



EDUCATIONAL
SOLUTIONS

2026



KNX TECHNOLOGY STUDY OF WIRING AND PROGRAMMING



Technical datasheets
on our website

EDUCATIONAL OBJECTIVES

- Discover the domestic automation environment of an electrical installation
- Discover and study the functionalities of a multi-brand KNX installation
- Understand the specifications of an electrical installation
- Drawing electrical diagrams
- Produce a component bill of materials
- Analyze the manufacturer's technical sheets
- Install electrical equipment
- Passing conductor cables and electrical ducts...
- Wiring and physically connecting various electrical components
- Carry out the parameterization of KNX components
- Carry out the commissioning of the installation
- Carry out electrical repairs



Specially designed for study and training in the KNX automation technology present in residential and tertiary premises as part of RT2012, these instructional solutions enable the acquisition and validation of the skills in a realistic eco-responsible environment.

5-PANEL SYSTEM - 5 SCREEN PRINTED FACES



ref. DP5-KNX

SUPPLIED
CONFIGURED

AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER

COMPOSANTS
ÉLECTRIQUES SIMULÉS

TEACHING FILE SUPPLIED

Teaching instructions in English on DVD-rom format Teacher / Students, including:

- Technical instructions, manufacturer resources for KNX components
- Extracts of electrical standards
- Layout diagram of the components
- Electric wiring diagram
- Different KNX installation programs
- Educational activities (6 dor DP1 / 12 for DP3) to create scenarios in order to optimize the operation of the installation while preserving the comfort of the occupant.
- Questionnaires for skills assessments of the question / answer type (under Excel® software). An administrator password allows the teacher to correct the student's assessment and modify the questions / answers if necessary

3-PANEL SYSTEM - 3 SCREEN PRINTED FACES



ref. DP3-KNX-C

SUPPLIED
CONFIGURED

AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER

REAL ELECTRICAL
COMPONENTS

ref. DP3-KNX

Unwired version with components supplied in kit form

AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER

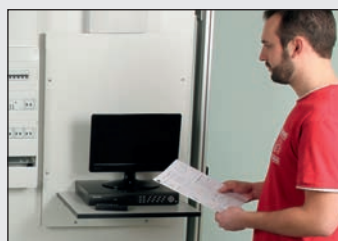
REAL ELECTRICAL
COMPONENTS

OPTIONAL KITS INTEGRABLE ON THE DP5-KNX

ANALOGUE VIDEOSURVEILLANCE

- 1 Lan 500GB video recorder with mouse and remote control. 4 Video inputs. Integrated web server(PC / MAC compatible).
- Recording on detection, Live viewing, Recording on time slot, Multi-user profiles
- 1 17-inch color LCD monitor.
- 2 swiveling color cameras
- 3.6mm fixed lens - Resolution 700 lines
- Day / night function - Integrated infrared lighting (20m)

ref. KX-3D5



AUDIO DOOR

Wired audio door entry unit composed of:

- 1 IP54 surface mounted door station
- 1 interior intercom
- 1 modular power transformer
- 1 electric strike

ref. KX-3D3

VIDEO DOOR

Wired video door entry unit composed of:

- 1 IP54 surface mounted door station
- 1 indoor video intercom
- 1 modular power transformer
- 1 electric strike

ref. KX-3D4

WIRE ANTI-INTRUSION ALARM

- 1 central alarm 2 zones self-powered on battery and 230V mains
- 4 infrared presence detectors
- 1 siren with flashing light
- 1 code keypad

ref. KX-3D2

1 PANEL SYSTEM - 2 SCREEN PRINTED FACES



ref. DP1-KNX

SUPPLIED
CONFIGURED

AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER

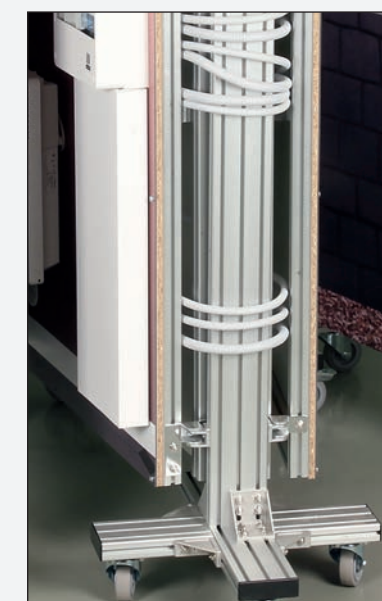
REAL ELECTRICAL
COMPONENTS



Foldable and mobile structure



Disassembly of plates



Easy ICTA sheaths passing

INTRODUCTORY CASE AND MODEL FOR THE KNX BUS

- EDUCATIONAL OBJECTIVES**
- Discover the HOME AUTOMATION environment of an electrical installation
 - Discover and study the functionalities of a KNX home automation installation
 - Understand the specifications of an electrical installation
 - Create electrical diagrams
 - Create a component nomenclature
 - Analyze manufacturer technical sheets
 - Configure KNX components
 - Create the wiring and connection of electrical components using flying wires
 - Commission the installation
 - -C versions only:
Configure a WIFI network for control on a tablet or smartphone

SUPPLIED FULLY WIRED AND CONFIGURED

AUTONOMOUS WIFI NETWORK

PARTNER KNX

TEACHING RESOURCES STUDENT / TEACHER

SIMULATED ELECTRICAL COMPONENTS

ref. VALDOM-KNX2-C

Communicating version

ref. VALDOM-KNX2

version without Wifi



ref. MAQ-KNX-C

Communicating version

ref. MAQ-KNX

version without Wifi



Dims : H780 x 210 x 280mm



Pushbuttons are easily removable without a tool to facilitate access to the programming buttons.



Technical datasheets on our website

KNX / DALI TECHNOLOGY - SMART OFFICE BUILDING

- EDUCATIONAL OBJECTIVES**
- Discover the building automation environment of a simulated tertiary electrical installation.
 - Discover, study the functionalities of a KNX installation
 - Discover DALI lighting technology
 - Understand the specifications of an electrical installation
 - Make electrical diagrams
 - Create a bill of components
 - Analyze manufacturers' data sheets
 - Configure the KNX components
 - Carry out the wiring and connection of electrical components on industrial terminals (depending on version).
 - Carry out the commissioning of the installation
 - Configure the variable lighting of different technologies including DALI

SUPPLIED FULLY WIRED AND CONFIGURED

AUTONOMOUS WIFI NETWORK

TEACHING RESOURCES STUDENT / TEACHER

SIMULATED ELECTRICAL COMPONENTS



ref. ITC-KNX



KNX CONNECTED HOUSES



Technical datasheets on our website

SUPPLIED FULLY WIRED AND CONFIGURED

AUTONOMOUS WIFI NETWORK

PARTNER KNX

TEACHING RESOURCES STUDENT / TEACHER

SIMULATED ELECTRICAL COMPONENTS



A chassis with wheels in aluminum profile
• Dimensions: (W)1200 x (D)700 x (H)1700mm - Weight: 92kg

ref. MCP-KNX-R

Version with wheels

- EDUCATIONAL OBJECTIVES**
- To learn about the HOME AUTOMATION environment of a simulated electrical installation
 - To learn about and study the features of a KNX multi-brand home automation installation
 - To understand the specifications of an electrical installation
 - To produce electrical diagrams
 - To create a parts list of components
 - To analyze manufacturer technical datasheets
 - To configure the KNX components
 - To perform wiring and connection of electrical components in jumper wires on industrial terminals to avoid wear of component terminals
 - To put installation into service
 - To configure the WiFi network for control via tablet or Smartphone

Delivered configured with ETS software + 20-participant dongle enabling configuration of KNX components



A chassis in aluminium profile to put on table
• Dimensions: (W)1200 x (D)410 x (H)845mm - Weight: 68kg

ref. MCP-KNX

Version on table



ref. MC-KNX-2



The set of switches of habitat type and KNX are integrated on the front panel. A translucent plate on the universal adapter, covers the connectors and protects electrical contacts, only the programming buttons remain accessible.

STUDY SYSTEM FOR THE KNX BUS - COMPLETE SOLUTION



With "KNX PARTNER" certified manufacture, the QUICK-KNX model enables the study and putting into service of multibrand KNX products. The KNX devices are prepared in plastic housings with the front engraved and equipped with Ø4mm terminals.

EDUCATIONAL OBJECTIVES

- Studying KNX communication media
- Studying the principle of a home control installation with KNX devices
- Configuration of KNX devices
- Creating the wiring of KNX devices
- Creating home control scenarios

Réf. QUICK-KNXPLUS

SUPPLIED CONFIGURED	TEACHING RESSOURCES STUDENT / TEACHER	ELECTRICAL COMPO- NENTS SIMULATED
------------------------	--	--------------------------------------



Sockets on the back of the console for connecting the modules

Study of the KNX bus - Autonomous subassemblies



Study of lighting control via push button

ref. QUICK-AK1 avec châssis



Study of the control of lighting dimming via push button

ref. QUICK-AK2 avec châssis



Lighting control study using a presence detector

ref. QUICK-AK3 avec châssis



Study of roller shutter control via push button

ref. QUICK-AK4 avec châssis



Study of gate and garage door opening control

ref. QUICK-AK5 avec châssis

Each reference is supplied with a lot of safety leads for wiring the modules. General power supply via 230VAC mains lead of 1.5m provided.



Technical datasheets on our website

 ENOCEAN TECHNOLOGY
 STUDY OF WIRING AND PROGRAMMING
 3-PANEL SYSTEM - 3 SCREEN-PRINTED FACES


Technical datasheets on our website



ref. DP3-ENO

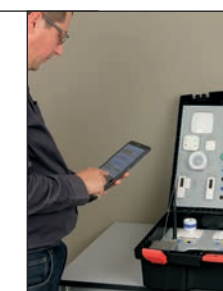
Available in 1 or 5 panels. Contact us

SUPPLIED CONFIGURED	AUTONOMOUS WIFI NETWORK	TEACHING RESSOURCES STUDENT / TEACHER	REAL ELECTRICAL COMPONENTS
------------------------	----------------------------	--	-------------------------------

 ENOCEAN TECHNOLOGY
 INTRODUCTORY CASE & MODEL


EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- To study the features of an ENOCEAN home automation installation
- To understand the specifications of an electrical installation
- To produce electrical diagrams and create a parts list of components
- To analyse manufacturer technical data sheets
- To configure the ENOCEAN components
- To put the MyHome installation into service
- To configure a Wifi network for control via a tablet or smartphone.



ref. VALDOM-ENO

SUPPLIED CONFIGURED	AUTONOMOUS WIFI NETWORK	TEACHING RESSOURCES STUDENT / TEACHER	ELECTRICAL COMPONENTS SIMULATED
------------------------	----------------------------	--	------------------------------------

Case with ergonomic handle. Dimensions 534 x 374 x 190mm. Supply by power cord 230V-2P + E.



ref. MAQ-ENO

SUPPLIED CONFIGURED	AUTONOMOUS WIFI NETWORK	TEACHING RESSOURCES STUDENT / TEACHER	ELECTRICAL COMPONENTS SIMULATED
------------------------	----------------------------	--	------------------------------------



Pushbuttons are easily removable without a tool to facilitate access to the programming buttons.



Technical datasheets on our website

MYHOME TECHNOLOGY STUDY OF WIRING AND PROGRAMMING



EDUCATIONAL OBJECTIVES

- Discover the HOME AUTOMATION environment of an electrical installation
- Study the functionalities of a MyHome BUS / SCS Legrand® home automation installation
- Understand the specifications of an electrical installation
- Create electrical diagrams
- Create a component parts list and analyze manufacturer technical sheets
- Install electrical equipment, run conductive cables, electrical conduits, etc.
- Create the wiring and physically connect different electrical components
- Configure the MyHome Legrand® components
- Commission the installation
- Take electrical consumption measurements (DP3 and DP5 versions only)
- Perform electrical troubleshooting

Specially designed for study and training in the MYHOME automation technology present in residential and tertiary premises as part of RT2012, these instructional solutions enable the acquisition and validation of the skills in a realistic eco-responsible environment.



Technical datasheets
on our website

5-PANEL SYSTEM - 5 SCREEN PRINTED FACES



ref. DP5-MH

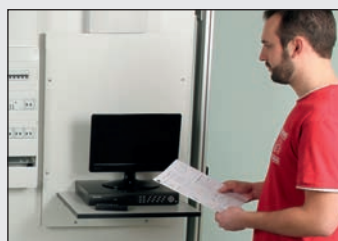


OPTIONAL KITS INTEGRABLE ON THE DP5-MH

ANALOGUE VIDEOSURVEILLANCE

- 1 Lan 500GB video recorder with mouse and remote control. 4 Video inputs. Integrated web server(PC / MAC compatible).
 - Recording on detection, Live viewing, Recording on time slot, Multi-user profiles
- 1 17-inch color LCD monitor.
- 2 swiveling color cameras
 - 3.6mm fixed lens - Resolution 700 lines
 - Day / night function - Integrated infrared lighting (20m)

ref. KX-3D5



WIRE ANTI-INTRUSION ALARM

- 1 central alarm 2 zones self-powered on battery and 230V mains
- 4 infrared presence detectors
- 1 siren with flashing light
- 1 code keypad

ref. KX-3D2

AUDIO DOOR

Wired audio door entry unit composed of:

- 1 IP54 surface mounted door station
- 1 interior intercom
- 1 modular power transformer
- 1 electric strike

ref. KX-3D3

VIDEO DOOR

Wired video door entry unit composed of:

- 1 IP54 surface mounted door station
- 1 indoor video intercom
- 1 modular power transformer
- 1 electric strike

ref. KX-3D4

TEACHING FILE SUPPLIED

Teaching instructions in English on USB key format Teacher / Students, including:

- Technical manuals, manufacturer resources for MyHome components
- Extracts from electrical standards
- Component layout diagram
- Electrical wiring diagram
- Educational activities to create scenarios in order to optimize the operation of the installation while preserving the comfort of the occupant.
- Questionnaires for skills assessments of the question / answer type (under Excel® software). An administrator password allows the teacher to correct the student's assessment and modify the questions / answers if necessary

3-PANEL SYSTEM - 3 SCREEN PRINTED FACES

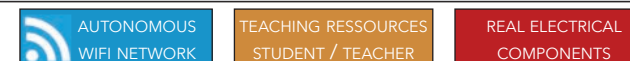


ref. DP3-MH-C



ref. DP3-MH

Version non câblée avec composants en kit



Foldable and mobile structure



Disassembly of plates

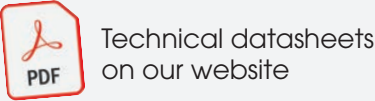
1 PANEL SYSTEM - 2 SCREEN PRINTED FACES



ref. DP1-MH



ICTA sheaths passing



MYHOME TECHNOLOGY
INTRODUCTORY CASE & MODEL

EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- To learn about and study the features of a MyHome home automation installation
- To understand the specifications of an electrical installation
- To produce electrical diagrams
- To create a parts list of components
- To analyse manufacturer technical data sheets
- To configure the MyHome components
- To put the MyHome installation into service
- To configure a Wifi network for control via a tablet or smartphone.

Learn about MyHome building automation technology quickly and easily. A WiFi switch + IP interface unit lets the student measure consumption and control the installation from a tablet or smartphone. The WiFi network created locally is specific to the model,so it is isolated from your institution's WiFi network.

SUPPLIED
CONFIGURED

AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER

SIMULATED ELECTRICAL
COMPONENTS



ref. VALDOM-MH



Case with ergonomic handle.
Dimensions 534 x 374 x 190mm.
Supply by power cord 230V-2P + E.



ref. MAQ-MH



Pushbuttons are easily removable
without a tool to facilitate access
to the programming buttons.

Dim : H780 x 210 x 280mm

MYHOME COMPLETE CONNECTED HOUSE

EDUCATIONAL OBJECTIVES

- Discover the Home Automation environment of a simulated electrical installation.
- Discover and study the features of a SCS Bus MyHome LEGRAND home automation system
- Understand the specifications of an electrical installation
- Make electrical diagrams
- Produce a components nomenclature
- Analyze the manufacturer datasheets
- Perform parameter setting of MyHome components
- Carry out the wiring and the connection of the electrical components to flying wires on industrial terminals to prevent wear of component terminals.
- Perform the commissioning of the installation
- Perform a WIFI network setting for control on tablet or Smartphone



All of the configurable standard and MyHome switches are integrated on the front panel.
A translucent plate on the universal adapter covers the connectors and protects against electrical contacts.
The programming of MyHome components does not require any disassembly on said components, thus improving their lifespan.



A chassis in aluminum profile to put on a table
• Dimensions : (W)1200 x (D)410 x (H)845mm - Weight: 70 kg
ref. MCP-MH Version to put on a table

SUPPLIED
CONFIGURED

AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER

COMPOSANTS
ÉLECTRIQUES SIMULÉS



A chassis with wheels in aluminum profile
• Dims : (W)1200 x (D)700 x (H)1700mm - Weight: 94 kg
ref. MCP-MH-R Version with wheels

INTRODUCTORY CASE
NETATMO



ref. VALDOM-NET

SUPPLIED
CONFIGURED

AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER

SIMULATED ELECTRICAL
COMPONENTS

EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- Learn and study the features of a NETATMO home automation installation
- To understand the specifications of an electrical installation
- To produce electrical diagrams
- To create a parts list of components and analyse manufacturer technical data sheets
- Configure NETATMO Céliane™ components
- Put the VALDOM-NET installation into service
- Configure a network through a 4G router for control via a tablet or smartphone. Requires a SIM card, not provided with the case.

RADIO TECHNOLOGY STUDY OF WIRING AND PROGRAMMING



Specially designed for study and training in the radio automation technology present in residential and tertiary premises as part of RT2012, these instructional solutions enable the acquisition and validation of the skills in a realistic eco-responsible environment.

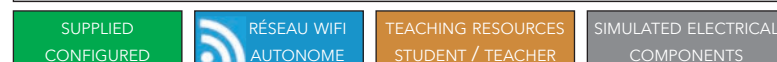


Technical datasheets
on our website

5-PANEL SYSTEM - 5 SCREEN PRINTED FACES



ref. DP5-DD



EDUCATIONAL OBJECTIVES

- Discover the HOME AUTOMATION environment of an electrical installation
- Discover and study the functionalities of a Radio home automation installation
- Understand the specifications of an electrical installation
- Create electrical diagrams
- Create a component nomenclature
- Analyze manufacturer technical sheets
- Install electrical equipment, run conductive cables, sheaths, etc.
- Create wiring and connect electrical components (DP-3 and DP-5)
- Configure Radio components
- Commission and troubleshoot the installation
- Take electrical consumption measurements



Foldable and mobile structure. Disassembly of plates. Easy ICTA sheaths passing

3-PANEL SYSTEM - 3 SCREEN PRINTED FACES



ref. DP3-DD2



1 PANEL SYSTEM - 2 SCREEN PRINTED FACES



ref. DP1-3D

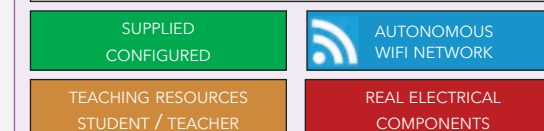


RADIO TECHNOLOGY SPECIAL MAINTENANCE AT HOME



Folded dimensions: L 1500mm x D 1800mm x H 1800mm

ref. DP3-DD-MD



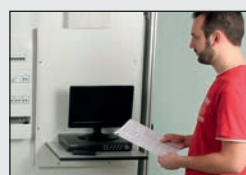
EDUCATIONAL OBJECTIVES

- Discover the HOME AUTOMATION environment of an electrical installation
- Discover and study the functionalities of a Radio home automation installation dedicated to assistance for autonomy
- Understand the specifications of an electrical installation
- Create electrical diagrams
- Create a component nomenclature and analyze the manufacturer's technical sheets
- Install electrical equipment, run conductive cables, sheaths
- Create the wiring and physically connect electrical components
- Configure the Radio components
- Commission the installation
- Configure a WIFI network
- Remotely control the components from a tablet or Smartphone
- Perform electrical troubleshooting
- Configure the voice assistant to control the house from a Smartphone / tablet. (Internet required)

OPTIONAL KITS INTEGRABLE ON THE DP5-DD

ANALOGUE VIDEOSURVEILLANCE

- 1 Lan 500GB video recorder with mouse and remote control. 4 Video inputs. Integrated web server(PC / MAC compatible).
 - Recording on detection, Live viewing, Recording on time slot, Multi-user profiles
- 1 17-inch color LCD monitor.
- 2 swiveling color cameras
 - 3.6mm fixed lens - Resolution 700 lines
 - Day / night function - Integrated infrared lighting (20m)



ref. KX-3D5

WIRE ANTI-INTRUSION ALARM

- 1 central alarm 2 zones self-powered on battery and 230V mains
- 4 infrared presence detectors
- 1 siren with flashing light
- 1 code keypad

ref. KX-3D2

AUDIO DOOR

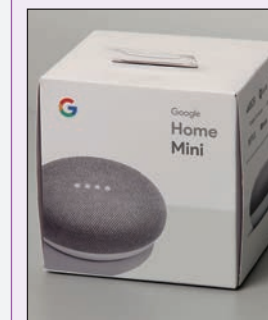
- Wired audio door entry unit composed of:
- 1 IP54 surface mounted door station
 - 1 interior intercom
 - 1 modular power transformer
 - 1 electric strike

ref. KX-3D3

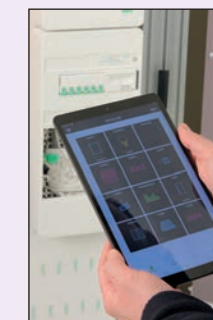
VIDEO DOOR

- Wired video door entry unit composed of:
- 1 IP54 surface mounted door station
 - 1 indoor video intercom
 - 1 modular power transformer
 - 1 electric strike

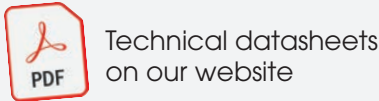
ref. KX-3D4



Supplied with a speaker
Google Home Mini



Controllable from
tablet and smartphone



CONNECTED HOUSES
RADIO DELTA DORE



A chassis in aluminum profile to put on a table
• Dimensions: (W)1200 x (D)410 x (H)845mm - Weight: 60 kg

ref. MCP-DD Version to put on a table

EDUCATIONAL OBJECTIVES

- Discover the Home Automation environment of a simulated electrical installation.
- Discover and study the features of a Delta Dore home automation system
- Understand the specifications of an electrical installation
- Make electrical diagrams
- Produce a components nomenclature
- Analyze the manufacturer datasheets
- Perform parameter setting of Delta Dore components
- Carry out the wiring and the connection of the electrical components to flying wires
- Perform the commissioning of the installation
- Perform a WIFI network setting for control on tablet or Smartphone



All Delta Dore radio transmitter / receiver modules and home type switches are integrated on the front panel. A translucent, removable plate covers the connectors and protects electrical contacts. Only the programming buttons remain accessible. The radio switches and the remote control are very easily removable thanks to a gripping band.

DELIVERED WIRED AND SET AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER SIMULATED ELECTRICAL COMPONENTS



A chassis with wheels in aluminum profile
• Dims: (W)1200 x (D)700 x (H)1700mm - Weight: 84 kg

ref. MCP-DD-R Version with wheels

3 ROOMS CONNECTED RADIO DELTA DORE



ref. MC-DD-1

SUPPLIED CONFIGURED AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER SIMULATED ELECTRICAL COMPONENTS

EDUCATIONAL OBJECTIVES

- Discovery of the Delta Dore radio protocol
- Getting started with the installation
- Installation of equipment
- Setup and maintenance of equipment
- Installation of a home automation box and a wifi router (networking, programming of the box, taken in hand via an Android application).

INTRODUCTORY CASE
FOR RADIO INSTALLATION



ref. VALDOM-DD

DELIVERED WIRED AND SET AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER SIMULATED ELECTRICAL COMPONENTS

EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- To learn about and study the features of a radio home automation installation
- To understand the specifications of an electrical installation
- To produce electrical diagrams
- To create a parts list of components
- To analyse manufacturer technical data sheets
- To configure the radio components
- Carry out wiring and connection of electrical components in flying wires
- To put the radio installation into service
- To configure a Wifi network for control via a tablet or smartphone.



INTRODUCTORY CASE
FOR RADIO ALARM



ref. VALDOM-ALR

DELIVERED WIRED AND SET AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER



EDUCATIONAL OBJECTIVES

- To create a parts list of components
- To understand and set up a radio intrusion alarm management
- To understand and learn programming of radio components
- To program the various components of an intrusion alarm such as the central unit, the detectors, the informative code keypad, the remote controls, the siren.
- To understand the setting and use of a radio fire detector

INTRODUCTORY MODEL
RADIO DELTA DORE

EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- To learn about and study the features of a radio home automation installation
- To understand the specifications of an electrical installation
- To produce electrical diagrams
- To create a parts list of components
- To analyse manufacturer technical data sheets
- To configure the Delta Dore® components
- To put installation into service
- To configure the WiFi network for control via tablet or smartphone

ref. MAQ-DD SUPPLIED CONFIGURED AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER SIMULATED ELECTRICAL COMPONENTS



Dims : H780 x 210 x 280mm



Technical datasheets
on our website



CREATING A COMPLETE RADIO INSTALLATION

EDUCATIONAL OBJECTIVES

- To learn about home automation.
- To study the compatibility of conventional lighting controls with radio controls.
- To study the configuration of communicating components by creating several home automation scenarios.
- To study the programming of and the DELTA DORE radio solution

ref. DOMORADIO-C

SUPPLIED WIRED & SET AUTONOMOUS WIFI NETWORK TOUCH TABLET SUPPLIED TEACHING RESOURCES STUDENT / TEACHER COMPOSANTS ÉLECTRIQUES SIMULÉS



STUDY OF AN ANTI-INTRUSION ALARM

EDUCATIONAL OBJECTIVES

- Understand and configure anti-intrusion alarm management
- Understand and learn Radio component programming
- Program the various components of an anti-intrusion alarm such as the control unit, the detectors, the informative code keypad, the remote controls, the siren.
- Configure Delta Dore® components and the gateway dedicated to its operation
- Carry out the commissioning of the installation
- Set up a WIFI network for ordering on a tablet or smartphone

ref. TAG-3-C

SUPPLIED WIRED AND CONFIGURED TEACHING RESOURCES STUDENT / TEACHER AUTONOMOUS WIFI NETWORK

RENOVATION OF A CLASSIC RADIO INSTALLATION



FRONT

EDUCATIONAL OBJECTIVES

- Understanding of the housing automation made for the housing renovation
- Understanding of a real and complete solution for a flat
- Studying the wiring and settings of communicating components
- Studying the programming and the DELTA DORE solution

ref. DOMOPLUS-C

SUPPLIED WIRED CONFIGURED AUTONOMOUS WIFI NETWORK TOUCH TABLET SUPPLIED TEACHING RESOURCES STUDENT / TEACHER REAL ELECTRICAL COMPONENTS



BACK

STUDY OF ELECTRICAL RADIO INSTALLATION

EDUCATIONAL OBJECTIVES

- To learn about home automation.
- To study the compatibility of conventional lighting controls with radio controls.
- To study the wiring and configuration of communicating components.
- To study the programming of and the DELTA DORE radio solution

Réf. QUICK-PPLUS

SUPPLIED CONFIGURED AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER SIMULATED ELECTRICAL COMPONENTS



Autonomous subassemblies



ref. QUICK-AK6 with frame

Study of radio lighting control



ref. QUICK-AK7 with frame

Study of radio lighting variation control



ref. QUICK-AK8 with frame

Study of radio roller blind control

STUDY OF ENERGY MANAGEMENT USING THE "SMART HOME" MODEL

EDUCATIONAL OBJECTIVES

- Study an energy consumption measurement system
- Study the principle of a home automation system equipped with DELTA DORE® radio components
- Configure DELTA DORE® radio components (radio frequency technology)
- Wire residential components
- Learn how to use a clamp meter

ref. QUICK-NRJ2PLUS

SUPPLIED CONFIGURED AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER SIMULATED ELECTRICAL COMPONENTS



SOMFY RADIO TECHNOLOGY - WIRING & PROGRAMMING STUDY



Specifically designed for training in radio home automation technology present in residential and commercial buildings, these educational solutions allow the acquisition and validation of skills in a realistic eco-responsible environment.



Product compatible with cybersecurity

EDUCATIONAL OBJECTIVES

- Discover the home automation environment of an electrical installation
- Discover and study the functionalities of a SOMFY wireless home automation system
- Create electrical diagrams
- Create a bill of materials (BOM)
- Analyze manufacturer datasheets
- Install electrical equipment, run cables and conduits
- Carry out the wiring and physically connect the electrical components
- Configure the SOMFY components
- Commission the installation
- Configure the Wi-Fi network for control via tablet or smartphone (requires connecting the TAHOMA gateway to the internet).

3-PANEL SYSTEM - 3 SCREEN PRINTED FACES



ref. DP3-SF-C

DELIVERED WIRED AND SET

REAL ELECTRICAL COMPONENTS

TEACHING RESSOURCES STUDENTS / TEACHER

1-PANEL SYSTEM - 2 SCREEN PRINTED FACES



ref. DP1-SF

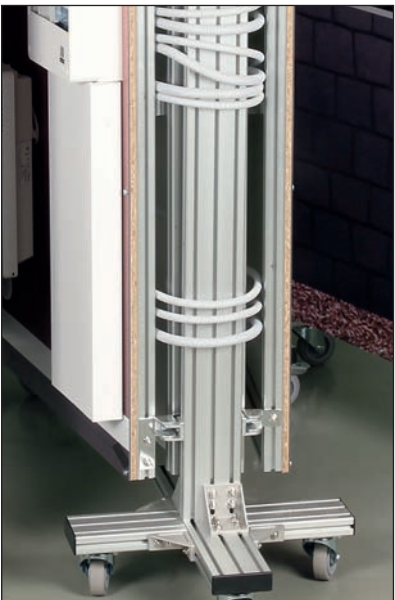
DELIVERED WIRED AND SET

REAL ELECTRICAL COMPONENTS

TEACHING RESSOURCES STUDENTS / TEACHER



Easy and quick removal of the plates



Foldable and mobile structure for easy storage in minimal space. Aluminum profile allows for easy passage of ICTA conduits.



Technical datasheets on our website

INTRODUCTORY CASE FOR RADIO INSTALLATION - SOMFY TECHNOLOGY

EDUCATIONAL OBJECTIVES

- Discover the home automation environment of an electrical installation
- Discover and study the features of a SOMFY radio home automation installation
- Understand the specifications of an electrical installation
- Create electrical diagrams
- Create a component parts list
- Analyze manufacturer technical data sheets
- Configure SOMFY radio components
- Connect and wire electrical components with flying leads
- Commission the installation
- Configure a Wi-Fi network for control via a tablet or smartphone



ref. VALDOM-SF

DELIVERED WIRED AND SET

AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

Some features of the study case require an internet connection. The router can be connected to the internet directly via an Ethernet cable, or by inserting a SIM card (not included) to connect to the national 4G LTE network.

INTRODUCTORY CASE FOR RADIO INSTALLATION - ZIGBEE TECHNOLOGY



- EDUCATIONAL OBJECTIVES**
- Discover the home automation environment of an electrical installation
 - Discover and study the features of a ZIGBEE radio home automation installation
 - Understand the specifications of an electrical installation
 - Create electrical diagrams
 - Create a component parts list
 - Analyze manufacturer technical data sheets
 - Configure ZIGBEE radio components
 - Connect and wire electrical components with flying leads
 - Commission the installation
 - Configure a Wi-Fi network for control via a tablet or smartphone

ref. VALDOM-ZB

DELIVERED WIRED AND SET

 AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER



Some features of the study case require an internet connection. The router can be connected to the internet directly via an Ethernet cable, or by inserting a SIM card (not included) to connect to the national 4G LTE network.

ZIGBEE TECHNOLOGY STARTER MODEL WITH WISER



- EDUCATIONAL OBJECTIVES**
- Discover the home automation environment of an electrical installation
 - Discover and study the functionalities of a ZIGBEE wireless home automation system
 - Understand the specifications of an electrical installation
 - Create electrical diagrams
 - Create a bill of materials (BOM)
 - Analyze manufacturer datasheets
 - Configure ZIGBEE wireless components
 - Carry out the wiring and connection of electrical components using jumper wires
 - Commission the installation
 - Configure the Wi-Fi network for control via tablet or smartphone

ref. MAQ-ZB

DELIVERED WIRED AND SET

 AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER



Technical datasheets on our website

TRADITIONAL HOUSING TYPE WIRING PANELS (1 OR 3 PANELS)

3-PANEL VERSION - 3 SCREEN-PRINTED SIDES



ref. DP3-CT

DELIVERED WIRED AND SET

TEACHING RESSOURCES STUDENTS / TEACHER

REAL ELECTRICAL COMPONENTS

- Common Practicals works**
- Creating a parts list based on the specifications for an electrical installation
 - Creating electrical diagrams
 - Creating a lighting system with simple control
 - Creating a lighting system with two-way control
 - Creating a lighting system with a timer
 - Creating a lighting system triggered by motion and/or light detection
 - Creating an electrical outlet circuit
 - Creating a heating circuit with a pilot wire
 - Creating a roller shutter circuit
- Practicals works for DP3-CT only**
- Creating a lighting system with variable control
 - Creating Ethernet network cabling
 - Creating a circuit for a charging socket for a type 1 electric vehicle

TRADITIONAL ELECTRICAL INSTALLATION
Electrical equipment without home automation without configuration

Frame delivered fully assembled.
Modular panel, roller shutter, convector, lighting, and flush-mounting boxes are always integrated into the frame before shipment.

- EDUCATIONAL OBJECTIVES**
- Discover the environment of an electrical installation
 - Understand the specifications of an electrical installation
 - Create electrical diagrams
 - Create a component parts list
 - Analyze manufacturer's technical data sheets
 - Install electrical equipment, run conductive cables, electrical conduits, etc.
 - Carry out wiring and physically connect various electrical components
 - Commission the installation
 - Perform electrical troubleshooting

1-PANEL VERSION - 2 SCREEN-PRINTED SIDES



ref. DP1-CT

DELIVERED WIRED AND SET

TEACHING RESSOURCES STUDENTS / TEACHER

REAL ELECTRICAL COMPONENTS



Technical datasheets
on our website

TEACHING RESOURCES
STUDENT / TEACHER

JUMPER LEADS WIRING BOARDS

Common practical works

- Simple introduction to circuit protection
- Wiring of single lighting and phase and neutral tapping
- Wiring of energy sensor
- Wiring of two-way lighting
- Wiring of lighting with timer switch, dusk switch, remote switch
- Wiring of lighting with presence selector
- Wiring of lighting variation
- Creation of circuits controlled by the timer switch (clock)
- Creation of sockets circuit
- Power supply of radiator with built-in thermostat
- Up/Down control of roller blind

Additional practical works for TAG-2-MAX

- Wiring a circuit with jettison
- Control a two-speed VMC.
(VMC with simulation on terminals and lights)
- Control a hot water electric circuit with a HC/HP relay. (VMC with simulation on terminals and lights)
- Cabling an outside lighting projector



ref. TAG-2-MAX



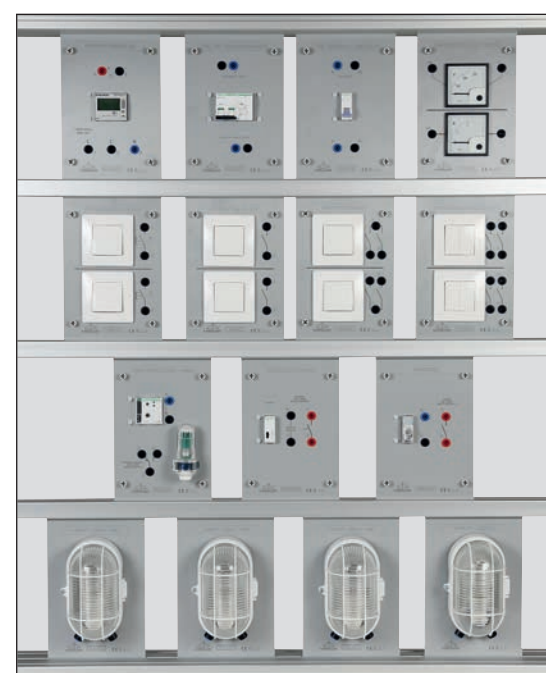
ref. TAG-2-P

ref. TAG-2



ref. VAL-2

STUDY OF DIFFERENT LIGHTS WIRING



ref. QUICK-APLUS

EDUCATIONAL OBJECTIVES

- Study of house wiring diagrams.
- Study and operation of a single lighting circuit.
- Study and operation of a double lighting circuit.
- Study and operation of a two-way circuit.
- Study and operation of a remote control switch circuit
- Study and operation of a timer circuit.
- Study and operation of a dusk switch circuit.
- Study and operation of an energy meter.



Sockets on the
back of the
console for
connecting the
modules



SINGLE LIGHTING CIRCUIT LEARNING PANEL

EDUCATIONAL OBJECTIVES

- Study wiring schemes for a simple lighting circuit.
- Study wiring schemes for a double ignition circuit.
- Study wiring schemes for a back-and-forth circuit.
- Study wiring schemes for a contactor circuit
- Study wiring schemes for a 230V 2P+T plug

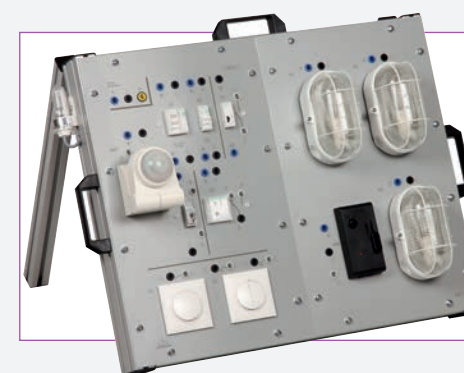
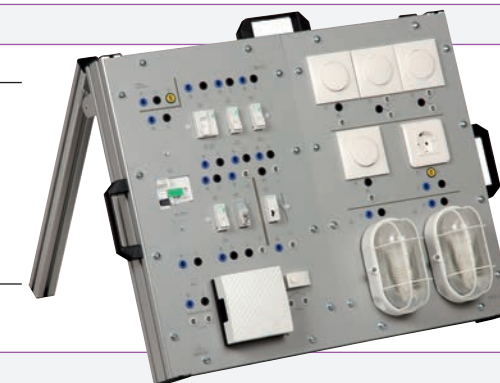
ref. TAE-2-M

LIGHTINGS AND DOORBELL LEARNING PANEL

EDUCATIONAL OBJECTIVES

- Study of single lighting circuit wiring diagrams
- Study of double lighting circuit wiring diagrams
- Study of two-way circuit wiring diagrams
- Study of remote control switch circuit wiring diagrams
- Study of timer circuit wiring diagrams
- Study of doorbell circuit wiring diagrams

ref. TAE-1-M



SINGLE LIGHTING CIRCUIT CONTROL LEARNING PANEL

EDUCATIONAL OBJECTIVES

- Study wiring schemes for a dusk-to-dawn switch
- Study wiring schemes for a timer
- Study wiring schemes for a rheostat
- Study wiring schemes for a contactor circuit
- Study wiring schemes for a presence detector

ref. TAE-3-M



Study a double lighting circuit
with switches

ref. QUICK-AK11



Study a lighting circuit
with a push-button and contactor

ref. QUICK-AK12



Study a lighting circuit
with back-and-forth switches

ref. QUICK-AK13



Study a lighting circuit
with a timer-type staircase

ref. QUICK-AK14



Study a lighting circuit
with a dusk-to-dawn switch

ref. QUICK-AK15



Study a two-roller shutter

ref. QUICK-AK16

BUILDING MANAGEMENT SYSTEM (BMS)
SIMULATION OF AN UNDERGROUND PARKING GARAGE WITH SUPERVISION

NEW

CREATE YOUR MODEL BY ADDING TO THE ESSENTIAL MAIN STRUCTURE (REF. PSUP) THE MODULE(S) CORRESPONDING TO THE SPECIFIC FUNCTIONS YOU WISH TO STUDY.

Supervisory model for an underground parking garage. Using the BMS (Building Management System) gateway and interconnected peripherals, it enables the technical management of the facility, including function control, data acquisition, and display. The customizable dashboard is accessible via a web page from a PC (not included). This modular system includes:

- the essential main structure (with electrical panel and computer bay)
- 9 optional modules to choose from based on your needs.

 Technical specifications detailed on our website



Version shown with all modules available

- The 9 modules available individually allow for the study of the following specific functions:
- Ref: PSUP-M1 Type 4 Fire Alarm Control Panel
 - Ref: PSUP-M2 Standalone Trigger Detector
 - Ref: PSUP-M3 Emergency Lighting Unit Controller
 - Ref: PSUP-M4 Access Control Panel
 - Ref: PSUP-M5 Vehicle Charging Station
 - Ref: PSUP-M6 Wired Intrusion Alarm Control Panel
 - Ref: PSUP-M7 Video Surveillance System
 - Ref: PSUP-M8 License Plate Recognition Camera
 - Ref: PSUP-M9 Ventilation and Technical Lighting



Rear view of the entire supervisory station

MAIN STRUCTURE REQUIRED



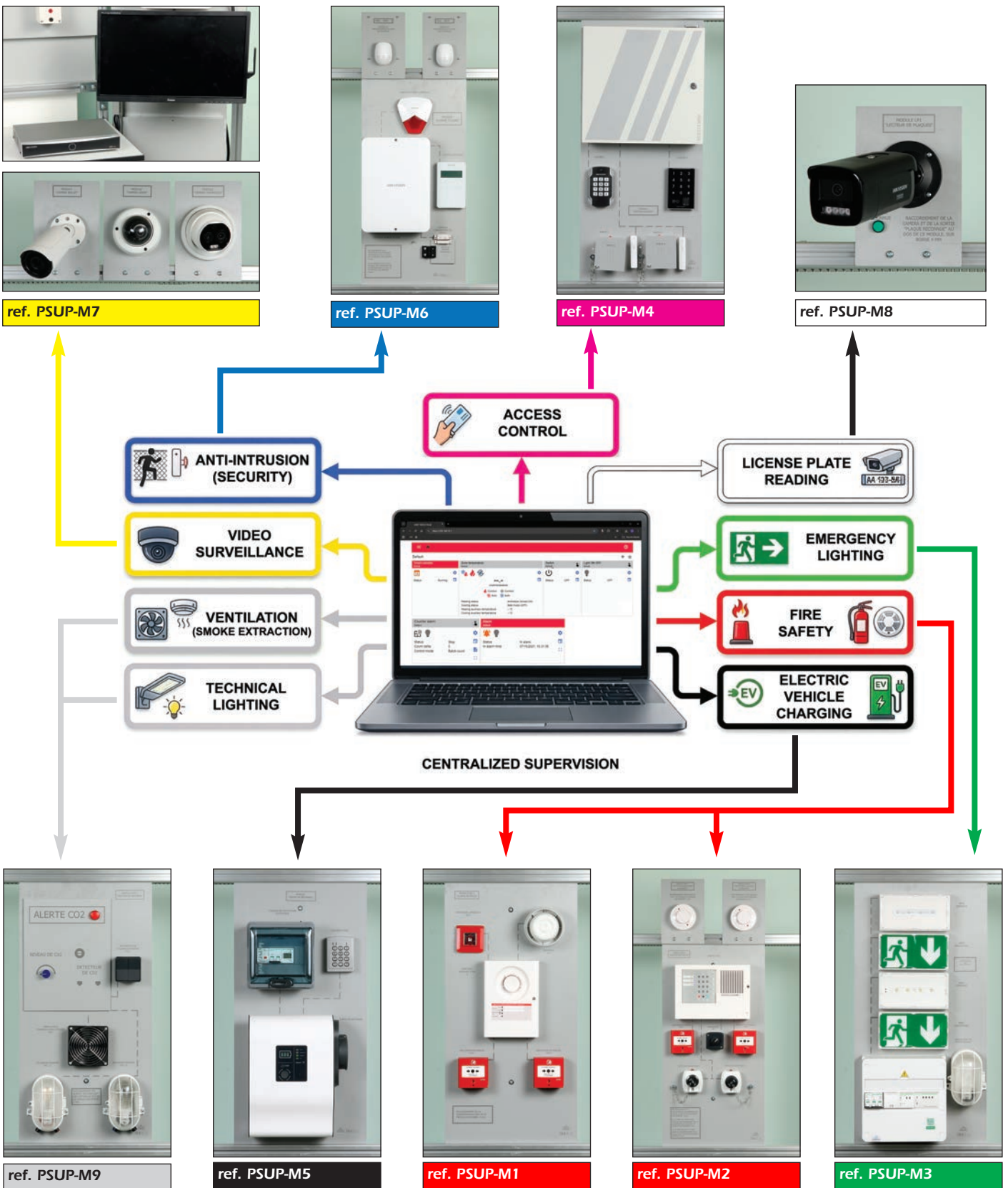
Aluminum structure on braked casters, equipped with two folding doors to reduce storage space. It includes:

- An electrical panel comprising:
 - 1 x 16A circuit breaker
 - 1 x 30mA residual current device (RCD)
 - 1 x BMS (Building Management System) gateway with software
 - 1 x RS485 single-phase meter allowing visualization of the model's total power consumption.
- A computer area with:
 - 1 x 24-port PoE switch
 - 1 x router
 - 1 x 500VA UPS (Uninterruptible Power Supply)
 - 1 x work surface
- 2 x power strips for connecting the various modules and the computer area

ref. PSUP

The **PSUP-M1 to M9** modules communicate with the BMS (Building Management System) on the PSUP chassis via a device that retrieves status feedback from the control unit using a fieldbus connection with two 4mm safety cables (supplied).

The included UWP IDE software (Windows® only) allows configuration and programming of the gateway via an Ethernet connection (cable supplied) to retrieve data transmitted by the various modules and display it on the dashboard. Each module is self-contained and addresses specific educational objectives with dedicated practical exercises.





 Technical specifications detailed on our website

IP VIDEO SURVEILLANCE WITH EMBEDDED INTELLIGENCE

OBJECTIFS PÉDAGOGIQUES

- Understand and configure a set of video surveillance components.
- Cable and configure an Ethernet computer network.
- Understand the configuration and programming of a video surveillance recorder.
- Commission the installation.
- Configure recording settings.
- Configure the PTZ motorized dome camera (TAG-23D only).

ref. TAG-23	ref. TAG-23D	with dome camera
SUPPLIED WIRED CONFIGURED	AUTONOMOUS WIFI NETWORK	TEACHING RESOURCES STUDENT / TEACHER



Only available on the TAG-23D version
4MP PTZ motorized dome IP camera, F1.6
Day/Night recording with IR filter,
25x optical zoom, IP67

HYBRID VIDEO SURVEILLANCE MANAGEMENT

EDUCATIONAL OBJECTIVES

- Understand and configure a set of video surveillance components.
- Wire a Hybrid analog and IP type network
- Make electrical diagrams
- Understand configuration, programming from an integrated Web server.
- Configure an Ethernet computer network.
- Carry out the commissioning of the installation
- Perform recording settings
- Perform dome camera settings (TAG-13D only)

ref. TAG-13	ref. TAG-13D	with dome camera
SUPPLIED WIRED CONFIGURED	AUTONOMOUS WIFI NETWORK	TEACHING RESOURCES STUDENT / TEACHER



Only available on the TAG-13D version
4MP PTZ motorized dome IP camera, F1.6
Day/Night recording with IR filter,
25x optical zoom, IP67

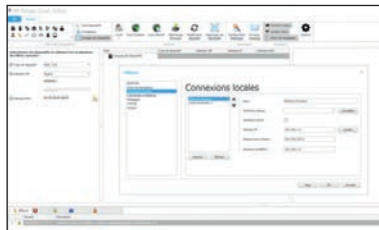


ETHERNET VIDEO / INTERCOM MANAGEMENT

OBJECTIFS PÉDAGOGIQUES

- Understand and configure a set of audio and video intercom components.
- Understand the configuration and programming from an integrated Web server.
- Configure an Ethernet computer network.
- Configure a WiFi router.
- Carry out the wiring diagram for the various intercom components.
- Carry out the wiring for the control unit, the audio and video intercoms, the electric strike.

ref. TAG-11
LIVRÉ CABLÉ ET PARAMÉTRÉ
RÉSEAU WIFI AUTONOME
DOSSIER PÉDAGOGIQUE ÉLÈVES / ENSEIGNANT



Web server integrated into the management unit

STUDY AN IP CAMERA

EDUCATIONAL OBJECTIVES

- Understand and configure a set of video surveillance components.
- Wire a hybrid analog and IP easy network
- Make electrical diagrams
- Create the wiring and physically connect various electrical components
- Produce a parts list and analyze manufacturer sheets
- Understand configuration, programming from an integrated Web server.
- Configure an Ethernet computer network.
- Carry out the commissioning of the installation
- Perform recording settings

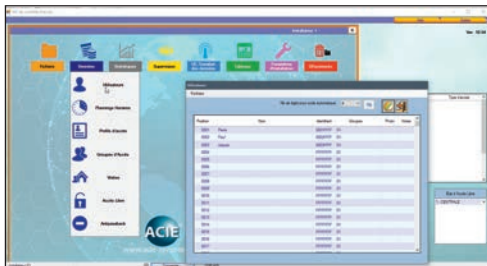


ref. QUICK-CIPPLUS
SUPPLIED WIRED CONFIGURED
AUTONOMOUS WIFI NETWORK
TEACHING RESOURCES STUDENT / TEACHER

ACCESS CONTROL MANAGEMENT

EDUCATIONAL OBJECTIVES

- Explore an access control system.
- Create a wiring diagram for the system.
- Install the wiring and commission the system.
- Understand and configure an access control management system and its peripherals.
- Create a user database and assign an access profile.



ref. TAG-20
SUPPLIED WIRED CONFIGURED
TEACHING RESOURCES STUDENT / TEACHER

Configuration is performed via the interface embedded in the control panel, or via the free software included with the model.





Technical specifications
detailed on our website

STUDY OF AN WIRED ANTI-INTRUSION ALARM

OBJECTIFS PÉDAGOGIQUES

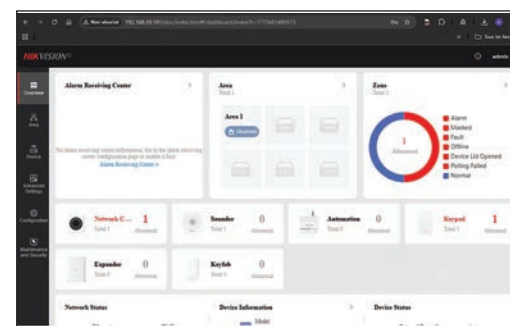
- Comprendre et câbler une alarme anti-intrusion.
- Installer et mettre en service une alarme anti-intrusion.
- Réaliser le paramétrage de la centrale via la page web embarquée.
- Paramétrer la caméra IP pour l'interconnexion avec la centrale.
- Paramétrer le routeur afin de créer un réseau local avec accès WIFI.

ref. TAG-21

SUPPLIED WIRED
AND CONFIGURED

TEACHING RESOURCES
STUDENT / TEACHER

AUTONOMOUS
WIFI NETWORK



Embedded web page allowing configuration and monitoring.

HIKVISION COMMUNICATING ACCESS CONTROL

EDUCATIONAL OBJECTIVES

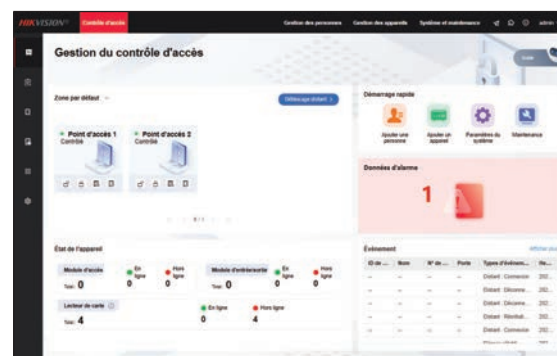
- Discover an access control system.
- Create the system wiring diagram.
- Install the wiring and commission the system.
- Understand and configure an access control management unit and its peripherals.
- Integrate the management of emergency exits and fire-resistant openings.
- Create a user database and associate access profiles.

ref. TAG-24

SUPPLIED WIRED
CONFIGURED

TEACHING RESOURCES
STUDENT / TEACHER

AUTONOMOUS
WIFI NETWORK



Configuration and monitoring
are performed via
the embedded web page



STUDY OF AN RADIO ANTI-INTRUSION ALARM

EDUCATIONAL OBJECTIVES

- Understand and configure anti-intrusion alarm management
- Understand and learn Radio component programming
- Program the various components of an anti-intrusion alarm such as the control unit, the detectors, the informative code keypad, the remote controls, the siren.
- Configure Delta Dore® components and the gateway dedicated to its operation
- Carry out the commissioning of the installation
- Set up a WIFI network for ordering on a tablet or smartphone

ref. TAG-3-C

SUPPLIED WIRED
AND CONFIGURED

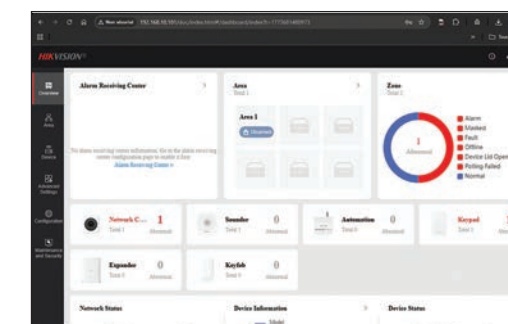
TEACHING RESOURCES
STUDENT / TEACHER

AUTONOMOUS
WIFI NETWORK

STUDY OF A WIRELESS ANTI-INTRUSION ALARM

EDUCATIONAL OBJECTIVES

- Install and commission a wireless burglar alarm.
- Configure the control panel via the embedded web interface.
- Pair the various components of a burglar alarm system, such as detectors, keypad and badge reader, and siren.
- Create and manage users.
- Configure the router to create a local network with Wi-Fi access.



Embedded web
page allowing
configuration
and monitoring.



ref. TAG-22

SUPPLIED WIRED
CONFIGURED

TEACHING RESOURCES
STUDENT / TEACHER

AUTONOMOUS
WIFI NETWORK

STUDY OF CONTACTLESS ACCESS CONTROLS

EDUCATIONAL OBJECTIVES

- Understand and configure the different access controllers
- Address access control issues for Person with Reduced Mobility
- Address the different RFID badge technologies
- Address the value of contactless access control
- Draw up the wiring diagram for the various elements

ref. TAG-14

SUPPLIED WIRED
CONFIGURED

TEACHING RESOURCES
STUDENT / TEACHER

AUTONOMOUS
WIFI NETWORK





Technical datasheets
on our website

COMMUNICATING COMMISSIONING PLAN MODEL

EDUCATIONAL OBJECTIVES

- Understand and configure an alarm center
- Understand and configure a PPMS device
- Understand the use and interest of a PPMS device
- Carry out the wiring of components relating to a PPMS device in TBT
- Configure a radio extension and its transmitter
- Set up manual trigger devices
- Perform local or remote maintenance of the device

ref. TAG-18

SUPPLIED WIRED
CONFIGURED

 AUTONOMOUS
WIFI NETWORK

TEACHING RESOURCES
STUDENT / TEACHER



EMERGENCY LIGHTING ADRESSABLE BY COMMUNICATING MANAGER



EDUCATIONAL OBJECTIVES

- Understand and configure emergency lighting management with SATI report.
- Understand and configure addressable emergency lighting management.
- Understand the difference between an ambient and evacuation BAES.
- Carry out the wiring of BAES components and a manager in SATI report configuration and in addressable configuration.
- Configure an emergency lighting manager.

ref. TAG-192

SUPPLIED WIRED
CONFIGURED

TEACHING RESOURCES
STUDENT / TEACHER



TRAINING SUITCASE OF EMERGENCY LIGHTING MANAGEMENT



EDUCATIONAL OBJECTIVES

- Understand and configure emergency lighting management with SATI report.
- Understand and configure addressable emergency lighting management.
- Understand the difference between an ambient and evacuation BAES.
- Carry out the wiring of BAES components and a manager in SATI report configuration and in addressable configuration.
- Configure an emergency lighting manager.

ref. VAL-192

SUPPLIED WIRED
CONFIGURED

TEACHING RESOURCES
STUDENT / TEACHER



Case with ergonomic handle.
Dimensions 534 x 374 x 190mm.
Power supply via 230V-2P+E mains cord.



CONTROL PANEL FOR FIRE ALARM TYPE 4

Version	WIRED		RADIO
Educational objectives	TAG-15	TAG-15-COM	TAG-15-R
Understand and configure type 4 fire alarm management.	✓	✓	✓
Understand how an optical smoke detector works.	✓	✓	✓
Understand how a manual call point works.	✓	✓	✓
Communicate with stand-alone smoke detectors	✓	✓	✓
Wiring the components of a type 4 fire alarm	✓	✓	
Pair the various fire alarm components via radio			✓
Set up a fire alarm panel.	✓	✓	✓
Understand parameterization and programming by PLC		✓	
Become familiar with PC and HMI supervision		✓	
Configure a Wifi network and control the components from a tablet		✓	
Understanding an IP Ethernet Network		✓	

WIRED VERSIONS

ref. TAG-15 ref. TAG-15-COM communicating via Wifi

RADIO VERSION

ref. TAG-15-R

SUPPLIED
CONFIGURED

TEACHING RESOURCES
STUDENT / TEACHER

 AUTONOMOUS
WIFI NETWORK



Technical datasheets
on our website

FIRE ALARM MANAGEMENT TYPE 4 AND BAES

EDUCATIONAL OBJECTIVES

- Understand and configure a type 4 fire alarm management system.
- Understand how an optical smoke detector works.
- Understand how a manual trigger works.
- Communicate with stand-alone smoke detectors
- Wire the components of a type 4 fire alarm
- Pair the different fire alarm components by radio
- Configure a fire alarm control panel.
- Understand and configure an emergency lighting management system with SATI report.
- Understand and configure an addressable emergency lighting management system.
- Understand the difference between an ambient and evacuation BAES.
- Wire BAES components and a manager in SATI report configuration and in addressable configuration.
- Configure an emergency lighting manager.

ref. TAG-1519

FULLY WIRED AND SET TEACHING RESSOURCES STUDENT / TEACHER



COMMUNICATING FIRE DOOR CONTROL PANEL

EDUCATIONAL OBJECTIVES

- Understanding and settings of a fire door control system.
- Understand how an optical smoke detector works.
- Understand how a manual call point works.
- Communicate with stand-alone smoke detectors
- Realize the wiring of components of a fire door control system.
- Configure a fire door control system.
- Understand parameter setting and programming by PLC (-COM version)
- Become familiar with PC supervision (-COM version)
- Understanding of an IP network (for the COM version)

ref. TAG-16 without PLC

FULLY WIRED AND SET TEACHING RESSOURCES STUDENT / TEACHER

ref. TAG-16-COM communicating version with PLC

FULLY WIRED AND SET TEACHING RESSOURCES STUDENT / TEACHER



TRAINING SUITCASE OF FIRE ALARM MANAGEMENT OF TYPE 4

EDUCATIONAL OBJECTIVES

- Theoretical study of component wiring .
- Understand the type 4 fire alarm management.
- Understand how a manual call point works.
- Communicate with stand-alone smoke detectors



Case with ergonomic handle.
Dimensions 534 x 374 x 190mm.
Supply by power cord 230V-2P + E.

ref. VAL-15

FULLY WIRED AND SET TEACHING RESSOURCES STUDENT / TEACHER

STUDY OF A WALLBOX FOR ELECTRIC VEHICLE

This educational solution, available in 2 references, allows you to discover and study the operation of an electric car charging station for domestic use. The learner will become familiar with the installation, configuration and testing of a charging station. The 1-M version also allows wiring of the control, removal and installation of IRO / IRL tubes. Put yourself in the shoes of an authorized installer by applying the NFC15100 verifications and by discovering the compulsory E.V.Ready self-checking sheets during an installation.

EDUCATIONAL OBJECTIVES

- Study an electric vehicle charging station.
 - Wire a charging station for a domestic electric vehicle (1-M version only)
 - Commission an electric vehicle charging station.
 - Test and diagnose an electric vehicle charging station.
 - Study an access command by code keypad and RFID badge
 - Study a communication by Wifi or Bluetooth
 - Study the different types of electric vehicle charging sockets
- Educational support**

 - Instructions and installation
 - Technical notices
 - Theoretical reminder on mode 3 type 2 sockets
 - Teaching scenarios (TEACHER / STUDENT type practical work)
 - Cable schematics

PRACTICAL WORKS	REFERENCES	
	BORNELEC1-M	BORNELEC2-M
Wiring a switch	✓	
Wiring a programmable keyboard	✓	
Wiring a clock	✓	
Wiring of a control circuit of a charging station	✓	
Cutting IRO / IRL tubes	✓	
Removal and installation of IRO / IRL tubes	✓	
Clock setting	✓	
Configuration of the RFID keyboard (daily use, user management, choice of operation by code, bage, key-board, keyboard + RFID badges)	✓	✓
Creation of the maintenance book for a charging station	✓	✓
Performing checks of standard NFC 15100	✓	✓
Discovery of E.V ready self-checking sheets	✓	✓
Analysis of the signals received by the charging station (presence of voltage, charge with and without fan, error) using the simulator provided and an oscilloscope.	✓	✓
Wifi switch configuration	✓	✓
Configuration of the charging station in wifi thanks to the Webserver integrated in the terminal (visualization of operating status, configuration of the kit communication, choice of charging mode, time pro-gramming, history, intensity setting, locking, charging stop, etc.)	✓	✓
Operation of the free EVCharge application in Bluetooth (history, cost of consumption, display of the state of the charging station)	✓	✓



Charging station tester delivered with the model.



Control and components wiring for BORNELEC1-M (back panel)

FULL VERSION FOR WIRING AND PROGRAMMING

ref. BORNELEC1-M

DELIVERED WIRED & SET

AUTONOMOUS WIFI NETWORK

Bluetooth

TEACHING RESSOURCES STUDENTS / TEACHER

Chassis on wheels. Weight: 65 kg
Dimensions: 1200 x 650 x 1860mm.
2 12mm melamine panels with an area of 1200 x 1600mm.
Power supply by 3 m 2P + E 230VAC 50Hz power cord.
The model is delivered wired and ready to operate.

 Technical datasheets on our website



COMPACT VERSION FOR PROGRAMMING

ref. BORNELEC2-M

DELIVERED WIRED & SET

AUTONOMOUS WIFI NETWORK

Bluetooth

TEACHING RESSOURCES STUDENTS / TEACHER

Chassis on wheels. Weight: 80 kg
Dimensions: 750 x 730 x 1840mm.
2 19mm melamine panels with an area of 1400 x 670mm.
Power supply by 3 m 2P + E 230VAC 50Hz power cord.
The model is delivered wired and ready to operate.



The charging station communicates via Wifi or Bluetooth. The locally created wifi network is specific to the model. It is isolated from the WiFi network of your establishment.



TRAINING SUITCASE OF AN ELECTRIC VEHICLE CHARGING STATION

Safe wiring on 4mm terminals. Safety leads and power supply cable are provided. Component marking informations and other technical characteristics are screen-printed on the faces.

ref. VAL-EV

DELIVERED WIRED & SET

Bluetooth

TEACHING RESSOURCES STUDENTS / TEACHER

 Technical datasheets on our website

EDUCATIONAL OBJECTIVES

- Study an installation of an electric vehicle charging station.
- Commission an electric vehicle charging station.
- Configure an access control via keypad with code and RFID badge
- Set up a clock control
- Study the different types of charging sockets for electric vehicles

Suitcase with ergonomic handle.
Dimensions 534 x 374 x 190mm.
Powered via 230Vac-2P+E AC cord.



Charging station tester delivered with the model.

FIBER DEPLOYMENT IN COLLECTIVE HOUSING

EDUCATIONAL OBJECTIVES

- Discover the FTTH network
- Discover the components of an optical link
- Understand the role of each piece of equipment
- Manipulate the different components of an FTTH network
- Handle cleaver and welder (optional equipment)
- Handle a fiber laser pen (optional equipment)
- Perform measurements with a photometer (optional equipment)

ref. DP1-FIB

STUDENT/TEACHER EDUCATIONAL FILE
CARRIED OUT BY A FIBER TRAINER

DELIVERED WIRED
READY TO USE



OPTION: MICRO WELDER + CLEAVER



ref. FIB-SOUD

- Micro Welder with 3-Axis Alignment
- Welder neck strap
- Optimization of G.657A2 1.00 fiber welder.
- BA-20 Li-on battery for welder.
- 3-hole wire stripper
- Manual Fiber Optic Splitter
- 200ml pump alcohol dispenser
- Cleaning wipe

SINGLE MODE REFLECTOMETER



ref. FIB-REFLEC

- Pulse width 3 ns to 20 us
- Photometer port -70 to +10 dBm
- Red laser 650 nm < 10mW
- Battery life: 10 h, USB 2.0 interface, 8Gb SD Card
- Weight: 1 Kg. SC/APC connector.

OPTION PHOTOMETER ET CONTINUITY



ref. FIB-MESURE

- 1 Optometer Source
- 1 Photometer
- 1 Laser pen
- 2 Patch cords
- 1 x SC-APC Female/Female Connector

- 1 Optometer Source
- 1 Photometer
- 1 Laser pen
- 2 Patch cords
- 1 x SC-APC Female/Female Connector

Technical datasheets on our website

Technical datasheets on our website

FIBER DEPLOYMENT IN INDIVIDUAL HOUSING AND/OR COLLECTIVE HOUSING



Facing housing with 2 apartments.



Facing technical

ref. DP2-FIB

STUDENT/TEACHER EDUCATIONAL FILE
CARRIED OUT BY A FIBER TRAINER

DELIVERED WIRED
READY TO USE

EDUCATIONAL OBJECTIVES

- Discover the FTTH network
- Discover the components of an optical link
- Understand the role of each piece of equipment
- Understand the differences inherent in collective and individual housing
- Manipulate the different components of an FTTH network
- Perform a standard fiber optic installation in a housing technical duct
- Handle splitter and welder (optional equipment)
- Handle a fiber laser pen (optional equipment)
- Perform measurements with a photometer (optional equipment)

Practical work provided

- MCQs on the courses (theoretical courses written by a specialized trainer)
- Identification of the different components
- Wiring and connection of different equipment (with and without soldering)
- Installation of a standard fiber optic setup
- Carrying out qualitative tests on the installation
- Measurement on the fiber optic network using a power meter and a light source on optical fiber (optional equipment)



The operator can easily access the street BPEO located under a hatch in a technical box simulating a telecom manhole.

OPTICAL FIBER STUDY

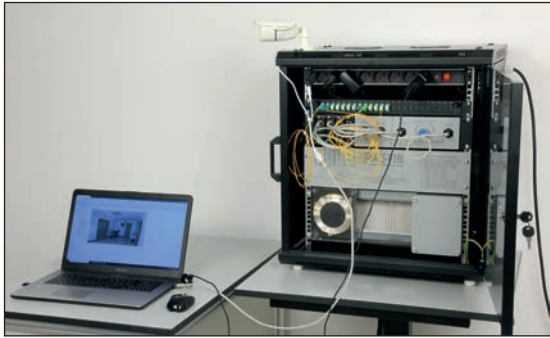
EDUCATIONAL OBJECTIVES

- Presenting the components of an optical link
- Mastering the principles of optoelectronic data transfer
- Understanding the role of an optical coupler
- Compare transmissions on optical media and RJ45
- Address the limits of copper compared to fiber (distances, flow rates, ...)
- Highlighting the main failures of an optical link
- Highlighting the main failures of an RJ45 link
- Manipulations and practical work on the model

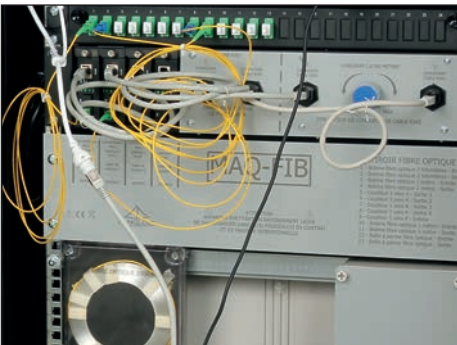
ref. MAQ-FIB TEACHING RESOURCES PRODUCED BY A FIBER TRAINER



VDI type box with handles (H760mm x W680mm x D450mm) to be placed on table + camera. Weight: 40kg. Power supply by 230Vac power cord of 3 meters (2P + E). Delivered wired and functional.



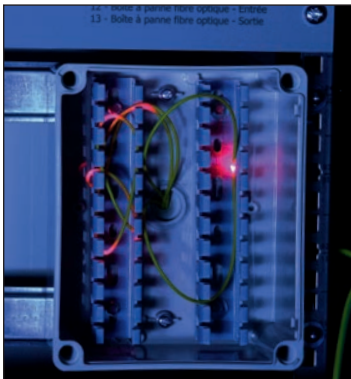
Back side. Teacher interface for fault creation.



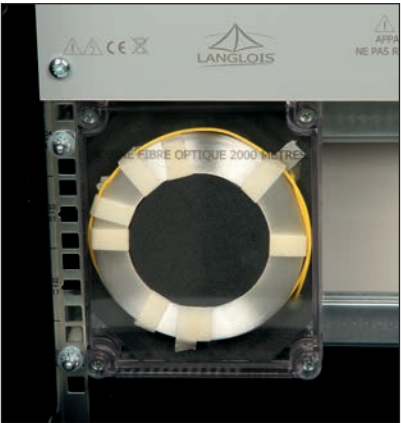
4-way optical coupler



RJ45 cable length simulation potentiometer



Fault display box



fiber optic coil of 2 km c

supplied accessories

- 4 RJ45 cables
- 6 optical fibers
- 1 network tester
- 1 optometer source
- 1 power meter



NETWORK ADMINISTRATION - CYBERSECURITY

EDUCATIONAL OBJECTIVES

- Discover the architecture of a computer network
- Apply cybersecurity concepts
- Understand the role of each piece of equipment
- Explore configuration and monitoring tools



ref. MAQ-ARES

System delivered wired, connected, ready to operate, with STUDENT + TEACHER educational file presenting many examples of practical work.



OPTION - NETWORK ATTACHED STORAGE SERVER - NAS



ref. IP-NAS

Storage server to be integrated into the patch bay. It allows you to apply skills on data sharing and backup. The set includes 1 x 19" 1U Rack Chassis, 2 x 1GbE RJ45 Ports, 4 x Disk Slots (3.5" SATA HDD or 2.5" SATA SSD) and 1 3.5" 1TB SATA 6Gb/s hard drive

FIBER OPTIC NETWORK STUDY SUITCASE



ref. VAL-FIB
TEACHING RESOURCES PRODUCED BY A FIBER TRAINER
DELIVERED WIRED & SET

EDUCATIONAL OBJECTIVES

- Discover the FTTH network
- Discover the components of an optical link
- Understand the role of each piece of equipment
- Handle the different components of an FTTH network
- Handle a cleaver and welder (optional equipment)
- Handle a fiber optic laser pen (optional equipment)
- Take measurements with a photometer (optional equipment)

 Technical datasheets
on our website

 Fiches techniques
détaillées sur notre site

V.D.I. NETWORK ADMINISTRATION - IP TELEPHONY - VIDEO SURVEILLANCE - CYBERSECURITY



Cybersecurity
compatible product

ref. MAQ-VDI

NOTICE + COURS + TP

System delivered wired, connected, ready to operate,
with a STUDENT + TRAINER training kit
presenting numerous examples of practical work.



EDUCATIONAL OBJECTIVES

- Discover the architecture of a corporate IT network
- Discover and configure a "voice, data, images" VDI rack
- Understand and cable a patch panel
- Understand how an IP PABX works
- Discover IP telephony
- Discover IP video surveillance
- Configure an Ethernet video camera
- Apply cybersecurity concepts
- Understand the role of each piece of equipment
- Discover configuration and monitoring tools

LAN NETWORK CONTROLLER
OPTION

ref. LA-1011

NETWORK STORAGE SERVER - NAS
OPTION

ref. IP-NAS



IP TELEPHONE NETWORK

EDUCATIONAL OBJECTIVES

- Discover the architecture of a corporate IP telephony network
- Understand the role of each piece of equipment
- Cabling a patch panel
- Understanding the principle of a rippled network
- Configuring an Ethernet IP network
- Installing a trunking system equipped with 230V, RJ11, and RJ45 sockets
- Understanding how an IP telephony server works
- Comparing analog and digital IP telephony

ref. MAQ-TEL

INSTRUCTIONS + THEORETICAL COURSES

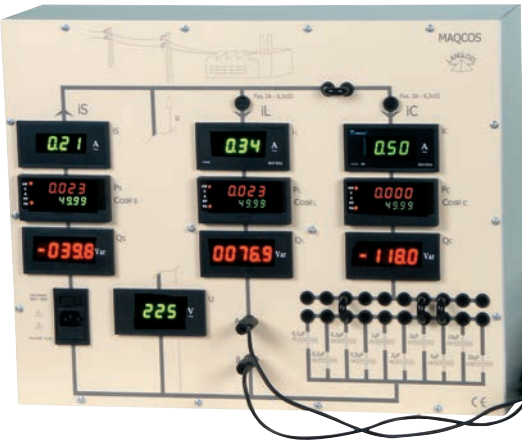


X2



X2

POWER FACTOR CORRECTION SYSTEM



EDUCATIONAL OBJECTIVES

- Study of the power factor.
- Study of powers.
- Demonstrate the interest of a cosine phi adjustment on the cost of kWh.

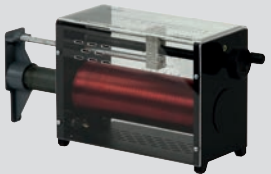
ref. MAQCOS

USER'S MANUAL WITH PRACTICAL WORKS

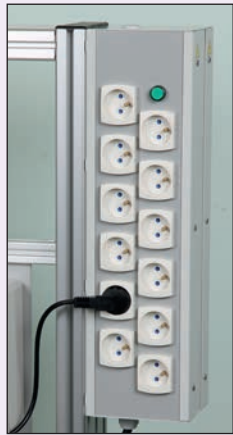


OPTION
INDUCTANCE
VARIABLE

ref. PSYJR2



MODULAR VERSION



ref. QUICK-LPLUS

STUDY OF THE 3RD AND 5TH
ORDER HARMONICS

EDUCATIONAL OBJECTIVES

- Studying, putting into service, getting started and setting of the system
- Studying of harmonic filtering of orders 3 & 5 and the power factor
- Practical corrections of harmonics generated by a speed variator.

ref. HARMOVAR



INDUSTRIAL-TYPE MAIN DISTRIBUTION BOARD
WITH DUAL POWER SUPPLY AND MONITORING

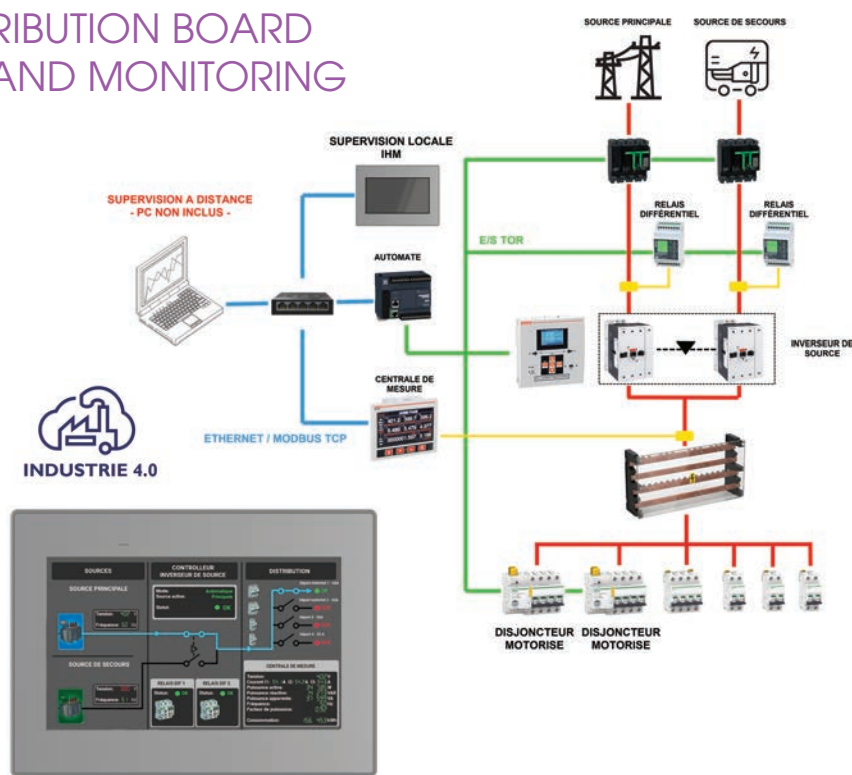


ref. TGBT-1C

ref. TGBT-1 without supervision

DELIVERED WIRED & SET

TEACHING RESSOURCES STUDENTS / TEACHER



- EDUCATIONAL OBJECTIVES**
- Discover electrical distribution and protection techniques and technologies
 - Apply the principle of selectivity
 - Size electrical components
 - Practice lockout/tagout procedures and voltage measurements (VAT)
 - Use and check PPE
 - Take electrical measurements
 - Perform maintenance operations
 - Review the objectives of Industry 4.0
 - Program a PLC and an HMI
 - Configure the communication protocol (Ethernet, Modbus TCP) to enable communication between the PLC, the HMI, the transfer switch, and the measurement unit.
 - Analyze data and plan maintenance operations

SOURCE SWITCHING CABINET

- EDUCATIONAL OBJECTIVES**
- Study an industrial-type 400Vac three-phase source inversion system
 - Understand the specifications of an electrical installation
 - Create electrical diagrams
 - Analyze manufacturer's technical data sheets
 - Perform component wiring and configuration
 - Commission the installation
 - Take electrical measurements
 - Record voltage, current, and power curves
 - Use PPE
 - Use maintenance documents



ref. ARM-COMS2

DELIVERED WIRED & SET

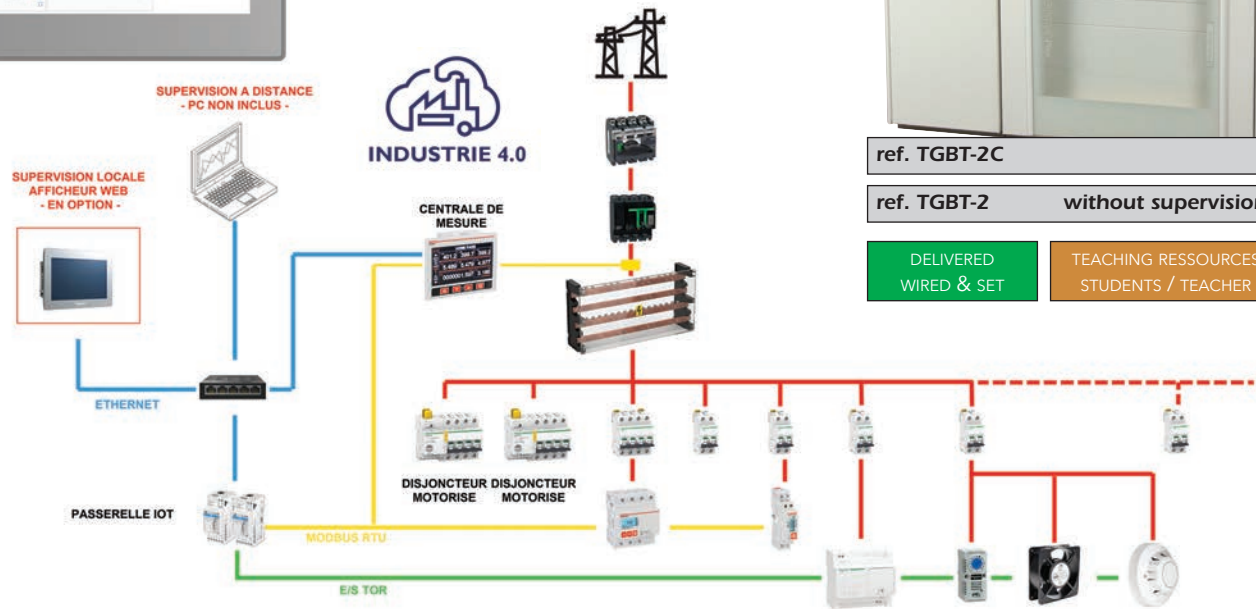
TEACHING RESSOURCES STUDENTS / TEACHER



Technical datasheets on our website

MAIN DISTRIBUTION BOARD SINGLE-SOURCE ENERGY
MANAGEMENT PANEL TERTIARY TYPE WITH SUPERVISION

- EDUCATIONAL OBJECTIVES**
- Discover electrical distribution and protection techniques and technologies
 - Apply the principle of selectivity
 - Size electrical components
 - Practice lockout/tagout procedures and voltage measurements (VAT)
 - Use and check PPE
 - Take electrical measurements
 - Perform maintenance operations
 - Review the objectives of Industry 4.0
 - Program an IoT gateway
 - Configure the Ethernet and Modbus RTU communication protocols
 - Create a dashboard
 - Analyze data and plan maintenance operations



ref. TGBT-2C

ref. TGBT-2 without supervision

DELIVERED WIRED & SET

TEACHING RESSOURCES STUDENTS / TEACHER

DISTRIBUTION BOX WITH SUPERVISION



ref. ILO-TRI 3-phase

ref. ILO-MONO single-phase



LOADS FOR LVGS

ref. THERM-T 3-phase

ref. THERM-M single-phase

SECTOR DOUBLER



ref. DBL-TGBT

SMART BUSINESS POWER MANAGEMENT

EDUCATIONAL OBJECTIVES

- Discover the Home Automation applied to a business installation.
- Study a power consumption measuring system.
- Perform an energy balance.
- Understand the specifications of an electric installation.
- Realize electrical diagrams.
- Produce a components nomenclature.
- Analyze the manufacturers' technical documentation.
- Configure the DELTA DORE® components (radio frequency technology).
- Understand and configure video surveillance system.
- Realize the wiring and connection of network components
- Commission the installation
- Configure the WIFI network

ref. ECP-DD2

DELIVERED
WIRED & SETAUTONOMOUS
WIFI NETWORKTEACHING RESSOURCES
STUDENTS / TEACHER

Back side



Technical datasheets
on our website

SPEED CONTROLLER USED FOR ENERGY SAVING

EDUCATIONAL OBJECTIVES

- Energy savings by speed controller demonstrated.
- Creation of the configuration of a speed controller with software.
- Using an energy measuring unit.
- Using a clamp ammeter.

ref. MAQ-WATT

TEACHING RESSOURCES STUDENTS / TEACHER



SMART ENERGY MANAGEMENT

This cabinet allows for the discovery and wiring of the components of an Energy Management Panel (EMP). It incorporates the latest technologies in energy-efficient electrical distribution.



Supplied accessories

- 2 lamps
- 2 1300W rheostats
- 1 set of 4mm safety test leads

EDUCATIONAL OBJECTIVES

- Carry out wiring according to specifications
- Produce electrical diagrams for industrial-type electrical installations
- Conduct functional tests
- Study an energy consumption measurement system
- Carry out an energy assessment
- Produce a component parts list
- Analyze manufacturer technical data sheets
- Configure component settings
- Configure a Wi-Fi network for control via tablet or smartphone
- Commission the installation



COMPACT VERSION
WITH NON-REMOVABLE GRILLE

In this tabletop version, the grill is fixed and
cannot be removed.

ref. ADE-TGE2



ref. ADC-TGE

DELIVERED
WIRED & SETAUTONOMOUS
WIFI NETWORKTEACHING RESSOURCES
STUDENTS / TEACHER

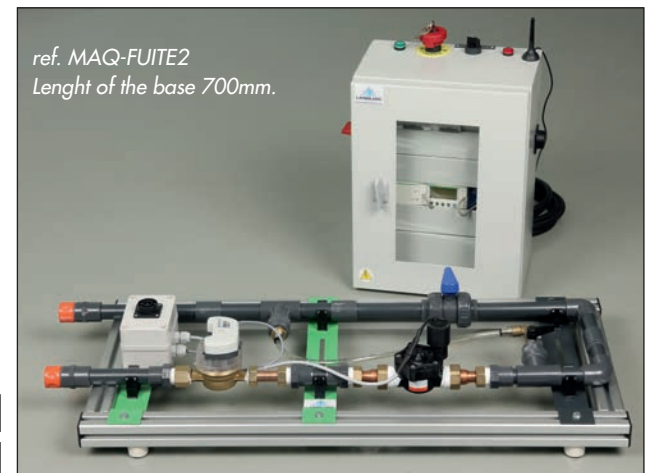
Very easy wiring and grid change
in this very ergonomic cabinet.

AUTOMATIC LEAK ALERT SYSTEM

EDUCATIONAL OBJECTIVES

- Learning about water leak detection by sensor.
- Using a GSM phone transmitter
- Using and programming a M221 logic module

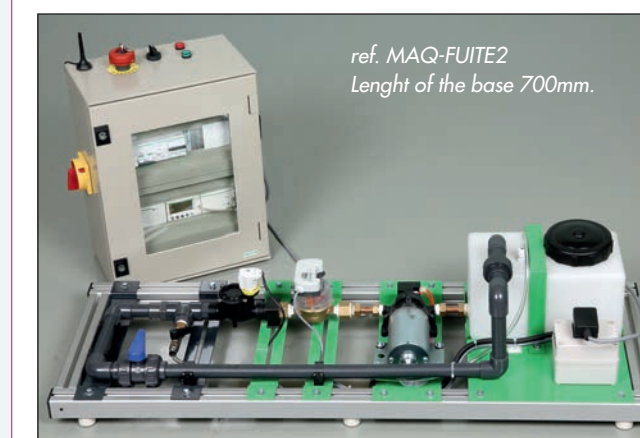
ref. MAQ-FUITE2
Lenght of the base 700mm.



Version with no pump or tank.
Requires a pressurized water inlet
in the room.

ref. MAQ-FUITE2

TEACHING RESSOURCES STUDENTS / TEACHER



ref. MAQ-FUITE2
Lenght of the base 700mm.

Fully self-contained version thanks to
its tank and pump 24V.
Requires no water inlet.

ref. MAQ-FUITE-2A

TEACHING RESSOURCES STUDENTS / TEACHER



Technical datasheets
on our website

IO-LINK SMART SENSOR STUDY CASE

EDUCATIONAL OBJECTIVES

- Discover IO-LINK technology
- Cabling IO-LINK equipment
- Configuring and viewing IO-LINK equipment with Moneo Configure software
- Configuring and viewing IO-LINK equipment with Moneo Blue software
- Familiarizing yourself with monitoring

ref. VAL-IOL



DELIVERED WIRED
AND SET

AUTONOMOUS
WIFI NETWORK

Bluetooth

TEACHING RESSOURCES
STUDENTS / TEACHER



STUDY CASE OF A CONVEYOR WITH AUTOMATION AND INTELLIGENT IO-LINK SENSORS

EDUCATIONAL OBJECTIVES

- Discover IO-LINK technology
- Wire IO-LINK devices
- Configure and view IO-LINK devices with Moneo configure
- Configure and view IO-LINK devices with Moneo blue
- Become familiar with monitoring
- Analyze an operating cycle
- Translate an operation into GRAFCET and LADDER diagrams
- Configure and program a PLC for communication with the IO-LINK master
- Program and test operating cycles on the PLC

ref. VAL-AUTOIOL



DELIVERED
WIRED AND SET

AUTONOMOUS
WIFI NETWORK

Bluetooth

TEACHING RESSOURCES
STUDENTS / TEACHER



ARDUINO® MICROCONTROLLER STUDY CASE

EDUCATIONAL OBJECTIVES

- Discover the Arduino® programming environment and the C language.
- Create electrical schematics
- Understand the interconnections between electronic modules.
- Analyze manufacturer datasheets.
- Create automation programs.
- Configure Wi-Fi components.
- Wire and connect electrical components using flying leads.
- Commission the installation.
- Configure Wi-Fi network settings for control from a web browser.

ref. VAL-MC1

DELIVERED WIRED
AND SET

AUTONOMOUS
WIFI NETWORK

TEACHING RESSOURCES
STUDENTS / TEACHER

SIMULATED ELECTRICAL
COMPONENTS



SENSORS STUDY CASE

EDUCATIONAL OBJECTIVES

- Discover different sensor technologies
- Discover signal types
- Understand how sensors interact with an installation
- Create wiring
- Test sensors under different conditions

ref. VAL-CAPT

DELIVERED WIRED AND SET

TEACHING RESSOURCES STUDENTS / TEACHER

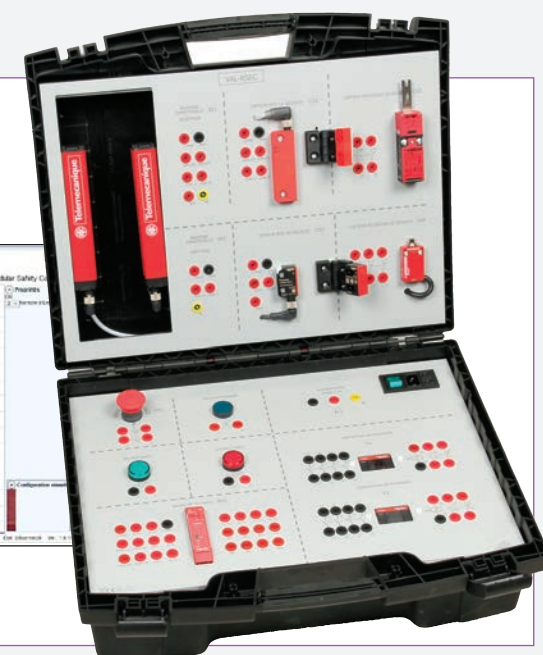
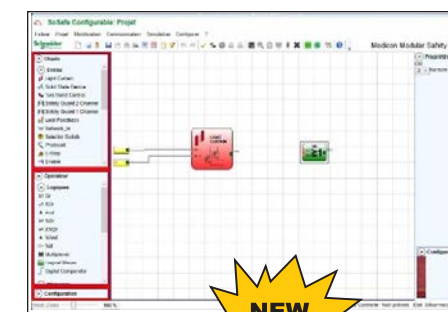
MACHINE SAFETY STUDY CASE

EDUCATIONAL OBJECTIVES

- Discover machine safety
- Understand safety logic
- Compare detection technologies
- Configure a safety relay
- Wire and commission an installation

ref. VAL-RSEC

TEACHING RESSOURCES STUDENTS / TEACHER



IOT MONITORING STUDY CASE

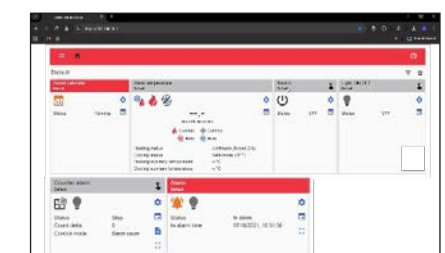
EDUCATIONAL OBJECTIVES

- Review of Industry 4.0 objectives
- Discover IoT monitoring and its components
- Define the data to monitor in order to evaluate system performance
- Interface sensors with the gateway
- Configure IP settings
- Design a dashboard
- Configure alarms
- Raise awareness of the benefits of shifting from reactive to proactive maintenance

ref. VAL-SUPIOT

AUTONOMOUS
WIFI NETWORK

TEACHING RESSOURCES
STUDENTS / TEACHER





Technical datasheets on our website

AUTOMATED INDUSTRIAL BELT CONVEYORS

EDUCATIONAL OBJECTIVES

- To observe and understand the operation of an industrial belt conveyor.
- To take industrial measurements of electrical values.
- To study the operation of inductive and photo-electric sensors.
- To study the reversal of the rotation direction of an asynchronous motor.
- To study the speed control of an asynchronous motor.
- To learn how to wire the different components available on a belt conveyor (detector and light column).
- To study the programming of a controller (PLC) with analogue output signal 4-20mA/0-10V.
- To study the programming of an HMI screen with supervision software.
- To study Ethernet / IP addressing
- To perform industrial maintenance operations.



Schneider Electric

SIEMENS

Réf.	Conveyor	Version	PLC
CONV-1S-C	1	3-phase	Schneider
CONV-1S-230-C	1	Single-phase	Schneider
CONV-1S-CSI	1	3-phase	Siemens
CONV-2S-C	2	3-phase	Schneider
CONV-2S-230-C	2	Single-phase	Schneider
CONV-2S-CSI	2	3-phase	Siemens

DELIVERED WIRED & SET



AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

TRAINING SUITCASE ON THE OPERATIVE PART OF A BELT CONVEYOR



EDUCATIONAL OBJECTIVES

- Discover and simulate an industrial-type control process
- Observe and understand the operation of a belt conveyor.
- Study the operation of inductive, photoelectric and mechanical sensors.
- Operate the wiring of the various components.

Possible Practical work

- Study and realization of an electrical wiring diagram
- Realization of GRAFCET, LADDER and Chronogram diagrams
- Study and wiring of the belt conveyor
- Connection and adjustment of the various sensors
- Digital meter configuration
- Connection of different components to launch functionalities

ref. VAL-TAP

DELIVERED WIRED AND SET

TEACHING RESSOURCES STUDENTS / TEACHER

Case with ergonomic handle.
Dimensions 534 x 374 x 190mm.
Power supply by 230V-2P+E cord.

WIRING OF AN AUTOMATED INDUSTRIAL BELT CONVEYOR

This operational section, equipped with a containment cabinet, allows for the study and wiring of the various operating modes of an industrial belt conveyor. The student wires the grid (optional) before installing it in the cabinet for testing. Student safety is ensured by a cabinet door opening sensor. This cuts off the power supply. If necessary, a key switch can be used to deactivate this safety feature.



Model shown:
Ref. ADC-CONV
with optional grid
Ref. GCONV1-ADC

ref. ADC-CONV

TEACHING RESSOURCES STUDENTS / TEACHER

EDUCATIONAL OBJECTIVES (requires the grids option)

- Observe and understand the operation of an industrial belt conveyor.
- Wire the different operating modes of a belt conveyor.
- Test the wiring by inserting the grid and connecting it to the conveyor.
- Create various wiring diagrams.
- Record electrical measurements (measuring devices not provided).
- Understand the role of each component.
- Study the operation of inductive and photoelectric sensors.
- Study the programming of a programmable logic controller with an analog signal.
- Perform industrial maintenance operations.

Pre-wired teacher grid option

Pre-wired grid for the study and wiring of a belt conveyor operating with a variable frequency drive and a PLC

ref. GCONV1-ADC



Student grid option delivered as a kit

Complete kit including all the components present on the teacher grid allowing the student to carry out the complete wiring and testing on the operational part.

ref. KX-GCONV1



SUPERMARKET CHECKOUT SIMULATOR

EDUCATIONAL OBJECTIVES

- Understanding, putting into service, getting started and setting of the system
- Making different wirings and functioning tests
- Illustration and visualization of the result of a PLC program

ref. TAPIX-ARM-GD

with not wired grid

ref. TAPIX-CAB

with wired grid

All systems with monitoring are delivered assembled and fully wired. Detailed instructions with full specifications for each component and practical exercises are provided. The monitoring system is fully developed and operational.

ref. TAPIX-S

Version with monitoring on computer

ref. TAPIX-CAB

Version with monitoring on touchscreen

DELIVERED WIRED AND SET

TEACHING RESSOURCES STUDENTS / TEACHER



Technical datasheets on our website

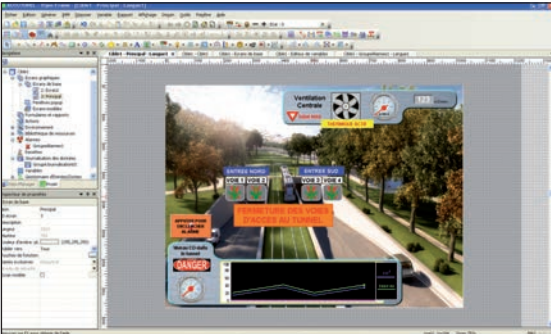
VENTILATION CONTROL AND TUNNEL ACCESS

EDUCATIONAL OBJECTIVES

- Putting into service, getting started, setting of the system
- Understand the setting and the programming by PLC
- Understanding and use of a supervision
- Practical approach of analog inputs
- Studying the Ethernet / IP addressing
- Studying a communication by Wifi

ref. TA12

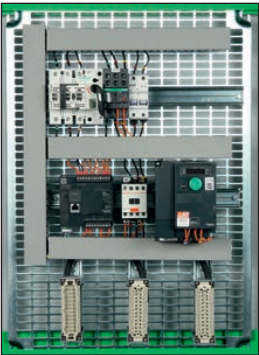
DELIVERED WIRED & SET AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER



WIRING OF A TUNNEL ACCESS AND VENTILATION SYSTEM

EDUCATIONAL OBJECTIVES (WITH GTUN1-ADC OPTION)

- Observe and understand the operation of a ventilation control system.
- Wire the various operating modes.
- Test the wiring by inserting the grille and connecting it to the ventilation system.
- Create various wiring diagrams.
- Understand the role of each component.
- Study the programming of a programmable logic controller with an analog signal.
- Perform industrial maintenance operations.



Pre-wired teacher grid option
Pre-wired grid for the study and wiring of a ventilation system of a tunnel with a variable speed drive and a PLC

ref. GTUN1-ADC

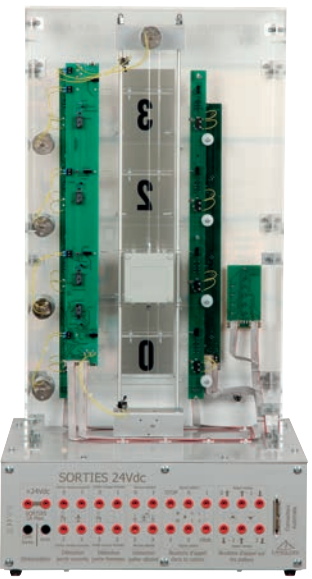
Student grid option delivered as a kit
Complete kit including all the components present on the teacher grid allowing the student to carry out the complete wiring and testing on the operational part.

ref. KX-GTUN1



ref. ADC-TUNNEL

TEACHING RESSOURCES STUDENTS / TEACHER



DIDACTIC LIFT

The ASC19 lift is a model which may be connected to a PLC or any microprocessor system. It comprises 24 outputs and 21 inputs. You can only use a part of input/outputs if you want to do easy programmes

EDUCATIONAL OBJECTIVES

- Handling and commissioning of the lift
- Configure and program a PLC step by step
- Study the Ethernet / IP addressing
- Wire the inputs / outputs of a PLC

ref. ASC19

LIVRE CÂBLÉ ET PARAMÉTRÉ DOSSIER PÉDAGOGIQUE ÉLÈVES / ENSEIGNANT

PLC FOR ASC19 DIDACTIC LIFT

PLC OPTION WITH PRE-WIRED CLAMP CONNECTORS

ref. AUTOMASC SCHNEIDER interface only

ref. AUTOMASC-SI SIEMENS interface only

ref. AUTOMASC-H SCHNEIDER interface + HMI

ref. AUTOMASC-H-SI SIEMENS interface + HMI

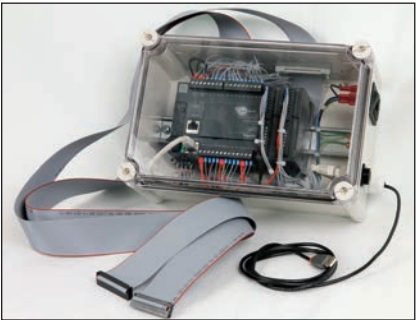
PLC TO CONNECT WITH SAFETY LEADS

ref. AUTO-ASC SCHNEIDER PLC only

ref. AUTO-ASC-SI SIEMENS PLC only

ref. AUTO-ASC-H SCHNEIDER PLC + HMI

ref. AUTO-ASC-H-SI SIEMENS PLC + HMI



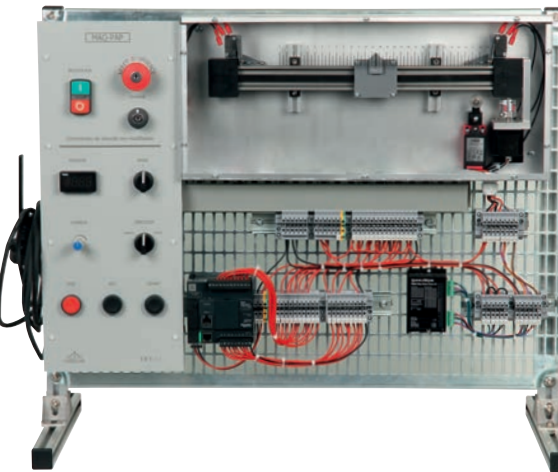
STEPPER MOTOR WIRING AND PROGRAMMING BOARD

EDUCATIONAL OBJECTIVES

- Discover motorized linear axes.
- Discover stepper motor technology and associated components.
- Discover the different applications of an installation comprising linear axes.
- Study and commission a linear axis.
- Study the programming of a programmable logic controller.

ref. MAQ-PAP

DELIVERED WIRED & SET TEACHING RESSOURCES STUDENTS / TEACHER



DOUBLE-LEAF ELECTRIC GATES



POA-11 - Street view

ref. POA-11 wiring with safety leads
ref. POA-111 wiring on industrial terminals
TEACHING RESSOURCES STUDENTS / TEACHER

ELECTRIC SLIDING GATES



POA-22 - House view

ref. POA-22 wiring with safety leads
ref. POA-222 wiring on industrial terminals
TEACHING RESSOURCES STUDENTS / TEACHER

EDUCATIONAL OBJECTIVES

- Observe and understand the operation of an electric gate automation system.
- Learn how to program a gate automation system based on several operating criteria.
- Take measurements of electrical quantities
- Study the operation of photoelectric cells.
- Carry out industrial maintenance operations.



Technical datasheets on our website

TRAINNING SUITCASE FOR INDUSTRIAL PLC PROGRAMMING

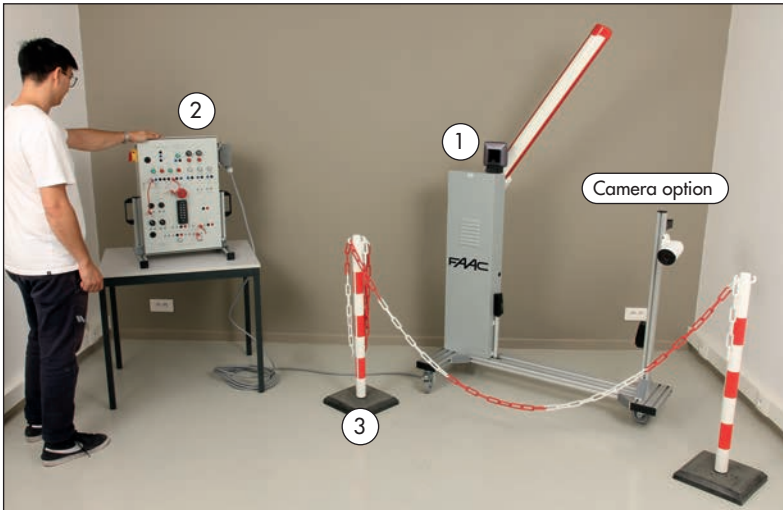
EDUCATIONAL OBJECTIVES

- Discover industrial automation
- Set up and program a PLC
- Set up and program an HMI
- Become familiar with supervision
- Study Ethernet / IP addressing
- Study a communication by Wifi

ref. VAL-AUTO-C		
DELIVERED WIRED & SET	 AUTONOMOUS WIFI NETWORK	TEACHING RESSOURCES STUDENTS / TEACHER



AUTOMATIC PARKING BARRIER



EDUCATIONAL OBJECTIVES

- Discover the operation of an automatic electric barrier.
- Study the control and safety devices
- Carry out measurements of electrical quantities
- Learn how to configure the system based on several operating criteria.
- Carry out maintenance operations.

ref. B2A-1	wiring with safety leads
ref. B2A-111	wiring on industrial terminals

DELIVERED WIRED & SET	TEACHING RESSOURCES STUDENTS / TEACHER
-----------------------	--

TRAFFIC LIGHTS WITH PLC



ref. TRICAUTO

This model simulates a crossroad equipped with 4 traffic lights. Using a TCP/IP PLC and monitoring software, it is possible to control the model and view its operation on a computer.

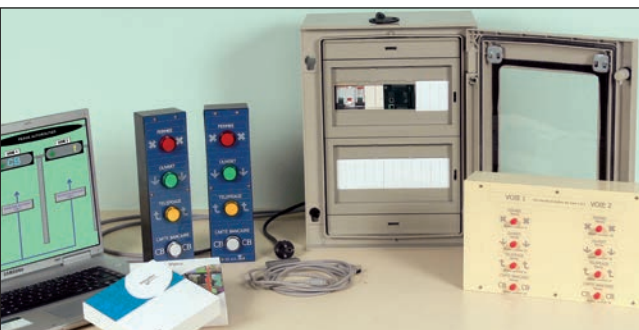
LIGHTING CONTROL SYSTEM WITH PLC



ref. COFEC

This model is a room lighting unit comprising an electrical cabinet and a console fitted with low-voltage spotlights. Using a TCP/IP PLC and monitoring software, it is possible to control the model and view its operation on a computer.

LIGHT SIGNS SYSTEM FOR A MOTORWAY TOLL



ref. AUTO-PEAG

Simulates a motorway toll. Comprises 1 electrical cabinet and 2 toll lane indication signs. Using a TCP/IP PLC and monitoring software, it is possible to control the model and view its operation on a computer.

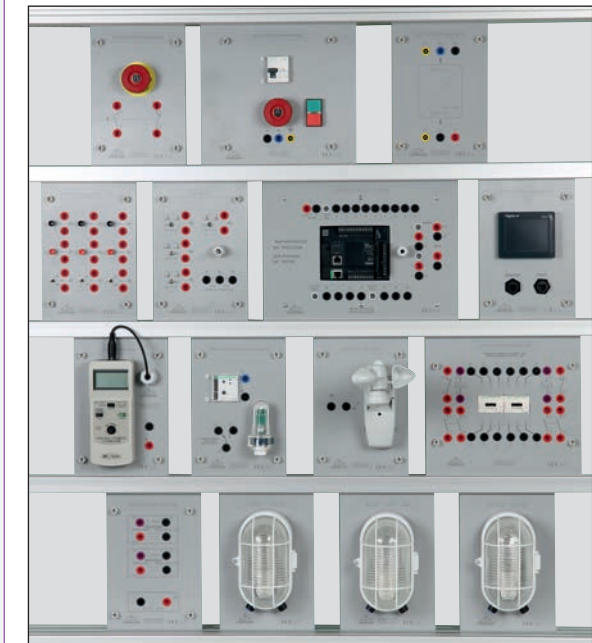
PUMPING STATION



ref. CHATO-SIM

This model simulates a drinking water pumping station. Using a TCP/IP PLC and monitoring software, it is possible to control the model and view its operation on a computer.

STUDY OF THE PROGRAMMING OF PLC AND HMI (HUMAN MACHINE INTERFACE)



EDUCATIONAL OBJECTIVES

- Study of a complete diagram with automation sensors and components for connecting to the inputs/outputs of a PLC.
- Study the configuration of an Ethernet for computers.
- Study the programming of a PLC in contact language.
- Study the programming of an HMI (Human Machine Interface).
- Study an analogue signal by current and voltage.
- Configure a Wifi network and control the components from a tablet (QUICK-ECPLUS only)

ref. QUICK-DPLUS (Siemens)

TEACHING RESSOURCES
STUDENTS / TEACHER

ref. QUICK-ECPLUS (Schneider)

AUTONOMOUS
WIFI NETWORK

TEACHING RESSOURCES
STUDENTS / TEACHER



Sockets on
the back of the
console for
connecting
the modules

SIMPLIFIED
STUDY OF M221
CONTROLLER



EDUCATIONAL OBJECTIVES

- To study the connection diagram of the inputs and outputs of a PLC.
- To study the configuration of a computer Ethernet.
- To study the programming of a PLC in contact language.
- To study the programming of an HMI (Human Machine Interface).
- Carry out a WiFi network configuration for ordering on a tablet or smartphone (QUICK-AK9-C only).

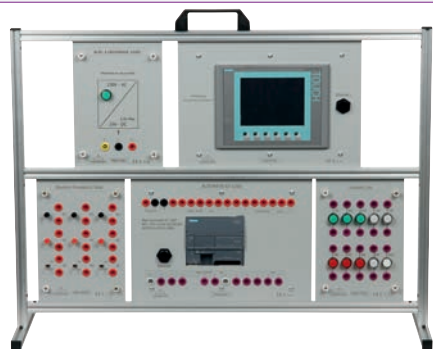
ref. QUICK-AK9

ref. QUICK-AK9-C version communicante

TEACHING RESSOURCES STUDENTS / TEACHER

AUTONOMOUS WIFI NETWORK

SIMPLIFIED
STUDY OF
SIEMENS
CONTROLLER



EDUCATIONAL OBJECTIVES

- To study the connection diagram of the inputs and outputs of a PLC.
- To study the configuration of a computer network type Profinet.
- To study the programming of an automaton in ladder language.
- To study the programming of an HMI (Human Machine Interface).

ref. QUICK-AK91

TEACHING RESSOURCES STUDENTS / TEACHER

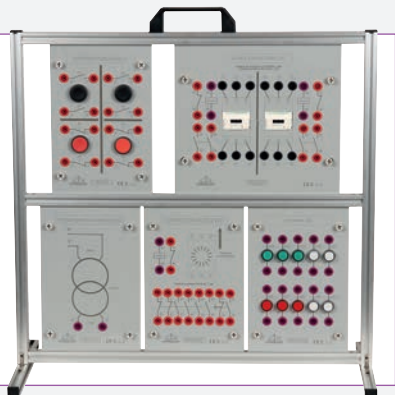
STUDY OF CONTACTOR + TIMING

EDUCATIONAL OBJECTIVES

- To study the connection diagram of 2 contactors and 1 timer
- To study the configuration of a timer.

ref. QUICK-AK10

TEACHING RESSOURCES STUDENTS / TEACHER



Technical
datasheets
on our website

MANAGING OF HYPERMARKET LIGHTING
BY SUPERVISION

EDUCATIONAL OBJECTIVES

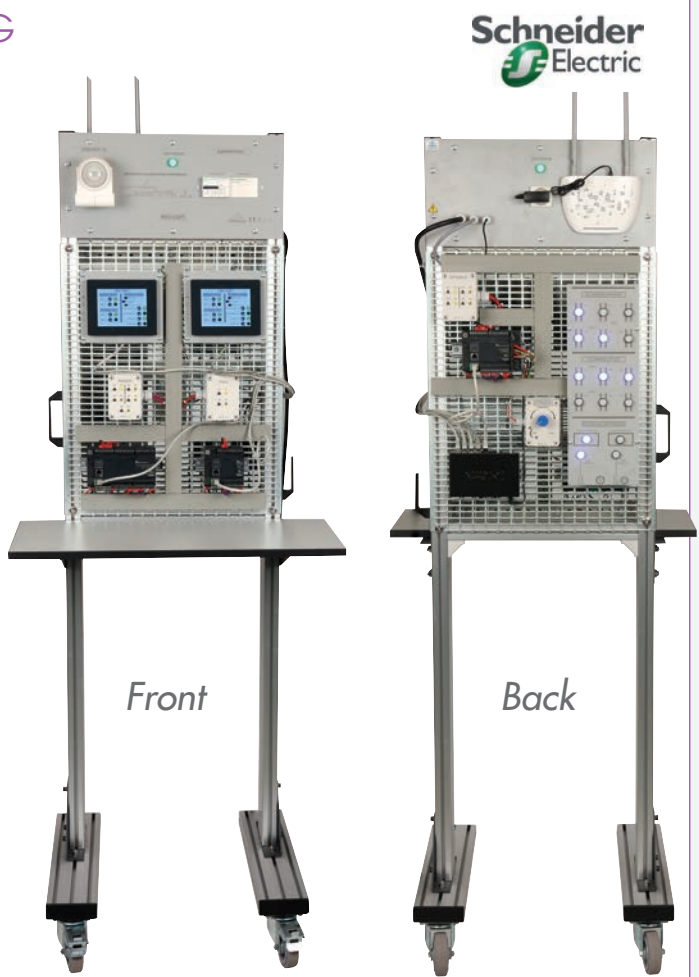
- Study and putting into service of a lighting management system for hypermarket by supervision
- Studying the configuration of an Ethernet type computer network
- Studying the programming of a PLC in contact language
- Studying the programming of an HMI (Human Machine Interface)
- Studying the coexistence of several PLCs and HMIs

ref. MAQ-LIGHT

DELIVERED
WIRED & SET

AUTONOMOUS
WIFI NETWORK

TEACHING RESSOURCES
STUDENTS / TEACHER



STUDY PLC SIEMENS® WITH SUPERVISION
SIMULATION OF LIGHTING COMMERCIAL SPACES

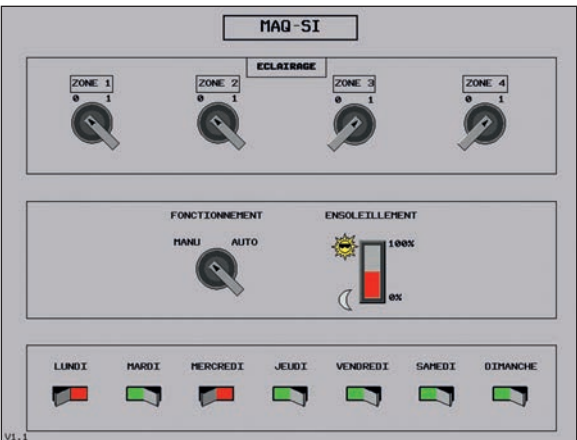
EDUCATIONAL OBJECTIVES

- Study of a wiring diagram developed in automation.
- Study and operation of a PROFINET® computer network
- Study of the programming of a SIEMENS® PLC.
- Study of the programming of an HMI (Human Machine Interface).

ref. MAQ-SI

DELIVERED
WIRED & SET

TEACHING RESSOURCES
STUDENTS / TEACHER



SIEMENS



FIELD BUS STUDY FOR PROFINET AND PROFIBUS
SIEMENS® COMPONENTS

SIEMENS



 Technical datasheets on our website



DELIVERED WIRED & SET AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER

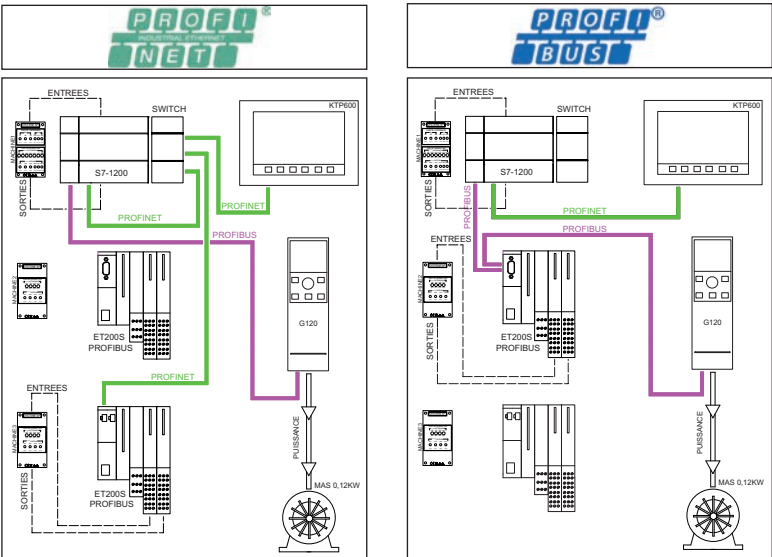
EDUCATIONAL OBJECTIVES	MAQ-NET	MAQ-NET1	MAQ-NET2
Studying of Fieldbus communication between different automatism components	✓	✓	✓
Profinet® cabling study	✓	✓	✓
Profibus® cabling study	✓		
Configuration of Profibus® components	✓		
Configuration of Profinet® components	✓	✓	✓
Configuration of remote inputs / outputs	✓	✓	
Setting the dimmer in Wifi	✓	option SIE-WI	option SIE-WI
Programming of an HMI, PLC, drive assembly	✓	✓	✓

RECOMMENDED SOFTWARE OPTION
LOG-STEP is highly intuitive.
On-line help and the practical assignments let students learn quickly with the different programming screens.
Compatible Windows 7 (64bits) / Windows 10 (64bits) / Windows server (64bits).

ref. LOG-STEP

WIFI CONSOLE OPTION (included on MAQ-NET)
Wifi module designed for quick commissioning, parameter setting and maintenance of drives SINAMICS G120. It is easily connected to the front panel of the drive, replacing the rotary button control module.

ref. SIE-WI



Wiring and Bus Diagrams of the MAQ-NET version

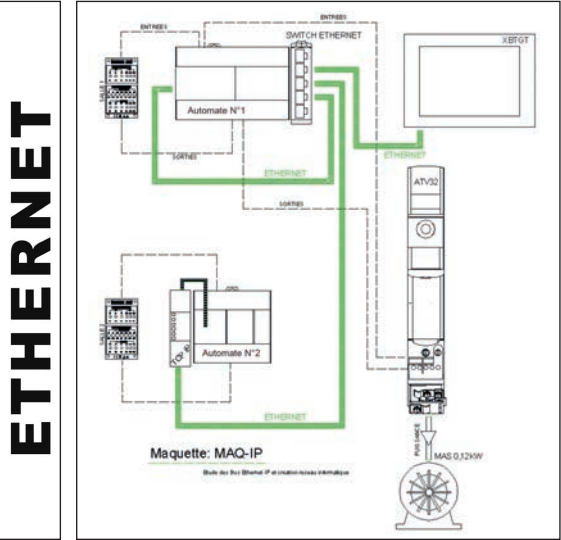
FIELD BUS STUDY FOR ETHERNET
SCHNEIDER® COMPONENTS

Schneider Electric 

- EDUCATIONAL OBJECTIVES**
- Study of field bus communication between different automation components
 - Study of Ethernet cabling and creation of an IP network
 - Configuring Ethernet components
 - Set up a Wifi network and control the components from a tablet
 - Configure a variable speed drive
 - Configure an HMI
 - Configure an automaton
 - Configure the association of 2 remote PLCs (MAQ-IP / MAQ-IP-N version only)

ref. MAQ-IP version with 2 PLC - on wheels
ref. MAQ-IP-N version to put on table

DELIVERED WIRED & SET AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER

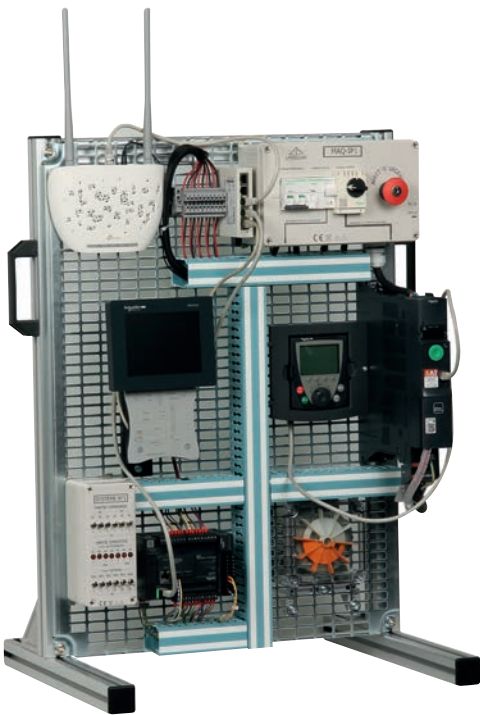
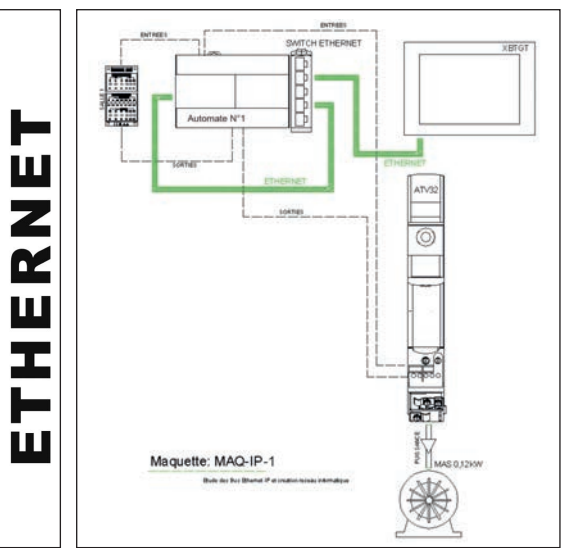


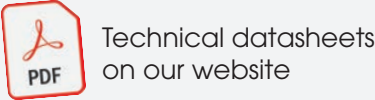
 Technical datasheets on our website



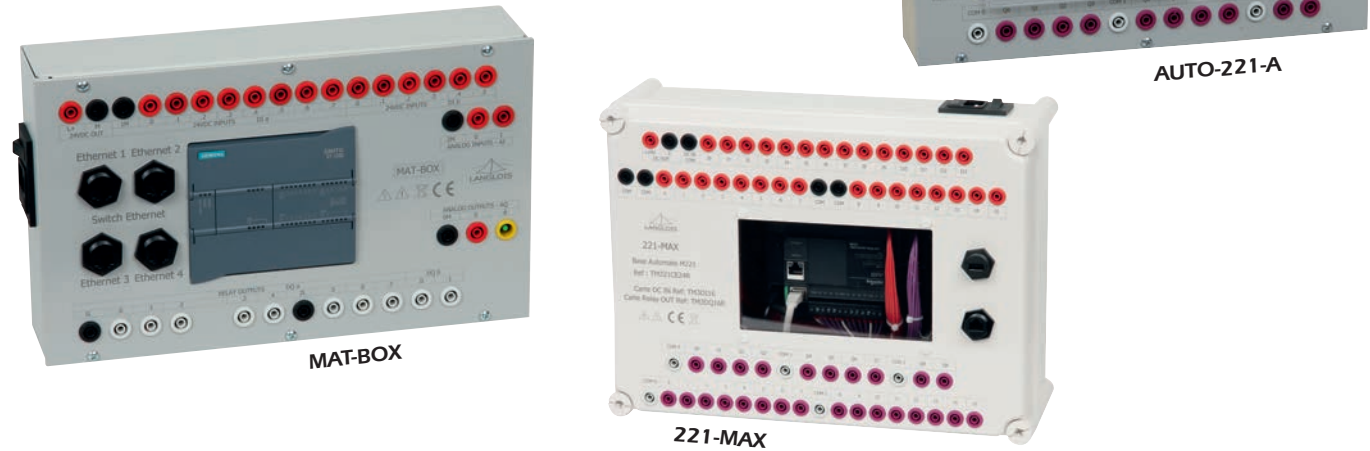
ref. MAQ-IP-1 simplified version (1 PLC only)

DELIVERED WIRED & SET AUTONOMOUS WIFI NETWORK TEACHING RESSOURCES STUDENTS / TEACHER

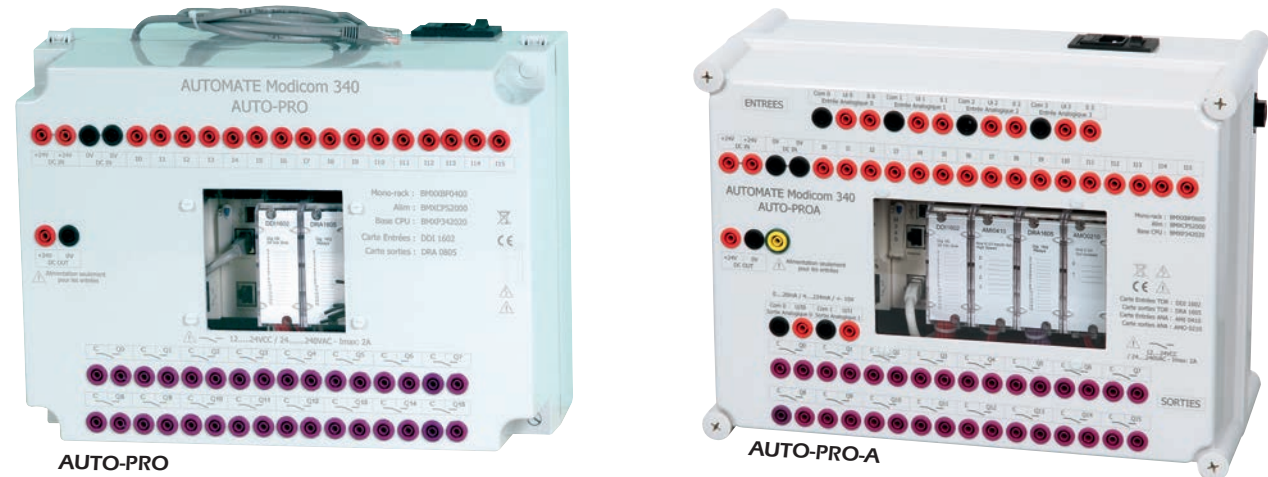




INTEGRATED PLC UNITS



Ref.	S7-MAX	MAT-BOX	AUTO-221	AUTO-221-A	221-MAX	AUTO-PRO	AUTO-PROA
Brand	SIEMENS		SCHNEIDER				
Model	SIMATIC S7-1200		M221			MODICOM M340	
Software	LOG-STEP (option)		EcoStruxure Machine Expert Basic (supplied)			CONTROL EXPERT (option)	
Nb of inputs	30 inputs 24VDC	14 inputs 24VDC	14 inputs 24VDC		30 inputs 24VDC	16 insulated inputs 24Vcc	
Number of outputs	26 All or Nothing outputs 2A max	10 All or Nothing outputs 2A max on resistive load			26 All or Nothing outputs 2A max	16 All or Nothing outputs 2A max	
Analog	no	2 inputs 0-10VDC 1 output 0-10VDC or 4-20mA	no	2 inputs PT100 1 output 0-10VDC or 4-20mA	2 analog inputs 0-10V	no	4 voltage / current inputs ±10V / 0-10V / 0-5V / 1-5V / ±5V 0-20mA / 4-20mA / ±20mA 2 voltage / current outputs ±10V / 0-20mA / 4-20mA
Ethernet	yes + 1 mini switch 4 ports RJ45		yes			Ethernet module TCP/IP on RJ45	
Power supply	230VAC-50/60Hz by means of socket unit + switch					230VAC-50/60Hz by means of socket unit + switch	
Dimensions	330 x 200 x 80mm				380 x 280 x 180mm	360 x 270 x 170mm	
Supplied with	1 Ethernet RJ45 3-m cable. 6 practical works (PLC configuration, use and programming.)		1 Ethernet RJ45 3-m cable. 1 USB cable PC/PLC			1 ethernet RJ45 3-m cable.	



INTEGRATED TOUCHSCREEN UNITS



Réf.	TOUCH-BOX	ST6-BOX6
Brand	SIEMENS	PRO-FACE by SCHNEIDER
Model	Simatic KTP700	ST6
Software	LOG-STEP (in option)	BLUE (supplied)
Touchscreen	7" TFT 65536 colors	7" 16M colors
Resolution	800 x 480 pixels	
Ethernet	1 RJ45 connector	1 RJ45 connector
USB	-	1 USBA connector
Power supply	230VAC-50/60Hz by means of socket unit + switch	
Dimensions	330 x 200 x 80mm	
Supplied with	1 Ethernet RJ45 3-m cable. User's manual with tutorials.	1 Ethernet RJ45 3-m cable.

PROGRAMMABLE CONTROLS SYSTEM

This unit is a programmable interface working as a PLC with orders (inputs) and contacts (outputs). Its particularity is to integrate a clock which sets controls. Its programming software is very easy to use. Among its various and user-friendly functions, the function "SIMULATION" which allows to check the program before using it in real condition. A network communication module which can be used to connect the ZELIO to the Ethernet using the Modbus TCP protocole
Dimensions of the box: 360 x 270 x 170mm

- Ethernet module features:
- direct connection to the ZELIO
 - female RJ45 reinforced cable
 - a communication display LED (LK/ACT 10/100)
 - a STATUS display LED (STS)
 - 16 inputs 24V DC, 6 can be wired in analog inputs 0-10V
 - 10 dry contacts outputs
 - a display indicating state and local programming
 - 6 keys for local programming



ref. ZELIO-NET

PUMPING SYSTEMS WITH SUPERVISION AND REGULATION

EDUCATIONAL OBJECTIVES

- Study of the supervision of an industrial pumping station
- Study of the regulation of water level by all-or-nothing float sensor
- Study of the regulation of water level by hydrostatic sensor 4-20mA
- Study of the regulation of water flow rate by flowmeter 4-20mA
- To understand the operation of an industrial pumping system
- To take industrial measurements of electrical values
- To produce a PID program with a controller PLC
- To produce a PID program with a 4-20mA regulator
- To study Ethernet / IP addressing
- To learn how to use and configure a speed variator
- To perform industrial maintenance operations
- To study the analogue signal 4-20mA



4 communicating models to choose from (Schneider PLC)

ref. HYDRO-1-C / HYDRO-2-C / HYDRO-3-C / HYDRO-4-C



STANDARDS MODELS : 3-PHASE 400V
Available on single-phase 230V



4 communicating models to choose from (Siemens PLC)

ref. HYDRO-1-CSI / HYDRO-2-CSI / HYDRO-3-CSI / HYDRO-4-CSI



OPTIONS FOR HYDRO

Breakdown box

ref. HYDRO-PAN



Hydrostatic pressure sensor

ref. HYDRO-NIV



Flowmeter

ref. HYDRO-DEB



All or nothing flow sensor

ref. CO-DEB



Float flow indicator

ref. FLO-DEB



REGULATION OF LEVEL AND FLOW RATE BY PID HYDROSTATIC PRESSURE LEVEL SENSOR AND 4-20mA FLOW RATE SENSOR

EDUCATIONAL OBJECTIVES

- Putting an electrical installation into service.
- To learn about and use a PID regulator, a hydrostatic sensor, and a 4-20mA flowmeter.
- To use a regulation system for water level and flow rate by analogue signal 4-20mA.
- To use and configure a speed variator locally and from programming software.
- To measure, analyse and interpret analogue signals.
- To learn industrial maintenance.

PID communicating with software

Réf. MAQ-ND-C

Réf. MAQ-NIV-C without flow rate regulation



Operative part only
Réf. MAQ-ND-OP



Technical datasheets
on our website

WIRING OF A PUMPING STATION WITH CONTROL BOX

This operational section, equipped with a containment cabinet, allows, with optional grids, the study and implementation of the wiring for the different operating modes of a level-controlled pumping station. The instructor demonstrates the operation using a pre-wired grid (option GHYD1-AD or GHYD2-ADC). The student then wires their own grid (option KX-GHYD1 or KX-GHYD2) before installing it in the cabinet to perform the tests.

Student safety is ensured by a cabinet door opening detection system.

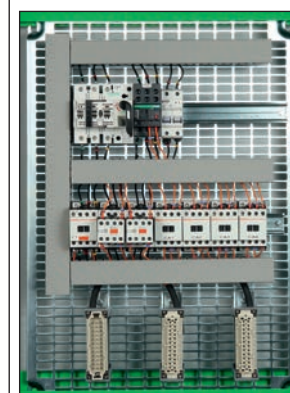
This system cuts off the power supply.

If necessary, a key switch allows this safety feature to be deactivated.

EDUCATIONAL OBJECTIVES (requires optional grids)

- Understand the operation of a level-controlled pumping station
- Wire the various operating modes
- Test the wiring by inserting the grid into the cabinet and connecting it to the pump
- Create the various wiring diagrams
- Record electrical measurements (measuring devices not provided)
- Study the operation of on-off and analog level sensors.
- Study the programming of a programmable logic controller with an analog output signal.
- Perform industrial maintenance operations.

TEACHER GRID OPTION WITH CONTACTORS (WIRED)



ref. GHYD1-ADC

Pre-wired grid for the design and wiring of a pumping station operating with contactors

Included:

- 1 wiring grid measuring 670 x 450 mm
- 1 lockable fuse-holder disconnect switch
- 1 double-pole fuse holder
- 1 three-pole contactor - 24V coil and 1 auxiliary contact block
- 1 thermal overload relay
- 5 auxiliary contactors - 24V coil
- 1 set of industrial male/female multi-point connectors



Réf. ADC-HYDRO

TEACHING RESSOURCES STUDENTS / TEACHER

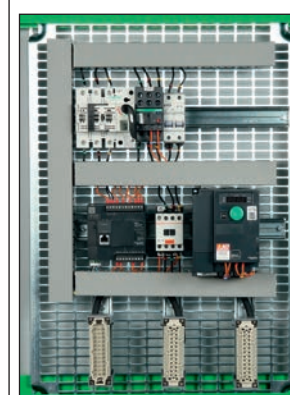
STUDENT GRID OPTION AS A KIT



ref. KX-GHYD1

Complete kit including all the components present on the teacher's grid allowing the student to carry out the complete wiring and testing on the operational part.

TEACHER GRID OPTION WITH DIFFERENTIAL AND PLC (WIRED)



ref. GHYD2-ADC

Pre-wired grid for the design and wiring of a pumping station operating with a variable frequency drive (VFD) and a programmable logic controller (PLC)

Included:

- 1 wiring grid measuring 670 x 450 mm
- 1 lockable fuse holder disconnect switch
- 1 double-pole fuse holder
- 1 thermal overload relay
- 1 three-pole contactor - 24V coil
- 1 three-phase input/output variable frequency drive (VFD) 3 x 400VAC - 370W
- 1 Schneider® M221 PLC with analog output card
- 1 set of industrial male/female multipoint connectors
- 1 PLC programming software
- 1 SoMove VFD programming software

STUDENT GRID OPTION AS A KIT



ref. KX-GHYD2

Complete kit including all the components present on the teacher's grid allowing the student to carry out the complete wiring and testing on the operational part.

LEVEL CONTROL SYSTEM BY MEANS OF PLC & TOUCHSCREEN

EDUCATIONAL OBJECTIVES

- Studying, putting into service, getting started and setting of the system
- Understanding the setting and the programming by PLC
- Understanding the PID level regulation, probes and sensors
- Study of Ethernet cabling and creation of an IP network
- Set up a Wifi network and control the components from a tablet

ref. REGULEAU-C

DELIVERED
WIRED & SET

AUTONOMOUS
WIFI NETWORK

TEACHING RESSOURCES
STUDENTS / TEACHER

Practical works

- Drawing of wiring diagrams
- Setting and programming the PLC
- Configuration of the PC Ethernet links / PLC / Touch Screen
- Configuration and setting of the touch screen
- Setting the 4-20mA water level regulation with the PID of the programmable PLC
- Wiring the grid
- Understanding the functioning of the level regulation by PID, probes and sensors



SUPPLIED WITH A
4-20mA LOOP
CALIBRATOR



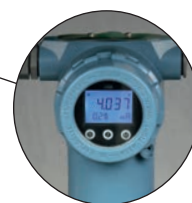
SYSTEM FOR WATER LEVEL AND FLOW REGULATION BY PID

OBJECTIFS PÉDAGOGIQUES

- Studying, putting into service, getting started and setting of the system
- Understanding and setting of the PID level regulation
- Calculating the span & zero offset of a level measurement by hydrostatic pressure of wet column. Adjust the level transmitter
- Wiring, putting into service & adjustment of components: transmitter, regulator...
- Make current measurements as in industry, without opening loops, with the help of a multimeter.
- Taking in hand the setting software of the frequency converter.

ref. DESNIV

TEACHING RESSOURCES STUDENTS / TEACHER



4-20mA hydrostatic
pressure sensor

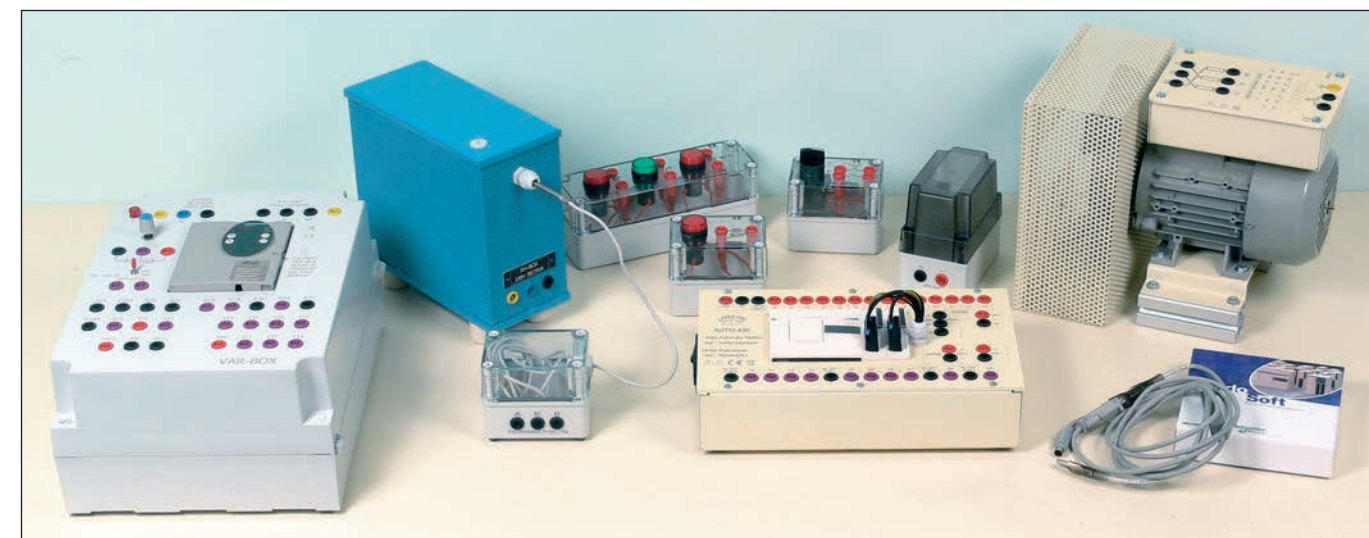
PRINCIPE DE FONCTIONNEMENT

Le but consiste à régler le niveau d'eau dans une colonne en polycarbonate transparent, diamètre 160mm, hauteur 1370mm. Une pompe élève l'eau d'un réservoir de 50 litres placé en partie basse vers la colonne. L'eau s'écoule en permanence de la colonne vers le réservoir par gravité à travers la vanne "réglage débit". Le régulateur PID reçoit l'information «niveau d'eau» provenant d'un capteur 4-20mA. Il compare ce signal à la consigne de niveau, et pilote le débit de la pompe, via un variateur de fréquence. Le système fonctionne selon deux modes : asservissement et régulation. Dans ce dernier cas, une vanne manuelle crée la perturbation.



Technical datasheets
on our website

TEMPERATURE CONTROL BY PLC



Réf. REGULAIR

USER'S MANUAL WITH PRACTICAL WORKS

EDUCATIONAL OBJECTIVES

- Studying the analogical regulation loop
- Studying the role of the frequency converter in a regulation system
- Understanding the PID configuration by PLC

SUPPLIED READY FOR OPERATION WITH THE TECHNICAL INSTRUCTIONS, THE PROGRAMMING SOFTWARE AND THE PLC PROGRAMS WHICH CORRESPOND TO THE VARIOUS TUTORIALS TO BE UNDERTAKEN. ALL OF THE COMPONENTS CAN BE SOLD SEPARATELY.



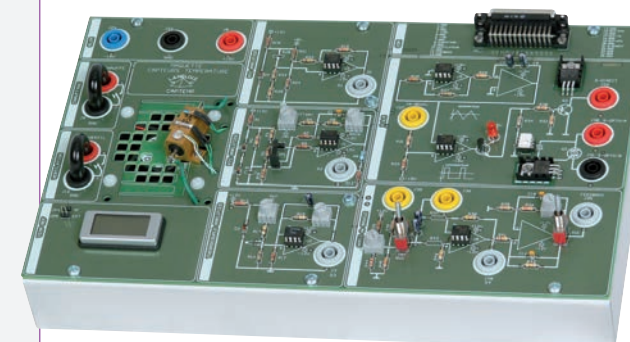
SYSTEM FOR HEAT REGULATION BY PID

EDUCATIONAL OBJECTIVES

- Understanding of the regulation principles by PID, from theory to practice.
- Wiring, calibration, loop measuring, statement of curves.

Réf. DESP

USER'S MANUAL WITH PRACTICAL WORKS



TEMPERATURE SENSORS & HEATING CONTROL

EDUCATIONAL OBJECTIVES

- Studying the regulation of temperature all or nothing
- Studying the regulation of temperature with control loop with variable gain
- Studying of thermal sensors: thermocouple, thermistor NTC and PTC.

Réf. CAPTEMP

USER'S MANUAL WITH PRACTICAL WORKS

ALL OR NOTHING TEMPERATURE REGULATION

EDUCATIONAL OBJECTIVES

- Understanding and wiring of a regulation chain All-Or-Nothing.
- Studying, setting, control of a All-Or-Nothing regulator.
- Retrieving information by computer.
- Understanding of the link resistance / temperature as measuring principle.

ref. REGULATOR

USER'S MANUAL WITH PRACTICAL WORKS



PID TEMPERATURE REGULATION

EDUCATIONAL OBJECTIVES

- Understanding and wiring of a regulation chain of temperature by PID
- Studying, setting, control of a PID regulator
- Retrieving information by computer.
- Understanding of the link resistance / temperature as measuring principle.

ref. REGULIDE

ref. REGUL-G communicating version

USER'S MANUAL WITH PRACTICAL WORKS



MODULAR VERSIONS



ref. QUICK-REG with frame

ref. QUICK-REG-N without frame

Technical datasheets
on our website

PIUD AND ON/OFF REGULATION TRAINING SUITCASE



ref. VAL-REG-C

DELIVERED
WIRED & SETTEACHING RESSOURCES
STUDENTS / TEACHER

EDUCATIONAL OBJECTIVES

- Understanding of the temperature control chain wiring.
- Understanding of the operating principle of each of the components
- Understanding of the operating principle of a 4-20mA signal
- Understanding of the advantages and disadvantages of PID regulation compared to ON/OFF action

Safe wiring via 4mm terminals. Safety cables and power cord are included. Component identification information and other technical specifications are silkscreened on the sides.

A regulator is the corrective organ inserted in a control loop, intended to control a process (boiler, compressor, pump, etc.). It receives a 4-20mA signal from a sensor, image of the quantity to be regulated (temperature, pressure, flow rate, etc.), compares it to the setpoint (previously programmed) and controls the process to reduce the "quantity to be regulated / setpoint" gap.

The included software allows the visualization of values in real time and the recovery of data in computer form. The configuration of the controller is also possible via the use of the PC.

CHAIN COMPONENTS OF REGULATION

HEATING UNIT



ref. RH-BOX

PT100 TEMPERATURE SENSOR



ref. PT100-BOX

ALL OR NOTHING REGULATORS



ref. TOR2002-BOX

PT100 - 4-20mA TEMPERATURE CONVERTER



ref. TMPT-BOX

PID REGULATORS



ref. AT403-BOX



ref. PID-C communicating version

SCR POWER CONTROLS

ref. CIA-GRA30T 3-phase

ref. CIA-GRA30M single



ref. GRAD-BOX single

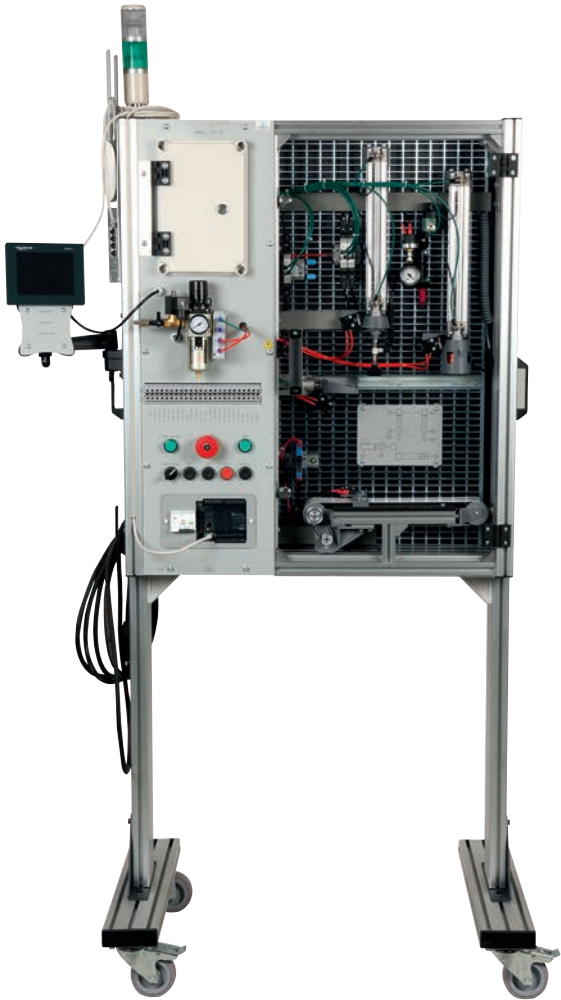


SMART PNEUMATIC CHAIN:
DIAGNOSTICS AND MAINTENANCE

EDUCATIONAL OBJECTIVES (DEPENDING ON VERSION) —

- Learn about pneumatic components
- Understand an electro-pneumatic circuit
- Study the control and safety devices
- Understand an operating cycle
- Commission and take control of pneumatic equipment
- Find and diagnose faults
- Learn the fundamentals of industrial automation
- Set up and program a PLC
- Program a manual mode using buttons
- Program an automatic mode
- Become familiar with supervision
- Set up and program an HMI
- Program a supervised mode
- Become familiar with the Ethernet network
- Study Ethernet / IP addressing
- Study Wi-Fi communication
- Control the system remotely via Wi-Fi communication

ref. PNEU-24-C	communicating version
 AUTONOMOUS WIFI NETWORK	TEACHING RESSOURCES STUDENTS / TEACHER
ref. PNEU-24	no communicating version
ref. PNEU-24-OP	operative part onlye



TRAINING SUITCASE
ON PNEUMATIC SYSTEMS

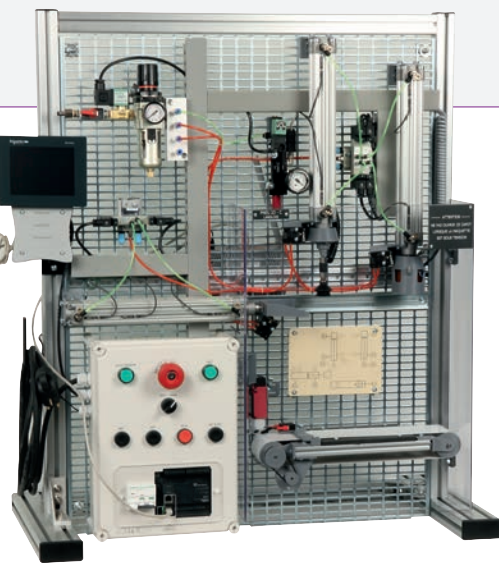
EDUCATIONAL OBJECTIVES —

- Discover pneumatic components
- Understanding an electropneumatic circuit
- Commissioning and handling pneumatic equipment
- Handle the wiring of the various components.

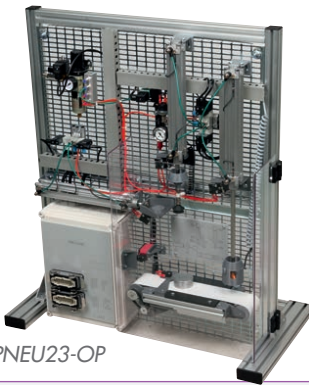
Possible practical work —

- Study and realization of electrical and pneumatic diagrams
- Identification of components
- Realization of pneumatic and electrical connections
- Analysis of an operating cycle
- Connection of different components to launch functionalities

ref. VAL-PNEU	
DELIVERED WIRED & SET	TEACHING RESSOURCES STUDENTS / TEACHER



Ref. PNEU23-C



Ref. PNEU23-OP

PNEUMATIC HANDLING LINE

EDUCATIONAL OBJECTIVES (DEPENDING ON VERSION) —

- Introduction to pneumatic components
- Commissioning, handling of pneumatic equipment
- Controlling the system in manual mode
- Controlling the system in sequential mode
- Approach to programming by PLC
- Controlling the system in automatic mode
- Setting up and programming a PLC
- Setting up and programming an HMI
- Familiarising yourself with supervision
- Studying Ethernet/IP addressing
- Studying communication via Wifi

ref. PNEU23-OP	without PLC
ref. PNEU23	with PLC - software
ref. PNEU23-C	communicating version

TEACHING RESSOURCES
STUDENTS / TEACHER



The communicating version is equipped with an HMI and a Wifi switch to allow supervision of the entire model.

AUTONOMOUS
WIFI NETWORK

STUDY OF PNEUMATIC COMPONENTS

EDUCATIONAL OBJECTIVES —

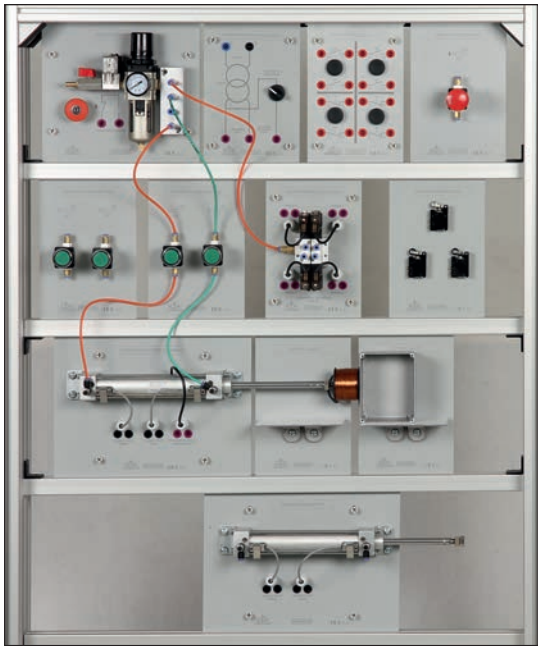
- To study the symbols used to represent pneumatic components
- To study the operation of a double-acting cylinder
- To study the operation of a double-acting cylinder with electromagnet
- To study the wiring of pneumatic and electropneumatic automation



ref. QUICK-PN1PLUS

TEACHING RESSOURCES
STUDENTS / TEACHER

Sockets on the back
of the console for
connecting
the modules



COMPRESSOR OPTION

ref. PRESS-35



- Flow rate: 70 l/min
- Connection: 4mm
- Pressure adjustable from 0 to 6 bars
- Tank volume: 4 litres
- Power: 180W
- Sound level: 70dBA (very low sound nuisance)
- Power supply: 230V AC 50Hz
- Dimensions: 385 x 205 x 325mm - Weight: 8.4kg

 Technical datasheets
on our website

PUMPING
SYSTEM

ref. HYDRO-OP



CABINET OPTION
& DEDICATED GRIDS

ref. MA8



GOP-HYD1 delivered pre-wired

KX-GOPH1 delivered as a kit

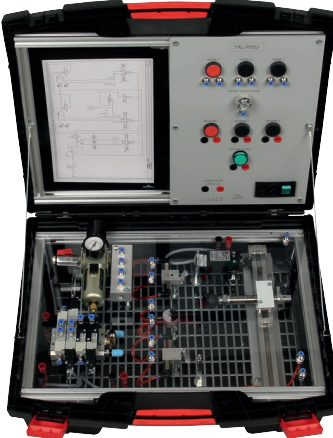
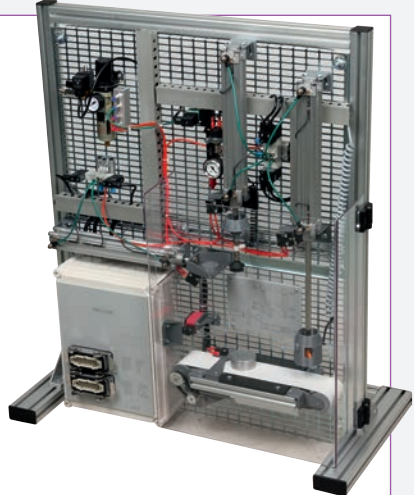
SMART
PNEUMATIC
CHAIN WITH
MAINTENANCE

ref. PNEU24-OP



PNEUMATIC
CHAIN

ref. PNEU-23-OP



SUITCASE ON
PNEUMATIC
SYSTEMS

ref. VAL-PNEU



BELT CONVEYOR
ON SUITCASE

ref. VAL-TAP

INDUSTRIAL BELT
CONVEYORS

ref. CONV-1



ref. CONV-2

SUPERMARKET
CHECKOUT SIMULATOR

ref. TAPIX



DIDACTIC
LIFT

ref. ASC19



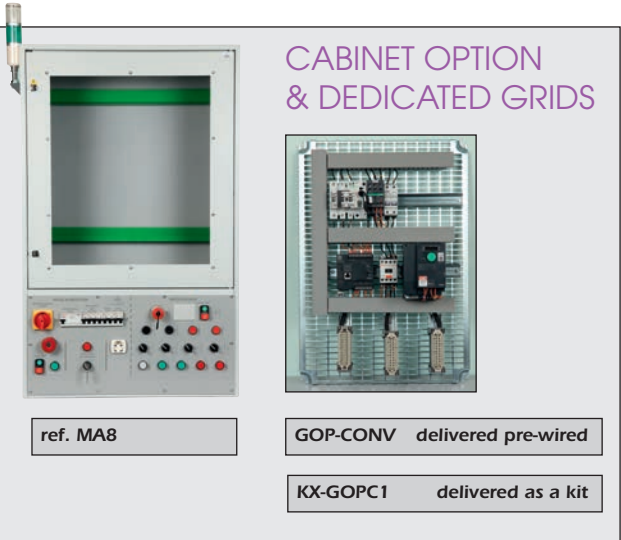
REGULATION
OF LEVEL AND FLOW
RATE BY PID

ref. MAQ-ND-OP



CABINET OPTION
& DEDICATED GRIDS

ref. MA8

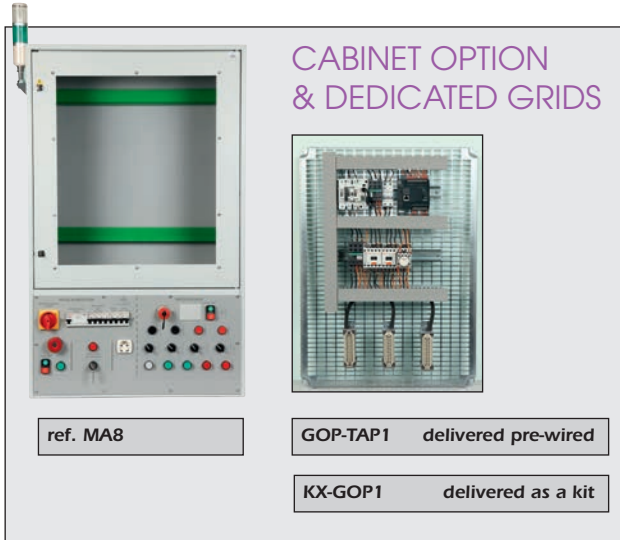


GOP-CONV delivered pre-wired

KX-GOPC1 delivered as a kit

CABINET OPTION
& DEDICATED GRIDS

ref. MA8



GOP-TAP1 delivered pre-wired

KX-GOP1 delivered as a kit

SIMULATOR FOR CHECKING
CONTROLLER (PLC)
PROGRAMMING

ref. PUP-PLC



SOLAR
TRACKER

ref. TRACSOL-OP



FAULT FINDING IN MOTOR

EDUCATIONAL OBJECTIVES

- Simulating common failures encountered with a cage induction motor with brake: damage winding, cut, shorted to ground
- Diagnosis by performing measurements and safety tests

Practical works

- Cut Winding
- Winding in short circuit
- Winding to ground
- Damaged winding
- Cut brake control system

The user's manual has been made by teachers, allowing the quick implementation of the product and the creation of practical work in the spirit of fault finding in the industry.

ref. MOTODIAG

USER'S MANUAL WITH PRACTICAL WORKS

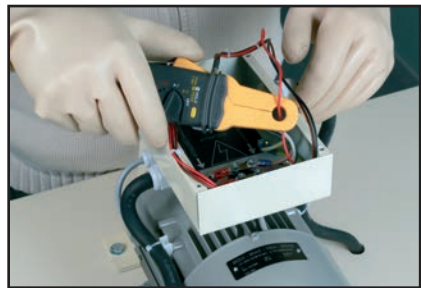
This complete kit on casters, comprising two back-to-back units and an asynchronous squirrel cage motor and a parking brake.

PRINCIPLE

Faults are recreated when the teacher rotates a single switch. Students can take measurements or perform tests in complete safety, regardless of the fault type. Faults can be looked for inside the student unit and in the motor terminal. The unit is isolated from the mains by means of an insulation transformer. In addition, a TT earthing system is recreated on the secondary for safety reasons. Therefore, even isolation faults are detected by a 30mA differential mechanism. All safety measures are implemented in order to protect individuals and equipment. (See the faults in the description of the teacher unit)



View of the teacher side, door closed and open.



Faults can be looked for inside the student unit and in the motor terminal.

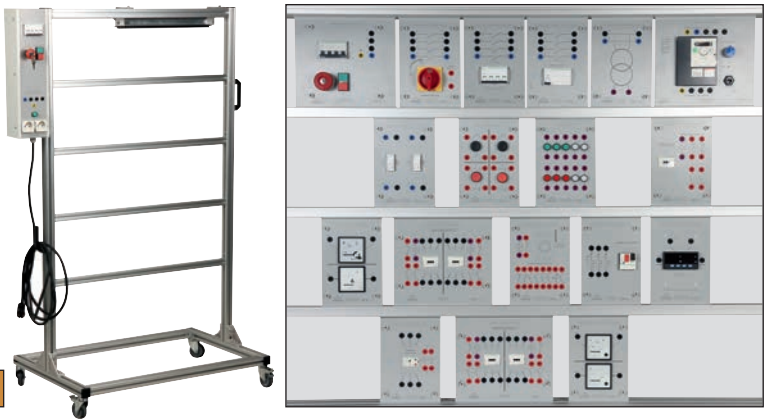
STUDY OF WIRINGS FOR STARTING ASYNCHRONOUS MOTORS

EDUCATIONAL OBJECTIVES

- Study of wiring diagrams for starting asynchronous motors.
- Study and operation of direct start-up.
- Study and operation of direct start-up with reversal of the direction of rotation.
- Study and operation of star/delta start-up.
- Configuration of a speed controller with software.
- Study and operation of start-up with speed controller.
- Using a digital wattmeter, ammeter and voltmeter.

ref. QUICK-CPLUS

TEACHING RESSOURCES STUDENTS / TEACHER



MOTOR-FAN OPTION

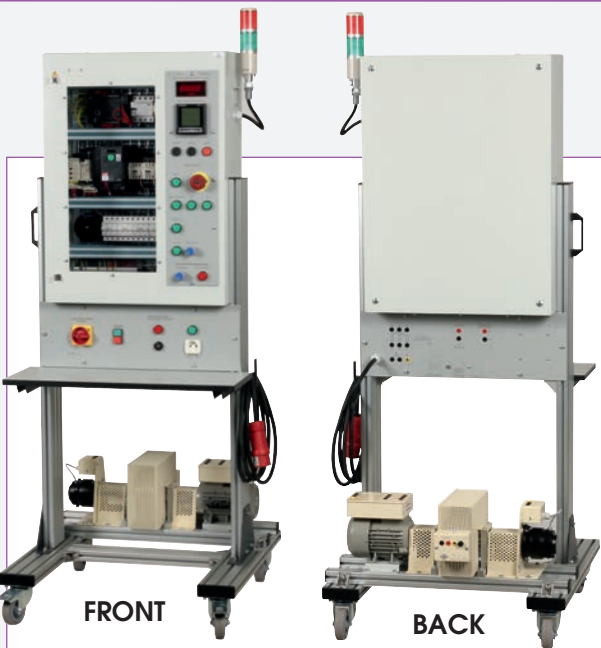
QUICKCPLUS can be completed by a fan.

- 300W 400/690V three-phase fan
- Rated speed 1500 rpm
- Power supply through 4mm dual chamber safety terminals

ref. KT-1M



Protection grid removed for photo purposes only



FRONT

BACK

MOTOR START-UP STUDIES

EDUCATIONAL OBJECTIVES

- Understanding the different ways of starting an induction motor

Proposed Practical Works

- Studying of the functioning star/delta starting, direct, by frequency converter, by soft starter
- Statement of engine characteristics, taking measurement of U and I
- Study of current transformers
- Modification of the acceleration and deceleration ramp of the frequency converter
- Setting the PC connection – PLC

ref. DEMARAC

USER'S MANUAL WITH PRACTICAL WORKS

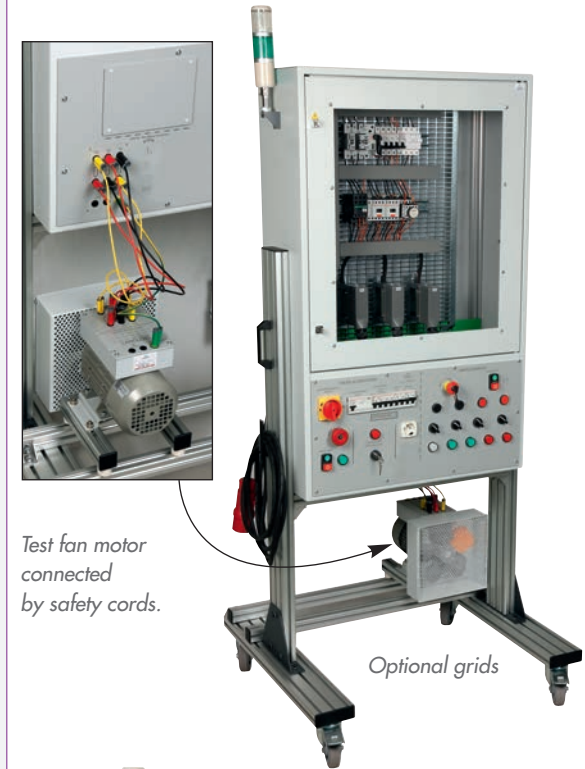
WIRING OF THE DIFFERENT ENGINE STARTING MODES

EDUCATIONAL OBJECTIVES

- Wiring the various starting modes of an asynchronous motor (with optional grids)
- Testing the wiring by connecting the grid to the motor
- Taking electrical measurements (measuring devices not included)

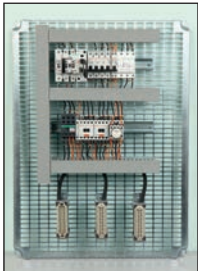
ref. ADC-DEM

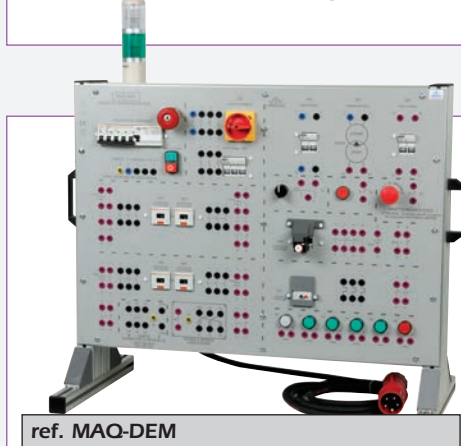
TEACHING RESSOURCES STUDENTS / TEACHER



Test fan motor connected by safety cords.

Optional grids

Grid Option	Grid Option	Grid Option	Grid Option
Star/delta start	Direct start and 2 directions of rotation	Engine start with variator	Soft start of an engine
			
ref. GET2-ADC	ref. G2S2-ADC	ref. GVAR2-ADC	ref. GPRO-ADC



ref. MAQ-DEM

DELIVERED WIRED & SET

TEACHING RESSOURCES STUDENTS / TEACHER

STUDY OF ASYNCHRONOUS MOTOR STARTS

ref. VAL-DEM-1

DELIVERED WIRED & SET

TEACHING RESSOURCES STUDENTS / TEACHER

EDUCATIONAL OBJECTIVES

- Understand the different starting modes of an asynchronous motor
- Know the role and identify the different elements of electrical protection



STUDY OF AN ASYNCHRONOUS MOTOR 1500W WITH POWDER BRAKE



Sets of modules (H-250mm) and rotating machinery for studying an asynchronous motor 1500W coupled with a powder brake with torque sensor and tachometer generator.

ref. QUICK-FPLUS (single-phase)

Requires connection to a mains single-phase electricity supply 230V AC

ref. QUICK-FTPLUS (3-phase)

Requires connection to a mains 3-phase electricity supply 3 x 400V AC + Neutral

TEACHING RESOURCES STUDENT / TEACHER

EDUCATIONAL OBJECTIVES

- Study the wiring diagram between a speed controller and an asynchronous motor.
- Study the configuration of a speed controller using SoMove software.
- Study the no-load behaviour of a three-phase asynchronous motor 1500W.
- Study the with-load behaviour of a three-phase asynchronous motor 1500W.
- Read and plot the electrical and mechanical characteristics of an asynchronous motor.



STUDY OF THE SYNCHRONIZATION OF AN ALTERNATOR WITH THE ELECTRICAL GRID



Set of modules (H-250mm) and rotating machinery for studying the synchronization of an alternator 1500W with the electricity grid 3 x 400V.

ref. QUICK-JPLUS

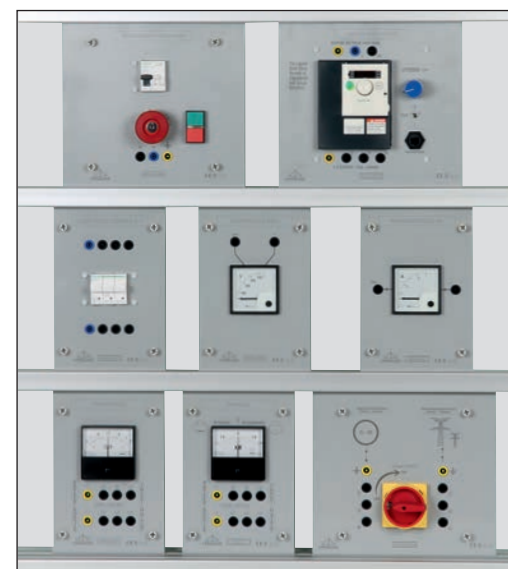
TEACHING RESOURCES STUDENT / TEACHER

EDUCATIONAL OBJECTIVES

- Understand the operation of a synchronous alternator.
- Understand the rules of synchronization with the electricity grid.
- Use a synchronoscope.
- Study the wiring diagram between a speed controller and an asynchronous motor.
- Creation of the configuration of a speed controller with software.
- Study the no-load and with-load behaviour of a 3-phase asynchronous motor 1500W.
- Study the no-load and with-load behaviour of an alternator.
- Read and plot the electrical and mechanical characteristics of the motor bench.



STUDY OF THE BEHAVIOUR OF A MACHINE IN HYPO AND HYPERSYNCHRONY



An asynchronous motor can convert mechanical energy into electrical energy. To perform this conversion, it has to be driven above the synchronous speed. QUICK-IPLUS is a set of modules of measurement (H-250mm) of switching and 2 asynchronous motors mounted on the same axis of rotation for studying hypersynchrony. The speed controller module drives the first motor above its synchronous speed so that the second becomes a three-phase generator. A central zero wattmeter module indicates the direction of the electrical energy consumed or fed in the case of feeding into the grid. A central 0 phase-meter module demonstrates the change of power factor according to the addition of capacitors or speed variation.

ref. QUICK-IPLUS

TEACHING RESOURCES STUDENT / TEACHER

EDUCATIONAL OBJECTIVES

- Study the hypohyper-synchronous operations of an asynchronous motor.
- Study the effect of a battery of capacitors on the power factor value.
- Study the synchronisation with the national grid.
- Study energy use at an isolated site.
- Calculate the efficiencies of an energy production system.
- Use a clamp ammeter.



Technical datasheets
on our website



Technical datasheets
on our website

DEMO PLUG AND PLAY MOTOR AC OR DC

EDUCATIONAL OBJECTIVES

- Understanding the different types of electrical motors & generators.
- Studying the operating characteristics of each device.

FEATURES OF DEMO-AC

Works with the 3-phase variable 0-48V 15A power supply (not included).

Presentation: The interconnection of the windings on to a didactic terminal box provides a visual understanding of the coil of the various electrical machines and their functions. Users are able to see the position of the brushes and their movement. It is powered by 48 volt ELV.

A full user manual is provided with the motor/alternator.

ref. DEMO-AC 48V alternating current

TEACHING RESSOURCES

FEATURES OF DEMO-DC

Works with the 3-phase variable 0-48V 15A power supply (not included).

Presentation: The interconnection of the windings on to a didactic terminal box provides a visual understanding of the coil of the various electrical machines and their functions. Series poles can be added or removed to/from the shunt poles to create a compound machine. Users are able to see the position of the brushes and their movement. It is powered by 48 volt ELV.

A full user manual is provided with the motor/alternator.

ref. DEMO-DC 48V direct current unit

TEACHING RESSOURCES

OPTION POWER SUPPLY BENCH FOR DEMO-AC & DC

Workbench for the study of motors ref. DEMO-AC and DEMO-DC.
Fitted with a 1200 x 750mm worktop and a 250mm width electrical cabinet.
High mechanical and high temperature resistance stratified worktop.

The lateral console delivers below outputs:

- variable 3-phase + N 0-48V / 15A per phase, usable in two-phase
- variable DC 0-48V / 6A
- 12V DC / 4,2A
- 2 x 230V power sockets (2P+E)

MOBILE VERSION WITHOUT TABLE
POWER SUPPLY ON WHEELS

ref. ALI-DEMO-M



ref. ALI-DEMO



DISMANTLED MOTOR

MAS-DEM educational objective is theoretical research into, and discovery of, the 3-phase asynchronous squirrel-cage motor. Presented in a case containing:

- The motor carcass with stator wiring, fitted with a terminal block.
- The squirrel-cage rotor.
- The left and right flanges + fan.
- Screws + screwdriver kit

The 370W motor can be assembled and disassembled depending on needs.

This provides a better understanding of three-phase motor technology.

The instructions cover all theoretical research into the operation and technology involved in the 3-phase squirrel-cage motor

FEATURES OF THE CASE

- Dim. 534 x 427 x 182mm
- Weight: 10Kg

ref. MAS-DEM

AUTOMATICALLY CONTROLLED SYNCHRONOUS MACHINE

SCOPE OF SUPPLY

Supplied complete and in working order, together with:

- 1 wound stator
- 2 additional bare combs for winding
- enamelled wire dia. 0.5 mm
- 14 leads dia. 2 mm
- 1 full set of instructions with amended tutorials.

Dimensions : 425 x 300 x 110mm. Weight : 6.5kg.

EDUCATIONAL OBJECTIVES

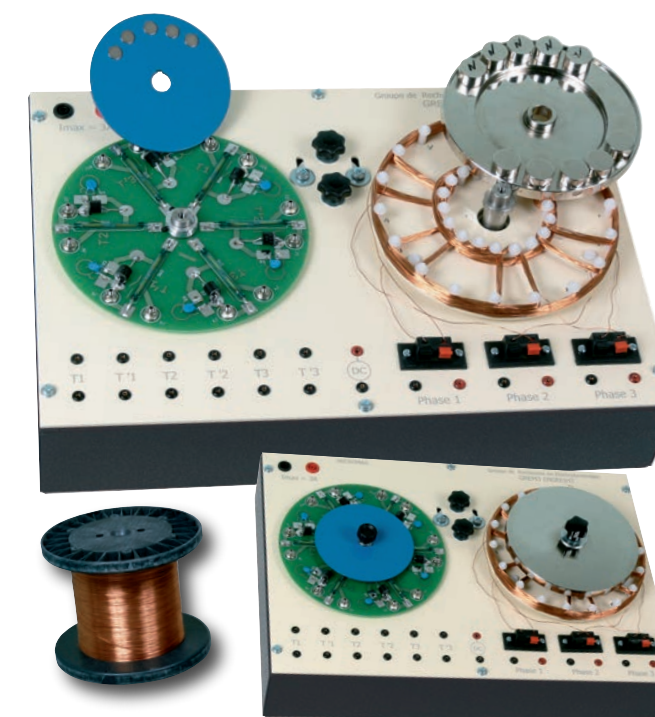
- Identifying the internal components of a auto-controlled synchronous machine (theoretical and practical)
- Functioning in motor and in generator
- Achieving the coils and set the switch

MICROMAG uses only dry contacts (with no complex electronic circuit) so that its operation is accessible to everyone. Using this model, students discover little by little the various components of an automatically controlled synchronous machine and, more generally, of a motor, via a theoretical and practical approach. The theoretical approach can be accessed at different study levels. At the secondary school level, the torque, the EMF and the number of turns in the winding are calculated simply by applying formulae. Engineering students will have the necessary mathematical knowledge to establish these relationships by using the laws of electromagnetism and applying them to the MICROMAG machine.

MICROMAG comes with a manual containing all of the basic laws which are necessary for understanding the tutorials. Wherever necessary, colour drawings are used to illustrate comments. Angular diagrams, timing diagrams and schematic diagrams are used to illustrate, step-by-step, the operation and/or stages of implementation.

In addition, the following is required for all tutorials:

- a 30V DC 2A power supply
- an oscilloscope with a memory function
- a dynamometer
- a gaussmeter – not essential – used for checking the current of the field
- enamelled wire for winding on the rotor(s) (supplied)



ref. MICROMAG

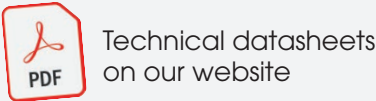
TEACHING RESSOURCES

OPTION POSTE DYNAMOMETRE

- Calibre 5000 gf
- Résolution : 1gf
- Précision 0,2% + 1dgt
- Arrêt automatique
- Dimensions 240x80x40mm
- Poids : 440g

ref. FG5000





ref. VAL-VAR TEACHING RESSOURCES STUDENTS / TEACHER

STUDY CASE FOR SPEED CONTROLLER ATV32

EDUCATIONAL OBJECTIVES

- Studying a 3-phase speed controller
- Studying a setup software and setting the speed controller

VAL-VAR is a study case for the speed controller ATV32 for asynchronous machine. It contains all the equipment required for autonomous operation. The case connects directly to the mains 230V single-phase. The printed PVC face includes the electrical protection and control equipment, safety terminals for cabling the inputs/outputs of the speed controller and taking current measurements in each phase of the motor.

CASE SUPPLIED READY TO USE WITH

- 1 set of safety leads and jumpers.
- 1 programming graphic terminal
- 1 SoMove software (Schneider Electric®) with RJ45/USB lead to link to PC
- 1 instruction manual including the component data sheets and practical assignments for speed controller programming help.



STUDY OF SPEED CONTROLLER

EDUCATIONAL OBJECTIVES

- To study and use a motor starter for an asynchronous machine.
- To configure an electronic controller
- To use the SOMOVE software
- To configure industrial ETHERNET communications.

ref. VAR-3KW TEACHING RESSOURCES

Instructional Schneider® speed controller for asynchronous motor 3000W at voltage of 3x400V. Supplied with Schneider® SOMOVE software. Motor power supply output on terminals 4mm at 3x400V +E. Power supply input 3x400V+N+E on safety terminals 4mm

STUDY OF A STARTER / RETARDER UNIT

EDUCATIONAL OBJECTIVES

- To study and use a motor starter for an asynchronous machine.
- To configure an electronic starter/retarder unit

Adjustment of the initial voltage, of rise time and fall time with 3 adjustment potentiometers on the front of the starter. Power supply input 3x400V+N+E on safety terminals 4mm. Motor power supply output 3x400V +E on terminals 4mm.

ref. DERA-3KW TEACHING RESSOURCES



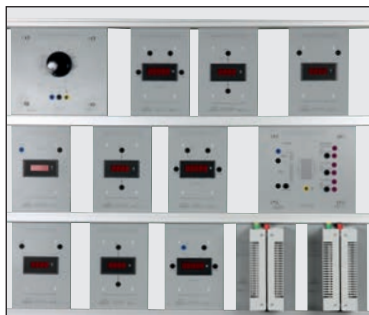
STUDY OF THE 140VA SINGLE-PHASE TRANSFORMER



ref. ETM140 USER'S MANUAL WITH PRACTICAL WORKS

EDUCATIONAL OBJECTIVES

- Theoretical practical study of a single-phase transformer with no load and loaded.
- Studying the electromagnetic induction
- power calculation, efficiency, transformation ratio, transformer losses.



ref. QUICK-GLPLUS Existe en version modulaire

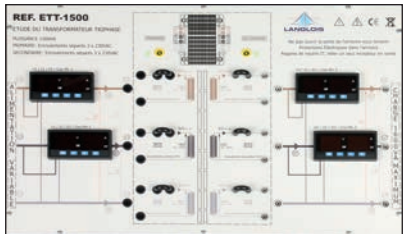
STUDY OF THE 1500VA 3-PHASE TRANSFORMER

EDUCATIONAL OBJECTIVES

- Study of a 3-phase transformer with no load, in short-circuit and loaded
- Creation of Star / Delta wiring according to the primary/secondary voltages selected
- Electrical measurements of the different values
- Calculation of the powers with the method of the 2 wattmeters

ref. ETT-1500 USER'S MANUAL WITH PRACTICAL WORKS

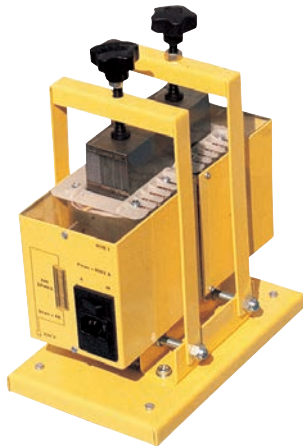
Upper face
4 multi-displays show the active powers, voltages, currents and power factors at the primary and at the secondary.
Engraved synoptic equipped with safety sockets to facilitate the wiring.



SAFETY DISMANTLED TRANSFORMER

MAGNETIC CIRCUIT

ref. MAG800



PRIMARY COILS



ref. BOB1



ref. BOB6

SECONDARY COILS



ref. BOB2



ref. BOB3



ref. BOB4

UNIT FOR FAULT DIAGNOSTICS ON INDUSTRIAL ELECTRICAL WIRING

ESSAI-DIAG is a model that allows troubleshooting at different points on a wiring grid. The wiring on the grid represents the Star/Delta starting of an asynchronous machine with two rotation directions.

The **ESSAI-DIAG2** version is a complete system, consisting of a control section and a power section with 3 x 24 VAC, controlling a three-phase asynchronous motor. Troubleshooting is performed on the entire circuit. On the **ESSAI-DIAG** version, only the control circuit is wired and allows troubleshooting.

Faults are selected by the instructor using switches located under a hatch at the rear of the model. The operating voltage is 24 VAC. Students can therefore safely perform measurements and tests regardless of the type of fault.

EDUCATIONAL OBJECTIVES

- Understand and understand motor starter wiring
- Create an industrial wiring diagram
- Simulate the most common faults in an industrial installation
- Visualize the effects of a coupling change on a motor (ESSAI-DIAG2)
- Perform measurements of various electrical quantities
- Take a voltage and current reading on the power section (ESSAI-DIAG2)
- Analyze and interpret the results
- Troubleshoot a relay installation
- Replace a faulty component



ref. ESSAI-DIAG2

ref. ESSAI-DIAG

USER'S MANUAL WITH PRACTICAL WORKS



ELECTRO-PNEUMATIC SYSTEM FAULT DIAGNOSIS STATION

EDUCATIONAL OBJECTIVES

- Learn about pneumatic components
- Understand an electro-pneumatic circuit
- Commission and handle pneumatic equipment
- Study the operation of photoelectric sensors and vacuum switches.
- Simulate failures on electrical and pneumatic circuits.
- Analyze and interpret the results.

Practical works

- Identification of components
- Creation of electrical and pneumatic diagrams
- Analysis of an operating cycle
- Search for different faults on the circuit using measuring devices.

ref. PNEU-DIAG

USER'S MANUAL WITH PRACTICAL WORKS



 Technical datasheets on our website

FAULT FINDING ON INDUSTRIAL ELECTRICAL WIRING

EDUCATIONAL OBJECTIVES

- To understand the wiring of a programmable logic controller (PLC)
- To load a program into a PLC with Ethernet connection.
- To simulate the most frequent faults on an automation installation with analogue signal.
- To analyse and interpret the results

Practical works

- Identification of the different components and production of electrical diagrams.
- Loading a PLC program on USB and Ethernet with ExoStructure basic software.
- Viewing of the PLC input/output states on the ExoStructure basic software.
- Finding the different faults on the circuit using measuring devices.



Supplied with loop calibrator 4-20mA

ref. PLC-DIAG

USER'S MANUAL WITH PRACTICAL WORKS



FAULT DIAGNOSIS UNIT FOR TEMPERATURE CONTROLLER

EDUCATIONAL OBJECTIVES

- To understand the wiring of a temperature control loop by PID
- To simulate the most frequent faults on an temperature controller with analogue signal.
- Analysing and interpreting the results.

Practical works

- Identification of the different components and production of electrical diagrams.
- Production of the wiring of the temperature control loop.
- Programming the PID.
- Measuring the analogue signal 4-20mA.
- Finding the different faults on the circuit using measuring devices.



STUDY OF EARTHING CONNECTIONS (NEUTRAL SYSTEM)



ref. SLT-1-T8W
Version with HMI and support arm

TEACHING RESSOURCES
STUDENTS / TEACHER

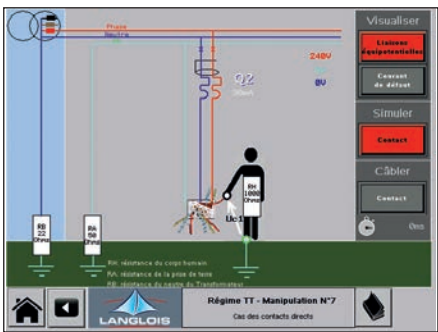


ref. SLT-1
Version with PC not supplied

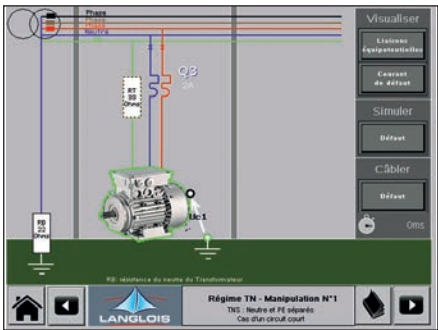
ref. SLT-1-PC
Version supplied with configured PC

EDUCATIONAL OBJECTIVES

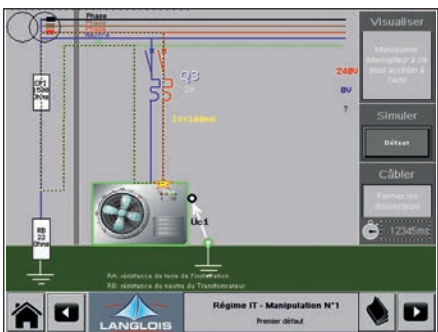
- To learn about the notion of electrical hazard (qualitatively and quantitatively).
- To demonstrate the features of each earthing connection scheme (TT, TN, IT)
- To be able to explain the role of each element of the protective arrangements (earthing connection, thermal magnetic circuit-breaker, residual current device, IMD).
- To show the fault current paths without danger.
- To take into account standard NFC 15-100



Example of screen - Test in TT mode:
direct contact



Example of screen - Test in TN mode:
visualization of equipotential bonds



Example of screen - Test in IT mode:
first fault

 Technical datasheets
on our website

SELECTIVITY
CHRONOMETRIC
DIFFERENTIAL



ref. VAL-SELEC1

DELIVERED WIRED & SET SIMULATED ELECTRICAL COMPONENTS TEACHING RESSOURCES STUDENTS / TEACHER

EDUCATIONAL OBJECTIVES

- Justify the role of each element in the safety chain.
- Use and adjust an residual current relay with a separate measuring current transformer.
- Familiarize yourself with the concept of differential time-domain selectivity.
- Explain the current flow path in the event of a fault.

STUDY OF THE ROLE OF THE EARTH & A DIFFERENTIAL CIRCUIT-BREAKER



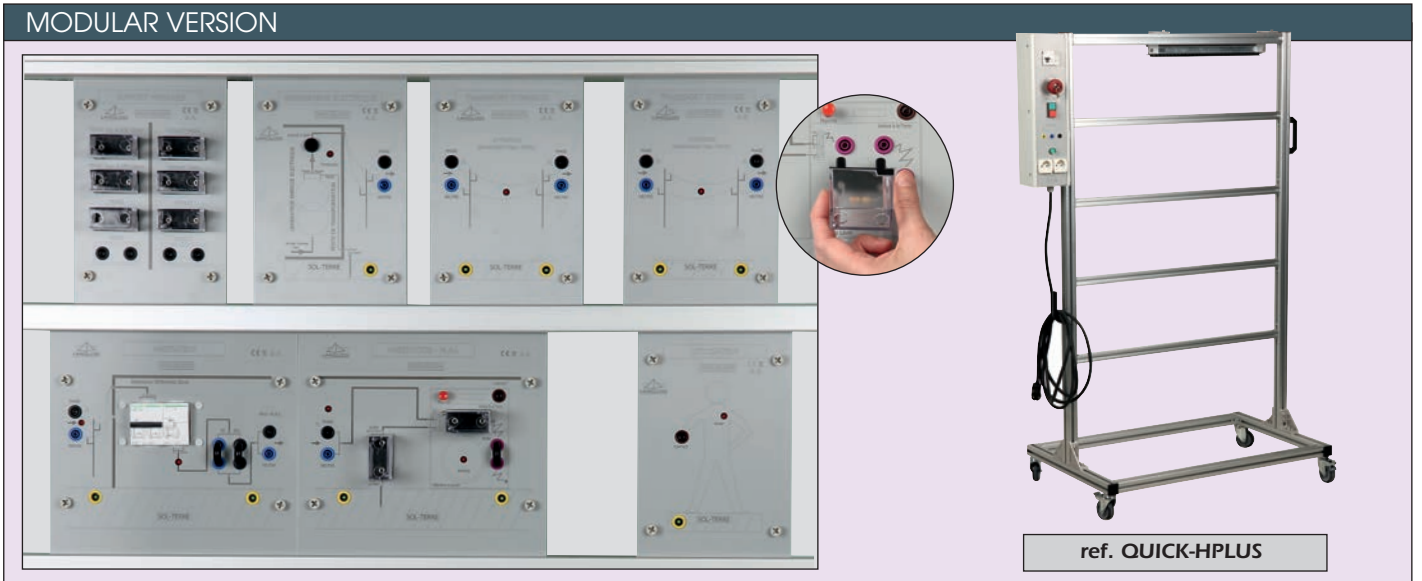
EDUCATIONAL OBJECTIVES

- Educating students about the risks of electrocution in the event of direct contact
- Educating students about the risks concerning the quality of the earth
- Showing the role of a 30mA residual current circuit breaker in a house

Theoretical recalls provided

- Operation of a thermal magnetic circuit-breaker rating, breaking capacity, tripping curve, symbols
- Operation of a residual current circuit-breaker rating, tripping time, symbols
- Physiological effects of the current hazard zones: current function times, dangerous voltages
- Maximum resistance of the earth

ref. SELDIF TEACHING RESSOURCES STUDENTS / TEACHER



ref. QUICK-HPLUS

CABINETS FOR INDUSTRIAL ELECTRICAL AUTHORIZATION

The service voltage of 24VDC, protected by circuit-breakers, makes use of the cabinet completely safe.
The integrated load, comprised of six 60W lamps, enables a sufficiently significant current to be generated.
The cabinet is self-contained and requires no connection to the mains 230V when in use.
A mains cable is nevertheless included for recharging the batteries using an integral charger.

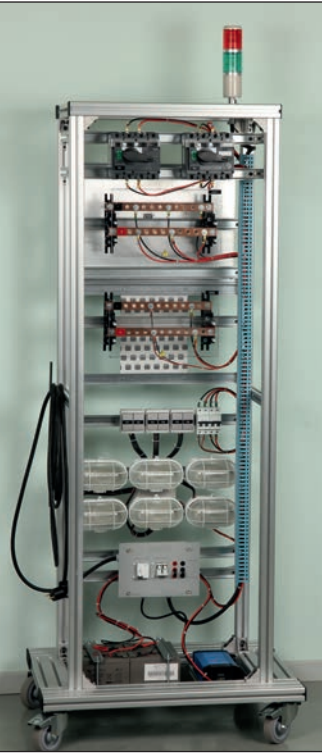
EDUCATIONAL OBJECTIVES

- Put into application the knowledge, rules and methods for certification for authorization to electrical hazards
- Carry out practical assignments, wiring tasks relevant to electrical authorization
- Perform maintenance and cleaning operations in an industrial cabinet
- Perform removal from service operations of electrical equipment
- Take measurements using a clamp ammeter

Practical works

- Reminder on electrical authorization
- Changing sets of copper busbars
- Removing the cabinet from service
- Complete the removal from service and authorization documents
- Check correct use of PPE (Parsonal Protective Equipment)
- Reading the current in the electrical cabinet using a clamp ammeter

Dimensions : HABILIT24-CA : 800 x 800 x h 1800mm - Weight: 90kg
HABILIT25 : 610 x 780 x h 1800mm - Weight: 115kg
HABILIT12 : 480 x 240 x 1000mm - Weight: 49kg



ref. HABILIT24-CA
Mobile version without walls



ref. HABILIT25
Mobile version with cabinet

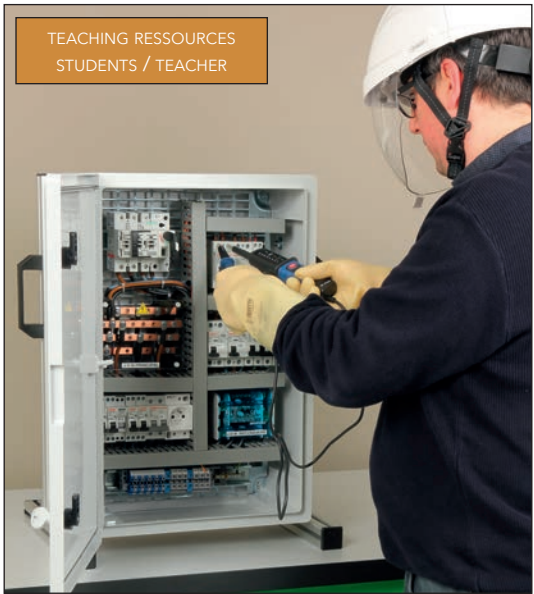


ref. HABILIT12
Compact mobile version

TEACHING RESSOURCES
STUDENTS / TEACHER



INDUSTRIAL CABINET FOR ELECTRICAL ACCREDITATION



Application for electrical hazard certification (BC / B1 / B1V / B2 / B2V / BE / BN) in an industrial environment.

Course content based on the rules set out in the French standard.

La protection générale par disjoncteur et la tension de service en très basse tension (TBT 24V AC ou DC selon version) rendent l'utilisation de la maquette entièrement sécurisée.
Compacte, à poser sur une table, cette maquette représente une armoire de distribution électrique et se décline en deux versions, 24Vac et 24 Vdc.

Version with three-phase 24Vac operating voltage

ref. HABILIT-IAC Power supply 3x400Vac + N + T with P17 socket

ref. HABILIT-IAC -230 Power supply 230Vac

Version with 24Vdc continuous operating voltage

ref. HABILIT-IDC Power supply 230Vac

Please note: no potential difference between phases on the 230Vac version

Practical Work Provided

- Review of electrical authorization
- Identification of components in an electrical diagram
- Safety procedures for maintenance
- Lockout/tagout of a component to be replaced
- Lockout/tagout of a disconnect switch/fuse holder/circuit breaker
- Completion of lockout/tagout and authorization documents
- Verification of proper use of PPE
- Performing voltage/current measurements
- Replacement of an accessory
- Replacement of a fuse

EDUCATIONAL OBJECTIVES

- Apply knowledge, rules and methods for certification to electrical risk certification
- Carry out practical work, wiring tasks related to electrical accreditation
- Perform maintenance and servicing operations in an industrial cabinet
- Perform electrical equipment lockout operations
- Study an industrial electrical installation
- Create electrical diagrams and a component parts list

HIGH VOLTAGE LOCKOUT/TAGOUT TRAINING MODEL



ref. HABILIT-HT1
TEACHING RESSOURCES STUDENTS / TEACHER

This model is designed for applying the knowledge, rules, and methods required for electrical safety certification (HC/H1/H2/HE). It was created to teach the procedures related to high-voltage (HV) operations. The extra-low voltage (24 Vac) ensures maximum safety.

EDUCATIONAL OBJECTIVES

- Apply knowledge, rules, and methods for electrical risk certification
- Acquire basic high-voltage (HV) operating skills
- Understand lockout/tagout procedures
- Perform safe operating maneuvers
- Practice Voltage Absence Verification (VAT) procedures
- HV lockout/tagout equipment optional
- Become familiar with the architecture of a high-voltage substation

The educational content is based on the rules set out by the French standard on the prevention of electrical risks.

Learners will faithfully reproduce the main high-voltage lockout/tagout procedures in a simulated, secure, and controlled learning environment. This system allows for a complete simulation of high-voltage

lockout/tagout procedures, with realistic manipulations and no electrical risk, incorporating a training key locking system and a clear visualization of operating states. Perfectly suited for use in educational settings.



Fiches techniques
détaillées sur notre site

MODEL FOR ELECTRICAL AUTHORIZATION IN AN INDUSTRIAL ENVIRONMENT

This model represents a motor starter cabinet and is available in two versions (direct start / star-delta start).

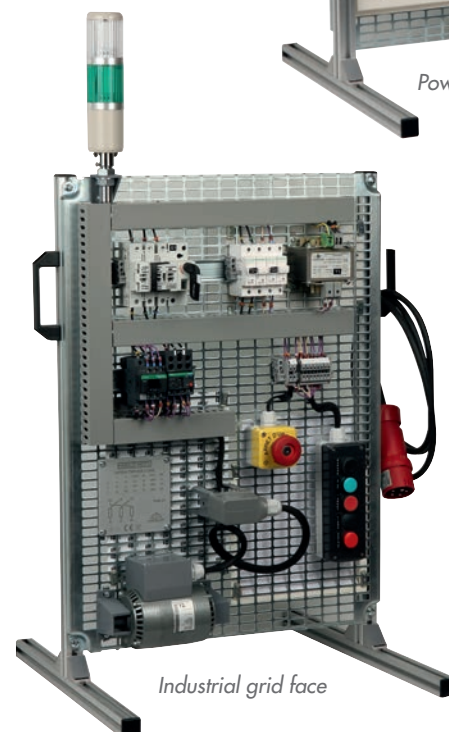
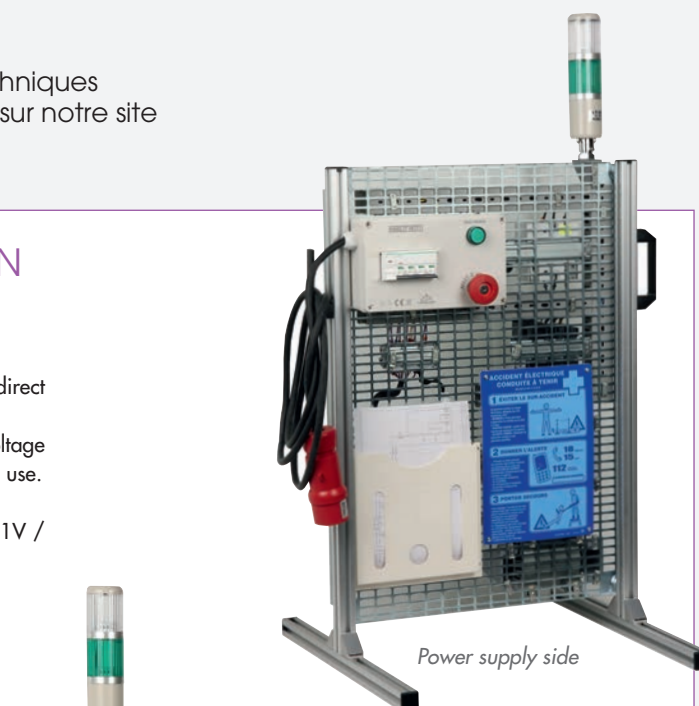
General protection via circuit breaker and the extra-low voltage operating voltage (24Vac or 42Vac depending on the version) make the model completely safe to use.

It allows for practical application for electrical safety certification (BC / B1 / B1V / B2 / B2V / BE / BN) in a typical industrial environment.

Educational content based on the rules established by the French standard.

EDUCATIONAL OBJECTIVES

- Apply knowledge, rules and methods for electrical risk certification
- Carry out practical work, wiring tasks related to electrical certification
- Perform maintenance and upkeep operations in an industrial cabinet
- Carry out consignment operations for electrical equipment
- Carry out measurement readings
- Read a direct start diagram (HABILIT-MOT1)
- Read a star-delta start diagram (HABILIT-MOT2)



ref. HABILIT-MOT1 Direct motor start version

ref. HABILIT-MOT2 Star-delta motor start version

USER'S MANUAL WITH PRACTICAL WORKS



CONVERSION BOX OPTION FOR HABILIT-MOT 1 AND 2 POWER SUPPLIES

Tabletop box that powers the model from a 230V, 2P+E outlet.

- On/Off switch and Emergency Stop
- Protective circuit breakers
- Power supply via a 3m cord with a 2P+E plug.
- Dimensions: 390 x 280 x 185mm.
- Three-phase socket for connecting the model

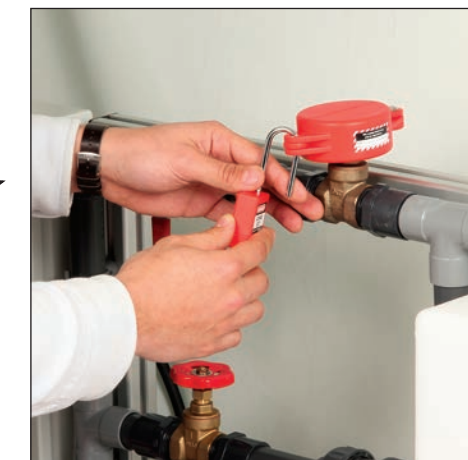
ref. AL-M2T4

ENERGY AUTHORIZATION AND ISOLATION IN AN INDUSTRIAL SETTING - PUMPING STATION



ref. HABILIT-HYD1

TEACHING RESSOURCES STUDENTS / TEACHER



EDUCATIONAL OBJECTIVES

- Implement the "LOCK-OUT TAG-OUT" methodology
- Apply knowledge, rules, and methods for electrical risk certification
- Perform maintenance and servicing operations requiring energy isolation
- Take measurements
- Read an electrical diagram

This model represents a pumping station such as those found in industrial settings (wastewater treatment, cooling, pumping stations, irrigation, etc.).

It allows for the application of knowledge, rules, and methods for electrical safety certification (BC/B1/B1V/B2/B2V/BE) in an industrial environment and for training in the "Lockout/Tagout" procedure.

Educational content based on the rules established by the French standard.

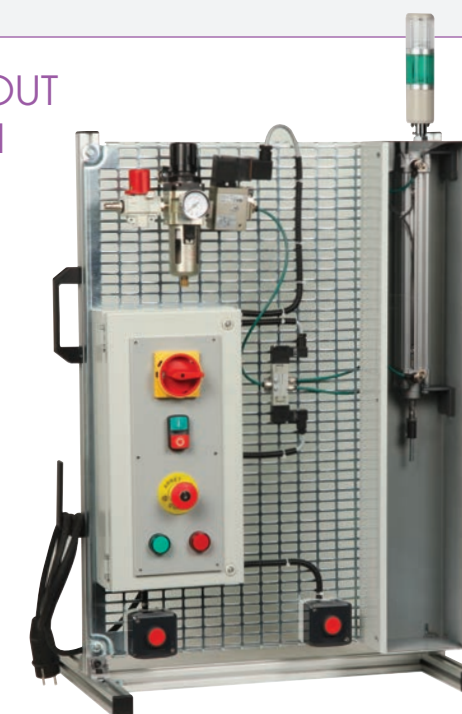
ENERGY AUTHORIZATION AND LOCKOUT/TAGOUT IN AN INDUSTRIAL SETTING - PNEUMATIC CHAIN

This model represents a pneumatically operated industrial machine such as those found on a production line (press, drilling station, screwing station, clamping station, etc.). It allows for the application of knowledge, rules, and methods for electrical risk certification (BC / B1 / B1V / B2 / B2V / BE) in an industrial environment and for training in the "Lockout/Tagout" procedure.

Educational content based on the rules established by the French standard.

EDUCATIONAL OBJECTIVES

- Apply knowledge, rules, and methods for electrical safety certification
- Apply the "LOCK-OUT TAG-OUT" methodology
- Perform practical exercises and wiring tasks related to electrical safety certification
- Carry out maintenance and upkeep operations
- Perform lockout/tagout procedures on electrical and pneumatic equipment
- Take measurements
- Read electrical and pneumatic diagrams



ref. HABILIT-PN1

USER'S MANUAL WITH PRACTICAL WORKS



Fiches techniques
détaillées sur notre site

ELECTRICAL AUTHORIZATION TABLE FOR HOUSING

Mise en application en vue de l'habilitation aux risques électriques (B0 / BE / BS), dans un environnement de type HABITAT.

Contenu pédagogique basé sur les règles de la norme française.

EDUCATIONAL OBJECTIVES

- Application of knowledge, rules and methods for certification to electrical hazard clearance
- Perform practical work related to electrical qualification B0 / BOV / BE / BS
- Perform electrical equipment logging operations
- Take measurement readings using a multimeter (not supplied)

Practical work provided

- Review of electrical certification
- Circuit breaker lockout
- Completing lockout and certification documents
- Verifying proper use of PPE
- Voltage measurement and continuity testing with a multimeter (not provided)

Examples of interventions

- Power off and logging
- Replacement of a Low Voltage fuse
- Replacement of a lamp
- Removing and installing a socket outlet
- Removing and installing a light switch
- Connecting an item of electrical equipment to a waiting circuit
- Reset on instruction of a protection device
- Replacement of an accessory of a lighting (bulb ...)



ref. HABILIT6

USER'S MANUAL WITH PRACTICAL WORKS

MODEL FOR ELECTRICAL CERTIFICATION PLUMBER - HEATING ENGINEER

Application for electrical hazard certification (B0 / BE / BS) in a residential environment.

Learning content based on the rules of the French standard.

The 24VAC operating voltage, protected by fuses, makes the model completely safe to use.

EDUCATIONAL OBJECTIVES

- Mise en application des connaissances, des règles et des méthodes en vue de la certification à l'habilitation aux risques électriques
- Réaliser des travaux pratiques en rapport avec l'habilitation électrique B0 / BE / BS
- Réaliser des opérations de consignation de matériels électriques (groupe climatiseur, chaudière électrique, prise)
- Réaliser des relevés de mesures à l'aide d'un multimètre (non fourni)

Practical work provided

- Review of electrical certification
- Locking out a circuit breaker and a fuse
- Completing the lockout and certification documents
- Verifying the proper use of PPE
- Measuring voltage and testing continuity with a multimeter (not provided)

Examples of interventions

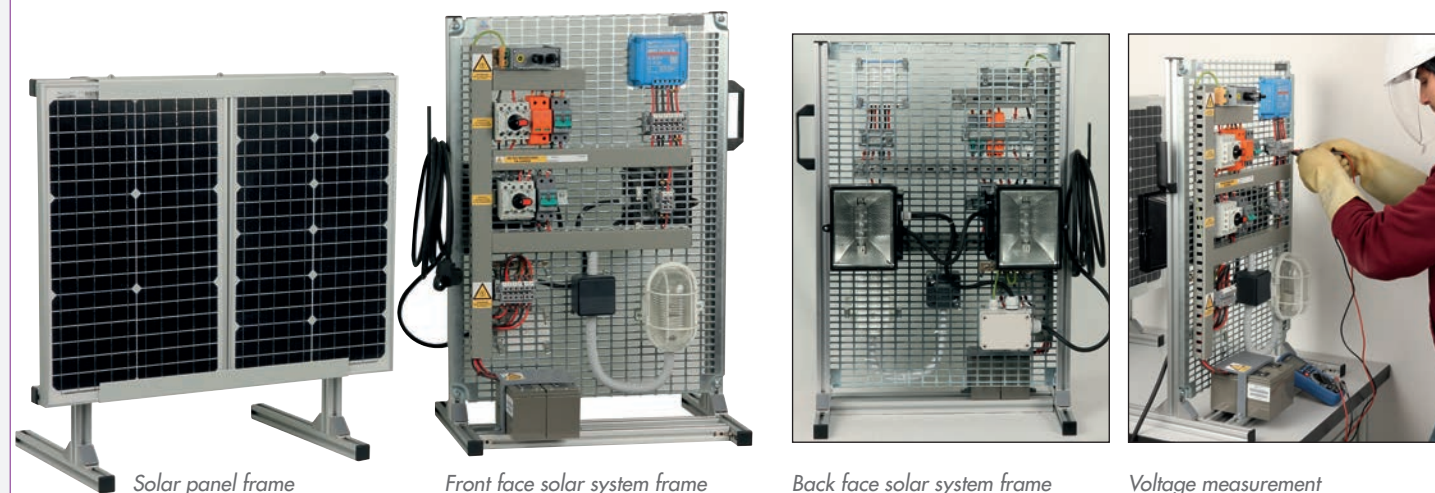
- Powering down and locking out
- Replacing a low-voltage fuse
- Connecting the terminal block of an electric boiler
- Removing and replacing a power outlet
- Connecting the terminal block of an indoor air conditioner unit
- Connecting the terminal block of an outdoor air conditioner unit
- Resetting a protective device on instruction



ref. HABILIT3

USER'S MANUAL WITH PRACTICAL WORKS

MODEL FOR ELECTRICAL ACCREDITATION IN A SOLAR INSTALLATION



Solar panel frame

Front face solar system frame

Back face solar system frame

Voltage measurement

ref. HABILIT-SOL

DELIVERED
WIRED AND SET



TEACHING RESSOURCES
STUDENTS / TEACHER

Application for electrical hazard certification (BC / B1 / B2 / BE / BR / BP) on a solar installation.

Educational content based on the rules of the French standard.

Compact, to be placed on a table, this model represents a photovoltaic installation. It is composed of two separate assemblies:

- A frame on which two solar panels are installed.
- A structure containing all the electrical protection and distribution components on one side and two floodlights to simulate sunlight on the other side.

EDUCATIONAL OBJECTIVES

- Study a solar installation for the electrical energy production
- Apply knowledge, rules and methods according to the accreditation of electrical hazards
- Carry out practical work and wiring tasks related to photovoltaic electrical accreditation
- Practice maintenance and servicing operations on a photovoltaic installation
- Practice consignment operations for electrical equipment
- Carry out measurement readings

Practical work provided

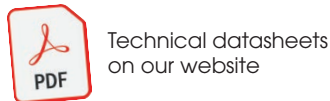
- Reminder of the prevention of electrical hazards
- Components Identification from electrical diagrams
- Securing for maintenance
- Consignment of a disconnecter
- Drafting of consignment and authorization documents
- Verification of the proper use of I.P.E
- Realization of voltage / current measurements
- Replacement of an accessory
- Performing solar panel maintenance operations
- Study and realization of solar panel couplings
- Study and realization of battery couplings
- Configure Bluetooth communication.
- Configure a photovoltaic installation from a tablet or a smartphone.



Panel installation:
The frame can be tilted to simulate roof installation.

DISCOVERY OF COLLABORATIVE ROBOTICS (COBOT)

4-axis, multifunctional tabletop robotic arm. This set allows you to learn collaborative robotics with an economical solution. It comes with various end effectors and accessories, such as a 3D printing, writing and drawing module. It is programmed with the scratch language. The control electronics, power supply and communication ports are centralized at its base. Configuration and programming are carried out via included software (Windows) and a USB connection.



ref. KI-COBO3

- Chassis characteristics**
- Overall dimensions: 330mm x 325mm x 410mm
 - Cobot weight: 3.4Kg

OPTION
MINI BELT CONVEYOR AND SENSORS



ref. VISION-COBO3

KIT VISION OPTION



ref. CONV-COBO3

LEARNING COLLABORATIVE ROBOTICS (COBOT)



EDUCATIONAL OBJECTIVES

- Understand the different aspects of collaborative robotics.
- Discover the programming of an industrial robot.
- Course reminder on analytical programming.
- Course reminder on the different types of sensors.

Characteristics

- Overall dimensions of the robot: L180 x W180 x H900 (arm unfolded). 8.2kg
- 19mm grey melamine base: 600 x 600mm.
- Power supply via 3-metre 2P + T mains cord.

This kit allows you to understand collaborative robotics with a simple and economical solution. Quick to set up, this cobot does not require an additional electrical box. All the control electronics, its power supply and its communication ports are centralized at its base. Configuration and programming are carried out via the free Robot Control software (Windows only) via an Ethernet connection. It comes with an electromagnet gripper, allowing you to perform "Pick and Place" operations on metal boxes (provided), as well as a photoelectric sensor and an inductive sensor.

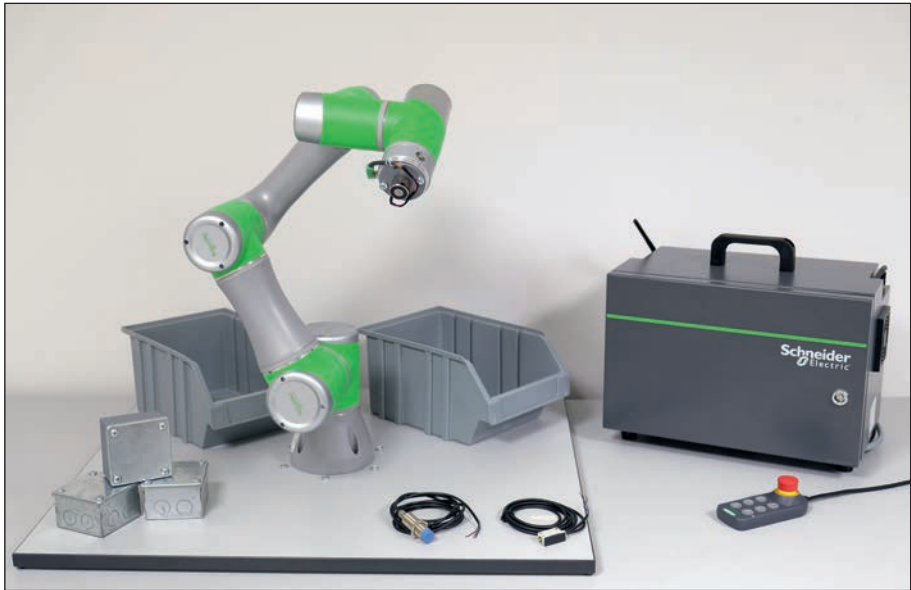
ref. KI-COBO1

EDUCATIONAL FILE STUDENTS / TEACHER



Electronics, power supply and com ports centralized in the robot foot

ADVANCED STUDY OF SCHNEIDER® COLLABORATIVE ROBOTICS (COBOT)



ref. KI-COBO2

STUDENT/TEACHER EDUCATIONAL FILE

EDUCATIONAL OBJECTIVES

- Understand the different aspects of collaborative robotics.
- Discover the programming of an industrial robot.
- Discover the Scratch programming environment.
- Understand the learning of positions and trajectories by free training.
- Review of courses on analytical programming.
- Review of courses on the different types of sensors.

Practical works

- Carrying out analytical programming using GRAFCET and LADDER, from an operating cycle.
- Carrying out a wiring diagram from the technical documentation.
- Wiring and configuring the system
- Learning positions and trajectories with the free training function.
- Programming the cobot in Scratch language, from the documentation provided.

Composition

- 1 Schneider® Lexium Robot with the following characteristics:
 - 6 degrees of freedom
 - Cobot payload up to 3kg
 - 16 PLC inputs and 16 outputs (TOR 24Vdc)
 - MODBUS TCP - TCP/IP - PROFINET - ETHERNET/IP communication
 - Power supply on P+N+T 230Vac socket.
- 1 gray melamine base.
- 1 24Vdc electromagnet gripper.
- 1 photoelectric sensor.
- 1 inductive sensor.
- 1 emergency stop button
- 3 metal boxes, one of which has a plastic bottom to avoid being detected by the inductive sensor.
- 2 storage bins that can hold metal boxes for "Pick and Place" operations.

Characteristics

- Overall dimensions of the robot: L x W x H: 180 x 180 x 750mm (arm unfolded). 12Kg
- Overall dimensions of the case: L x W x H: 410 x 235 x 307mm. 18Kg
- Grey melamine base 19mm: 600 x 600mm.
- Power supply by 3-meter 2P + T power cord.

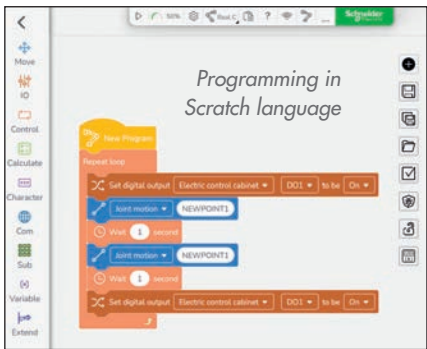
KI-COBO2 allows you to understand collaborative robotics with a simple and fast solution. All the control electronics, its power supply and its communication ports are centralized in its control box (included). Configuration and programming are carried out via the free Schneider® EcoStruxure Cobot Expert software (Windows and Android only) via an Ethernet connection or its own Wifi connection. It is programmed with the scratch language, particularly recognized for its accessibility and ease of assimilation. The Cobot has the free training learning function. The user manipulates the robot by hand, allowing it to record positions or trajectories. It is delivered with an electromagnet gripper, allowing "Pick and Place" operations to be carried out on metal boxes (provided), as well as a photoelectric sensor and an inductive sensor.



Learning positions and trajectories by free training



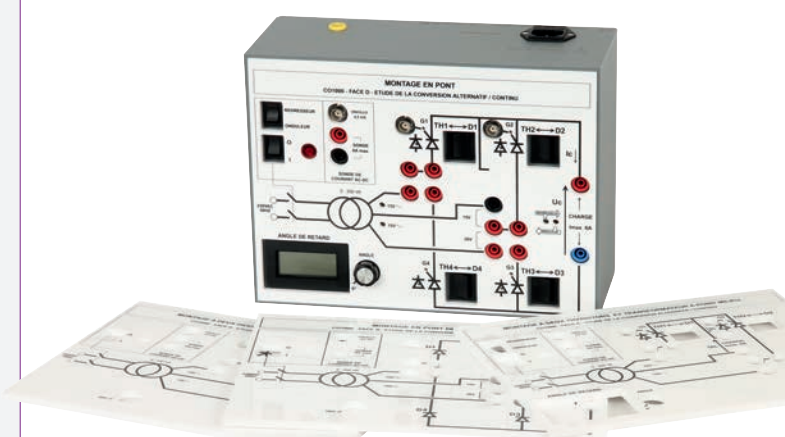
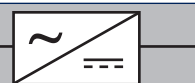
Configuration and programming via Schneider® EcoStruxure Cobot Expert software



SINGLE-PHASE / DIRECT CURRENT CONVERSION TEST BENCH

RECTIFIER

CO-1000 IS SUPPLIED WITH 4 MOVEABLE FRONT PANELS, INSTRUCTION BOOK INCLUDED TUTORIALS



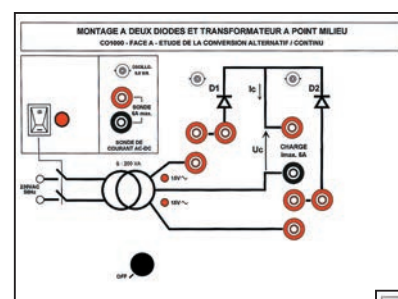
ref. CO-1000

USER'S MANUAL WITH PRACTICAL WORKS

SOME CO-1000 PRACTICES REQUIRE OPTIONAL ACCESSORIES

Rheostat ECO1/2 10 Ω
Ref. ECO1/2 10 Ω Variable coil
Ref. PSYJR290W motor
Ref. CO-110

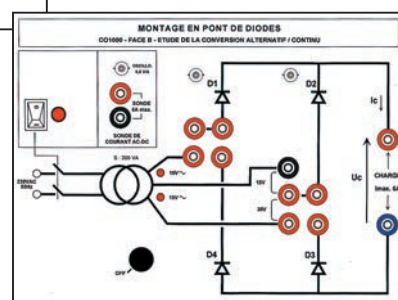
Ref. CO-104 Smoothing coil 40mH - 3A
 Ref. CO-105 Smoothing coil 20mH - 3A
 Ref. CO-108 Smoothing coil 60mH - 3A
 Ref. CO-106 12V/24V Battery



PANEL A: ASSEMBLY WITH TWO DIODES AND MID-POINT TRANSFORMER

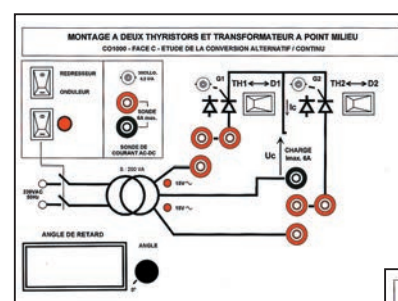
Return to single half-wave rectification and switching to double half-wave rectification by simply adding jumper straps.

Experiment 1 Power flow on resistive load (R)
 Experiment 2 Power flow on inductive load (R,L)



PANEL B: DIODE BRIDGE CIRCUIT ASSEMBLY

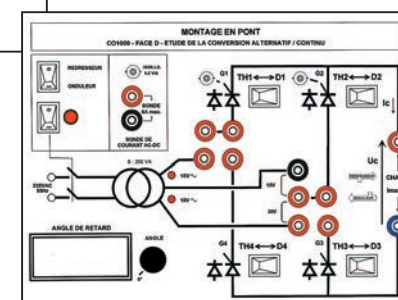
Experiment 1 Power flow on resistive load (R)
 Experiment 2 Power flow on inductive load (R,L)
 Experiment 3 Power flow on active load (E,R)
 Experiment 4 Power flow on active inductive load (E,R,L)
 Experiment 5 Application to a DC motor power supply
 Any of these 4 diodes can be replaced by a rectifier at any time, simply by throwing the appropriate switch. This facilitates comparisons between all-diode, all-rectifier, symmetrical mixed, and asymmetrical mixed assemblies.



PANEL C: ASSEMBLY WITH TWO RECTIFIERS AND MID-POINT TRANSFORMER

Controlled single- and double-wave rectification.

The tests on panel A may be used again for comparison.



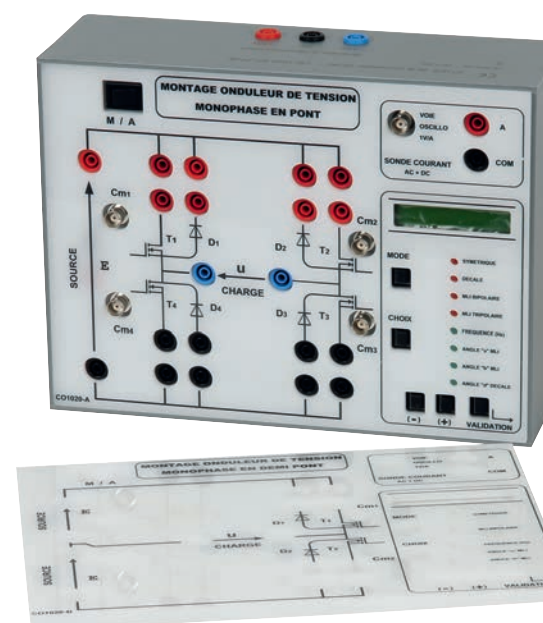
PANEL D: BRIDGE CIRCUIT ASSEMBLY (ALL RECTIFIERS OR MIXED)

Comparative studies of diode / rectifier / mixed assemblies
 Experiment 1 Power flow on active inductive load (E, R, L)
 Operates as a static convertor
 Operates as a grid-interactive inverter
 Experiment 2 Application to a DC motor power supply (DCM)
 Mixed bridge-circuit assembly
 Experiment 3 Power flow on active inductive load (E, R, L)
 Experiment 4 Application to a DC motor power supply (DCM)

SINGLE-PHASE CONTINUOUS / ALTERNATING CURRENT CONVERSION TEST BENCH

INVERTER

CO-1000 IS SUPPLIED WITH 2 MOVEABLE FRONT PANELS, INSTRUCTION BOOK INCLUDED TUTORIALS



SOME CO-1020 PRACTICES REQUIRE OPTIONAL ACCESSORIES

Ref. ECO1/2 10 Ω Rheostat ECO1/2 10 Ω
 Ref. ECO1/2 15 Ω Rheostat ECO1/2 15 Ω
 Ref. ECO1/2 22 Ω Rheostat ECO1/2 22 Ω
 Ref. ECO1/2 33 Ω Rheostat ECO1/2 33 Ω

for an optimal use, low resistance loads are better

Ref. PSYJR2 Variable coil

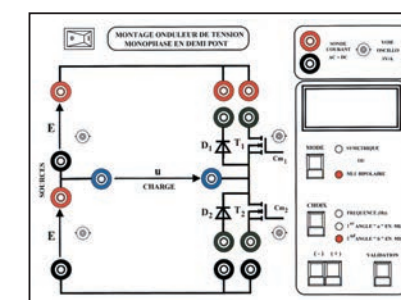
Ref. CO-106 12V/24V Battery

Ref. CO-107 Single-phase transformer 12V - 230V with its lamp 230V - 40W

Ref. CO-122 Capacitor 22 μ F

ref. CO-1020

USER'S MANUAL WITH PRACTICAL WORKS



PANEL A "SINGLE-PHASE, STATIC, HALF-BRIDGE VOLTAGE CONVERTER (2 SWITCHES)"

The diode and power transistor operate by cross-barring

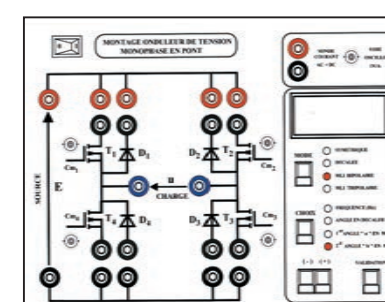
Presentation of symmetrical control

Presentation of the Pulse-Width Modulation control: Bipolar PWM wave

Experiment N°1: Throughput over resistive load (R)

Experiment N°2: Throughput over inductive load (R, L)

Experiment N°3: Throughput over resonant load (R, L, C)



PANEL B "SINGLE-PHASE, STATIC, BRIDGE VOLTAGE CONVERTER (4 SWITCHES)"

Presentation of offset control

Presentation of the Pulse-Width Modulation control: Three-pole PWM wave

Experiment N°1: Throughput over resistive load (R)

Experiment N°2: Throughput over inductive load (R, L)

Experiment N°3: Throughput over resonant load (R, L, C)

Experiment N°4: Application to induction heating

Experiment N°5: Application to a backup power supply
Using the CO-1000 test bench as a charger.Technical datasheets
on our website



Technical datasheets on our website

ELECTRONIC TEST UNITS



COMPLETE TEST UNIT

ref. AT102

Designed for installation and rapid testing of prototypes and for practical experiments with analog and digital circuits. The contact board, which is hardwearing, is removable. Dimensions: 340 x 265 x 130mm. Weight: 4.8kg.

- 1 BOARD
- 4 SUPPLIES
- 1 FUNCTION GENERATOR
- 2 DIGITAL DISPLAYS
- 1 DC DIGITAL VOLTMETER
- 1 UNIVERSAL COUNTER 8 DIGITS
- 8 DIODE DISPLAYS
- 10 LOGIC SWITCHES
- 2 LOGIC PUSH-BUTTONS
- 4 ADAPTERS



ANALOG TEST UNIT

ref. AT106

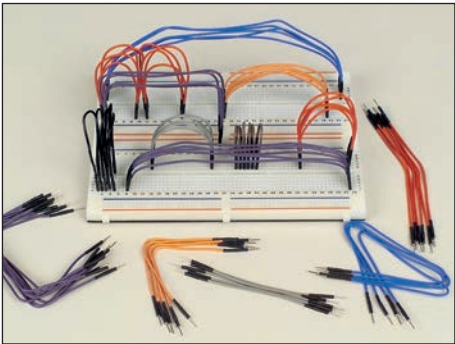
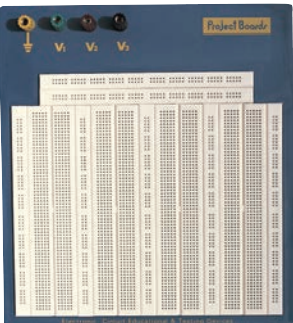
AT106 is a test bed for analog circuits. Easy maintenance: common circuits and diagrams provided. Dims: 340x265x130mm. Weight 3.7kg. Mains 230V.

- 1 BOARD
- 4 SUPPLIES
- 1 FUNCTION GENERATOR
- 1 VOLTMETER
- 1 UNIVERSAL COUNTER 8 DIGITS
- 1 MICRO-AMMETER
- 1 LOUDSPEAKER
- 4 ADAPTERS
- 3 SWITCHES
- 1 POSITION ROTARY SWITCH
- 2 POTENTIOMETERS

ELECTRONIC TEST BOARDS & MICRO-LEADS

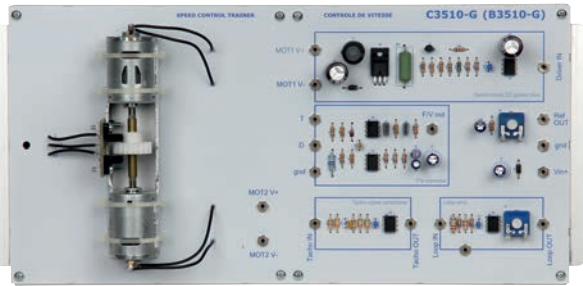
Ref.	GL12	GL12S*	GL24	GL24S*	GL48	GL48S*
Nb of contacts	840	840	1680	1680	3260	3260
Dimensions mm	200 x 75	200 x 75	225 x 150	225 x 150	260 x 240	260 x 240

* With safety sockets



Ref.	M5	G7	N10	V1	B2
Length	50mm	70mm	100mm	150mm	200mm
Obligatory color	BROWN	GREY	BLACK	PURPLE	BLUE

The flexible wire used for these leads is terminated at each end by a 0.6mm diameter nickel-plated plug. The electrical contact is excellent.



SPEED FEEDBACK

PRACTICAL WORKS

- Study of the luminous barrier/frequency voltage converter.
- Study of the tachometric filter.
- Study of the loop amplifier and of the controlled switching power supply.
- Comparison of tachometric voltages and opticalencoder + converter.
- Comparison of low rotation frequencies with and without feedback loop.
- Study of the feedback response for different values of loop gain.

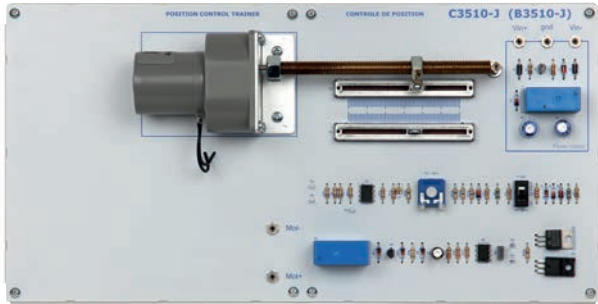
ref. C3510-G

POSITION FEEDBACK

PRACTICAL WORKS

- Study of the principle of a closed feedback loop: error voltage, pre-amplification, driver stage, push-pull.
- Study of limitation of movements circuits.
- Anti-jamming system.
- Study of the feedback response to a voltage step for different values of loop gain.

ref. C3510-J



ALL OR NOTHING SENSORS & ACTUATORS

PRACTICAL WORKS

- Description of the different components and their usage.
- Functioning of the amplifiers.
- Measurement of the detection distance of the inductive sensor.
- Analysis of the electronic switch, controlled by direct or alternating current.
- Study of a line consisting of an optoelectro-barrier, a switch and a solenoid.
- Possibility of making other lines: optoelectro-barrier - reed relay - Hall sensor - electronic switch - buzzer

ref. C3510-L

STEPPING MOTOR

PRACTICAL WORKS

- Study of the principle of a stepping motor and its different ways of functioning by step and half-step.
- Vibrations seen at low frequency, loss of steps at high frequency.
- Determination of the take-in resonance frequency and of the rotation limit frequency
- Observation of signals delivered by the driver to the motor windings.
- Inversion of currents in the motor coils.
- Observation of 4 signals applied by the control logic to the driver out of phase with one another.

ref. C3510-T



INCREMENTAL & ABSOLUTE ENCODER

PRACTICAL WORKS

- 3-BIT ABSOLUTE DCB ENCODER correspondence between the position of the disc, the status of the sensors and the display. Transition codes and synchronisation sensor.
- INCREMENTAL DCB ENCODER use of the encoder in counter and count-down mode. Detection of the direction of rotation, improvement of accuracy using an angle sensor.
- 4 BIT GRAY ENCODER GRAY/DCB code comparison. A synchro. sensor is required.

ref. B3510-R



www.langlois-france.com

info@langlois-france.com - Tél. : 0033 556 75 13 33

Z.I. du haut-vigneau 33174 Gradignan cedex