



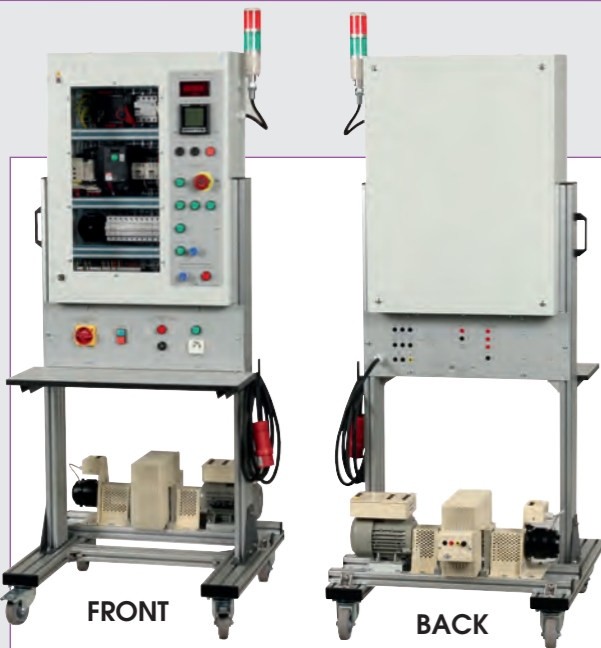
EDUCATIONAL
SOLUTIONS

2023





Technical datasheets on our website



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

TEACHING RESOURCES WITH PRACTICAL WORKS

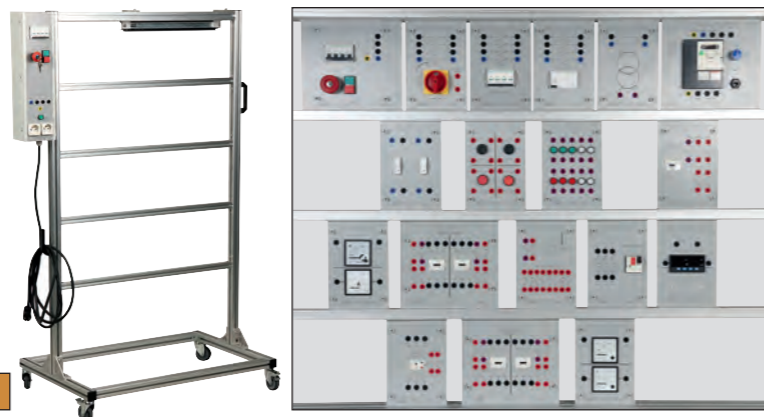
System for studying the start-up of asynchronous motors. For this completely stand-alone system, all you have to do is connect it to a 3-phase 400V mains socket. Selection of the required motor start-up type via push-buttons at the front of the electrical cabinet. A 300W asynchronous motor, a powder brake and a tachometer generator are fixed directly onto the base with wheels. The power unit and the electrical cabinet are linked together using 4mm safety leads so that measurements can be taken using a hook-on ammeter or voltmeter, etc. A key-operated switch at the front makes it possible to use the electrical cabinet when it is switched on with the door open. In this way, a qualified individual may take electrical measurements inside the cabinet. A multifunction measuring unit displays the electrical quantities on the front door. A digital tachometer shows the motor rotation speed. A potentiometer at the front is used for varying the motor load.

- Base with wheels: 750 x 670mm
- Total height: 1970mm - Weight: 110kg

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 RESOURCES STUDENT / TEACHER

FAN OPTION

QUICK-C 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

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.



ref. VAL-VAR

TEACHING RESOURCES STUDENT / TEACHER

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 RESOURCES



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 RESOURCES





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

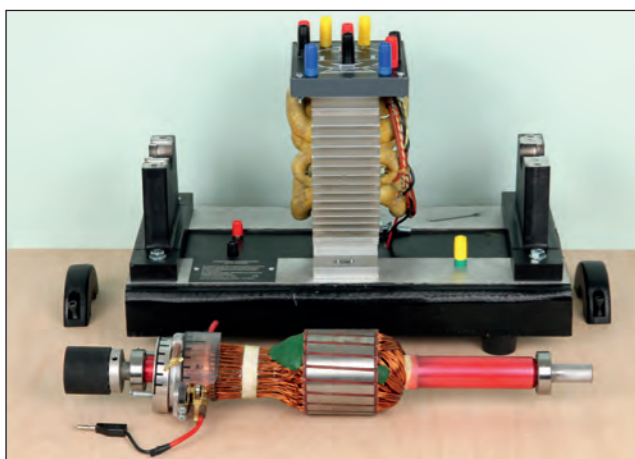
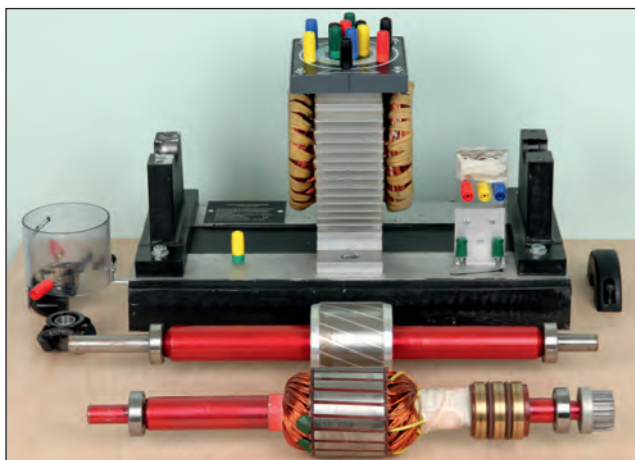
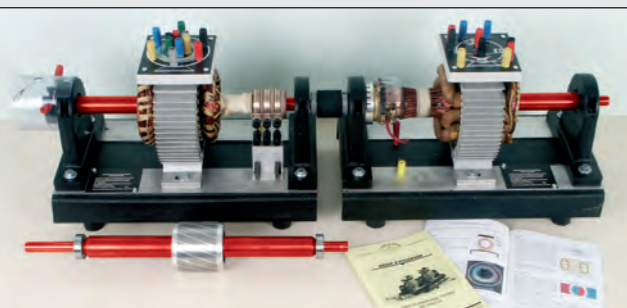
TEACHING RESOURCES

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 RESOURCES



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

SIEMENS

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

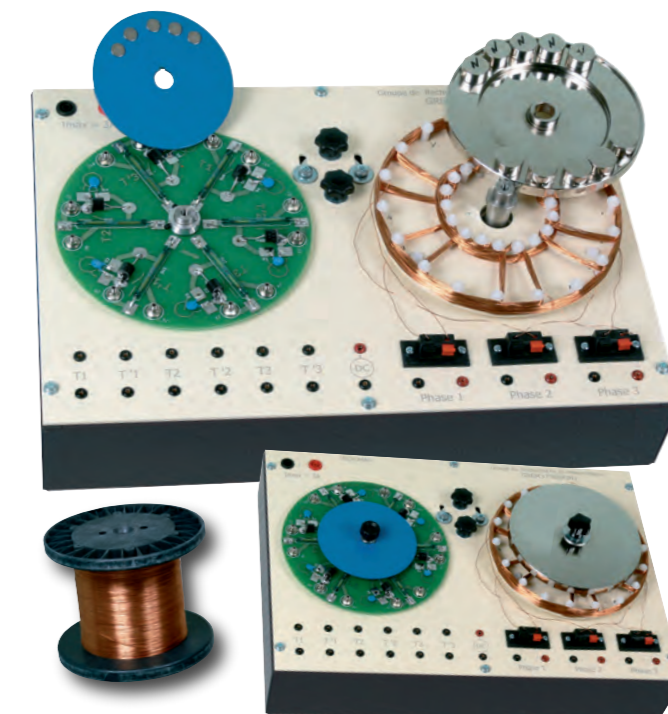
- Identifying the internal components of a auto-controlled synchronous machine (theoretical and practical)
- Functioning in motor and in generator
- Achieving the coils and set the switch

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

DOSSIER PÉDAGOGIQUE RÉALISÉ PAR L'ENSEEIH

OPTION DYNAMOMETER



- Rating: 5000 gf
- Resolution: 1 gf
- Accuracy: 0.2% + 1 dgt
- Automatic shutdown
- Dim.: 240 x 80 x 40 mm
- Weight: 440 g

ref. FG5000

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

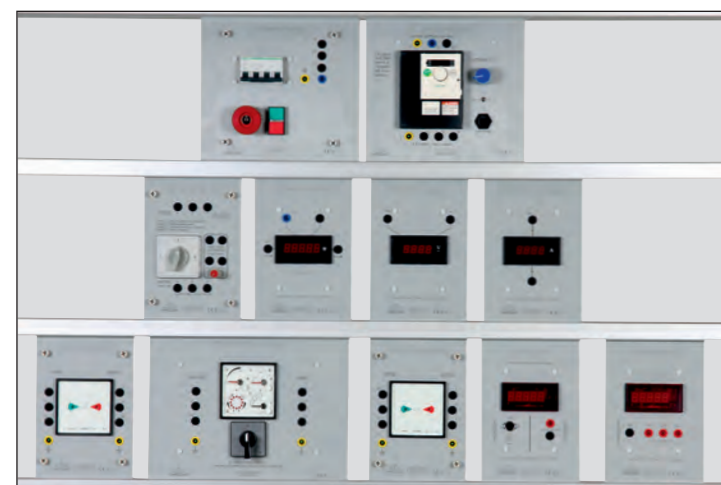
TEACHING RESOURCES STUDENT / TEACHER

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**

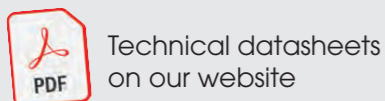
TEACHING RESOURCES STUDENT / TEACHER

EDUCATIONAL OBJECTIVES

- Study the hyposynchronous and hypersynchronous 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



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

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.

View of the student side, with glass door.

ref. MOTODIAG TEACHING RESSOURCES + PRATICAL WORKS

UNIT FOR FAULT DIAGNOSTICS ON INDUSTRIAL ELECTRICAL WIRING

ESSAI-DIAG is a model for producing faults at different points on a wiring frame. The wiring on frame represents the Star/Delta startup with double direction of rotation of an asynchronous machine. Only the control circuit is wired. Finding the faults is carried out only on the control circuit. The faults are selected by the instructor using the switches located under a rear flap of the model. The voltage of the circuit does not exceed 24VAC. Thus students can take measurements or perform tests in complete safety, regardless of the fault type. Power supply 230VAC by 3 metre lead and mains plug 2P+E. Model supplied wired and fully functional.

EDUCATIONAL OBJECTIVES

- To learn and understand the wiring of motor startup
- To produce an industrial wiring diagram
- To simulate the most frequent faults on an industrial installation
- To take the measurements of the different electrical values
- To analyse and interpret the results
- To find the faults on a relay installation



ref. ESSAI-DIAG TEACHING RESSOURCES + PRATICAL WORKS



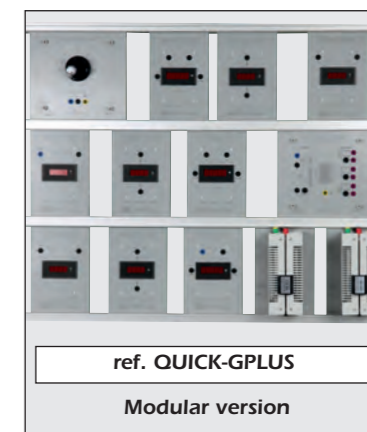
STUDY OF THE 140VA SINGLE-PHASE TRANSFORMER



ref. ETM140 COURS THÉORIQUES + TP CORRIGÉS

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 Modular version

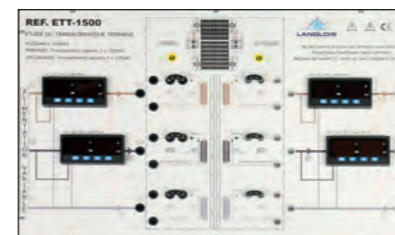
STUDY OF THE 1500VA 3-PHASE TRANSFORMER

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 TEACHING RESSOURCES + PRATICAL 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



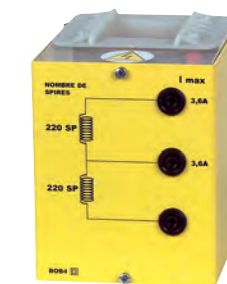
ref. BOB6



ref. BOB2



ref. BOB3



ref. BOB4

SECONDARY COILS

KNX TECHNOLOGY STUDY OF WIRING AND PROGRAMMING



Technical datasheets on our website

EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- To learn about and study the functionalities of a Schneider® KNX 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 datasheets
- To install electrical equipment, route conductor cables, electrical ducts, etc.
- To wire and physically connect different electrical components
- To configure the KNX components
- To put the installation into service
- To perform electrical troubleshooting

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



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.

SYSTEME 3 PANNEAUX - 3 FACES SERIGRAPHIEES



ref. DP3-KNX-C

DELIVERED WIRED AND SET

AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

REAL ELECTRICAL COMPONENTS

ref. DP3-KNX

Version not wired with components delivered as a kit

AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

REAL ELECTRICAL COMPONENTS

Panel 1 equipment

- Screenprinted image of indoor wall of dwelling entrance
- 1 light 230V
- 1 convector 500W
- 1 building technical duct
- 1 flush-mounted box for making the interconnections of the devices.
- 2 pots for hollow partition

Panel 2 equipment

- Screenprinted image of living room wall of a dwelling
- 2 LED lights
- 3 flush-mounted boxes for making the interconnections of the devices.
- 3 boxes for hollow partition

Panel 3 equipment

- Screenprinted image of outer wall of dwelling with window
- 2 halogen type outdoor lights
- 1 electric roller shutter
- 1 flush-mounted box for making the interconnections of the devices.
- 1 surface-mounted weatherproof socket 230V 2P+E

SYSTEME 1 PANNEAU - 2 FACES SERIGRAPHIEES



ref. DP1-KNX

DELIVERED WIRED AND SET

AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

REAL ELECTRICAL COMPONENTS

Panel 1 equipment

- Screenprinted image of indoor wall of dwelling entrance
- 1 LED light 230V
- 1 halogen light 230V
- 1 convector
- 1 modular panel integrating:
 - 1 RC circuit-breaker 30mA
 - 2 thermal-magnetic circuit breakers 10A
 - 1 thermal-magnetic circuit breaker 16A
 - 1 KNX bus power supply 320mA 32 devices
 - 1 programming/connection interface USB/KNX
 - 1 set of KNX actuators allowing the management:
 - a convector, a rolling shutter, variable lighting, TOR outputs
- 1 KNX thermostat with screen and buttons (comfort mode, night mode, eco mode, set point T°C)
- 3 KNX pushbuttons, 2 buttons
- 1 socket 2P+E, 230V.
- 1 flush-mounted box for making the interconnections of the devices.

Panel 2 equipment

- Screenprinted image of outer wall of dwelling with window
- 1 light 230V
- 1 halogen light
- 1 electric roller shutter 230V.
- 1 weatherproof socket 2P+E, 230V.



Foldable and mobile structure



Disassembly of plates




Easy ICTA sheaths passing

INTRODUCTORY CASE AND MODEL FOR THE KNX BUS

Learn about KNX building automation technology quickly and easily with this simple, intuitive model. This instructional solution enables acquisition and validation of the skills, in a simple home automation environment. Ideal for introducing your students quickly and clearly!
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 FULLY WIRED AND CONFIGURED
- AUTONOMOUS WIFI NETWORK
- TEACHING RESOURCES STUDENT / TEACHER
- SIMULATED ELECTRICAL COMPONENTS

 Technical datasheets on our website

EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- To learn about and study the features of a KNX home automation installation
- To understand the specifications of an electrical installation
- To produce electrical diagrams
- To create a parts list of components & analyse manufacturer technical data sheets
- To configure the KNX components
- To put installation into service
- Versions KNX-C only : To configure the WiFi network



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

ref. VALDOM-KNX-C **Communicating version**

ref. VALDOM-KNX **Standard version without Wifi**



ref. MAQ-KNX-C **Communicating version**

ref. MAQ-KNX **Standard version without Wifi**




Dims : H780 x 210 x 280mm



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

KNX CONNECTED HOUSES

 Technical datasheets on our website

- SUPPLIED FULLY WIRED AND CONFIGURED
- AUTONOMOUS WIFI NETWORK
- 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**

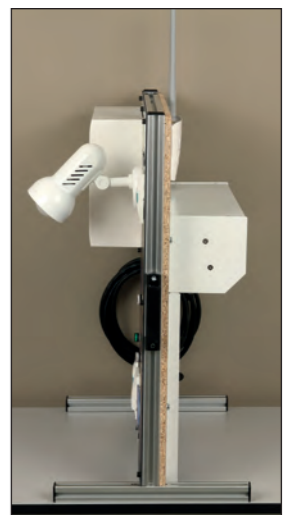


A chassis in aluminium profile to put on table
• Dimensions: (W)1200 x (D)410 x (H)845mm - Weight: 68kg

ref. MCP-KNX **Version on table**



ref. MC-KNX-1



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



Sockets on the back of the console for connecting the modules



Réf. QUICK-KNXPLUS

SUPPLIED CONFIGURED | TEACHING RESSOURCES STUDENT / TEACHER | ELECTRICAL COMPONENTS SIMULATED

Study of the KNX bus - Autonomous subassemblies



Study of lighting control by pushbutton

ref. QUICK-AK1 avec châssis



Study of variation lighting control by pushbutton

ref. QUICK-AK2 avec châssis



Study of lighting control by presence detector

ref. QUICK-AK3 avec châssis



Study of roller blind control by pushbutton

ref. QUICK-AK4 avec châssis



Study of opening control of gate and garage door

ref. QUICK-AK5 avec châssis

Frame : Height 610mm - Width 590mm
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 INTRODUCTORY CASE & MODEL

Safe wiring on 4mm terminals. Identifying information for components and other technical features are printed on the sides. An energy meter integrated in the system can indicate the power consumed by the spotlight and display it directly on your tablet or smartphone through the cloud via the 4G WiFi router.

The WiFi network is created from a 4G WiFi router (delivered without SIM card) in order to have a local network specific to the model and isolated from your institution's WiFi network.

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
- To 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.
The radio switches and the remote control are very easily removable thanks to a gripping band.



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

- To learn about the HOME AUTOMATION environment of an electrical installation
- To learn about and study the functionalities of a MyHome BUS / SCS Legrand®
- 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
- To install electrical equipment, route conductor cables, electrical ducts, etc.
- To wire and physically connect different electrical components
- To configure the MyHome BUS / SCS Legrand® components
- To put the installation into service
- To perform electrical consumption measurements
- To perform electrical troubleshooting

TEACHING FILE SUPPLIED

Teaching instructions in English as Instructor / Students, including:

- Technical instructions, manufacturer resources for MyHome components
- Extracts of electrical standards
- Layout diagram of the components
- Electric wiring diagram
- Different KNX installation programs
- Educational activities to create scenarios in order to optimize the operation of the installation while preserving the comfort of the occupant.



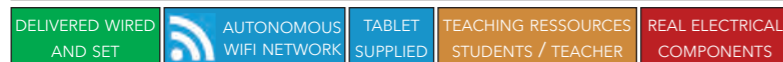
Technical datasheets
on our website

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.

3-PANEL SYSTEM - 3 SCREEN PRINTED FACES



ref. DP3-MH-C



Dimensions fully unfolded: L 4400mm x D 400mm x H 1800mm
Dimensions folded: L 1500mm x D 1800mm x H 1800mm

Panel 1 equipment

- Screenprinted image of indoor wall of dwelling entrance
- 1 light 230V
- 1 convector 500W
- 1 building technical duct
- 1 flush-mounted box for making the interconnections of the devices.
- 3 pots for hollow partition

Panel 2 equipment

- Screenprinted image of living room wall of a dwelling
- 2 LED lights
- 1 flush-mounted box for making the interconnections of the devices.
- 5 boxes for hollow partition

Panel 3 equipment

- Screenprinted image of outer wall of dwelling with window
- 2 halogen type outdoor lights
- 1 electric roller shutter
- 1 flush-mounted box for making the interconnections of the devices.
- 1 surface-mounted weatherproof socket 230V 2P+E

1 PANEL SYSTEM - 2 SCREEN PRINTED FACES



Panel 1 equipment

- Screenprinted image of indoor wall of dwelling entrance
- 1 LED light 230V
- 1 light at 230V
- 1 heater 500W with control wire.
- 1 modular panel integrating:
 - 1 RC circuit-breaker 30mA
 - 3 thermal-magnetic circuit breakers 10A
 - 1 thermal-magnetic circuit breaker 16A
 - 1 power supply of MyHome bus 600mA.
 - 1 up-down modular actuator for MyHome roller shutter.
 - 1 modular interface for MyHome current measurement.
 - 1 modular interface for MyHome heating control.
 - 1 modular actuator for simple lighting
 - 1 modular actuator for variable lighting
 - 1 MyHome / IP Bus Gateway for remote control of the MyHome installation
- 1 thermostat for MyHome heating.
- 3 control actuator buttons with 2 MyHome Céliane relays
- 1 socket 2P+E, 230V.
- 1 flush-mounted box for making the interconnections of the devices.
- 1 audio/video web server for remotely controlling the MyHOME installation using web pages or using the Webserver MyHOME portal for free download on Android or Apple. One WiFi switch is supplied with the web server to control the setup directly from your smartphone or tablet.

Panel 2 equipment

- Screenprinted image of outer wall of dwelling with window
- 1 light 230V
- 1 halogen light
- 1 electric roller shutter 230V.
- 1 weatherproof socket 2P+E, 230V.

ref. DP1-MH



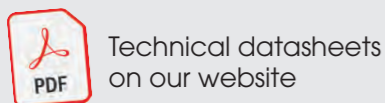
Foldable and mobile structure



Disassembly of plates



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
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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.

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



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



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 TECHNOLOGY



SUPPLIED CONFIGURED	AUTONOMOUS WIFI NETWORK	TEACHING RESOURCES STUDENT / TEACHER	SIMULATED ELECTRICAL COMPONENTS
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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 PROGRAMMING



ref. DP1-3D



ref. DP1-3D-SV version without vidéo

DP1-3D is an automated radio alarm panel, double-sided. This learning solution's goal is to excite the interest of students in allowing them to discover radio automation programming with a touch tablet in an environment very close to reality.

Composition of the entryway

- 1 anti-intrusion radio alarm center, 2 areas, with siren
- 1 radio keyboard to receive information and for remote control, with an LCD display, starting and stopping service. Total and partial operation, 3 access codes (1 master, 2 users). Log of the last 200 events. Information on system status: enabled and disabled, doors open, etc. Siren test. System configuration.
- 1 infrared sensor. Range 12m.
- 1 radio remote control. 4 keys.
- 1 opening contact to protect openings (doors, windows, etc.)
- 1 radio switch for opening/closing the roller shutter.
- 1 radio switch to control lighting.
- 1 radio/RJ45 center to control all components from a touchpad or a smartphone (must download the application from the Apple or Android store).
- 1 WiFi switch.
- 1 2P+E 230VAC plug.
- 1 light to simulate lighting.
- 2 lights to simulate the opening/closing of the roller shutter.

Composition of the dining room side

- 1 infrared sensor. Range 12m.
- 1 camera with infrared radio sensor to visualize the image on a tablet or smartphone. Range 12m. (Ref. DP1-3D only)
- 1 radio switch for opening/closing the roller shutter.
- 1 radio switch to control lighting.
- 1 opening contact to protect openings (doors, windows, etc.)

EDUCATIONAL OBJECTIVES

- Understand and set an anti-intrusion alarm system
- Program different components of an anti-intrusion radio alarm
- Configure a Home automation software on a touch tablet.

CHARACTERISTICS OF THE FRAME

- Frame in matte anodized aluminum.
- On rollers. With handles for easy movement.
- Overall dimensions: L x w x h: 1200 x 600 x 1840mm.
- Mains power supply lead 2P+E, 3 meters.

RADIO TECHNOLOGY - STUDY OF WIRING AND PROGRAMMING



Dimensions fully unfolded:
L 4400mm x D 400mm x H 1800mm

Dimensions folded:
L 1500mm x D 1800mm x H 1800mm

ref. DP3-DD



EDUCATIONAL OBJECTIVES

- To learn about the HOME AUTOMATION environment of an electrical installation
- To learn about and study the functionalities 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 & analyse manufacturer technical datasheets
- To install electrical equipment, route conductor cables, electrical ducts, etc.
- To wire and physically connect different electrical components
- To configure the radio components
- To perform commissioning of the installation
- To perform electrical consumption measurements
- To remote control of the various components from a tablet or Smartphone
- To perform electrical troubleshooting

The aluminium structure of the frame allows ICTA ducts to run the whole height of the panel. The surfaces (12mm thick) of a panel are separated by 120mm which is very convenient for integrating the electrical components, partition pots 50mm and other embedded connection boxes. The different panels are fixed using a 1/4 turn screw system for easy mounting/dismounting of the teaching sequences.

Screenprinted panel 1 : indoor wall of dwelling entrance

Screenprinted panel 2 : living room wall of a dwelling

Screenprinted panel 3 : outer wall of dwelling with window



Foldable and mobile structure for a storage in a minimum of space



Disassembly of plates easy and fast



Easy ICTA sheaths passing.



Technical datasheets on our website



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

DELIVERED WIRED AND SET

AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

SIMULATED ELECTRICAL COMPONENTS



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.

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



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

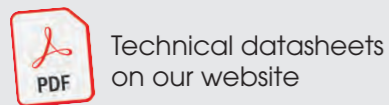
AUTONOMOUS WIFI NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

SIMULATED ELECTRICAL COMPONENTS



Dims : H780 x 210 x 280mm



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



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



RENOVATION OF A CLASSIC RADIO INSTALLATION

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



FRONT



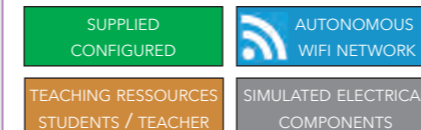
BACK

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



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

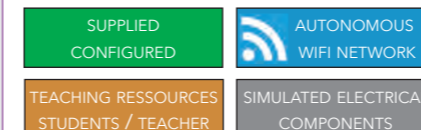
Study of radio roller blind control

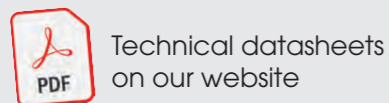
INTELLIGENT HOME ENERGY CONTROL SYSTEM

EDUCATIONAL OBJECTIVES

- Study a measurement system for energy consumption according to new standard for energy saving.
- Study the principle of a home control installation equipped with DELTA DORE® radio components
- Parameter the DELTA DORE® radio components (RF technology)
- Produce wiring for home components.
- Learn how to use a clamp ammeter.

ref. QUICK-NRJPLUS-C





HYBRID VIDEO SURVEILLANCE MANAGEMENT PANEL

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



Dome camera only (TAG-13D only)

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

Provides study of hybrid analog and IP Easy video surveillance. The student can set interconnections to BNC and Ethernet wires. He will be able to configure addressing, settings for different cameras, and visualization of different camera images. Recording on detection or by time range. Electrical energy-independent system. Images of different cameras can be directly visualized on a tablet or smart-phone using an integrated WiFi network.

ACCESS CONTROL MANAGEMENT PANEL

EDUCATIONAL OBJECTIVES

- Understand and configure VIGIK® access management from the RESIDORG software.
- Understand the configuration and programming of a "Master" access card.
- Set the entry authorization of people according to several criteria.
- Make a wiring diagram and the complete wiring of the system.



ref. TAG-10	
SUPPLIED WIRED CONFIGURED	TEACHING RESOURCES STUDENT / TEACHER

Programming and supervision of the system via PC with the supplied software

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



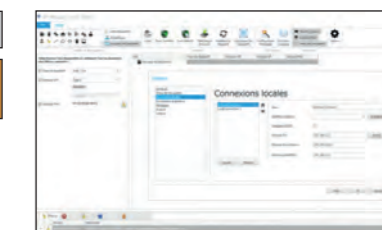
ETHERNET VIDEO / INTERCOM MANAGEMENT PANEL

EDUCATIONAL OBJECTIVES

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



Web server integrated into the management unit

COMMUNICATING COMMISSIONING PLAN MODEL



Technical datasheets on our website

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 the management of security lighting with "SATI report".
- Understand and configure the management of addressable emergency lights.
- Understand the difference between an ambient emergency lights and an evacuation emergency lights.
- Wiring emergency light components and a manager in SATI report configuration and in addressable configuration.
- Configure remote management from a computer.
- Configure a zone manager with touch screen from a computer.
- Configure the addressable emergency lights in the zone manager.

ref. TAG-17

SUPPLIED WIRED CONFIGURED



AUTONOMOUS WIFI NETWORK

TEACHING RESOURCES STUDENT / TEACHER



TRAINING SUITCASE OF EMERGENCY LIGHTING MANAGEMENT



EDUCATIONAL OBJECTIVES

- Understand and configure the management of security lighting with "SATI report".
- Understand and configure the management of addressable emergency lights.
- Understand the difference between an ambient emergency lights and an evacuation emergency lights.
- Wiring emergency light components and a manager in SATI report configuration and in addressable configuration.
- Configure remote management from a computer.
- Configure a zone manager with touch screen from a computer.
- Configure the addressable emergency lights in the zone manager.

ref. VAL-17

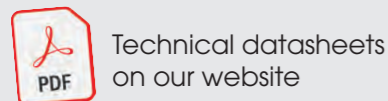
SUPPLIED WIRED CONFIGURED



AUTONOMOUS WIFI NETWORK

TEACHING RESOURCES STUDENT / TEACHER





CONTROL PANEL FOR FIRE ALARM TYPE 4

Version	WIRED		RADIO
	TAG-15	TAG-15-COM	TAG-15-R
Educational objectives			
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 VERSION

ref. TAG-15

SUPPLIED CONFIGURED | TEACHING RESOURCES STUDENT / TEACHER

COMMUNICATING WIRED VERSION

ref. TAG-15-COM

SUPPLIED CONFIGURED | TEACHING RESOURCES STUDENT / TEACHER | AUTONOMOUS WIFI NETWORK

RADIO VERSION

ref. TAG-15-R

SUPPLIED CONFIGURED | TEACHING RESOURCES STUDENT / TEACHER

ANTI-INTRUSION ALARM MANAGEMENT PANEL

EDUCATIONAL OBJECTIVES

- Understanding and setting of an intruder alarm management
- Understanding the setup and software programming
- Understanding of an IP Ethernet network
- Setting an IP camera Ethernet and a WIFI router

ref. TAG-12

SUPPLIED CONFIGURED | AUTONOMOUS WIFI NETWORK | TEACHING RESOURCES 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

LIVRÉ PARAMÉTRÉ | DOSSIER PÉDAGOGIQUE ÉLÈVES / ENSEIGNANT



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 (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

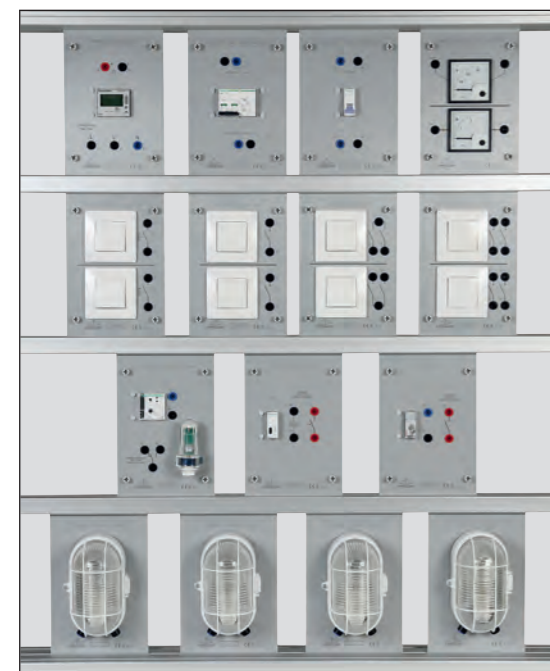
ref. TAG-2



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

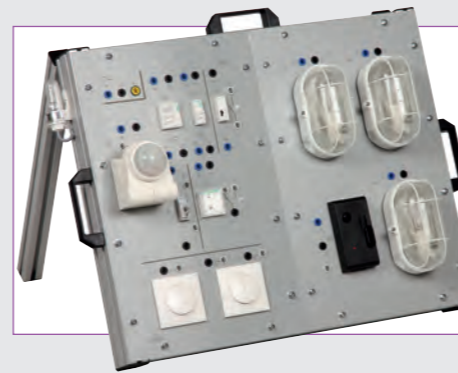
ref. TAE-2-M

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

STUDY OF A WALLBOX FOR ELECTRIC VEHICLE

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 in the form of a TEACHER / PUPIL type practical work.
- Cable schematics

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.



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.



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.



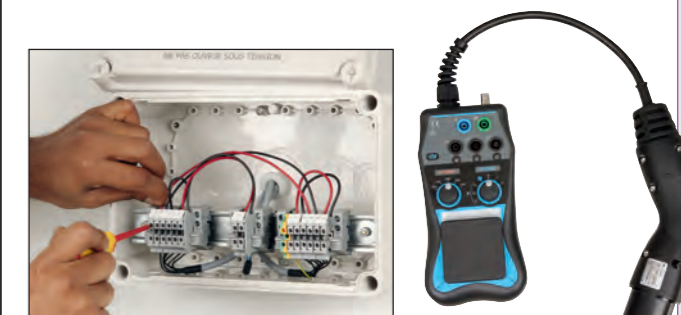
The charging station communicates via Wifi or Bluetooth. The locally created wifi network is specific to the model. It is isolated from the WiFi network of your establishment.



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, keyboard, 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 programming, 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)	✓	✓

Components on the panels	BORNELEC1-M	BORNELEC2-M
3.7 kW to 4.5 kW single-phase electric charging station (one mode 3 type 2 socket) with integrated web server allowing the setting of the station via the Wifi switch or operation by the user via Bluetooth. Application to download free from Play Store® or Apple Store®	✓	✓
RJ45 Wifi switch (connection on 2P + E socket)	✓	✓
Code keyboard with USB port for programming via the software supplied with the model (3 operating modes per RFID badge and / or code)	✓	✓
2P + E surface mounting socket	✓	✓
Waterproof modular electric panel	✓	✓
Differential circuit breaker 30mA	✓	✓
Undervoltage coil	✓	✓
Modular contactor	✓ (2)	✓ (1)
Surge arrester	✓	✓
Clock	✓	✓
Surface switch	✓	✓
Box containing industrial terminals for wiring components in 12Vdc	✓	✓
IRO / IRL tubes for cable passage	✓	✓
3D screen-printed side representing a car garage	✓	✓
Melamine tablet (PC support, oscilloscope ...)		✓

Supplied accessories	BORNELEC1-M	BORNELEC2-M
1 electric vehicle charging station tester to measure, test and simulate signals from an electric vehicle. BNC terminal allows you to observe these signals using an oscilloscope	✓	✓
2 RJ 45 cords (1 and 3 meters))	✓	✓
2 RFID badges for the keyboard	✓	✓
6m of IRO / IRL tube	✓	



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

Charging station tester delivered with the model.

OPTICAL FIBER STUDY



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.

Supplied with a Student + Teacher teaching documentation and numerous practical works, this educational model makes it possible to understand the use of optical fiber and to compare it with Ethernet cabling networks in RJ45.

ref. MAQ-FIB

TEACHING RESOURCES PRODUCED BY A FIBER TRAINER

EDUCATIONAL OBJECTIVES

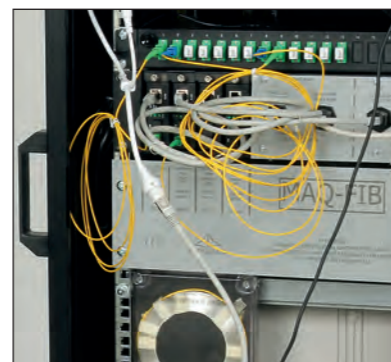
- Presenting the components of an optical link
- Mastering the principles of optoelectronic data transfer
- Understanding the role of an optical coupler
- Compare transmissions on optical media and RJ45
- Address the limits of copper compared to fiber (distances, flow rates, ...)
- Highlighting the main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

Composition of the model

- 1 brewing box composed of:
 - 1 multiple socket protected by fuse
 - 1 fiber optic patch drawer
 - 1 4-way optical coupler connected to the drawer
 - 1 fiber optic coil of 2 km connected to the drawer
 - 1 set of optical fibers connected to the drawer
 - 2 media converter RJ45 / Fiber optic pairs
 - 1 RJ45 cable length simulator
 - 1 teacher interface for fault management (access to the rear by key lock)
- 1 IP camera
- 1 optometer source with visible and invisible light source
- 1 power meter to carry out the attenuation measurements
- 1 RJ11, RJ45, and BNC network tester with remote control block
- 1 set of 4 RJ45 cords and 6 optical fiber
- 1 educational file including:
 - A presentation of the model
 - 6 lessons with video support allowing a complete approach to optical fiber
 - Manufacturer's notices
 - Students / teacher practical work
 - The installation diagram



Back side. Teacher interface for fault creation.



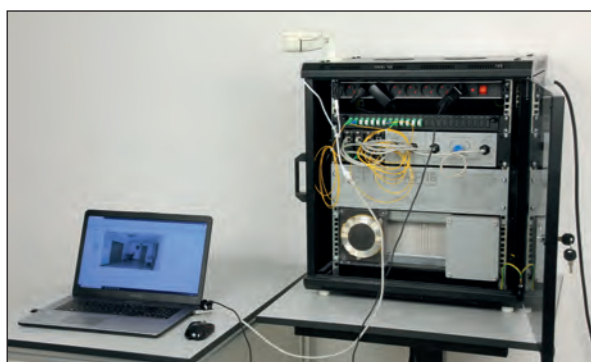
4-way optical coupler



fiber optic coil of 2 km



Fault display box



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.



ref. CONV-1 Operating part alone

ref. CONV-1S

ref. CONV-1S-C Communicating version

DELIVERED WIRED & SET	AUTONOMOUS WIFI NETWORK	TEACHING RESSOURCES STUDENTS / TEACHER
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ref. CONV-2 Operating part alone

ref. CONV-2S

ref. CONV-2S-C Communicating version

DELIVERED WIRED & SET	AUTONOMOUS WIFI NETWORK	TEACHING RESSOURCES STUDENTS / TEACHER
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OPTION OF VISION SENSOR



ref. CONV-VISION

Vision sensor combined with configuration software for part surveillance and recognition by video. The part conveyed under the camera by the conveyor is checked and compared with the image recorded in the memory of the video sensor. If the part does not conform, the conveyor stops and an indicator signals the fault.



Technical datasheets
on our website

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.

OPERATING PART: ELECTRICAL CABINET + LIGHTING CONSOLE

- 1 32A rated 30mA residual current four-pole circuit breaker
- 2 double pole circuit breakers for protecting the 6 lighting circuits
- 6 double pole remote control switches.
- 1 double pole circuit breaker for protecting the PLC.
- 1 connection terminal block
- 6 24V LED lamps
- 6 push-buttons for manual lighting control
- 1 3m multiwire cable for connecting the lights to the electrical cabinet.

PLC

- with 10 relay outputs and 14 inputs, supplied with
- a cable for interconnection with the model
- programming software in English/French in ladder language.
- Dimensions: 170 x 130 x 130 mm. 220-240V AC

MONITORING

- Allows you to manage the lighting control from a PC
 - Offers the basic features of a graphical tool
 - acquisition and display of PLC variables
 - monitoring and control of lights (switching on, switching off and timer)
 - The software's graphics editor supports many applications.
- The user can modify the preloaded demo program or create a new one

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.

OPERATIVE PART

- 6 x traffic lights control INPUT by 24 VDC level
- 4 x car detection sensor OUTPUT by 24 VDC level (supplied by the PLC)
- 6 x traffic lights manual switch on/off
- Interconnection : DB25 plug
- Dimensions : 390 x 325 x 140 mm

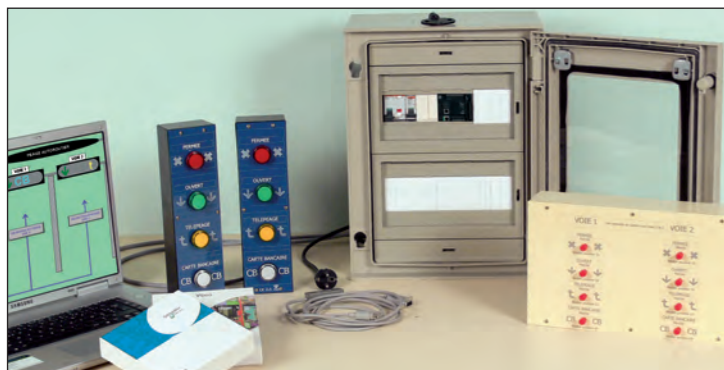
PLC

- model : 9 output & 7 relay inputs, supplied with :
 - one interconnection wire plug link on the didactical model.
 - one programming software based on "contact" language.
- Dimensions : 170 x 130 x 130 mm / 220-240 VAC

MONITORING

- Traffic lights system controlled from a computer
- Visual and intuitive display interface :
 - Acquisition of PLC parameters and visual control
 - Cars and traffic lights monitoring
 - Traffic lights control (switch on/off adjustment time, orange flashing)
- The software visual editor allowed to adapt the basic settings and to change software visual interface. Large possibility of use according to your particular teaching needs.

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 : opening/closure of lanes, management of banker's card or telepayment (electronic road pricing (ERP)) payments, manual or automatic function with time-stamp on the PLC, etc...

OPERATING PART

- 3 push-buttons for On / Cycle Start / Cycle Stop
- 6 switches representing the water level sensors.
- 4 lamps representing the operation of the two pumps.

PLC

- with 7 relay outputs and 9 inputs, supplied with
- a TCP/IP interface for the Ethernet connection
- a 1.5m M/F DB25 cable for interconnection with the model.
- programming software in English/French in ladder language.
- Dimensions: 170 x 130 x 130 mm. 220-240V AC

MONITORING

- Multilingual software for controlling the lights using a PC
 - Offers the basic features of a graphical tool
 - acquisition and display of PLC variables
 - monitoring and control of the station' operation (start-up and shutdown of the pumps and maintenance operations, etc..)
 - The software's graphics editor supports many applications.
- The user can modify the preloaded demo program or create a new one

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.

ELECTRICAL CABINET

- 1 32A rated 30mA residual current four-pole circuit breaker
- 1 single-pole circuit breaker for protecting the PLC and sign
- 1 set of junction boxes

OPERATING PART, EACH CONSISTING OF

- 4 24V lamps (Open / Closed / Banker's card / Telepayment)
- 2 m of multiwire cable for connecting to the electrical cabinet.

PLC

- with 10 relay outputs and 14 inputs, supplied with
- 1 TCP/IP interface for Ethernet connection
- 2 1.5m multiwire cables for interconnection with the model
- programming software in English/French in ladder language.
- Dimensions: 170 x 130 x 130 mm. 220-240VAC

MONITORING

- Multilingual programming software for managing the toll indication cabinet from a PC.
 - Offers the basic features of a graphical tool
 - acquisition and display of PLC variables
 - monitoring and control of the toll lane (lane open, lane closed, payment by BC or telepayment)
 - The software's graphics editor supports many applications.
- The user can modify the preloaded demo program or create a new one

DIDACTIC LIFT



ref. ASC19

DELIVERED WIRED & SET TEACHING RESSOURCES STUDENTS / TEACHER

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

MAIN FEATURES :

- Opening and closing of the doors on each floor is done by electric servo motors.
 - The rear of the lift is visible through the sides and the bottom which are transparent
 - The route of the lift is sensed at each floor by a photo-detectors.
 - Limit switches (without program control) stop the lift if there is an error in the program. These mechanical stops are present on all movement axes of motor.
 - A key switch can return to a position called "normal"
 - All of the buttons and switches are fitted with de-bounce circuits.
 - The outputs are protected against the possibility of a short-circuit.
 - The rear sliding door is of a transparent Plexiglass design and there is no manual access possible, as there is risk of damaging the servomotor.
 - On Input / Output side a 24Vdc power supply is available. An overload and short circuit protection is integrated to the system.
- The mechanical controls are sturdy and can withstand any likely faults.**



Technical datasheets on our website

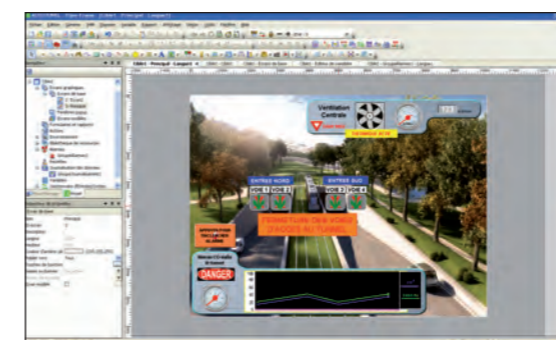
VENTILATION CONTROL AND TUNNEL ACCESS

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



ELECTRIC GATES



POA-11 - Streeer side

ref. POA-11 swing gates



POA-11 - House side

ref. POA-22 sliding gate

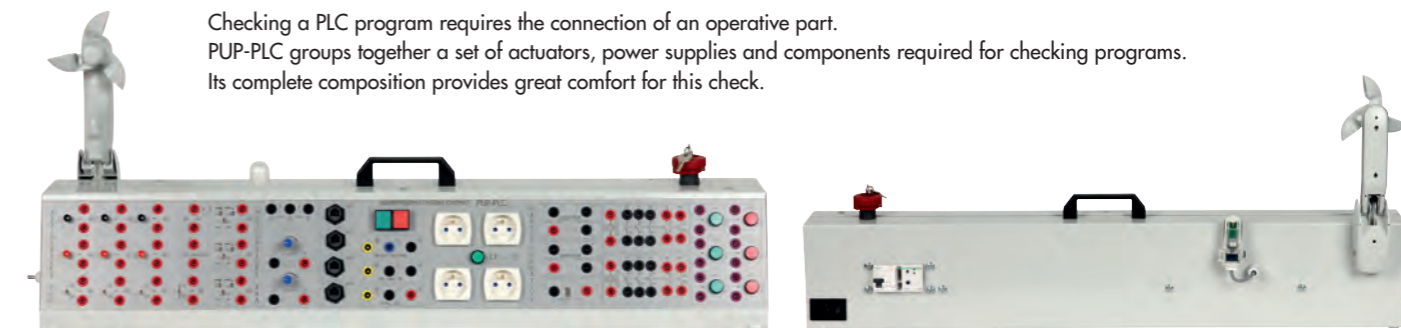
TEACHING RESSOURCES STUDENTS / TEACHER

EDUCATIONAL OBJECTIVES

- To observe and understand the operation of electric gate automation.
- Reminder about the different solar panel technologies.
- To study the operation of an assembly of solar panel, battery, charge regulator.
- To take measurements of electrical values.
- To study the operation of photo-electric cells.
- To learn how to program gate automation according to several operating criteria.
- To perform industrial maintenance operations.

SIMULATOR FOR CHECKING CONTROLLER (PLC) PROGRAMMING

Checking a PLC program requires the connection of an operative part. PUP-PLC groups together a set of actuators, power supplies and components required for checking programs. Its complete composition provides great comfort for this check.



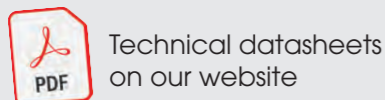
ref. PUP-PLC

Features

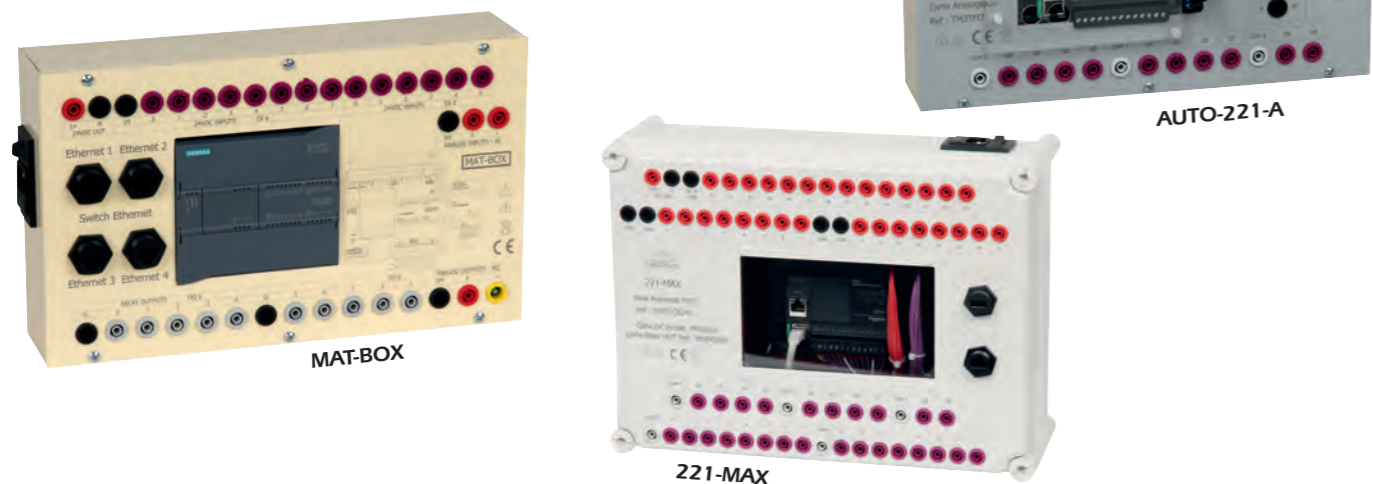
- 3-metre power cord for power supply 230V-50/60Hz single phase.
- Console dimensions: 1000 x 160 x h 300mm. Weight: 14kg.

Composition of the console

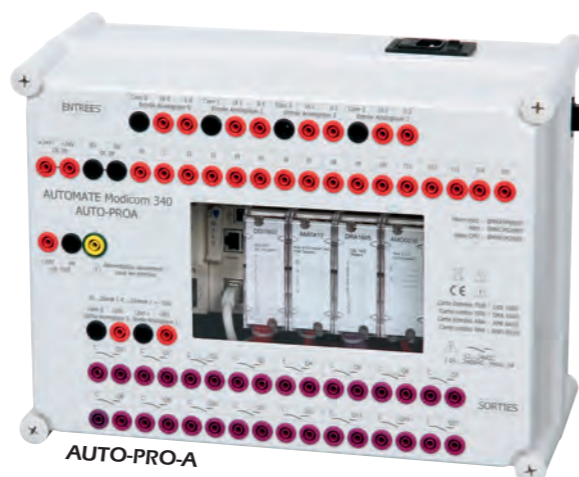
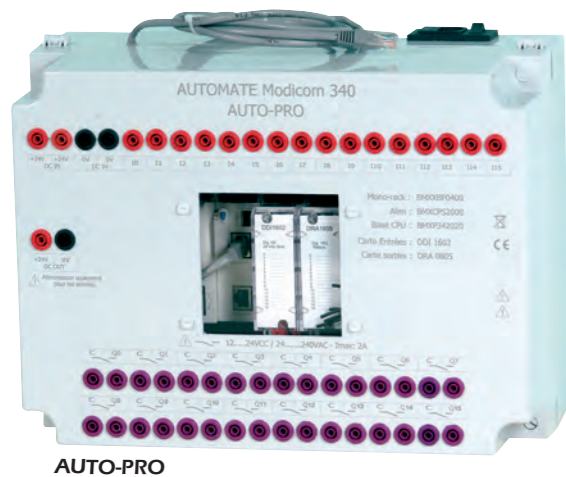
- 1 Start / Stop button with indicator light (general control)
- 1 thermal magnetic + RC circuit-breaker 30mA
- 3 pushbuttons NO
- 3 pushbuttons
- 2 ON/OFF switches NO
- 2 ON/OFF switches
- 1 wind sensor, binary contact
- 1 light sensor, binary contact
- 3 limit switches NO
- 1 Temperature sensor PT100, 3-wire output
- 1 voltage generator adjustable by potentiometer from 0 to 10VDC
- 1 current generator adjustable by potentiometer from 4 to 20mA
- 1 dimmer 230VAC with control 0-10VDC
- 1 dimmer 230VAC with control 4-20mA
- 1 buzzer 24VDC
- 2 3-pole contactors 24VAC + 2 auxiliary contacts NO
- 3 green indicator lights 24VAC
- 3 red indicator lights 24VAC
- 1 source of fixed voltage 230VAC 50Hz
- 1 source of fixed voltage 24VDC
- 1 source of voltage 24VAC 50Hz
- 1 carrying handle



INTEGRATED PLC UNITS



Ref.	MAT-BOX	AUTO-221	AUTO-221-A	221-MAX	AUTO-PRO	AUTO-PROA
Brand	SIEMENS	SCHNEIDER			SCHNEIDER	
Model	SIMATIC S7-1200	M221			MODICOM M340	
Software	LOG-STEP (en option)	EcoStruxure Machine Expert Basic (fourni)			CONTROL EXPERT (en option)	
Nb of inputs	14 inputs 24VDC		30 inputs 24VDC		16 insulated inputs 24Vcc	
Number of outputs	10 All or Nothing outputs 2A max on resistive load	10 All or Nothing outputs 2A max		26 All or Nothing outputs 2A max	16 sorties 2A max - TOR	
Analog	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	330 x 200 x 80mm	380 x 280 x 180mm	360 x 270 x 170mm		
Supplied with	1 Ethernet RJ45 3-m cable. 6 detailed 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



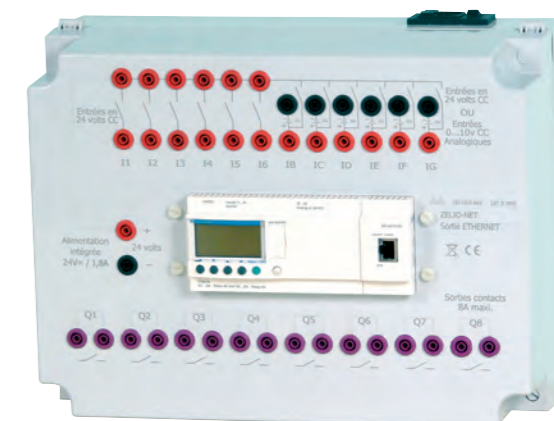
Réf.	TOUCH-BOX	STU-BOX4	STU-BOX6
Brand	SIEMENS	SCHNEIDER	
Model	Simatic KTP600	HIMISTU	
Software	LOG-STEP (in option)	VijeoDesigner (supplied)	
Touchscreen	5,7" TFT 256 colours	3,5" 65536 colours	5,7" 65536 colours
Resolution	320 x 240 pixels		
Ethernet	1 RJ45 connector	6 RJ45 connectors (Including 1 5-ports switch)	1 RJ45 connector
USB	no	1 USB 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

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

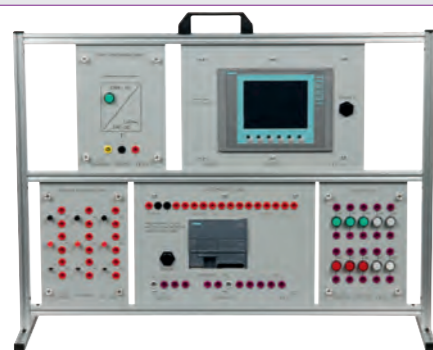
- To study the connection diagram of the inputs and outputs of a PLC.
- To study the configuration of a computer Ethernet.
- To study the programming of a PLC in contact language.
- To study the programming of an HMI (Human Machine Interface).
- Carry out a WiFi network configuration for ordering on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

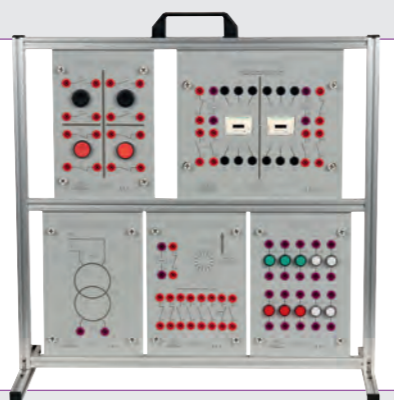
STUDY OF CONTACTOR + TIMING

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

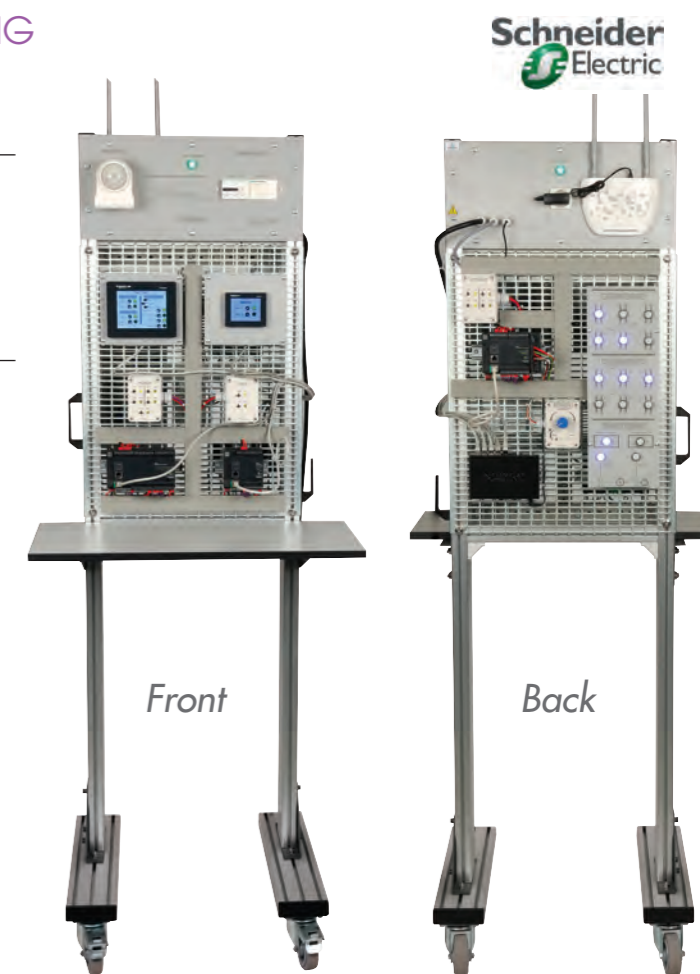
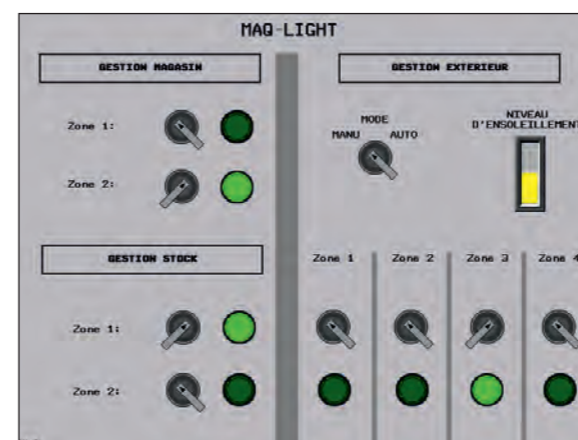
MANAGING OF HYPERMARKET LIGHTING BY SUPERVISION

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



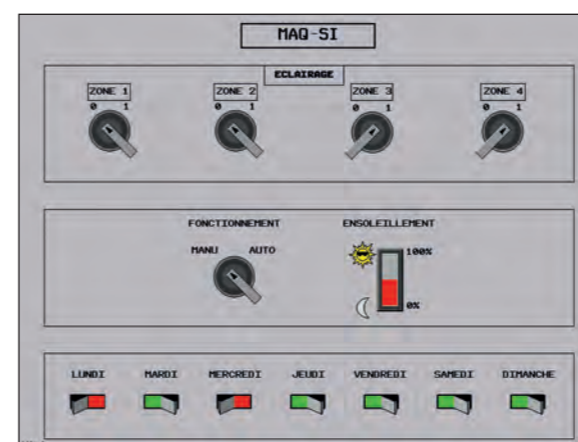
STUDY PLC SIEMENS® WITH SUPERVISION SIMULATION OF LIGHTONG COMMERCIAL SPACES

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

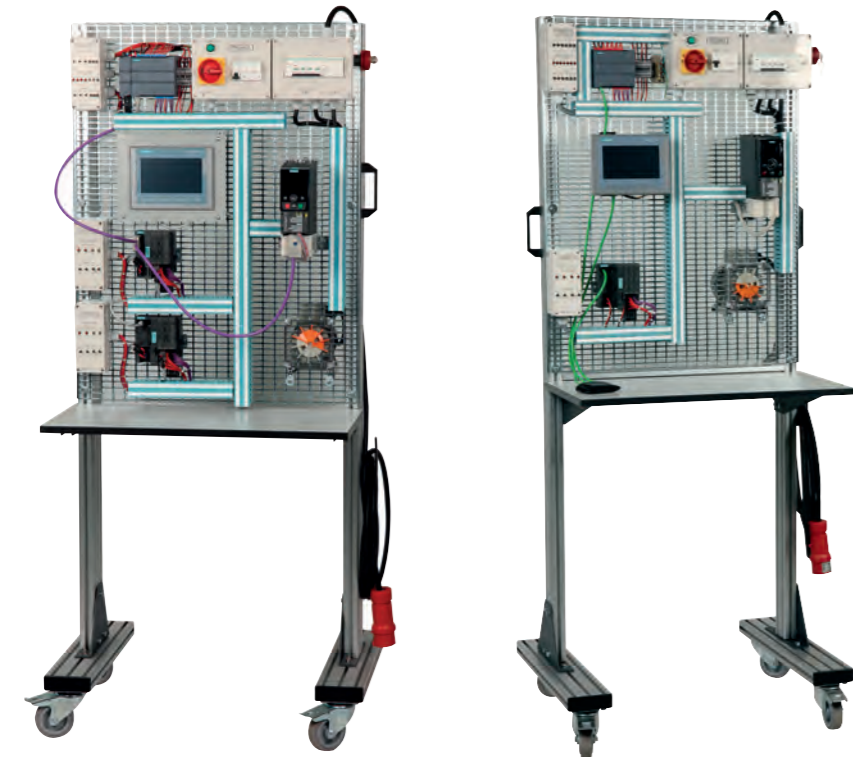
DELIVERED WIRED & SET
TEACHING RESSOURCES STUDENTS / TEACHER



FIELD BUS STUDY FOR PROFINET AND PROFIBUS
SIEMENS® COMPONENTS



Technical datasheets on our website

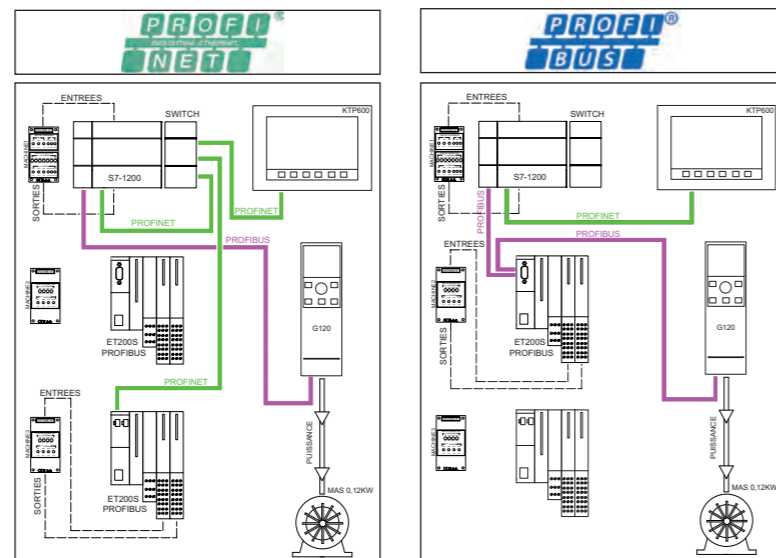


DELIVERED WIRED & SET | AUTONOMOUS WIFI NETWORK | TEACHING RESSOURCES STUDENTS / TEACHER

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



Schémas de câblage et Bus de la version MAQ-NET

FIELD BUS STUDY FOR ETHERNET
SCHNEIDER® COMPONENTS



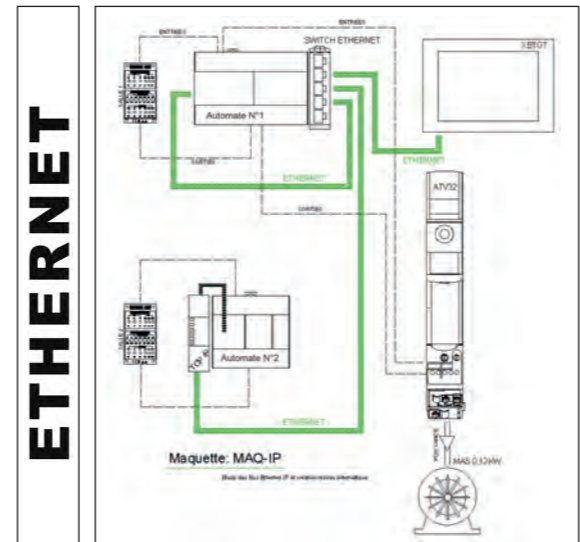
EDUCATIONAL OBJECTIVES

- 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



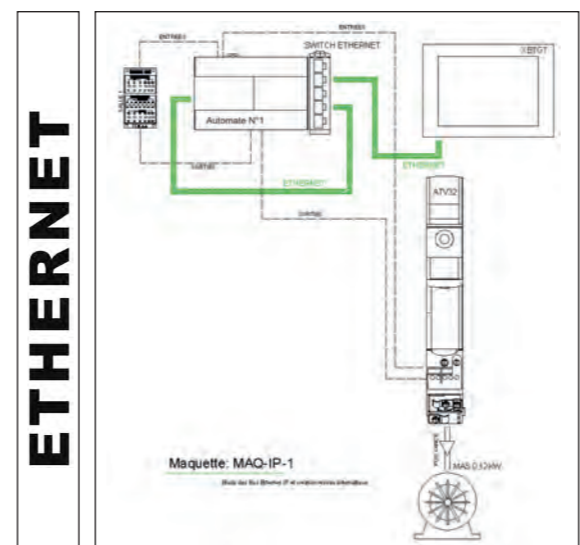
ETHERNET

Technical datasheets on our website

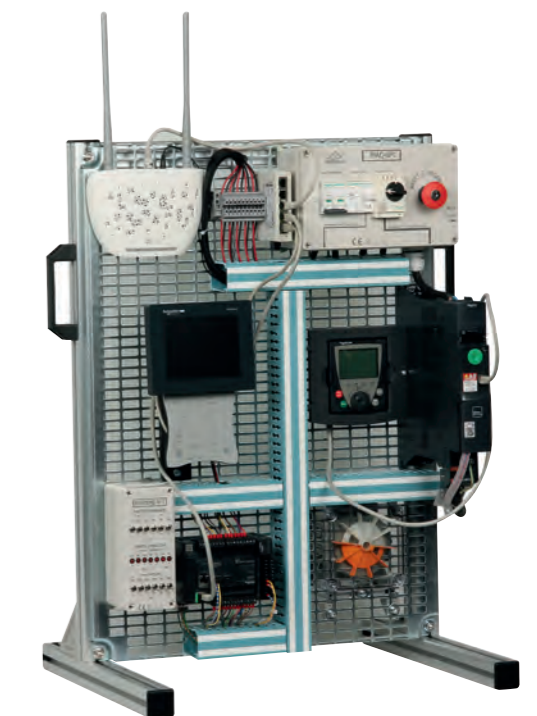


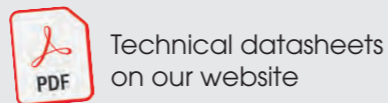
ref. MAQ-IP-1 version simplified (only 1 PLC)

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



ETHERNET





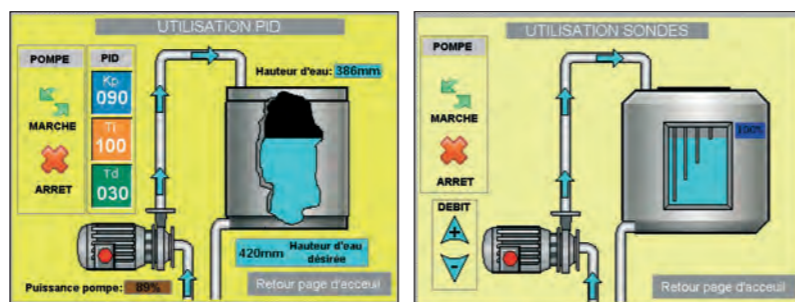
REGULATION DE NIVEAU PAR AUTOMATE ET ECRAN TACTILE

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
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Using the PID on the touchscreen

Using Probes on the Touchscreen



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.

Réf. MAQ-ND

Réf. MAQ-NIV without flow rate regulation

DELIVERED WIRED & SET	TEACHING RESSOURCES STUDENTS / TEACHER
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Operative part only

Réf. MAQ-ND-OP



SYSTEM FOR WATER LEVEL AND FLOW REGULATION BY PID

EDUCATIONAL OBJECTIVES

- 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. DESNIIV

DELIVERED WIRED & SET	TEACHING RESSOURCES STUDENTS / TEACHER
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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



STANDARDS MODELS : 3-PHASE 400V

Available on single-phase 230V
Add -230 at the end of the references

4 communicating models to choose from

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

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

- Failure 1: General operation fault
- Failure 2: Sensor supply fault
- Fault 3: 4-20mA signal fault of the water level regulation
- Failure 4: PLC power supply fault
- Failure 5: Float 1 fault
- Failure 6: Float 2 fault
- Fault 7: Flow control 4-20mA signal fault
- Fault 8: PID output signal fault (except HYDRO-3/HYDRO-4)
- Fault 9: Motor pump 1 running fault
- Fault 10: Motor pump 2 running fault

ref. HYDRO-PAN

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. REGULOR ref. REGUL-S communicating version

USER MANUALS + THEORETICAL COURSES



MODULAR VERSIONS

ref. QUICK-O ref. QUICK-OS communicating



Technical datasheets on our website

PIUD AND ON/OFF REGULATION TRAINING SUITCASE



ref. VAL-REG ref. VAL-REG-C communicating version

DELIVERED WIRED AND SET

TEACHING 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



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 MANUALS + THEORETICAL COURSES



MODULAR VERSIONS

ref. QUICK-K ref. QUICK-KS communicating



CHAIN COMPONENTS OF REGULATION

HEATING UNIT



ref. RH-BOX

ALL OR NOTHING REGULATORS



ref. TOR2002-BOX



ref. TOR-COM communicating version

PID REGULATORS



ref. AT403-BOX



ref. PID-G communicating version

PT100 TEMPERATURE SENSOR



ref. PT100-BOX

PT100 - 4-20mA TEMPERATURE CONVERTER



ref. TMPT-BOX

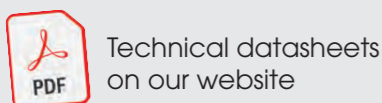
SCR POWER CONTROLS

ref. CIA-GRA30T tri

ref. CIA-GRA30M mono



ref. GRAD-BOX mono



TEMPERATURE CONTROL BY PLC

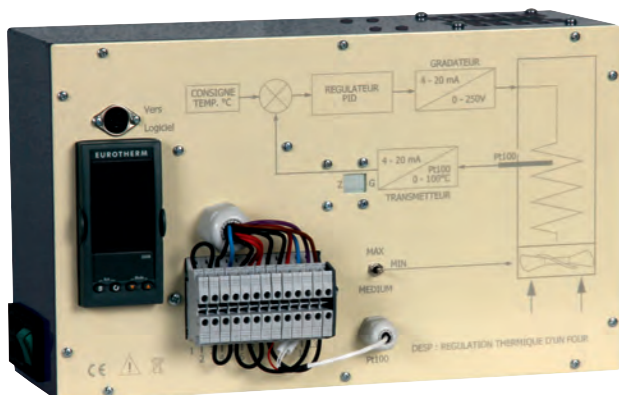


Ref. REGULAIR USER'S MANUAL + PRACTICAL WORKS

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.

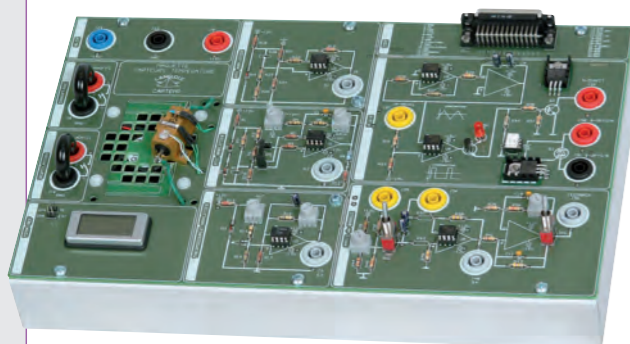


SYSTEM FOR HEAT REGULATION BY PID

EDUCATIONAL OBJECTIVES

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

Ref. DESP USER'S MANUAL + 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.

Ref. CAPTEMP USER'S MANUAL + PRACTICAL WORKS

MODEL FOR ELECTRICAL AUTHORIZATION IN AN INDUSTRIAL ENVIRONMENT

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



Industrial grid face



Power supply side

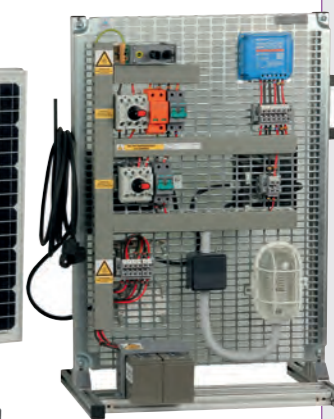
MODEL FOR ELECTRICAL ACCREDITATION IN A SOLAR INSTALLATION

EDUCATIONAL OBJECTIVES

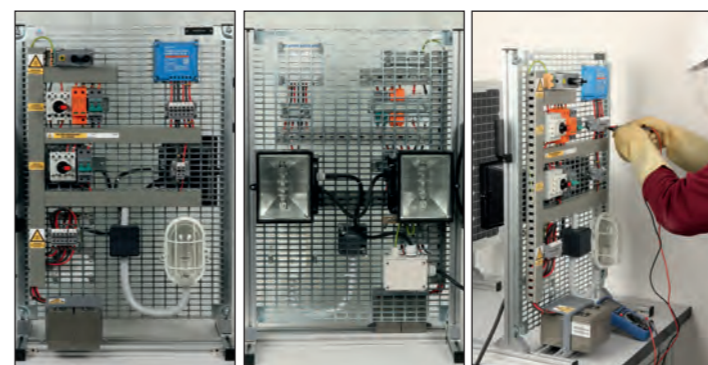
- Study a solar installation for the electrical energy production
- Apply knowledge, rules and methods according to the accreditation of electrical hazards
- Carry out practical work and wiring tasks related to photovoltaic electrical accreditation
- Practice maintenance and servicing operations on a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



Solar panel frame



Solar system frame



Face avant

Face arrière

Mesure de tension



ref. HABILIT-SOL

SUPPLIED CONFIGURED



TEACHING RESSOURCES STUDENT / TEACHER

CABINET FOR ELECTRICAL AUTHORIZATION

The service voltage of 24VDC, protected by fuse and circuit-breaker, 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. Available in 3 versions, fixed or mobile.

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 (Personal Protective Equipment)
- Reading the current in the electrical cabinet using a clamp ammeter

TEACHING RESSOURCES
STUDENTS / TEACHER

Features

- 3-metre mains lead for battery charger
- Dimensions : HABILIT24-CA: 800 x 800 x h 1800mm - Weight: 90kg
HABILIT24: 450 x 700 x h 2000mm - Weight: 96kg
HABILIT24-S: 600 x 800 x h 2120mm - Weight: 111kg
HABILIT12 : 480 x 240 x 1000mm - Weight: 49kg



ref. HABILIT24-CA

Open version on wheels

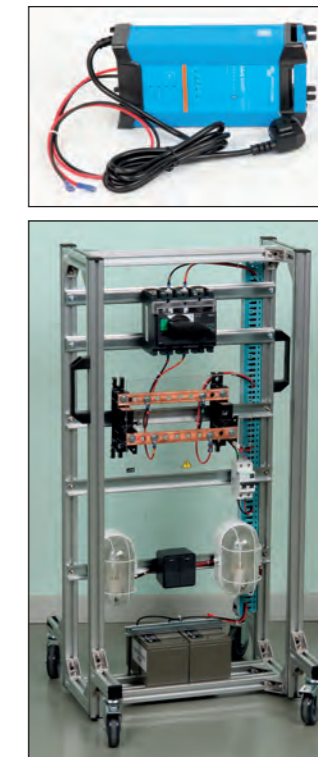


ref. HABILIT24-S

Cabinet version on wheels

ref. HABILIT24

Cabinet version - Fixed



ref. HABILIT12

Compact model on wheels

COMPACT MODEL FOR ELECTRICAL AUTHORIZATION

EDUCATIONAL OBJECTIVES

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

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 ...)



Portable model for the implementation of electrical hazards authorization (BO / BOV / BE maneuver / BS) in a housing type environment.

The 24VAC service voltage protected by fuses, makes the use of the model completely secure.

The component marking information and other technical features are screen printed on PVC faces.

ref. HABILIT6

USER'S MANUAL + PRACTICAL WORKS



Technical datasheets on our website



ref. EF2



ref. CEF



ref. CA-SGH



ref. CA-G8



ref. CA-HA12



ref. CA-HA13

STUDY OF EARTHING CONNECTIONS (NEUTRAL SYSTEM)



ref. SLT-1-T8
Version with HMI and support arm

TEACHING RESSOURCES
STUDENTS / TEACHER



Technical datasheets on our website



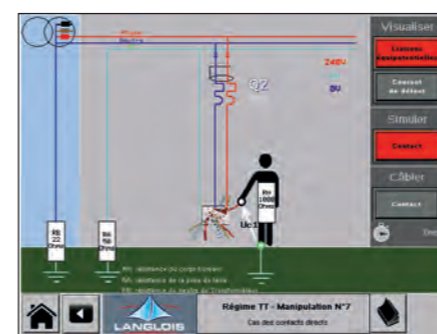
ref. SLT-1
Version with PC not supplied

EDUCATIONAL OBJECTIVES

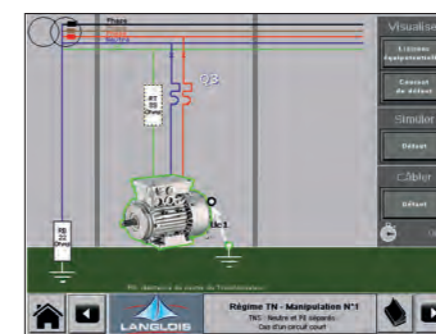
- To learn about the notion of electrical hazard (qualitatively and quantitatively).
- To demonstrate the features of each earthing connection scheme (TT, TN, IT)
- To be able to explain the role of each element of the protective arrangements (earthing connection, thermal magnetic circuit-breaker, residual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

Practical works - 2 types

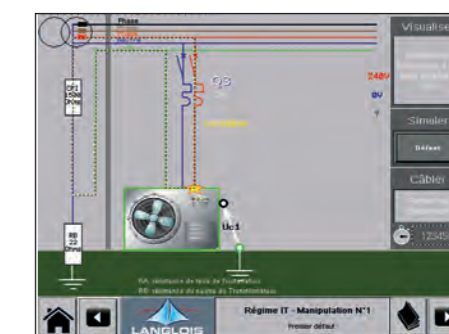
- Demonstrating the structure of the protective arrangements against indirect and direct risks.
 - Defining the selection criteria for the different components (protection sensitivity, etc.)
- Study of 7 scenarios for the TT system, 3 for TN and 5 for IT. Supplied with booklet for guiding the student through the course. Contains a note on the 3 NEUTRAL SYSTEMS and some recaps of standard NFC 15-100. For each test, this gives the objectives, the diagram, questions on the calculations to be done, on the measurements to be carried out and on the diagnostics to make.



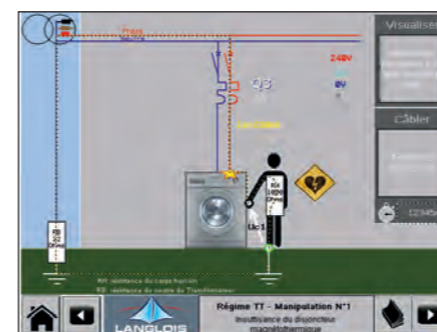
Example of screen - Test in TT mode: direct contact



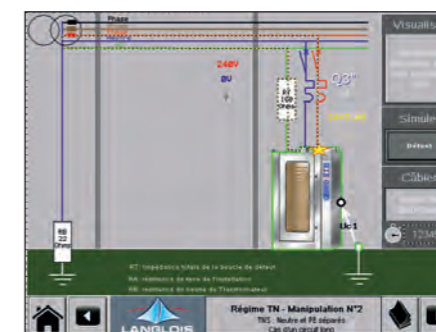
Example of screen - Test in TN mode: visualization of equipotential bonds



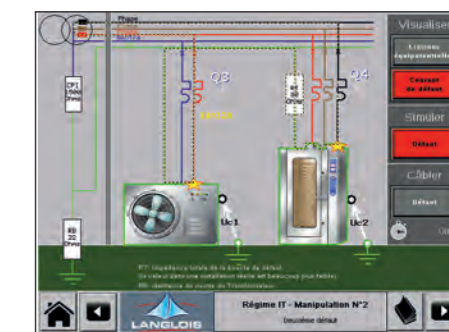
Example of screen - Test in IT mode: first fault



Example of screen - Test in TT mode: failure of the magnetothermal circuit breaker



Example of screen - Test in TN mode: neutral and PE separated. Case of a long circuit



Example of screen - Test in IT mode: visualization of fault currents.

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



EDUCATIONAL OBJECTIVES

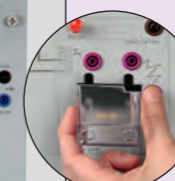
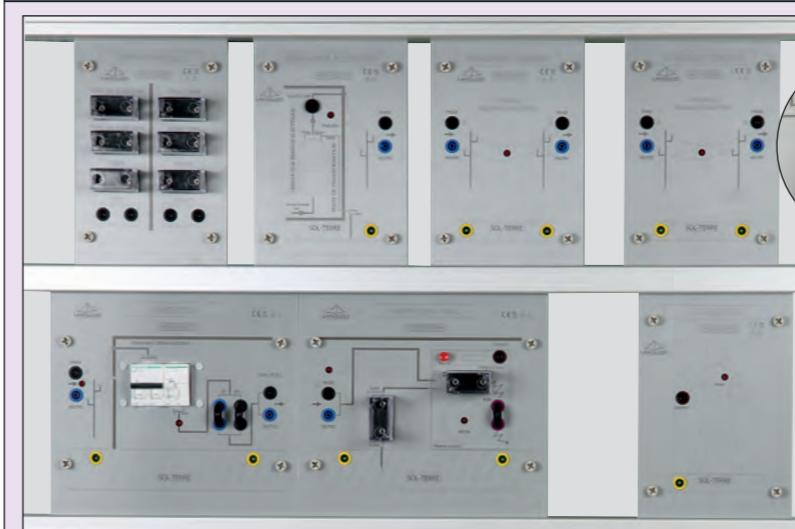
- Educating students about the risks of electrocution in the event of direct contact
- Educating students about the risks concerning the quality of the earth
- Showing the role of a 30mA residual current circuit breaker in a house

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

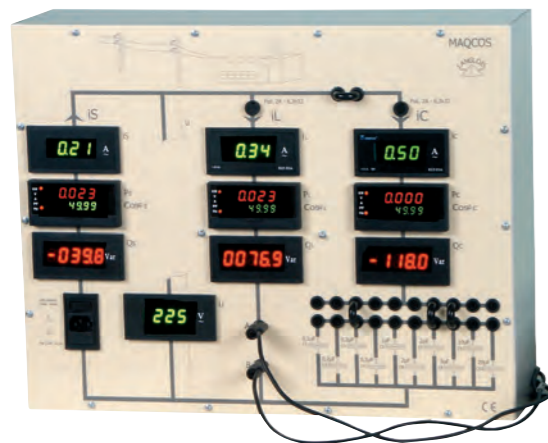
ref. SELDIF TEACHING RESSOURCES STUDENTS / TEACHER

MODULAR VERSION



ref. QUICK-HPLUS

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.



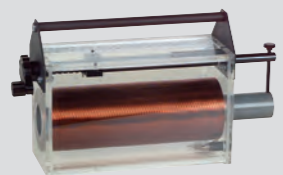
Proposed Practical Works

- studying of an industrial air extraction installation:
Current of branches – power of the transport line with and without power factor correction – Active and reactive power in the branches – Fresnel diagrams
- Study of the pure inductance of a plant in working in order to determine the capacitor bank necessary. Role of automatic compensation
- Study of resonance, max / min current

ref. MAQCOS

USER'S MANUAL WITH PRACTICAL WORKS

VARIABLE INDUCTANCE OPTION

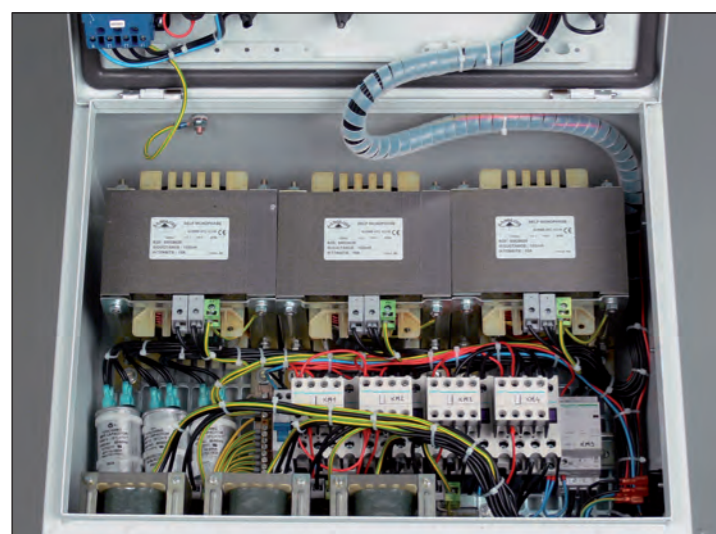


ref. PSYJR

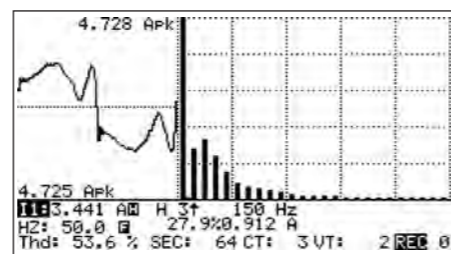
STUDY OF THE 3RD AND 5TH ORDER HARMONICS

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.

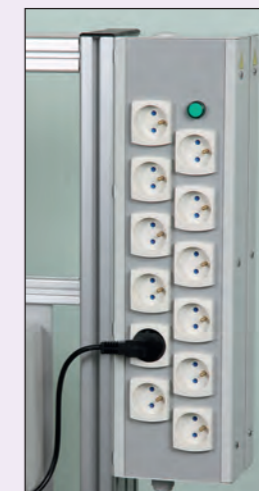


ref. HARMOVAR



H3 filter activated

MODULAR VERSION



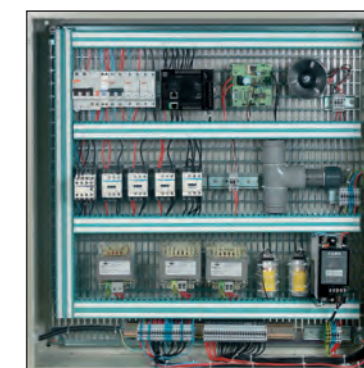
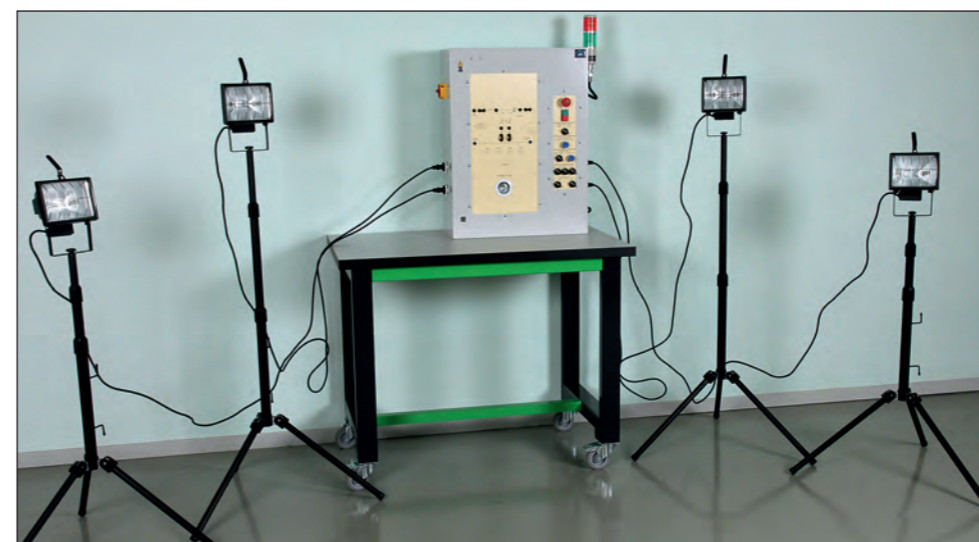
Sockets at the rear of the desk for connection modules

ref. QUICK-LPLUS



Technical datasheets on our website

POWER QUALITY CONTROL



Inside view of the cabinet

ref. HARMO-35

USER'S MANUAL WITH PRACTICAL WORKS

EDUCATIONAL OBJECTIVES

- Understanding and using of the method of Fourier series decomposition
- Studying of the power in presence of harmonics
- Understanding the compensation of the power factor by harmonics correction
- Studying the functioning of the dephasing dimmer

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



Vue de profil



Rear view



ref. ECP-DD

DELIVERED
WIRED AND SET

AUTONOMOUS
WIFI NETWORK

TEACHING RESSOURCES
STUDENTS / TEACHER



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.

Practical works

- Configuration of the speed controller with software.
- Configuration of the energy measuring unit.
- Comparison of energy consumption.
- Calculation of the cost of depreciation of the speed controller.
- Reading and plot of the electrical characteristics.

ref. MAQ-WATT

TEACHING RESSOURCES STUDENTS / TEACHER



SMART ENERGY MANAGEMENT

EDUCATIONAL OBJECTIVES

- Study an industrial-type electrical installation
- Study an energy measurement system
- Establish an energy balance
- Understand the specifications of an electrical installation
- Draw electrical diagrams
- Create a parts list
- Analyse manufacturers' technical data sheets
- Connect and configure the components
- Configure a WIFI network to allow remote control with tablet or Smartphone
- Realize the commissioning of the installation

ref. ADE-TGE1

DELIVERED
WIRED AND SET

AUTONOMOUS
WIFI NETWORK

TEACHING RESSOURCES
STUDENTS / TEACHER



System for attaching and quickly removing the grid in the closet.



Grid support at the back of the box allowing the wiring of the grid before it is used in the 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
Length of the base 700mm.

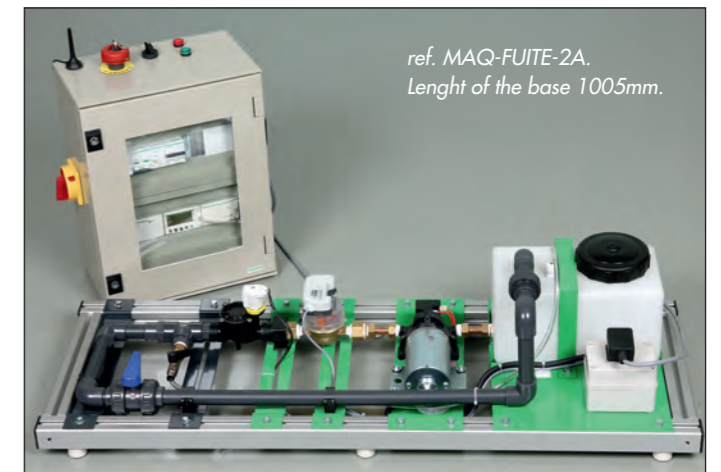


Version with no pump or tank.
Requires a pressurized water inlet in the room.

ref. MAQ-FUITE2

TEACHING RESSOURCES STUDENTS / TEACHER

ref. MAQ-FUITE-2A.
Length of the base 1005mm.



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

ref. MAQ-FUITE-2A

TEACHING RESSOURCES STUDENTS / TEACHER

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

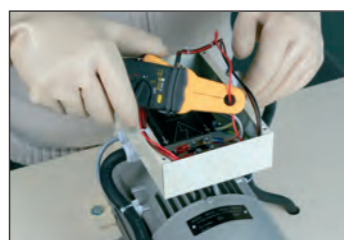
The user's manual has been made by teachers, allowing the quick implementation of the product and the creation of practical work in the spirit of fault finding in the industry.

ref. MOTODIAG

USER'S MANUAL WITH PRACTICAL WORKS



View of the student side, with glass door.



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



View of the teacher side, door closed and open.



Technical datasheets on our website

UNIT FOR FAULT DIAGNOSIS ON INDUSTRIAL ELECTRICAL WIRING

EDUCATIONAL OBJECTIVES

- To learn and understand the wiring of motor startup
- To produce an industrial wiring diagram
- To simulate the most frequent faults on an industrial installation
- To take the measurements of the different electrical values
- To analyse and interpret the results
- To find the faults on a relay installation

Practical works

- Identification of the different components
- Producing the electrical diagrams
- Reading the currents and voltages in the circuit
- To find the different faults on the circuit using measuring devices



ref. ESSAI-DIAG

USER'S MANUAL WITH PRACTICAL WORKS

PLC FAULTS DIAGNOSIS UNIT

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



Supplied with loop calibrator 4-20mA

Practical works

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



ref. PLC-DIAG

USER'S MANUAL WITH PRACTICAL WORKS



ref. TEMP-DIAG

USER'S MANUAL WITH PRACTICAL WORKS

FAULT DIAGNOSIS 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.





Technical datasheets on our website

PNEUMATIC HANDLING LINE

EDUCATIONAL OBJECTIVES (following version) —

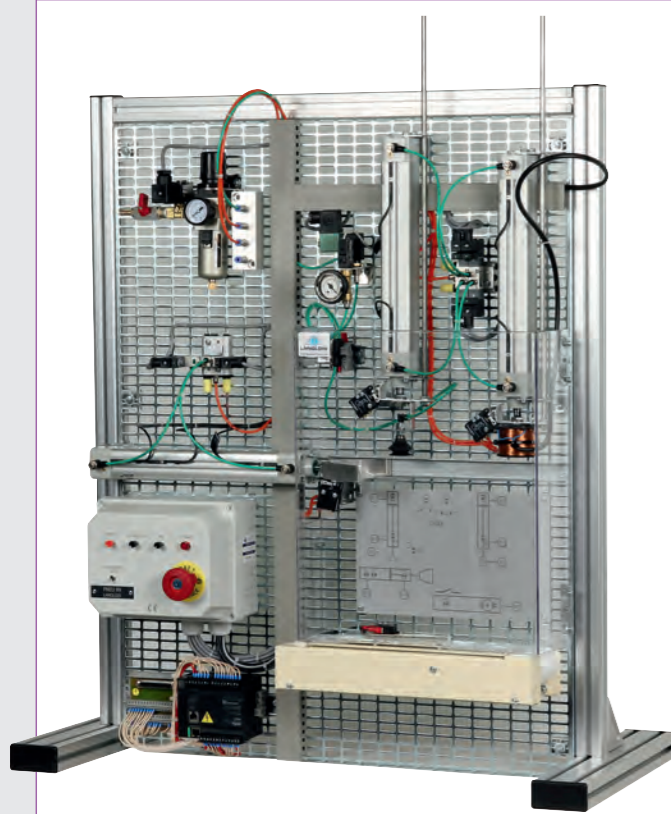
- Introduction to pneumatic components
- Commissioning, handling of pneumatic equipment
- Controlling the system in manual mode
- System control in sequential mode
- PLC programming approach
- System control in automatic mode
- Configure and program a PLC
- Configure and program an HMI
- Become familiar with supervision
- Study Ethernet / IP addressing
- Study a communication by Wifi

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

TEACHING RESSOURCES STUDENTS / TEACHER



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



STUDY OF PNEUMATIC COMPONENTS

EDUCATIONAL OBJECTIVES —

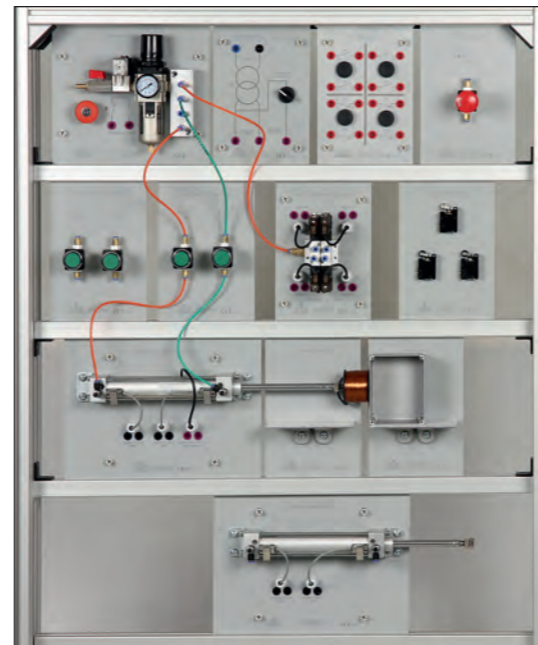
- To study the symbols used to represent pneumatic components
- To study the operation of a double-acting cylinder
- To study the operation of a double-acting cylinder with electromagnet
- To study the wiring of pneumatic and electropneumatic automation

ref. QUICK-PN1 PLUS

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

SMART PNEUTATIC CHAIN: DIAGNOSTICS AND MAINTENANCE



ref. PNEU-22-OP operative part onlye

ref. PNEU-22-C with console and HMI - communicating version

WIFI AUTONOMOUS NETWORK

TEACHING RESSOURCES STUDENTS / TEACHER

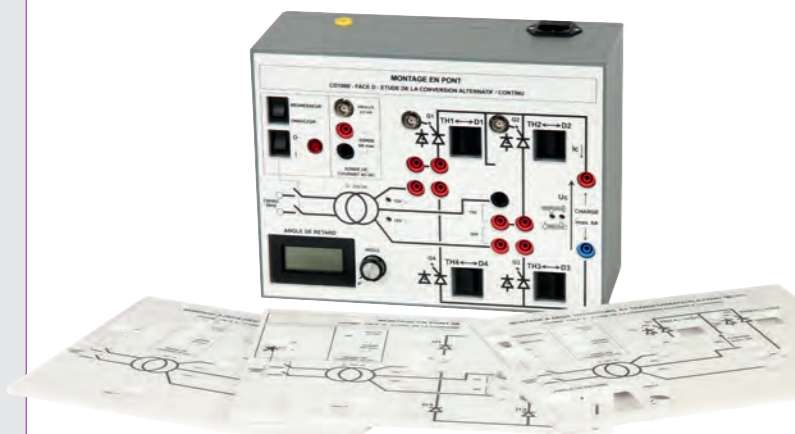


EDUCATIONAL GOALS	PNEU-22-OP	PNEU-22-C
Learn about pneumatic components	✓	✓
Understand an electro-pneumatic circuit	✓	✓
Study the control and safety devices	✓	✓
Understand an operating cycle	✓	✓
Commission and operate pneumatic equipment	✓	✓
Find and diagnose faults	✓	✓
Learn all aspects about industrial automation		✓
Set and program a PLC		✓
Program a manual mode using the console buttons		✓
Program an automatic mode		✓
Learn about supervision		✓
Set and program an HMI		✓
Program a supervised mode		✓
Learn about the Ethernet network		✓
Study Ethernet / IP addressing		✓
Study a communication by Wifi		✓
Control the system remotely via Wifi		✓

SINGLE-PHASE / DIRECT CURRENT CONVERSION TEST BENCH

RECTIFIER

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



ref. CO-1000

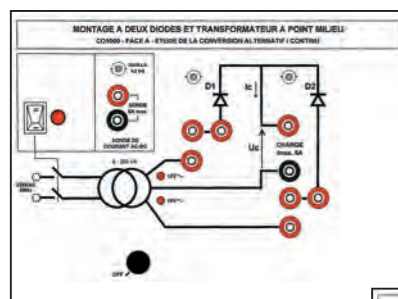
TEACHING RESSOURCES WITH PRACTICAL WORKS

SOME CO-1000 PRACTICES REQUIRE OPTIONAL ACCESSORIES

- Rheostat ECO1/2 10Ω Ref. ECO1/2 10Ω
- Variable coil Ref. PSYJR
- 90W motor Ref. CO-110

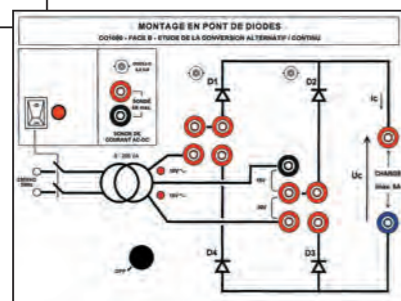


- Réf. CO-104 Smoothing coil 40mH - 3A
- Réf. CO-105 Smoothing coil 20mH - 3A
- Réf. CO-108 Smoothing coil 60mH - 3A
- Réf. CO-106 12V/24V Battery



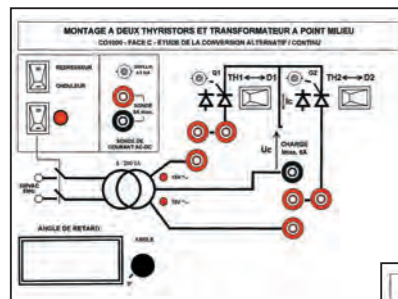
PANEL A: ASSEMBLY WITH TWO DIODES AND MID-POINT TRANSFORMER

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)



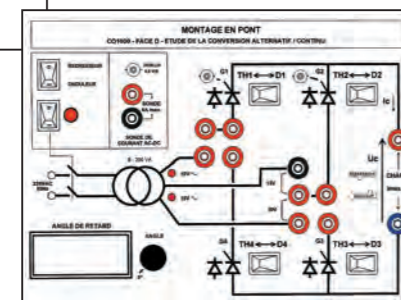
PANEL B: DIODE BRIDGE CIRCUIT ASSEMBLY

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.



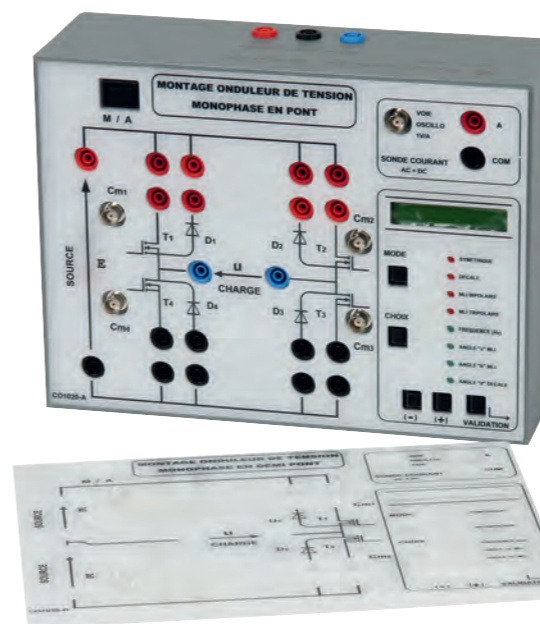
PANEL D: BRIDGE CIRCUIT ASSEMBLY (ALL RECTIFIERS OR MIXED)

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

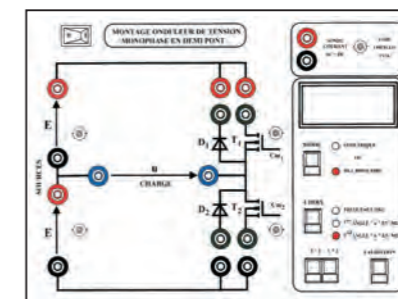


SOME CO-1020 PRACTICES REQUIRE OPTIONAL ACCESSORIES

- Ref. ECO1/2 10Ω Rheostat ECO1/2 10Ω
- Ref. ECO1/2 15Ω Rheostat ECO1/2 15Ω
- Ref. ECO1/2 22Ω Rheostat ECO1/2 22Ω
- Ref. ECO1/2 33Ω Rheostat ECO1/2 33Ω
- for an optimal use, low resistance loads are better
- Ref. PSYJR Variable coil
- Ref. CO-106 12V/24V Battery
- Ref. CO-107 Single-phase transformer 12V - 230V with its lamp 230V - 40W
- Ref. CO-109 load made up of a 40W machine 12V/230V
- Ref. CO-122 Capacitor 22μF

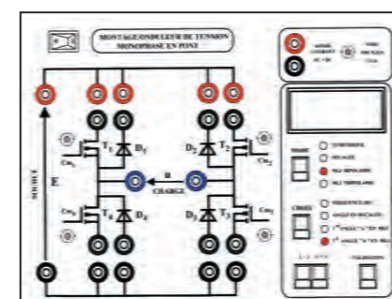
ref. CO-1020

TEACHING RESSOURCES 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)
 Application to induction heating
 Experiment N°4: Application to speed variations in an alternating current motor
 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



LOGIC TEST UNIT

ref. AT104

AT104 is a test bed intended for learning about logic circuits. Several of the commonest circuits are integrated into the test bed. Dim. : 340 x 265 x 130mm. Weight 4,7kg.

- 1 BOARD
- 1 INTERCONNECTION BREADBOARD
- 4 SUPPLIES
- 3 CLOCKS
- 1 SHORT-CIRCUIT INDICATOR
- 4 SWITCHES
- 8 LED DISPLAYS



ANALOG TEST UNIT

ref. AT106

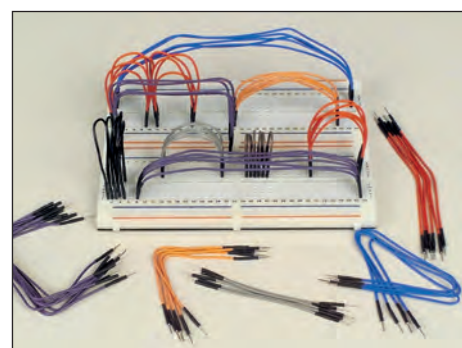
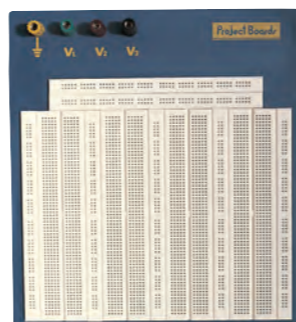
AT106 is a test bed for analog circuits. Easy maintenance: common circuits and diagrams provided. Dims: 340x265x130mm. Weight 3.7kg. Mains 230V.

- 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

Réf.	GL12	GL12S*	GL24	GL24S*	GL48	GL48S*
Number 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



Réf.	M5	G7	O1	R10	N10	V1	B2
Length	50mm	70mm	100mm	100mm	100mm	150mm	200mm
Obligatory color	BROWN	GREY	ORANGE	RED	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 optical encoder + converter.
- Comparison of low rotation frequencies with and without feedback loop.
- Study of the feedback response for different values of loop gain.

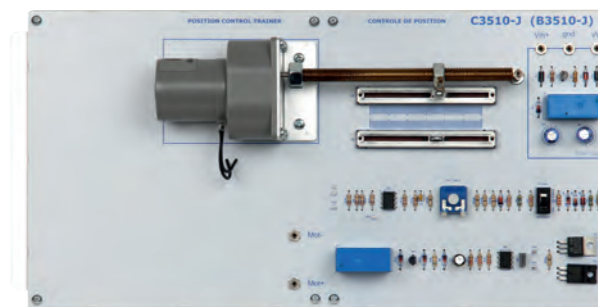
ref. C3510-G

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



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