 - the other to support the load box.

Measurement apparatus not included, necessary for operating the study bench

- RF spectrum analyzer from 150 kHz to 1 GHz.
- Single-phase power and network analyzer for measuring harmonics of rank 2 to 50.

References

HARMOCEM Electromagnetic Disturbance Study Bench	MDG99150
Trolleys for electromagnetic disturbance study bench	MDG99158

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

EMC

Electromagnetic compatibility
Coexistence of strong/weak currents
Scan or click on the QR code

Energy quality

Bench | Study of harmonic disturbances

Learning goals

- Investigate disturbance issues on a three-phase facility.
- Analyze Harmonic and EMC phenomena and neutral heating.
- Implement appropriate solutions.

Presentation

This bench is in the form of an electrical cabinet and a cabinet containing lighting charges.

The electrical architecture simulates the installation of a theater.

It consists of two separate supply lines, which make it possible to manage a lighting circuit and to control the motorization of the scenery.

The measurement and practical work requires the use of a spectrum analyzer (HF) and harmonics analyzer (BF).

Study bench

- The bench is mounted on a chassis with wheels.
- The upper part comprises:
 - 1 synoptic with selection of components to be used,
 - 1 lamp measuring and power control panel,
 - protective circuit breakers and differentials,
 - line selfs,
 - anti-harmonic filter salts,
 - resonant selfs,
 - three-phase capacitors,
 - 1X 2 kVA 400/240 V decoupling transformer ,
 - 1 Altivar controller for 1.5 kW motor.
- Bottom box:
 - 1x 500 W 3-halogen light rail,
 - 1 fluorescent, compact or induction lamp boom,
 - 1 temperature monitoring probe,
 - 2 cooling fans,
 - 1 set of cords and probes.

Characteristics

- Power supply: 400 V AC - 3P+N+T - 3.3 kVA
- Dimension (H x W x D): 1860 x 900 x 570 mm
- Weight: 230 kg

Measurement apparatus not included, necessary for operating the study bench

- RF spectrum analyzer from 150 kHz to 1 GHz.
- Low Frequency Three-Phase Network and Power Analyzer: power and energy quality (harmonics).

References

HARMOTRIS harmonic disturbance study bench

MDG99190

The +

- Applicable to industrial and tertiary installations.
- Mobile equipment.
- Secure measurement points.



HARMOTRIS Bench

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Recommended training



For updating your knowledge

HARM

Harmonics

Technical solutions

Scan or click on the QR code

Energy production

Modular bench | Solar power generation

Learning goals

- Discover and identify constituents.
- Study, size and implement solar panels.
- Study the influence of solar masks.

Presentation

This modular bench is designed to discover the basics of solar panel power generation. To view the state of charge, the regulator module is equipped with 2 LEDs:

- green for fully charged battery,
- red for battery charging.

Description

Composition

- 1 support structure ref. MD1AM000.
- 1 solar panel ref. MD1AMS005.
- 1 measurement module with 1 voltmeter and 1 ammeter ref. MD1AMS001.
- 1 battery charge regulator module ref. MD1AMS002.
- 1x 12 V DC battery module ref. MD1AMS003.
- 1 inverter module 12 V DC / 230 V AC ref. MD1AMS004.
- 1x 15 W lamp holder module ref. MD1AMP004.

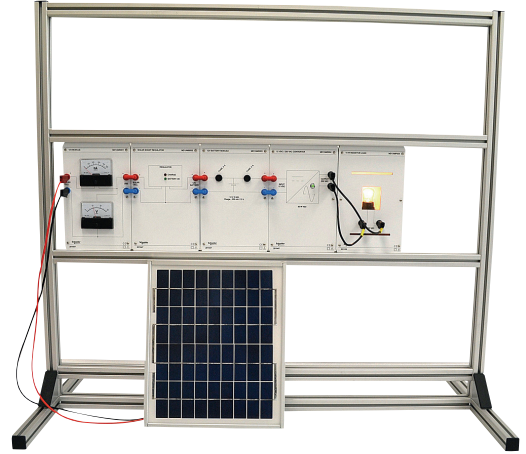
References

Modular solar energy production bench

MD1AMLSOL

The +

- Discovery of solar production.
- Prototyping an energy chain.
- Fast and secure implementation.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Pro MEEC Level (Electrical Connected Environments)
- Electrician CAP

Energy production

Bench | Micro power plant for isolated site

Learning goals

- Connect the photovoltaic panels to study the different series/parallel combinations.
- Understand the different components of an isolated photovoltaic production line.
- Measure energies at different points in the installation.
- Study battery charge and discharge constraints.

The +

- High-performance photovoltaic panels.
- Fast and secure implementation.

Presentation

This bench allows you to implement a solar power production chain, from photovoltaic panels to 230 V AC receivers.

Description of the photovoltaic structure

One or two photovoltaic structures may be combined to form the production field.

Each structure can be adjusted to determine the best exposure. Each of these comprises two panels of six photovoltaic cells.

Each panel has an MC4 connection which must be connected (series or parallel) according to the electrical constraints of the conversion chain. The connection is made by means of a coupling box connected to the main box by means of a 10 m cable (thus allowing the studies to be carried out indoors).

The combination of two structures will thus allow for greater diversity of connection and greater production power.

Characteristics

- Photovoltaic panel:
 - dimensions (L x P x H) : 820 x 670 x 50 mm
 - Weight : 7 kg
- Coupling box:
 - dimensions (L x P x H) : 190 x 140 x 110 mm
 - Weight: 2 kg

Conversion box description

It is equipped with: one regulator, one battery, one inverter, two selectable 230 V AC charges and protective and measuring equipment.

The regulator powers the 12 V DC battery and the 12 V DC / 230 V AC inverter. This provides power to two LED lamps of different powers. Measurement points and ammeters make it possible to visualize and measure the charge and discharge current.

Characteristics

- dimensions (L x P x H) : 530 x 360 x 180 mm
- Weight: 11 kg

References

Photovoltaic structure for a micro-power station	MD3BPPV
Conversion box for central microphone bench	MD3BPSOLI



Photovoltaic structure



Conversion box and coupling box

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Energy production

Bench | EnR Production Study

Learning goals

- Implement different power generation and storage configurations.
- Study electrical energy storage.
- Study the regulator and inverter functions.
- Compare production and efficiency between fixed PV panels and a solar tracker.
- Study wind function.

Presentation

This bench is designed for studying the different components of an energy chain. From DC production, to internal AC or DC and external use on home outlet. The bench may incorporate storage batteries and/or programmable power supply to simulate a renewable energy source. Renewable energy sources are offered as an option, see chapter "Modules and accessories". They are of four types:

- fixed photovoltaic panels,
- photovoltaic panels tracker,
- motorized bench wind turbine,
- outdoor wind turbine on mast.

A set of interchangeable plugs is provided with the bench. Each plug represents one possible configuration and places the measurement points in the energy chain.

Description

Basic version

- 1 production, storage and consumption sequence controller.
- 1 display for displaying U/I/P electrical quantities.
- 1 inverter for isolated site.
- 230 V and 24 V lamp loads or external load.

The following versions have the following additional features:

- basic version with simulation: 1 programmable variable DC power supply,
- basic version with storage: 1 set of 24 V/27 Ah gel-lead batteries with charger,
- basic version with simulation and storage: 1 programmable power supply and battery storage.

Renewable energy sources

These modules are offered as an option: see chapter "Modules and accessories".

References

EnR bench version with power supply and batteries

MDG99403

The +

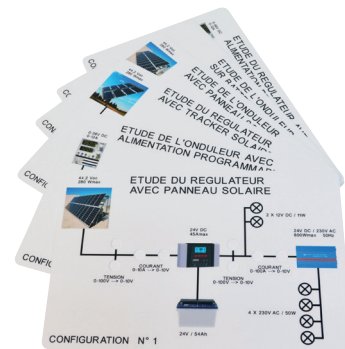
- Operation is possible regardless of weather.
- Many different configurations.
- Remote monitoring possible by touch-sensitive tablet application.



Front View



Back View



Configuration sheets

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)

Energy production

Solar Water pumping bench

Learning goals

- Discover and implement the drawing bench.
- Study the operation, setup and maintenance of the Solar ATV 312 controller.
- Dimension the photovoltaic panels necessary for the operation of the bench.

Presentation

This bench reproduces a stand-alone solar pumping solution proposed by Schneider Electric, in areas where connection to the electricity grid is not possible. The electrical energy supplied by photovoltaic panels directly feeds a specific variable speed drive. The system operates without batteries, the aim being to ensure the permanent supply of water by dimensioning the tank according to the water needs and the daily sunshine. To facilitate an educational use, this model is supplied with energy:

- either by a PV panel field with 300 V DC output,
- a 24 V DC laboratory power supply,
- or by the 230 V AC mains.

Description

Composition

- 1 Altivar 312 Solar 180 W.
- 1 centrifugal pump.
- 1 high tank with level sensor.
- 1 low reservoir to simulate the water table.
- 1 on/off switch pump.
- 1 rotary knob to vary the voltage.
- 1 pump power indicator.
- 1 pump fault light.
- 1 emergency stop punch.
- 1 power cord.
- Protective circuit breakers.

References

Solar Water pumping bench

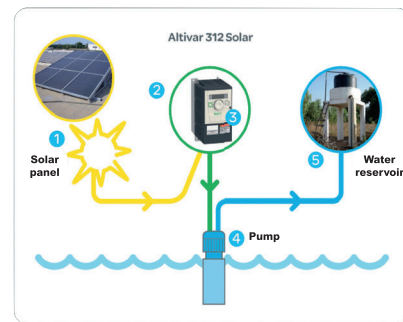
MD3BPODS

The +

- Compact equipment.
- Operation indoors or outdoors.



SUN AND WATER



Principle

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- Electrotechnical BTS
- Pro MEEC Level (Electrical Connected Environments)



Digital

Selection criteria E2

Augmented reality E4

Cybersecurity E5

Industrial production simulation..... E6

Simulation of residential buildings..... E7

Selection criteria

Electrical distribution and energy

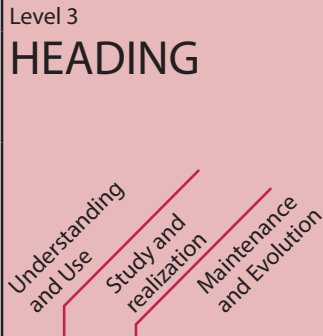
Different types of educational solutions

Pack
Business skills training through student projects.

Modular bench
Learning concepts and knowledge.

Model
Implementation of advanced technologies.

System
Complete understanding of a business environment.



Augmented reality

Model	Augmented Reality Development [new]			
-------	--	--	--	--

Cybersecurity

Model	Cybersecurity Study [new]			
-------	----------------------------------	--	--	--

Industrial production simulation

Software	Factory I/O			
----------	-------------	--	--	--

Simulation of residential buildings

Software	Home I/O			
----------	----------	--	--	--

Level 4 Bac pro				Level 5 BTS				Level 6 Bachelor, Licence Pro, Master, Engineer				Page
Understanding and Use				Understanding and Use				Understanding and Use				
Study and realization				Study and realization				Study and realization				
Maintenance and Evolution				Maintenance and Evolution				Maintenance and Evolution				
				■	■	■		■	■	■		E4
				■	■			■	■			E5
				■	■			■	■			E6
				■	■			■	■			E7

Augmented reality

Model | Augmented Reality Development [new]

Learning goals

- Understand the benefits and challenges of augmented reality.
- Develop all applications of augmented reality and implement them.

Presentation

- Augmented reality is becoming an inescapable tool in all areas of personal and professional life.
- It increases learning efficiency and enriches the user experience.
- The augmented reality application development kit will enrich your processes or activities with real-time visualization, document content, efficiency data, learning tutorials and more.

Description

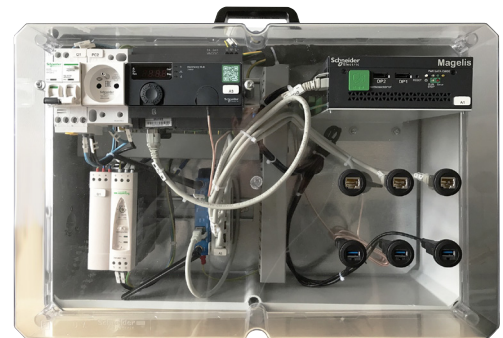
- The augmented reality development kit includes:
 - One WiFi server PC (screen and keyboard not included),
 - Ecostruxure Augmented Operator Advisor 3D development software (training not included: see suggestion at the bottom),
 - an Ecostruxure Augmented Operator Advisor 3D Builder license (the cloud or local license must be renewed annually: [click here](#)),
 - Ecostruxure Operator Terminal Expert runtime software (used for its drivers),
 - One Ecostructure Operator Terminal Expert Runtime license,
 - a Zigbee receiver for coupling wireless measurement sensors.
- An Android or iOS tablet for operation can be provided as an option.

References

Augmented Reality Development Box		MD4STPKDEVRA ⓘ
Tablets for operation	Android	MD1ACTABA ⓘ
	iOS	MD1ACTABI ⓘ

The +

- Applicable to all business areas.



Augmented reality application development kit

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS SN (digital systems)
- Engineering Degrees

Recommended training



For updating your knowledge

AOADEV

Programming - EcoStruxure Augmented Operator Advisor
Scan or click on the QR code

Cybersecurity

Model | Cybersecurity study [new]

Learning goals

- Understand industrial networks and their applications.
- Understand the risks associated with equipment networking.
- Implement industrial communication buses
- Set up a machine and an industrial firewall to prevent cyber security risks.

Presentation

- In a world where all equipment is connected and communicating through various and varied protocols, cybersecurity becomes indispensable.
- Cybersecurity research equipment helps raise awareness of the risks of hacking and implement techniques to counter attacks.

Description

- The equipment includes:
 - 1 M580 process controller,
 - 1 HMI of the Magelis range,
 - 1 fire wall Stormshield SNI40,

References

Cybersecurity Study Board

MD1AE58ECYB 

The +

- Industrial solution Schneider Electric Stormshield.
- Simple and complete pedagogy.



Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS SN (digital systems)
- DUT GEII (Electrical Engineering and Industrial Computing)
- Engineering Degrees

Recommended training



For updating your knowledge

CYBINDUS

Cybersecurity of industrial systems
Implementation
Scan or click on the QR code

Industrial production simulation

Software | Factory I/O

Learning goals

- Understand the programming of automation (Modicon M340 or M221 automatons).
- Interactively drive virtual operational parts.
- Diagnose a malfunction.

Presentation

Factory I/O is a software for simulating operational parts animated by an automated program developed on EcoStruxure Control Expert or EcoStruxure Machine Expert Basic.

The virtual environments offered are realistic thanks to total interactivity and the quality of real-time 3D graphic animations, dynamics and sounds. Factory I/O allows you to build, simulate and troubleshoot virtual industrial systems. The systems are electrically connected to the APIs. The simulator provides access to a control console with Auto mode, emergency stop and 3 push buttons (Start, Stop and Reset).

This software is designed and developed by RealGames in partnership with the University of Reims Champagne Ardenne and distributed by Schneider Electric.

Description

Each reference consists of:

- 1 Factory I/O software,
- 1 DAQ interface box,
- 1 complete Modicon PLC with pre-wired terminal blocks or pre-wired terminal blocks alone (requires the PLC).

Factory I/O Software

- Software rights by code.
- Virtual machines simply configured from 60 basic objects.
- 20 pre-configured machines.
- 80 industrial parts.

Factory I/O can also be associated with other controllers.

In this case, order the modular offer reference with case with secure sockets.

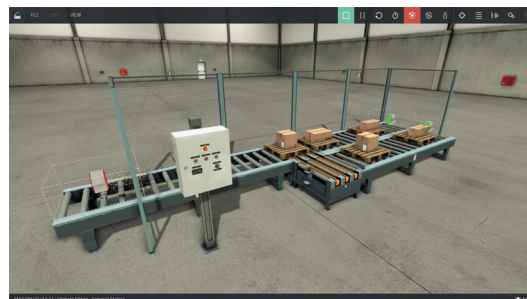
These software packs can be associated with the interface module for Factory I/O software ref. MD1AM0030.

References

FACTORY I/O software without DAQ	MD1S3DF
FACTORY I/O software without DAQ license 1 student 1 year	MD1S3DF1E
FACTORY I/O software with full Modicon M221	MD1S3DM221APF
FACTORY I/O software with full Modicon M340	MD1S3DM340APF
FACTORY I/O Software with Modicon M340 I/O Cards	MD1S3DM340ESF
FACTORY I/O software with Modicon M340 terminal blocks	MD1S3DM340BF

The +

- Configurable operating parts.
- Wired I/O links for maintenance.
- Ability to simulate failures.



I/O Factory Screen



Interface module for Factory I/O software

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS CRSA (design and realization of automatic systems)
- Engineering Degrees

Simulation of residential buildings

Software | Home I/O

Learning goals

- Discover the value of home automation compared to the conventional wired solution.
- Implement a KNX installation.
- Control installation remotely.
- Optimize energy consumption.
- Study the information chain.
- Perform a remote controlled home automation project.

Presentation

The HOME I/O software with its 8E/8S interface box makes it possible to realize a virtual 3D house controllable by an external equipment. The assembly advantageously replaces the actual operating parts, while retaining the connections to the home sensors and actuators. Energy consumption changes according to the steering and climatic conditions. The time can be accelerated for modeling the operations. Developed in partnership with the University of Reims Champagne Ardenne and Real Games, the HOME I/O software is distributed by Schneider Electric.

This software was recognized as of educational interest by the Ministry of National Education in 2014.

The external control can be carried out through a KNX bench using the included CONNECT I/O software.

The optional 8-bit KNX module allows KNX bench connection.

Description

Composition

- 1 license for HOME I/O software.
- 1 interface module 8 inputs and 8 outputs TOR.

Option

- 1 KNX connector module

References

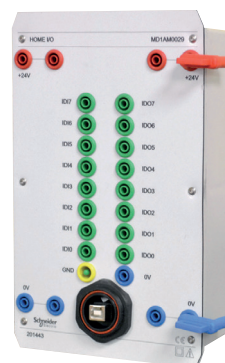
HOME I/O software and interface box	MD1AM0029
KNX module 8 binary inputs	MD1AM3051

The +

- Using 3D tools.
- Combination of real and virtual.
- Progressive movement of the residential building.



HOME I/O Software



Interface module 8 inputs and 8 outputs TOR



KNX connector module

Competencies covered

- Understanding and Use
- Study and realization
- Maintenance and Evolution (scaling)

Target degrees

- BTS FED (home energy fluids) option C HBD (home automation and interconnected buildings)
- Engineering Degrees

Recommended training



For updating your knowledge

KNXC
KNX System
KNX Certification
Scan or click on the QR code



Additional offer

Operational parts

Containment cabinet..... F2

Ventilation simulator for a building..... F3

Bench | Wiring of industrial components F4

Training motors..... F5

Other equipment F6

Accessories

Service Kit..... F8

Operational parts

Containment cabinet

Learning goals

- Implement an electro-mechanical control panel in a secure environment.
- Allow electrical tests to be carried out without any direct contact with live parts.

Presentation

These cabinets are designed to receive control plates wired by students to power them up safely. The cabinet can be connected to external operating parts.

The test voltages of 400 V AC and 24 V DC shall be supplied only if the cabinet door is closed.

Description

- Composition:
 - key switch for maintenance,
 - extractable protection and control block,
 - plates made by the students supplied with safety sockets,
 - quick connection of the student control panel,
 - outward connections by safety bushings (2 motor outputs).
- Containment cabinets come with:
 - 4 sets of Telemetry plates,
 - 4 PVC plates to be drilled to pass the cables (dimensions 295 x 200 x 3 mm),
 - 24 detachable terminals 5 female poles.
- The containment cabinet can also be provided pre-mounted on a trolley equipped with an asynchronous electric motor with its various protection and control components.

References

Containment cabinet	MD1AA685
Containment cabinet on motor trolley	MD1AA695

The +

- Secure and robust wiring.
- High control console accessible closed door.
- Pre-wiring for TSX machine.



Containment cabinet



Containment cabinet on motor trolley

Operational parts

Ventilation simulator for a building

Learning goals

- Study the characteristics of a centrifugal fan.
- Perform flow measurements and power consumption measurements.
- Show the contributions of variable speed to energy savings.
- Study ATC with energy recovery.
- Calculate head losses.
- Check facility EMC levels.
- Use ECO2 software to calculate economic data.

The +

- Mobile equipment.
- Sound trap to reduce noise.
- Demountable chimney for handling.

Presentation

This operating part is sold without the order that can be adapted.

- The fan is driven by an electromechanical sequence or by a pump/ventilation specific controller.
- The flow rate is regulated mechanically by means of a valve.
- An air flow sensor at the top of the chimney allows you to compare the different settings.

Description

- Bench mounted on chassis with locking wheels.
- Composition:
 - 1x 0.75 kW motor fan,
 - 1 electrical box with built-in protections and controls
 - 1 pressure controller with its diaphragm probes.
- Characteristics :
 - power supply: 400 V AC / 0.75 kVA,
 - dimensions (H x L x P): 2500 (1850 chimney row) x 1200 x 850 mm,
 - mass: 133 kg.

References

Building ventilation simulator

MD1AA750



Operational parts

Bench | Wiring of industrial components

Learning goals

- Implement and cable components.
- Adjust safeguards/protections and test the installation.
- Check the operation of the assembly.
- Implement an electromechanical control panel in a secure environment.
- Associate this plate with an operative part.
- Perform tests safely.

The +

- Mobile equipment.
- Use both sides simultaneously.
- Self-contained in compressed air.

Presentation

This bench consists of a containment cabinet, with a hinged and foldable wiring grid at the rear. The lower part is composed of three pre-wired charges: a compressor, three resistors and a fan. The compressor is used to supply air to a pneumatic circuit.

The student must do the power wiring on a removable grid and then connect the control box and loads by connectors. The rear gate makes it possible to produce a pneumatic circuit. The assembly is used to reproduce the electrical installation of a compressor room. An optional hardware kit is available for the production of a control panel.

Description

Composition

- Bench mounted on chassis with locking wheels.
- 1 test cabinet.
- 1 protection circuit and 24 V AC power supply.
- 3 removable Téléquik grids.
- 1 control box to cable.
- 1x 0.34 kW single-phase compressor.
- 1x 0.126 kW three-phase fan.
- 3x 0.25 kW resistors.

Hardware kit option to cable

- 1 Téléquik plate.
- 7 contactors and auxiliary units.
- 1 thermal relay.
- 8 magnetothermal circuit breakers.
- 1 switch-disconnector.
- Pneumatic cylinders and distributors.
- Electrical and pneumatic wiring accessories.
- Wiring terminals.

References

Wiring bench for industrial components	MD1AA200
Hardware kit for IC wiring bench	MD1AA209



Wiring bench

Operational parts

Training motors

Motors with brake

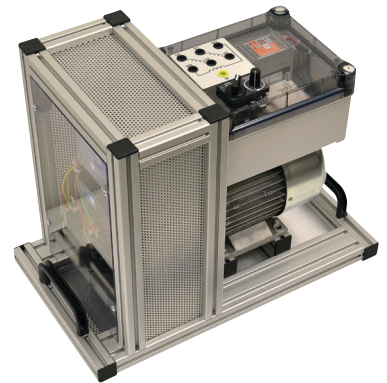
- Motors used to simulate different types of electromechanical equipment:
 - blower fan,
 - electric pump,
 - hoist...

Reference

Three-phase asynchronous motors	230 / 400 V - 750 W	MD1AA529
	400 / 690 V - 750 W	MD1AA529LT



230 / 400 V motor



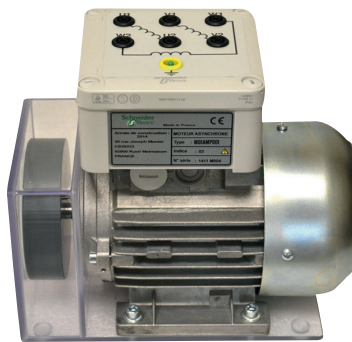
400 / 690 V motor

Motors

- Stand mounted
- Equipped with connecting sockets.

References

Three-phase asynchronous motors	230 / 400 V - 180 W	MD1AMP001
	400 / 690 V	MD1AMP013



230 / 400 V motor



400 / 690 V motor

Operational parts

Other equipment

Centrifugal fan

- Variable air flow fan with a transparent column for displaying the exhaust air flow.

Reference

Centrifugal fan	MD1AMP014
-----------------	-----------



Centrifugal fan

Conveyors

- Conveyor equipped with a geared motor and a photoelectric cell that makes it possible to regulate in 2 directions of operation.

References

Conveyors tape	1 m	MD1AMP002
	2 m	MD1AMP024



Belt conveyor (1 m)



Belt conveyor (2 m)

Training radiator

- 2000 W training radiator with 4mm safety sockets for easy connection to different control modules.

Reference

Training radiator	MD1AMP010
-------------------	-----------



Training radiator

Operational parts

Other equipment (continued)

Venetian blind and roller shutter

- Venetian blind:
 - swiveling strips,
 - with a 24 V DC motor to ensure the up, down and orientation movements of the slats,
 - with self-locking brake to stop the blind at any height.
- Roller shutter with up and down control.

Reference

Venetian blind	MD1AASTORE
Roller shutter	MD1AAVOLETR



Venetian blind



Roller shutter

Fixed solar panels

- Photovoltaic panel for the study and production bench supply by EnR.

Reference

Fixed solar panels	MDG99410
--------------------	----------



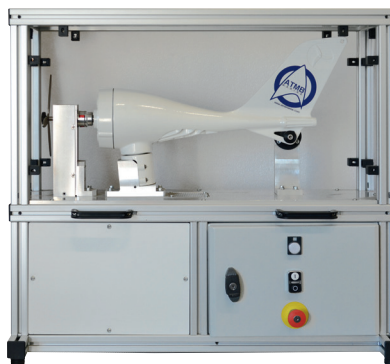
Fixed solar panels

Motorized wind turbine

- Bench with wind turbine with autonomous drive to power the study and production bench by EnR.

Reference

Motorized wind turbine	MDG99430
------------------------	----------



Motorized wind turbine

Cords

- Set of secure well cords.

Reference

Cords	MD1AMLCORDONS
-------	---------------

Accessories

Service Kit

Security intervention kit for a bench and a security case

This kit consists of:

- Absence of voltage check (VAT),
- Personal Protective Equipment (PPE):
 - insulating gloves,
 - side shield,
- consignment accessories,
- signal tape.



Security intervention kit for a bench and a security case

Reference

Service Kit	MD1AA639
-------------	----------

Security intervention kit for a bench and a security case

This kit consists of:

- Absence of voltage check (VAT),
- Personal Protective Equipment (PPE):
 - insulating gloves,
 - side shield,
- consignment accessories,
- signal tape.



Security intervention kit for a bench and a security case

Reference

Service Kit	MD1AA518
-------------	----------

Index

Reference Index

AET

AET-P01-CCA	C14
AET-K01-CCA	C14
AET-P01-FAP	C15
AET-K01-FAP	C15
AET-P01-HAS	C10
AET-K01-HAS	C10
AET-P01-HPL	B28
AET-P01-SCA	B29
AET-K01-SEN	B31
AET-K01-MSP	B37
AET-K01-MST	B37
AET-K01-MSD	B37
AET-K01-PNC	D10

E

EVA1SADS	C17
----------------	-----

F

FSACSFCDAPIXL	B18
FSACSFCDHMI	B18
FSACSFRCDEAPIXL	B18
FSACSFRCDEHMI	B18

MD1AA

MD1AA200	F4
MD1AA209	F4
MD1AA320W02M2	B40
MD1AA320W02M3	B40
MD1AA320W04M2	B40, B42
MD1AA320W04M3	B40
MD1AA320W06M2	B40
MD1AA320W06M3	B40
MD1AA320W07M2	B40
MD1AA320W07M3	B40
MD1AA513	D5
MD1AA514	D5
MD1AA516MR	D5
MD1AA516SO	D5
MD1AA518	F8
MD1AA529	F5
MD1AA529LT	F5
MD1AA540	B35
MD1AA580FP	B41
MD1AA595	B42
MD1AA630	D6
MD1AA638	D7
MD1AA639	F8
MD1AA685	F2
MD1AA695	F2
MD1AA710	D13
MD1AA720	D11
MD1AA720NC	D11
MD1AA725	D12
MD1AA728	D11
MD1AA729	D11
MD1AA739	D13
MD1AA740	B33

MD1AA740T	B33
MD1AA740V	B33
MD1AA750	F3
MD1AA750A63	C7
MD1AA780MR	D13
MD1AA780SO	D13
MD1AA785	D15
MD1AA786	D13, D15
MD1AA787	D13, D15
MD1AA788	D15
MD1AA790SP	D14
MD1AA790SPK	D14
MD1AA930W07M3	B40, B42
MD1AA930W07N4	B40
MD1AA930W15M3	B40
MD1AA930W15N4	B40
MD1AA930W22M3	B40
MD1AA930W22N4	B40
MD1AA930W30M3	B40
MD1AA930W30N4	B40
MD1AA930W40M3	B40
MD1AA930W40N4	B40
MD1AA930W55N4	B40
MD1AAHABILAV	D8
MD1AAHABILAVNC	D8
MD1AAKNXD	C14
MD1AAKNXLSS	C14
MD1AAKNXVR	C14
MD1AAPCBP	D9
MD1AAPCBPNC	D9
MD1AASTORE	F7
MD1AAVOLETR	F7

MD1AC

MD1ACTABA	B12, B13, B14, E4
MD1ACTABI	B12, B13, B14, E4

MD1AE

MD1AE34MEC	B17
MD1AE58E	B17
MD1AE58ECYB	E5
MD1AE854TC	B26
MD1AE858MR	B26
MD1AE885	B25
MD1AE903	B6
MD1AE904	B6
MD1AE905CYB	B6
MD1AE905IOTB	B6
MD1AE905IOTC	B6
MD1AE905M5802P	B6
MD1AE905RA	B6
MD1AE905RAST	B6
MD1AE905SUPG	B6
MD1AE955MR	B24
MD1AER905	B6

MD1AL

MD1AL905	B6
----------------	----

MD1ALFOGTL1	C24
MD1ALVDIC19	C15

Reference Index

MD1AM

MD1AM0029	E7
MD1AM3051	E7
MD1AM6121	C21
MD1AM6122	C21
MD1AM6123	C22
MD1AM6130	C22
MD1AML221	B23
MD1AMLATV320	B43
MD1AMLATVEE	C5
MD1AMLCOM	B16
MD1AMLCORDONS	D16, F7
MD1AMLDM	B34
MD1AMLDM3	B34
MD1AMLEEX	C16
MD1AMLKNXCI	C11
MD1AMLKNXEE	C13
MD1AMLKNXPRO	C12
MD1AMLMR	B23
MD1AMLRFD	B30
MD1AMLSECU	B31
MD1AMLSECUMA	B32
MD1AMLSOL	D22
MD1AMP001	B43, F5
MD1AMP002	F6
MD1AMP010	F6
MD1AMP011	B31
MD1AMP013	F5
MD1AMP014	F6
MD1AMP024	B32, F6

MD1AP

MD1AP21	B19
MD1AP21C	B20
MD1AP21P	B20
MD1AP34M	B21
MD1AP34ME	B21
MD1AP34MEC	B21
MD1AP34MN	B21
MD1AP34R	B21
MD1AP41A	B19
MD1AP41E	B19
MD1AP58EA	B22
MD1AP58EE	B22
MD1AP058LX	B44
MD1AP241STU	B20
MD1AP258STU	B20
MD1APATS01	B36
MD1APATS22	B36
MD1APATS48	B36
MD1APATV320BM	B37
MD1APATV320BT	B37
MD1APATV320CM	B37
MD1APATV320CT	B37
MD1APATV930M	B37
MD1APATV930T	B37
MD1APCC	B15
MD1APCE	B15
MD1APCM	B15
MD1APHMI10V2	B28
MD1APHMI855	B28
MD1APLX32M	B38
MD1APLX32T	B38
MD1APMT32MAX2	B39
MD1APMT32PAS	B39
MD1APMTLX32	B38
MD1APMTLXI	B38
MD1APMTMAX2	B39
MD1APMTPAS	B39
MD1APPFM34	B22
MD1APPFRFID	B29
MD1APPWS6	B27
MD1APPWSC1	B27
MD1APPWSC2	B27
MD1APPWSC3	B27
MD1APPWSC4	B27
MD1APPWSC5	B27
MD1APPWSC6	B27

MD1AT

MD1ATVEE	C6
MD1AVKNX	C9

MD1S3

MD1S3DF	E6
MD1S3DF1E	E6
MD1S3DM221APF	E6
MD1S3DM340APF	E6
MD1S3DM340BF	E6
MD1S3DM340ESF	E6

MD1SA

MD1SAA5	D5
MD1SAA5Z	D5
MD1SAA50	D5

MD3BP

MD3BPODS	D27
MD3BPPV	D23
MD3BPSLTSC	D16
MD3BPSOLI	D23

MD4ST

MD4STPKDEVIOT	B12
MD4STPKDEVIOTCAPT	B12, B13
MD4STPKDEVRA	B14, E4
MD4STPKDID	B13
MD4STPKDIDPOP	B13

MDCAE

MDCAE3LOT	C29
MDCAE3LOTP	C29
MDCAE5LOT	C29
MDCAE5LOTP	C29
MDCAELOTG	C29

MDG99

MDG99CDEE	C27
MDG99ETAB	C23
MDG99ODACE	C26
MDG99ODACP	C20
MDG99SIMUPV	D26
MDG99UTE	C19
MDG99UTO	C19
MDG99UTR	C19
MDG99WISLK	C25
MDG993EBMB	C10
MDG9912	C18
MDG99140	C8
MDG99150	D20
MDG99158	D20
MDG99160	D19
MDG99169	D19
MDG99190	D21
MDG99403	D24
MDG99410	F7
MDG99430	F7
MDG99603	D17
MDG99605	D17
MDG99609	D17
MDG99610	D18

MDGCG

MDGCGCITYC4

MDGCGCITYKITC4

MDGCGGRIDBOX.....C4

MDGCGSIMUBUILD.....C4

MDGCGSIMUENR.....C4

MDGCGSIMUINDC4

MDGCGSIMUINFRA.....C4

MDGCGSIMURESIC4

MDGHTA

MDGHTAHBLIS.....D10

MDGHTAIMD10

MDGHTAIMQM.....D10

MDGHTAINJ.....D10

MDGHTATGBTD10

MDGHTATRFD10

MDGVE

MDGVE050CC17

MDGVE050MC17

MDGVE050PC17

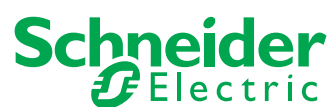
MDGVE050TC17

MDGVELMS.....C17

MDSIM

MDSIMAE9B6

Life Is On



se.com/fr/edu

Schneider Electric France
Marketing Communication France
35 Joseph Monier Street - CS 30323
F92506 Rueil-Malmaison Cedex

in.didactic@se.com

Tips: 0 825 012 999*
Services: 0810 102 424**

* Services 0,15 €/call + call price
** Free service + call price

© 2022 Schneider Electric. All rights reserved. Life Is On Schneider Electric is a trademark owned by Schneider Electric SE, its subsidiaries and affiliates.
Due to the evolution of standards and materials, the characteristics indicated by the texts and images of this document are binding only after confirmation by our services.
Life Is On: life lights up - Design, realization: DMCF, Emmanuel Froger

07/2022
ZZ6118-B

Version 01