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⇨Products
 ⇨Products range
  ⇨Units
   ⇨4.-Electricity

AEL-1. ELECTRICAL INSTALLATIONS LAB | AEL-2. HOME AUTOMATION SYSTEMS LAB | AEL-3. ELECTRICAL MACHINES LAB | AEL-4. ELECTROMECHANICAL CONSTRUCTIONS LAB | AEL-5. POWER SYSTEMS AND SMART GRID TECHNOLOGY LAB

Key features:

➤ **SCADA Control System.**

➤ **Specialized EDIBON Softwares, based on Labview, for:**

　- **SCADA Control Software.**

　- **Data Acquisition Software.**

　- **Computer Aided Instruction Software.**

　... and others.

➤ **Touch Screens and computers.**

➤ **Functional and self contained Electrical Workbench with instrumentation panel with all the required elements to supply power and control in the workbench.**

➤ **Intuitive, quick and accurate interaction of the user with the Electrical Workbench.**

➤ **Complete and functional training solution for electricity learning purposes.**

➤ **Covering all areas of electricity field.**

　... and others possibilities.

Classroom and Laboratory Lay Out

Room 1
Room 2
Room 3

Toilet   Toilet

Manager Room

Stock   Services

Seminary

Toilet

Toilet

Whiteboard

Projector

Teacher Desk

Legend:
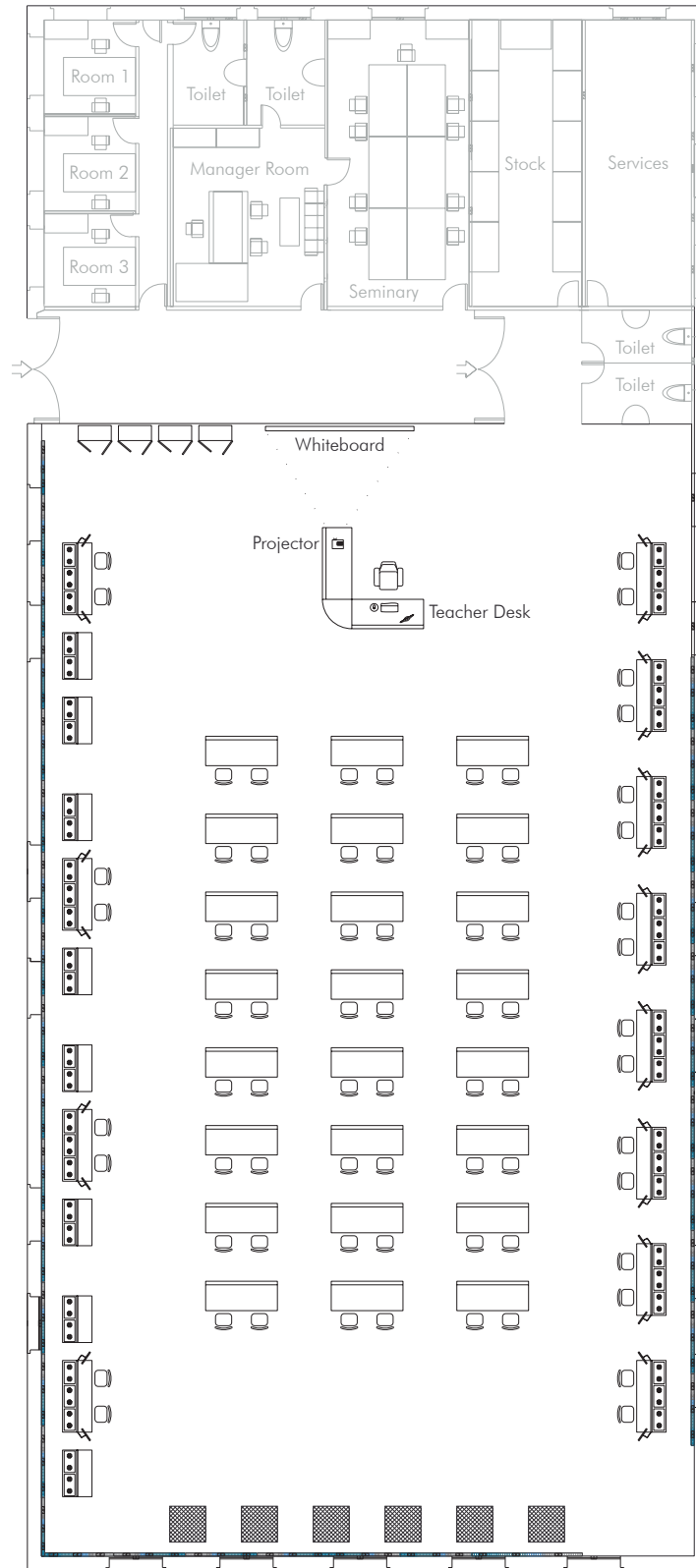
AEL-WTS. Laboratory Workplace Table

AEL-WBC. Electrical Workbench (Rail) + 2 x AEL-PC.
Two Touchscreen and computers

AEL-WBM. Electrical Workbench (Mobile)

AEL-MC. Multipurpose Cabinet

AEL-WIC. Electrical Installations Cabinet

EDIBON, a company with more than 35 years of experience designing and implementing training systems, has a wide variety of applications adapted to XXI century new technologies.

Apart from providing a solid theoretical basis, EDIBON units and trainers are aimed at technical professional training, vocational training, for higher education and even applied research, as well as at the improvement in all fields through advanced systems.
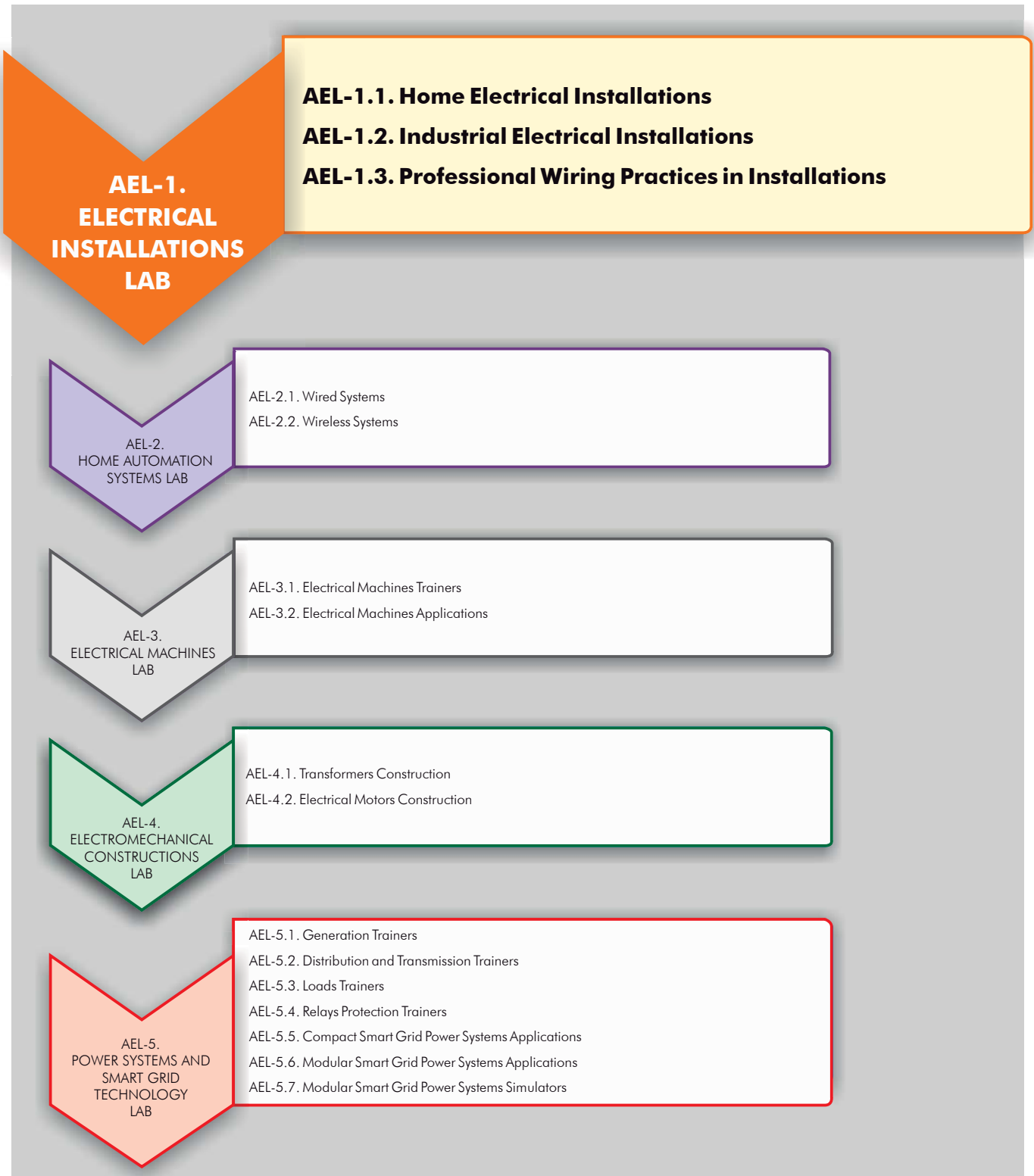
The electricity area includes five great groups that cover **Electrical Installations**, Home Automation Systems, Electrical Machines, Electromechanical Constructions, Power Systems and Smart Grid Technology.

All the units have a modular and intuitive design, with real elements used in the industry and technological market.

In this catalogue we will cover "**AEL-1. Electrical Installations Lab.**"

AEL-1. ELECTRICAL INSTALLATIONS LAB

AEL-1.1. Home Electrical Installations

AEL-1.2. Industrial Electrical Installations

AEL-1.3. Professional Wiring Practices in Installations

AEL-2. HOME AUTOMATION SYSTEMS LAB

AEL-2.1. Wired Systems
AEL-2.2. Wireless Systems

AEL-3. ELECTRICAL MACHINES LAB

AEL-3.1. Electrical Machines Trainers
AEL-3.2. Electrical Machines Applications

AEL-4. ELECTROMECHANICAL CONSTRUCTIONS LAB

AEL-4.1. Transformers Construction
AEL-4.2. Electrical Motors Construction

AEL-5. POWER SYSTEMS AND SMART GRID TECHNOLOGY LAB

AEL-5.1. Generation Trainers
AEL-5.2. Distribution and Transmission Trainers
AEL-5.3. Loads Trainers
AEL-5.4. Relays Protection Trainers
AEL-5.5. Compact Smart Grid Power Systems Applications
AEL-5.6. Modular Smart Grid Power Systems Applications
AEL-5.7. Modular Smart Grid Power Systems Simulators

AEL-1. Electrical Installations Lab

The AEL-1. Electrical Installations Lab is formed by:

AEL-WBC. **Electrical Workbench (Rail)**

AEL-WBR. **Electrical Workbench (Rack)**

+

+

Applications
(to be mounted on rail)

Applications + Rack

AEL-AD33

AEL-AD3A

...

AEL-AD33 + N-RACK-A

AEL-AD3A + N-RACK-A

...

+

Software packages

Electrical Workbench

AEL-PC
Touch screen and computer

AEL-PC
Touch screen and computer

(Post 1)

(Post 2)

AEL-WBC.
Electrical Workbench (Rail)

Instrumentation Panel (Post 1)

Instrumentation Panel (Post 2)
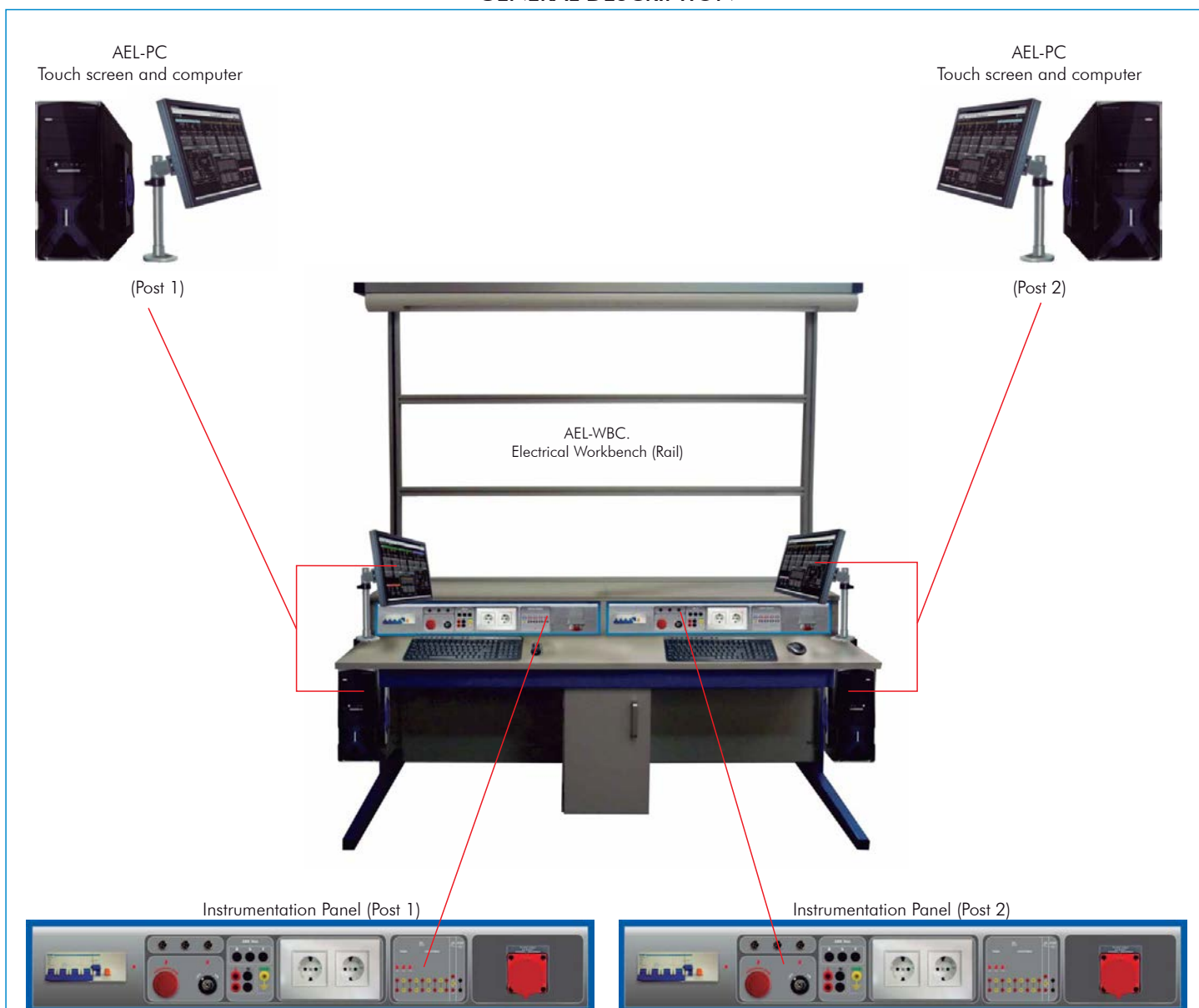
The Electrical Workbench has been designed to offer the students and teachers the necessary tools to learn and teach about the XXI century technologies.

The Electrical Workbench consists of:

Furniture, itself:

Consists of the frame that allows to locate the applications, lighting fitting, table, supports, etc.

Instrumentation Panel:

The workbench has been designed to be used by one or two students. Each student has access to its own instrumentation panel.

There are two Electrical Workbench versions:

AEL-WBC. Electrical Workbench (Rail).

The AEL-WBC is a workbench designed with rails in order to put and remove all electrical modules free.

AEL-WBR. Electrical Workbench (Rack).

The AEL-WBR is a workbench designed with strong rack in order to fix all electrical modules.

Optional:

Touch screen and computer (AEL-PC):

The workbench can be supplied with one or two touch screens and computers. Thus, both students and teachers gain quick access to the applications to control them better, obtaining the maximum man-machine interaction.

In summary, technology, quality and aesthetics are combined in this piece of furniture in order to offer the best features for both research and teaching fields.
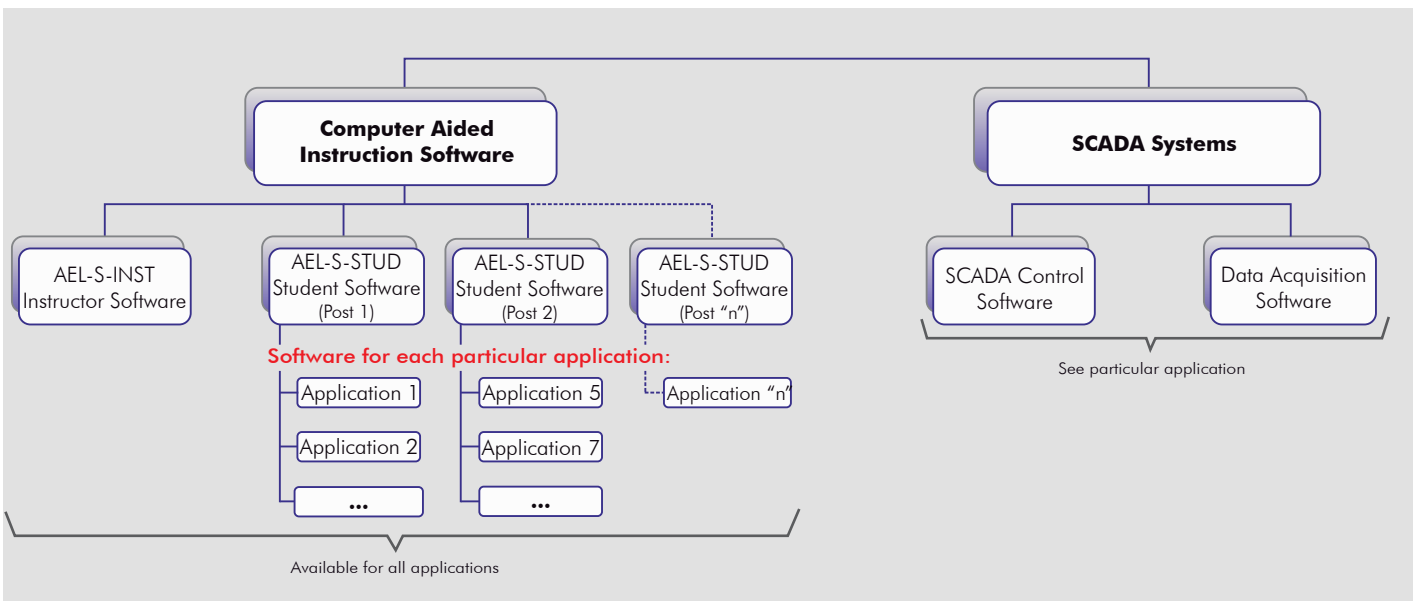
EDIBON has different software packages to provide students the maximum level in training systems.

Computer Aided Instruction Software

- AEL-S-INST. **Instructor Software:**

This software is recommended as a comprehensive, multi-level, instructional tool that directs students to work independently and at their own speed, while also freeing the instructor to provide specific guidance whenever needed.

- AEL-S-STUD. **Student Software**:

This software includes theory about the applications and assesses the students' knowledge through tests and exams.

NOTE: Will be necessary acquire a license per student.

SCADA Systems

- **SCADA. Control Software:**

Software designed to control different applications that require an advance control system, such as generation systems remote control, distribution systems with control over power flows and isolating switches, etc. It is included if the application required it.
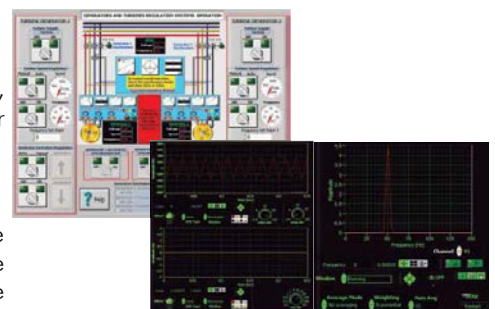
- **Data Acquisition Software:**

This software has been designed to acquire different signals to know the state of the processes. For example, to study the dynamic characteristics of an induction squirrel cage motor, the data acquisition system allows to monitor, in real time, the mechanical torque curves, speed, electrical power, etc. to obtain thus all the electrical parameters of the machine. It is included if the application required it.

Example of some Software Screens:

Computer Aided Instruction Software screens

SCADA Control and Data Acquisition Softwares screens

List of **Applications**

AEL-1. **ELECTRICAL INSTALLATIONS LAB**		
AEL-1.1. **Home Electrical Installations**	**AEL-1.2.** **Industrial Electrical Installations**	**AEL-1.3.** **Professional Wiring Practices in Installations**

Applications	Applications	Applications
Lighting and Control	**Industrial Control Engineering**	**Cubicle Wiring Installations**
• AEL-AD13. Audio Door Entry System.	• AEL-CM1. Manual Control Operations.	• AEL-AEBI. Assembly Exercises in Building Installations.
• AEL-AD14. Audio and Video Door Entry System.	• AEL-CM2. Operations with Manual Commutators.	• AEL-AESI. Assembly Exercises for Signals Electrical Installations.
• AEL-AD6A. Luminosity Control Station.	• AEL-CM3. Automatic Control Operations.	• AEL-AEBM. Assembly Exercises on Building Mains Feeds and Meter Cabinets.
• AEL-AD6B. Basic Luminosity Control Station.	• AEL-CM4. Automatic Control Operations with contactors and sensors.	• AEL-AESU. Assembly Exercises on Switching Units.
• AEL-AD24. Position Switch.	• AEL-MED. Industrial Measurement Technology.	
• AEL-AD5. Stair Lights Timing.		**Electrical Control Panel Wiring**
• AEL-AI13-E. Modular Trainer for Electrotecnics (Lighting).	**Fault Simulators**	• AEL-AEPI. Electrical Control Panel Wiring Installation.
• AEL-AE4. Test Unit for Differential Automatic Switches.	• AEL-AD33. Single-Phase Installations Faults Simulator.	
	• AEL-AD33T. Three-Phase Installations Faults Simulator.	
Climatization		
• AEL-AD9A. Heating Control Station.	**Relays Trainer**	
• AEL-AD9B. Basic Heating Control Station.	• AEL-PRTS. Protective Relaying Training System.	
	• AEL-AE5. Relay Control Station.	
	Loads	
	• AEL-AI13-A. Modular Trainer for Electrotecnics (RLC Circuits).	

Applications	Applications	Applications

The Electrical Installations Lab (AEL-1) is focused on the theoretical-practical study of home and industrial electrical systems employed nowadays.

On one hand, this area covers all those applications and trainers designed to study home electrical installations and industrial electrical installations. Besides, it includes a series of trainers to study the most common electrical faults generated in actual electrical installations. After simulating those faults, a great variety of protection relays will be studied with the trainers designed for that purpose.

On the other hand, there is a specific area for the training of home and industrial professional wiring, using perfectly conditioned cabinets to integrate the components.

The complete Electrical Installations Lab (AEL-1) includes:

- Electrical Workbench.

- Software packages.

- Applications.

Electrical Workbench:

There are two Electrical Workbench versions:

AEL-WBC. Electrical Workbench (Rail).

The AEL-WBC is a workbench designed with rails in order to put and remove all electrical modules free. The frame consists of three levels to get a maximum space for the modules and applications. Besides, the user can put and remove manually all electrical modules and make free configurations to construct different applications.

The advantage of this workbench is that all modules can be put and removed free and quick, so the student can change quickly to other practical exercises.

AEL-WBR. Electrical Workbench (Rack).

The AEL-WBR is a workbench designed with strong rack in order to fix all electrical modules. Each module will be fixed with screws. The frame consists of three racks to support different applications.

The advantage of this workbench is that all applications are perfectly covered to get a homogeny and strong unit.

The Electrical Workbench is ready to use Specialized EDIBON Softwares, based on Labview, for:

SCADA Control Software.

Data Acquisition Software.

Computer Aided Instruction Software.

…others.

It is a complete and functional training solution for electricity learning purposes, with intuitive, quick and accurate interaction of the user with the Electrical Workbench.

It is a functional and self contained Electrical Workbench, with wide working area for several applications, with instrumentation panel including all the required elements to supply power and control in the workbench.

The Electrical Workbench is mainly formed by:

Furniture, itself:

Formed by the frame that allows to allocate the applications, lighting fitting, table, supports, etc.

Dimensions: 2000 x 1000 x 1900 mm approx.

Instrumentation Panel:

2 x Control and supply panels.

Three-phase and single-phase power systems.

Independent Residual Circuit Breaker (RCB).

Two single-phase sockets.

Different level control voltages for signals applications.

Integrated lighting system.

Technical data:

1 x Differential Protection, 1 x Emergency Stop Button and 1 x Safety Key.

Power Terminal Connections: 1 x Three-phase terminals: 380 Vac + N+ GND and 1 x Single-phase terminals: 230 Vac + GND and 2 x Single-phase plugs + 2 x Three-phase plugs.

Control terminals: 2 x 24 Vac., 2 x (+24) Vdc., 2 x (+12) Vdc., 2 x (-12) Vdc. and 2 x (+5) Vdc.

Power Supply required: 380 Vac 3PH + N + GND.

Optional:

Touch screen and computer (AEL-PC).

The workbench can be supplied with one or two touch screens and computers.

Software packages:

Computer Aided Instruction Software:

AEL-S-INST. **Instructor Software:**

It is software designed for the teacher. The teacher can administrate the classroom and students, schedule specific task for single student or groups, follow the progress of the class through the practical exercises and tests. It is composed of:

Student Manager:

Administration of an unlimited number of students and courses.

Addition, deletion and editing of students and student data.

Classroom Editor:

Wizard for creation of new courses.

Addition, deletion and editing of student groups.

Creating, deletion and editing courses.

Assignment of students to classes.

Assignment of Scheduled practical exercises and tests to students or classes.

Test & Questioner Creator:

Creating, deletion and editing custom test.

Programming of the number of questions, number of answers, time to perform the test and more.

Specific questions or an arbitrary set of question taken from a database.

Test preview.

Insertion of graphics, animations and tables.

Insertion of test questions.

Editing questions.

Seven different types of question: single and multiple choice, missing text, assignment, matrices, arbitrary text, selection of images.

Ability to input meta data (points, time for questions, difficulty, etc.)

Reporter & Static Results:

Presentation of the results, selecting users, groups, tests or a mix.

Statistics of users or groups, to view the evolution and progress.

Graphical presentation of progress in courses and tests.

Reports on courses, tests, single user or classes.

Summary of results and time.

Calculation of average results for groups.
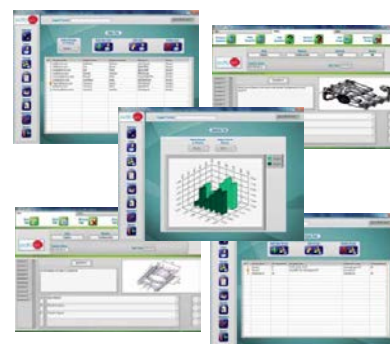
AEL-S-STUD. **Student Software:**

It allows students to complete practical exercises with a PC. It loads programmatically practical exercises scheduled by the teacher, allows student to do test and view the results obtained. To help to follow the practical exercises, it provides gadgets such as animation loaders, video help players and more. It software are composed of:

Registration:

Easy student registration.

Practical Exercise:

Automatically load of practical exercise files (PDFs) scheduled by the teacher by date, classroom or course.

Windows Calculator and Notepad integration.

Default web browser integration.

Custom Spreadsheet. This gadgets loads a file containing the information about the most common equations used in each practical exercise. It has the following features:

Allows the student to fill the table and computes student input data.

It can load and save tables with full data.

It can plot the table data linking with two variables.

It can plot the equations used in the practical test.

It can export data to an XLS file.

Allows student to record an audio or a video and send it to the teacher.

The student can load additional help, such as PDFs, GIFs, Flash animations or videos.

Student and teacher can chat through the application.

Exercises:

Student can perform provided tests, or customized tests created by the teacher.

Result Viewer:

Students can see the results obtained on their tests attempts.

Summary of single user results and time.

Reports on single user results.

Applications:

<div style="border:1px solid orange; text-align:center;">
AEL-1.1
Home Electrical Installations
</div>

──────────── Lighting and Control ────────────

AEL-AD13. **Audio Door Entry System**

The Audio Door Entry System "AEL-AD13" consists of a series of elements that allow the students to understand how the main elements of the Audio Door Entry Systems work.

All these elements have safety connection elements to make electrical connections.

The AEL-AD13 includes the following modules:

- N-ALI02.   Main Power Supply.
- N-POR03. Interphone.
- N-POR01. Phones Power Supply.
- N-POR06. Lock.
- N-POR02. Phone.

The application AEL-AD13 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

- N-RACK-M.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Assembly of the system.

2.- Checking the interphone operation.

3.- Study of audio door entry system wiring.

AEL-AD14. **Audio and Video Door Entry System**

The Audio and Video Door Entry System "AEL-AD14" consists of a series of elements that allow the students to understand how the main elements of the Audio and Video Door Entry Systems work.

All these elements have safety connections elements to make the required electrical connections.

The AEL-AD14 includes the following modules:

- N-ALI02.   Main Power Supply.
- N-POR04. Video Camera.
- N-POR05. Phone / Monitor.
- N-POR06. Lock.
- N-POR07. Digital Station.
- N-POR08. Video - Interphone Power Supply.

The application AEL-AD14 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

- N-RACK-M.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Checking the main power supply (N-ALI02).

2.- Checking the Video-interphone power supply (N-POR08).

3.- Communication between Video camera (N-POR04) and Phone/monitor (N-POR05) / Digital station (N-POR07).

4.- Real application of an audio and video entry system.

AEL-AD14 + RACK

Applications:

──────────── Lighting and Control ────────────

AEL-AD6A. **Luminosity Control Station**

The Luminosity Control Station "AEL-AD6A" consists of a series of elements that allow the students to understand how the main elements of the automatic lightning installation work.

The AEL-AD6A has a motion sensor that can be connected to the lighting circuit. Thus, the student can understand different cabling made in the installations.

The AEL-AD6A includes the following modules:
- N-ALI02.   Main Power Supply.
- N-COM14. 2 Commutators.
- N-REG06. Voltage Electronic Regulator (Switch) Module.
- N-INT18.   1-pole Switch + 1-pole Switch with Light.
- N-LAM08. 2 Lamp-holders +Incandescent Lamps.
- N-LAM09. Fluorescent Lamp.
- N-LAM10. 2 Halogen Lamps.
- N-SEN26. Presence and Motion Sensor (Wall).

The application AEL-AD6A can be mounted on rack (option A) or on rail (option B):

Option A:
   This application needs the following rack:
   - N-RACK-A.
   Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.
Option B:
   This application can be mounted on rail.
   Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- To control the luminosity of an halogen lamp.
2.- To control the luminosity of an incandescent lamp.
3.- Light point from a switch.
4.- Light point from two devices.
5.- Fluorescent tube.
6.- To test the station using a motion sensor.
7.- Variation of the luminous intensity.
8.- To control the lamp using a motion sensor.
9.- Luminosity control.
10.- Complete control of the station.

AEL-AD6A + RACK

AEL-AD6B. **Basic Luminosity Control Station**

The Basic Luminosity Control Station "AEL-AD6B" consists of a series of elements that allow the students to understand how the main elements of a lightning installation work. Through this appliance, the student can understand different cabling made in the lightning systems.

The AEL-AD6B includes the following modules:
- N-ALI02.   Main Power Supply.
- N-COM14. 2 Commutators.
- N-REG06. Voltage Electronic Regulator (Switch) Module.
- N-INT18.   1-pole Switch + 1-pole Switch with Light.
- N-LAM08. 2 Lamp-holders + Incandescent Lamps.
- N-LAM10. 2 Halogen Lamps.

The application AEL-AD6B can be mounted on rack (option A) or on rail (option B):

Option A:
   This application needs the following rack:
   - N-RACK-M.
   Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.
Option B:
   This application can be mounted on rail.
   Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- To control the luminosity of an halogen lamp.
2.- To control the luminosity of an incandescent lamp.
3.- Light point from a switch.
4.- Light point from two devices.
5.- Variation of the luminous intensity.
6.- Luminosity control.
7.- Complete control of the station.

AEL-AD6B + RACK

Applications:

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AEL-1.1
Home Electrical Installations
</div>

──── Lighting and Control ────

AEL-AD24. **Position Switch**

The Position Switch "AEL-AD24" consists of a series of switches that allow the students to understand how different switches work in order to control commutations, such as Make Before Break (MBB), Break Before Make and Instantaneous Microswitch.

Thus, the student can understand the importance of these types of switches and make different operations.

The AEL-AD24 includes the following modules:

- N-ALI02.   Main Power Supply.
- N-ALI03.   AC Auxiliary Power Supply .
- N-SEN01. Instantaneous Micro-switch.
- N-SEN02. MBB Micro-switch.
- N-SEN03. BBM Micro-switch.
- N-LAM03. 3 Push-buttons and Lamps.
- N-SEN01/N-SEN02/N-SEN03. Module Control.

The application AEL-AD24 can be mounted on rack (option A) or on rail (option B):

Option A:

  This application needs the following rack:
  - N-RACK-A.

  Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

  This application can be mounted on rail.

  Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Identifying the elements of the Main Power Supply (N-ALI02).

2.- Checking the Main Power Supply (N-ALI02)

3.- Checking the auxiliary power supply (N-ALI03).

4.- Checking the 3 Push-buttons and Lamps module (N-LAM03).

5.- Checking the work mode of a MBB Micro-switch (N-SEN02).

6.- Checking the work mode of a BBM Micro-switch (N-SEN03).

7.- Checking the work mode of an instantaneous micro-switch (N-SEN01).

8.- Real application of the position switch.

9.- Checking the software and programming switches commutation times.

AEL-AD24 + RACK

AEL-AD5. **Stair Lights Timing**

The AEL-AD5 is an application designed to teach the students different automatisms used in stair lights.

The AEL-AD5 includes the following modules:

- N-ALI02.   Main Power Supply.
- N-CTI10.   Automatic of Stairs.
- N-INT21.   Switch + Commutator Group + Bell Push-Button. (2 units)
- N- LAM08. 2 Lamp-holders + Incandescent Lamps. (2 units)
- N-LAM13. 2 Low Consumption Fluorescent Lamps. (2 units)

The application AEL-AD5 can be mounted on rack (option A) or on rail (option B):

Option A:

  This application needs the following racks:
  - N-RACK-A.
  - N-RACK-B.

  Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

  This application can be mounted on rail.

  Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Identification of the elements of the main power supply.

2.- Checking the main power supply.

3.- Test of the set from two points with incandescent lamps.

4.- Test of the set from two points with fluorescent lamps.

Applications:

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AEL-1.1
Home Electrical Installations

</div>

— Lighting and Control —

AEL-AI13-E. **Modular Trainer for Electrotecnics (Lighting)**

This application has been designed to teach the students in different ways of connect lights: series connection, parallel connection, push-button connection, etc.

The AEL-AI13-E includes the following modules:

• N-ALI02.   Main Power Supply.

• N-ALI10.   Power Supply Module.

• N-LAM09. Fluorescent Lamp.

• N-MED65. Digital Multimeter.

• N-REL50.   Relays Module.

• N-LAM26. Lighting Module.

The application AEL-AI13-E can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

• N-RACK-A.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Lamp controlled by a switch or a push button.

2.- Lamp controlled from three points.

3.- Lamps controlled by relays.

4.- Acoustic circuit.

5.- Fluorescent tube.

AEL-AI13-E + RACK

AEL-AE4. **Test Unit for Differential Automatic Switches**

This application has been designed to teach the students in how work the differential protections breakers.

The AEL-AE4 includes the following modules:

• N-ALI02.   Main Power Supply.

• N-IAD01.   1-pole + neutral Differential Automatic Switch, 6A, 30 mA, class A.

• N-CAR04. Variable Resistive Load, 150 ohm, 500 W.

The application AEL-AE4 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

• N-RACK-B.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- To simulate a fault to earth and to test if the differential breaks.

2.- To calculate the current earth fault.

3.- Study of fault circuit.

AEL-AE4 + RACK

Applications:

<div style="text-align:center">

AEL-1.1
Home Electrical Installations

</div>

—— Climatization ——

AEL-AD9A. **Heating Control Station**

The Heating Control Station "AEL-AD9A" consists of a series of elements that allow the students to understand how the main elements of the Heating Control Station work.

It has a thermostat for heating and a thermostat for heating and refrigeration. These sensors are connected to other elements, such as lamps and bells, in order to simulate the behaviour of the installation.

The AEL-AD9A includes the following modules:

- N-ALI02.   Main Power Supply.
- N-TIM01.   Bell 70 dB. (2 units)
- N-SEL09.   Double Luminous Signalling red-green. (2 units)
- N-MED76.   Thermostat for Heating.
- N-MED77.   Thermostat for Heating and Refrigeration.

The application AEL-AD9A can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

- N-RACK-M.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Identification of the elements of the main power supply.

2.- Checking the main power supply.

3.- Checking relays.

4.- Checking the thermostat for heating and tests.

5.- Checking the thermostat for heating and refrigeration, and tests.

6.- Test with several temperatures and green light.

7.- Test with several temperatures and red light.

8.- Test with several temperatures and the siren.

9.- Test with several temperatures, red light and the siren.

10.- Test with several temperatures, green light and the siren.

AEL-AD9A + RACK

AEL-AD9B. **Basic Heating Control Station**

The Basic Heating Control Station "AEL-AD9B" consists of a series of elements that allow the students to understand how the main elements of the Heating Control Station work.

It has a thermostat for heating. This sensor is connected to other elements, such as lamps and bells, in order to simulate the behaviour of the installation.

The AEL-AD9B includes the following modules:

- N-ALI02.   Main Power Supply.
- N-TIM01.   Bell 70 dB.
- N-SEL09.   Double Luminous Signalling red-green.
- N-MED76.   Thermostat for Heating.

The application AEL-AD9B can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

- N-RACK-B.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Identification of the elements of the main power supply.

2.- Checking the main power supply.

3.- Checking the relay and the thermostat for heating.

4.- Test with several temperatures and green light.

5.- Test with several temperatures and red light.

6.- Test with several temperatures and the siren.

7.- Test with several temperatures, red light and the siren.

8.- Test with several temperatures, green light and the siren.

AEL-AD9B + RACK

Applications:

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AEL-1.2
Industrial Electrical Installations

</div>

───────────────── Industrial Control Engineering ─────────────────

AEL-CM1. **Manual Control Operations**

It has been designed to study basic logics operations with contactors using timers, push-buttons, signalling lamps, contactors, thermal relays, OR operators and more combinations used in the industrial world.

The AEL-CM1 includes the following modules:

- N-ALI01.   Industrial Main Power Supply.
- N-PUL01.   Emergency Stop Push-Button (220 Vac).
- N-PUL48.   3 Double Chamber Push-Buttons.
- N-LAM02.   Auxiliary Lamps (3 lamps, 24 Vac).
- N-CON01. 3-pole Contactor (24 Vac). (2 units)
- N-REL30.   Synchronization Relay.
- N-ALI03.   AC Auxiliary Power Supply.

The application AEL-CM1 can be mounted on rack (option A) or on rail (option B):

Option A:

  This application needs the following rack:
  - N-RACK-A.

  Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

  This application can be mounted on rail.

  Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Sequential operation with contactor and timers.
2.- Signalling of contactor state.
3.- Utilization of static timer.
4.- Static timer with excitation delay.
5.- Logic OR operator.

AEL-CM2. **Operations with Manual Commutators**

It is an application designed to study manual operations with motors, such as manual starter with rotor resistor, Dahlander motor manual variation speed and investment, run investment, sequential orders, star/delta starter with run investment, etc.

The AEL-CM2 includes the following modules:

- N-ALI01.   Industrial Main Power Supply.
- N-ARR12.   Direct Starter.
- N-ARR01.   Manual Star-Delta Starter.
- N-ARR13.   Direct Starter with Inversion.
- N-ARR05.   Manual Star-Delta Starter with Inversion.
- N-ARR07.   Manual Dahlander Commutator, 2 Speeds.
- N-ARR11.   Poles Commutation with Inversion.
- EMT8.   Asynchronous three-phase motor with wound rotor.
- EMT9.   Dahlander three-phase motor.
- FYWL.   Flywheel.
- N-TRANS03. Three-phase Autotransformer.

The application AEL-CM2 can be mounted on rack (option A) or on rail (option B):

Option A:

  This application needs the following rack:
  - N-RACK-A.

  Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

  This application can be mounted on rail.
  Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Starting the motor with manual switch.
2.- Star/delta starter with manual switch.
3.- Reversing motor operation with manual switch.
4.- Star/Delta starter with two directions of rotation with manual switch.
5.- 2 Speed variation of Dahlander motor with manual switch.
6.- 2 Speed variation of Dahlander motor with two directions of rotation with manual switch.

Applications:

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AEL-1.2
Industrial Electrical Installations

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―――――――― Industrial Control Engineering ――――――――

AEL-CM3. **Automatic Control Operations**

The Automatic Control Operations "AEL-CM3" is an application designed to study automatic operations with motors, such as:

Start/delta starter.

Run investment

Sequential orders.

Automatic star/delta starter with timers.

Star/delta starter with run investment.

etc.

All these operations can be done through contactors combination and timers.

The AEL-CM3 includes the following modules:

- N-ALI01.   Industrial Main Power Supply.
- N-PUL01.   Emergency Stop Push-Button (220 Vac).
- N-PUL48.   3 Double Chamber Push-Buttons.
- N-LAM02.   Auxiliary Lamps (3 lamps, 24 Vac).
- N-CON01.   3-pole Contactor (24 Vac). (4 units)
- N-REL47.   Thermal Relay.
- N-REL30.   Synchronization Relay. (2 units)
- N-ALI03.   AC Auxiliary Power Supply.
- EMT7.   Asynchronous three-phase motor of squirrel cage.
- N-TRANS03. Three-phase Autotransformer.
- FLYW.   Flywheel.

The application AEL-CM3 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.
- N-RACK-B.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Thermal Relay Operation.

2.- Manual star-delta circuit of three-phase induction motor.

3.- Manual reversing operations of three-phase induction motor.

4.- Timer Sequential Control operations of three-phase induction motor.

5.- Automatic star/delta starter of three-phase induction motor.

6.- Automatic star-delta reversing circuit of three-phase induction motor.

7.- Countercurrent braking.

Applications:

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AEL-1.2
Industrial Electrical Installations

</div>

———————————— Industrial Control Engineering ————————————

AEL-CM4. **Automatic Control Operations with contactors and sensors**

The Automatic Control Operations with contactors and sensors "AEL-CM4" is an application designed to study automatic logic operations through different sensors connected to contactors and different loads.

All the operations can be done through contactors combined with inductive sensors, capacitive sensors, barrier sensor, etc.

The AEL-CM4 includes the following modules:

- N-ALI02. Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-PUL48. 3 Double Chamber Push-Buttons.
- N-LAM02. Auxiliary Lamps (3 lamps, 24 Vac).
- N-CON01. 3-pole Contactor (24 Vac). (4 units)
- N-REL47. Thermal Relay.
- N-SFC.   Limit switch.
- N-MED47. Pulse Counter.
- N-SEN05. Cylindrical Inductive Proximity Sensor.
- N-SEN13. DC Cylindrical Capacitive Proximity Sensor.
- N-SEN21. Barrier Photoelectric Sensor (Emitter).
- N-SEN22. Barrier Photoelectric Sensor (Receptor).
- N-SEN23. Reflecting Photoelectric Sensor (Emitter).
- N-SEN24. Reflecting Photoelectric Sensor (Receptor).
- N-SEN25. Level Magnetic Sensor.
- DPP.   Water tank.
- N-CNV.   Level controller.
- EMT7.   Asynchronous three-phase motor of squirrel cage.

The application AEL-CM4 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.
- N-RACK-M.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Starting the motor and control with limit switch.

2.- Starting the motor and control with inductive sensor.

3.- Starting the motor and control with capacitive sensor.

4.- Starting the motor and control with photocell sensor.

5.- Starting the motor and control with photocell sensor and reflector.

6.- Starting the motor and control with level sensor.

7.- Starting motor and control with pulses programmer.

8.- Starting motor with 2 directions of rotation.

Applications:

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AEL-1.2
Industrial Electrical Installations

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──────────────── Industrial Control Engineering ────────────────

AEL-MED. **Industrial Measurement Technology**

The Industrial Measurement Technology "AEL-MED" is an application designed to study the electrical supervision systems in industrial installations to know the state of the different services.

The AEL-MED includes the following modules:

- N-ALI02. Main Power Supply.
- N-MED22. AC Voltmeter (0-400 Vac).
- N-MED10. AC Ammeter (0-5 A).
- N-MED26. Frequency Meter.
- N-EALAR. Network Analyzer with active and reactive energy counters.
- N-MED49. Hour Counter.
- N-SWT4. Four position selector (measuring point selector).

The application AEL-MED can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

- N-RACK-M.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Optional modules:

- -EMT-7. Asynchronous three-phase motor of squirrel cage.
- -EMT-9. Dahlander Motor.
- -N-REF/T. Three-Phase Resistor Load with commutator.
- -N-IND/T. Three-Phase inductive load with commutator.
- -N-CON/T. Three-Phase variable capacitor load with commutator.
- -FLYW. Flywheel.
- -FRECP. Eddy Current Brake.
- -N-VVCC/M. DC power supply to control the brake torque of FRECP.

If the Option A (modules mounted on rack) is chosen, the rack/s required will depend on the optional modules requested by the customer.

Some practical possibilities:

1.- Measurement of current and voltage of the installations.

2.- Measurement of energy consumption of the installations.

3.- Register of hours of service.

4.- Development of remote measurement stations.

Applications:

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AEL-1.2
Industrial Electrical Installations

</div>

— Fault Simulators —

AEL-AD33. **Single-Phase Installations Faults Simulator**

This application has been designed to study several protections belonging to home installations. Through the safety elements, the student can simulate different faults and verify the reasons why each type of protection acts.

It includes some innovative electric devices for the protection of people and installations against the effects of electric current, which ensure the continuity of power availability, as well as people safety.

It includes a single-phase transformer to simulate earth derivations under safety conditions. It includes protections for: protection by grounding, protection by differential circuit breaker with automatic reset and protection by differential circuit breaker with variable sensitivity.

To check all protections, a variable resistor is included to control current derivations. It also has meters to know the amount of derivation current and verify the protection´s sensitivity.

The AEL-AD33 includes the following modules:

- N-ALI02.   Main Power Supply.
- N-TRANS01. Single-phase Power Transformer.
- N-DIF.   Differential Protection.
- N-DIFVS.   Differential Protection with variable sensitivity.
- N-DIFR.   Differential Protection with automatic resetting.
- N-FAULT.   Fault Injection module.
- N-MEDV.   Analog Voltmeter.
- N-MEDI.   Analog Ammeter.
- N-MED65.   Digital Multimeter.
- N-TSTF.   Tester Protection module.

The application AEL-AD33 can be mounted on rack (option A) or on rail (option B):

Option A:

   This application needs the following rack:

   - N-RACK-A.

   Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

   This application can be mounted on rail.

   Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Study of basic differential protection.

2.- Study of differential protection with variable sensitivity.

3.- Study of differential protection with automatic restore.

4.- Adjustment of the protection sensibility of the differential protection.

5.- Study of Single-phase ground short-circuit with basic differential protection.

6.- Study of Single-phase ground short-circuit with short-circuit impedance and basic differential protection.

7.- Study of Single-phase ground short-circuit with differential protection with variable sensitivity.

8.- Study of Single-phase ground short-circuit with short-circuit impedance and differential protection with variable sensitivity.

9.- Study of Single-phase ground short-circuit with differential protection with automatic restore.

10.- Study of Single-phase ground short-circuit with short-circuit impedance and differential protection with automatic restore.

11.- Study of isolation coordination.

AEL-AD33 + RACK

Applications:

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AEL-1.2
Industrial Electrical Installations
</div>

──── Fault Simulators ────

AEL-AD33T. **Three-Phase Installations Faults Simulator**

This application has been designed to study several protections belonging to industrial installations. Through safety elements, the student can simulate different faults and verify the reasons why each type of protection acts. It includes some innovative electric devices for the protection of people and installations against the effects of electric current, which ensure the continuity of power availability, as well as people safety.

It includes a three-phase transformer in order to simulate earth derivations under safety conditions. Besides, the following protections are included. protection by earthing, protection by differential circuit breaker with automatic reset and protection by differential circuit breaker with variable sensitivity.

To check all protections, a variable resistor is included to control current derivations. It also has meters to know the amount of derivation current and verify the protection´s sensitivity.

The AEL-AD33T includes the following modules:

- N-ALI01.   Industrial Main Power Supply.
- N-TRANS03. Three-phase Autotransformer.
- N-TDIF.   Three-phase Differential Protection.
- N-TDIFVS.   Three-phase Differential Protection with variable sensitivity.
- N-TDIFFR.   Three-phase Differential Protection with automatic resetting.
- N-FAULT.   Fault Injection module
- N-TMEDV.   Three-phase Analog Voltmeter.
- N-TMEDI.   Three-phase Analog Ammeter.
- N-MED65.   Digital Multimeter.
- N-TSTF3.   Tester Protection module (3-phase).

The application AEL-AD33T can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.
- N-RACK-B.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Study of basic three-phase differential protection.

2.- Study of three-phase differential protection with variable sensitivity.

3.- Study of three-phase differential protection with automatic restore.

4.- Adjustment of the three-phase protection´s sensibility of the differential protection.

5.- Study of three-phase ground short-circuit with basic differential protection.

6.- Study of three-phase ground short-circuit with short-circuit impedance and basic differential protection.

7.- Study of three-phase ground short-circuit with differential protection with variable sensitivity.

8.- Study of three-phase ground short-circuit with short-circuit impedance and differential protection with variable sensitivity.

9.- Study of three-phase ground short-circuit with differential protection with automatic restore.

10.- Study of three-phase ground short-circuit with short-circuit impedance and differential protection with automatic restore.

11.- Study of isolation coordination.

Applications:

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AEL-1.2
Industrial Electrical Installations

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──────────── Relays Trainer ────────────

AEL-PRTS. **Protective Relaying Training System**

The Protective Relaying Training System "AEL-PRTS" is a revolutionary design to study industrial relays protection. The system provides hands-on training, at the system level, in the following fields of protective relaying:

> Generator protection.
> Transformer protection.
> Induction Motor protection.

The AEL-PRTS consists of several modules to study the relays:

> Induction motor, synchronous generator, loads, voltmeters, ammeters, etc.

> Protective Relaying Control Station. It is a rack that includes a series of modules with a wide range of different industrial relays: three-phase overcurrent relay, AC/DC Current Sensitivity Relay, AC/DC Voltage Sensitivity Relay, three-phase Under/Over Voltage Relay, synchro-check relay, under/over frequency relay, reverse power relay, phase balance/sequence relay and motor power-factor relay.

Through safety elements, the student can simulate different faults and verify the reasons why each type of protection acts.

The AEL-PRTS includes the following modules:

- N-ALI01.   Industrial Main Power Supply.
- N-TRANS03. Three-phase Autotransformer.
- N-REL23.   Overcurrent Relay and Fault to Earth.
- N-REL27.   Current Control Relay.
- N-REL28.   Voltage Control Relay.
- N-REL30.   Synchronization Relay.
- N-REL21.   Overvoltage Relay.
- N-REL21B.   Subvoltage Relay.
- N-REL51.   Reverse power relay.
- EMT6.   AC Synchronous three-phase motor alternator.
- EMT7.   Asynchronous three-phase motor of squirrel cage.
- N-REFT.   Three-phase Resistor Load with commutator.
- N-INDT.   Three-phase Variable Inductive Load with commutator.
- N-CONT.   Three-Phase variable capacitor load with commutator.
- N-VVCC/M.   DC Motor Speed Controller.
- N-VVCA/M.   AC Motor Speed Controller.

The application AEL-PRTS can be mounted on rack (option A) or on rail (option B):

Option A:
  This application needs the following racks:
  - N-RACK-A.
  - N-RACK-M.
  Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:
  This application can be mounted on rail.
  Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Study of basic three-phase overcurrent relay.

2.- Study of current sensitivity relay.

3.- Study of three-phase overvoltage relay.

4.- Study of three-phase undervoltage relay.

5.- Study of synchro-check relay.

6.- Study of under/over frequency relay.

7.- Study of reverse power relay.

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Applications:

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AEL-1.2
Industrial Electrical Installations
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—————— Relays Trainer ——————

AEL-AE5. **Relay Control Station**

The Relay Control Station "AEL-AE5" is an application for the control of relays that is composed by several modules in order to carry out practical exercises with the aim of learning the use of a relay control station.

This application consists of different types of relays, such as over current relay, earth leakage relay and elements of control like a three-pole contactor. Thus, the student can test all the elements of the relays control and simulate different situations through the elements of the application.

The AEL-AE5 includes the following modules:

- N-ALI01.   Industrial Main Power Supply.
- N-ALI03.   AC Auxiliary Power Supply.
- N-CON01.   3-pole Contactor (24 Vac).
- N-TRA31.   Current Transformer 1000/1.
- N-TRA10.   Current Transformer 25 / 5 A.
- N-REL23/A.   Earth Leakage Relay.
- N-REL23/B.   Overcurrent Relay.
- N-REF.   Resistor Load with commutator. (4 units)

The application AEL-AE5 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Checking the Industrial Main Power Supply (N-ALI01).

2.- Checking the AC Auxiliary Power Supply (N-ALI03).

3.- Start up of a three-phase contactor.

4.- Calculation of the transformation ratio of a toroid.

5.- Start up of an overcurrent relay.

6.- Start up of an earth leakage relay.

AEL-AE5+ RACK

Applications:

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AEL-1.2
Industrial Electrical Installations

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— Loads —

AEL-AI13-A. **Modular Trainer for Electrotecnics (RLC Circuits)**

The AEL-AI13-A includes the following modules:

- • N-ALI01. Industrial Main Power Supply.
- • N-ALI10. Power Supply Module.
- • N-CAR30. Inductances Module.
- • N-CAR31. Capacitors Module.
- • N-CAR32. Rectifier Diodes Module.
- • N-CAR33. Resistive Components Module.
- • N-MED65. Digital Multimeter.

The application AEL-AI13-A can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- • N-RACK-A.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

Some practical possibilities:

1.- Resistance measurement.

2.- Resistors in series association.

3.- Resistors in parallel association.

4.- Coils in series association.

5.- Coils in parallel association.

6.- Capacity measurement of a capacitor.

7.- Capacitors series association.

8.- Capacitors parallel association.

9.- Charge analysis of a capacitor.

10.- Discharge analysis of a capacitor.

11.- Time constant.

12.- Analysis of a RL circuit in series.

13.- Analysis of a RL circuit in parallel.

14.- Analysis of a RC circuit in series.

15.- Analysis of a RC circuit in parallel.

16.- Low-pass filter.

17.- High-pass filter.

18.- Star/delta transformation.

19.- Delta/star transformation.

AEL-AI13-A + RACK

Applications:

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AEL-1.3
Professional Wiring Practices in Installations

</div>

— Cubicle Wiring Installations —

AEL-AEBI. **Assembly Exercises in Building Installations**

The AEL-AEBI is a professional wiring system designed to train the students in building installations wiring.

Some practical possibilities:

This system has the following wiring exercises, among others:

1.- Wire stripping exercises.

2.- Techniques for surface and concealed installation of cables and conduits.

3.- Functions and usage of automatic circuit-breakers.

4.- Disconnection with a control lamp and socket.

5.- Multiple switch, two-way and intermediate switch circuits with a socket.

6.- Staircase timer circuit with a timing relay.

7.- Configuration of circuits in conduits or cable installations for fluorescent lamp circuits.

AEL-AEBI

AEL-AESI. **Assembly Exercises for Signals Electrical Installations**

The AEL-AESI is a professional wiring system designed to train the students in building installations wiring. The practical exercises consist of assembling a door bell and a stairway lighting systems.

Some practical possibilities:

The AEL-AESI has the following wiring exercises:

1.- Assembly and wiring.

2.- Intercom System with door opener.

3.- Building intercom and bell systems.

4.- Testing and commissioning of the circuits in accordance with circuit and installations diagrams.

5.- Assembly and wiring of entrance and building intercom systems in accordance with circuit and installation diagrams.

6.- Testing and commissioning of the circuits.

AEL-AESI

AEL-AEBM. **Assembly Exercises on Building Mains Feeds and Meter Cabinets**

The AEL-AEBM is a professional wiring system designed to train the students in building installations wiring.

Some practical possibilities:

The AEL-AEBM focuses on the following assembly exercises:

1.- Configuration, assembly and wiring of a meter board with sub-distribution.

2.- Installation of a digital meter.

3.- Installation of RCDs, line circuit breakers, etc.

4.- Simple installation circuits in supply entry rooms.

AEL-AEBM

Applications:

<div style="border: 1px solid orange;">
AEL-1.3
Professional Wiring Practices in Installations
</div>

———————— Cubicle Wiring Installations ————————

AEL-AESU. **Assembly Exercises on Switching Units**

This unit is focused on mechanical skills.

The AEL-AESU let the student to know the necessary materials to wire different electrical elements and to make different operations with contactors, time-delay relays, overcurrent relays, etc.

Installation materials:

- Main contactors. (4 units)

- Time-delay relays, delayed response. (2 units)

- Push-buttons. (3 units)

- Over current relays. (2 units)

- Red indicator lamp. (2 units)

- Green indicator lamp. (2 units)

- Switch. (2 units)

Terminal strip set 1:

- Terminal strips, color 1. (35 units)

- Terminal strips, color 2. (25 units)

- Terminal strips, color 3. (25 units)

- Bridge terminal. (2 units)

- End terminals. (4 units)

Terminal strip set 2:

- Terminal strips, color 1. (12 units)

- Terminal strips, color 3. (2 units)

- Bridge terminal. (2 units)

- End terminals. (4 units)

- Test plugs. (14 units)

- Adapter plugs. (14 units)

Set of NEOZED fuses:

- Fuses sockets. (8 units)

- Fuses, 10A. (6 units)

- Fuse, 2A. (2 units)

Cable duct (channel) wiring support unit:

- Crail 1m (cap rail). (2 units)

- Cable conduit 3m. (2 units)

- Plastic expanding rivets. (32 units)

- Base plate, Pertinax, 450 x 290 x 3mm. (2 units)

Some practical possibilities:

1.- Familiarization with different wiring techniques such as flat wiring, channel wiring and chamber wiring.

2.- Configuration and commissioning of different circuits.

3.- Contactor control with circuit-breaker.

4.- Contactor control with inching mode.

5.- Contactor control with self-holding.

6.- Contactor control with two operating locations.

7.- Reversing circuit with contactors.

8.- Forced sequential connections with main current circuit.

9.- Interlocking of a contactor control.

10.- Contactor controls with a timing relay.

11.- Contactor circuits for motors with 2 speeds and 2 separate windings.

12.- Dahlander circuit with contactors.

13.- Star-delta circuit with contactors.

14.- Starter circuit for a slip-ring motor.
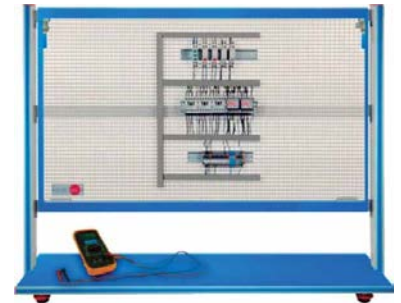
AEL-AESU

Applications:

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AEL-1.3
Professional Wiring Practices in Installations
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———————————— Electrical Control Panel Wiring ————————————

AEL-AEPI. **Electrical Control Panel Wiring Installations:**

N-CPUB. **Electrical Control Panel Basic Unit**

The basic unit allows flexible working with a series of in-line devices and incorporates the control voltage and the main voltage supply.

Nominal voltage: 230/400 V.

Control voltage: 230 V.

Frequency: 50/60 Hz.

Maximum current: 16 A.

I/O: 4 mm safety sockets.

2 DIN rail, 330 mm.

1 Line circuit breaker, 3 poles.

1 Line circuit breaker, single pole.

2 Voltage dividers.

N-CPUB

The application AEL-AEPI can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following rack:

• N-RACK-B.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

See additional elements at the beginning of the catalogue.

CPKIT1. **Electrical Control Panel Kit1**

The N-CPKIT1 consists of a series of the protective and operating elements such as contactors, motor protection switches, 4 mm adapters, etc.

Nominal voltage: 230/400 V.

Control voltage: 230 V.

Frequency: 50/60 Hz.

1 Remote pulse switch, 1 change-over contact.

4 Main contactors, 4-poles.

4 Auxiliary contactors, 2 NO/2 NC.

Latched push-button switches, 1 NO/1 NC.

Latched push-button switches, 1 NO/1 NC.

Indicator lamps.

1 Motor protection switch, 0.6 … 1 A.

1 Motor protection switch, 1.4 … 2 A.

1 Time-delay relay, delayed drop-out, 1.5… 30s.

1 Time-delay relay, delayed pull-on, 1.5 … 30s.

Safety adapters:
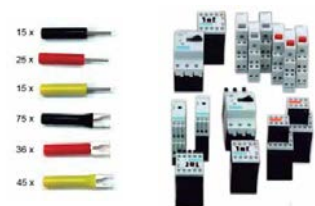
75 fork adapters for main contacts.

45 fork adapters for auxiliary contactors.

36 fork adapters for control contacts.

15 pin adapters for main contacts.

15 pin adapters for auxiliary contactors.

25 pin adapters for control contacts.

CPKIT1

AEL-1. **ELECTRICAL INSTALLATIONS LAB**

AEL-1.1. **Home Electrical Installations**	AEL-1.2. **Industrial Electrical Installations**	AEL-1.3. **Professional Wiring Practices in Installations**

Applications

Lighting and Control

- AEL-AD13.   Audio Door Entry System.
- AEL-AD14.   Audio and Video Door Entry System.
- AEL-AD6A.   Luminosity Control Station.
- AEL-AD6B.   Basic Luminosity Control Station.
- AEL-AD24.   Position Switch.
- AEL-AD5.   Stair Lights Timing.
- AEL-AI13-E.   Modular Trainer for Electrotecnics (Lighting).
- AEL-AE4.   Test Unit for Differential Automatic Switches.

Climatization

- AEL-AD9A.   Heating Control Station.
- AEL-AD9B.   Basic Heating Control Station.

Applications

Industrial Control Engineering

- AEL-CM1.   Manual Control Operations.
- AEL-CM2.   Operations with Manual Commutators.
- AEL-CM3.   Automatic Control Operations.
- AEL-CM4.   Automatic Control Operations with contactors and sensors.
- AEL-MED.   Industrial Measurement Technology.

Fault Simulators

- AEL-AD33.   Single-Phase Installations Faults Simulator.
- AEL-AD33T.   Three-Phase Installations Faults Simulator.

Relays Trainer

- AEL-PRTS.   Protective Relaying Training System.
- AEL-AE5.   Relay Control Station.

Loads

- AEL-AI13-A.   Modular Trainer for Electrotecnics (RLC Circuits).

Applications

Cubicle Wiring Installations

- AEL-AEBI.   Assembly Exercises in Building Installations.
- AEL-AESI.   Assembly Exercises for Signals Electrical Installations.
- AEL-AEBM.   Assembly Exercises on Building Mains Feeds and Meter Cabinets.
- AEL-AESU.   Assembly Exercises on Switching Units.

Electrical Control Panel Wiring

- AEL-AEPI.   Electrical Control Panel Wiring Installation.

AEL-2. **HOME AUTOMATION SYSTEMS LAB**

AEL-2.1. **Wired Systems**	AEL-2.2. **Wireless Systems**

Applications

General Wired Home Automation Systems

- AEL-AD1A.   Robbery Alarm Station.
- AEL-AD1B.   Basic Robbery Alarm Station.
- AEL-AD3A.   Fire Alarm Station.
- AEL-AD3B.   Basic Fire Alarm Station.
- AEL-AD15A. Position Control Station.
- AEL-AD15B. Basic Position Control Station.
- AEL-AD25A. Control Station for Home Electric Service through the telephone.
- AEL-AD22.   Flooding Control Station.
- AEL-AD30.   Gas Control Station.
- AEL-AD31.   Movement and Sound Detection and Control.
- AEL-AD40.   Remote Control Station Via Telephone.

EIB Systems

- AEL-EIB1.   EIB Lighting Control System.
- AEL-EIB2.   EIB Shutter Control System.
- AEL-EIB3.   EIB Heating Control System.
- AEL-EIB4.   EIB Safety Control System.
- AEL-EIB5.   EIB PLC, Touch Panel and Timer System.
- AEL-EIB6.   EIB Scenery Control System.
- AEL-EIB-T.   EIB Complete Control System.

Applications

General Wireless Home Automation Systems

- AEL-AD28A. Integral Control Station of Home Electric Systems.
- AEL-AD28B. Basic Control Station of Home Electric Systems.
- AEL-AD28C. Elementary Control Station of Home Electric Systems.
- AEL-AD23.   Wireless Basic Control Station (RF).

AEL-3. ELECTRICAL MACHINES LAB

AEL-3.1. **Electrical Machines Trainers**	AEL-3.2. **Electrical Machines Applications**

Applications

Transformers Trainers
- AEL-SPTT.   Single-Phase Transformer Trainer.
- AEL-TPTT.   Three-Phase Transformer Trainer.
- AEL-DTT.   Distribution Transformer Trainer.
- AEL-AI13-D.   Modular Trainer for Electrotecnics (Transformers).

Generators/Motors Trainers
- AEL-EEA.   Alternator Study Unit.
- AEL-EGMG24. Motor-Generator Group.
- AEL-EEEM.   Energy Efficiency in Electrical Motors.
- AEL-EMSS.   Electrical Machines Soft Starter
- AEL-EMCF.   Electrical Machines Control through Frequency Controller.
- AEL-EMRP.   Electrical Machines Relays Protection Trainer.
- AEL-ACINT.   AC Three-Phase Induction Motor of Squirrel Cage Trainer.
- AEL-ACDHT.   AC Dahlander Three-Phase Induction Motor Trainer.
- AEL-DCSET.   DC Series Excitation Motor Trainer.
- AEL-DCSHT.   DC Shunt Excitation Motor Trainer.
- AEL-DCCOT.   DC Compound Excitation Motor Trainer.
- AEL-DCSPT.   DC Separately Excited Motor Trainer.
- AEL-UMT.   Universal Motor Trainer.
- AEL-ACRLT.   AC Three-Phase Reluctance Motor Trainer.
- AEL-ACSPT.   Asynchronous Single-Phase Motor with Split Phase Trainer.
- AEL-SERIN/CA-1kW.   Computer Controlled Advanced Industrial Servosystems Trainer - 1 kW (for AC Motors).
- AEL-AI13.   Modular Trainer for Electrotecnics (RLC Circuits, Electrostatics, Motors, Transformers, Lighting).
- AEL-AI13-C.   Modular Trainer for Electrotecnics (Motors).
- AEL-C-04S.   Dynamics Loads, with SCADA.

Fault Simulator Trainers in Electrical Machines
- AEL-ESAM.   Fault Simulation Trainer in Electrical motors.
- AEL-ESAE.   Electrical Faults Simulation Trainer.
- AEL-MMRT.   Motor Management Relays Trainer.

Applications

Generators/Motors Applications
- AEL-ACINA.   Applications of AC Three-Phase Induction Motors of Squirrel Cage.
- AEL-ACDHA.   Applications of AC Dahlander Three-Phase Induction Motors.
- AEL-ACWRA.   Applications of AC Three-Phase Induction Motors of Wound Rotor.
- AEL-ACLA.   Applications of AC Linear Motor Operations.
- AEL-DCSEA.   Applications of DC Series Motors.
- AEL-DCSHA.   Applications of DC Shunt Motors.
- AEL-DCCOA.   Applications of DC Compound Motors.
- AEL-DCSPA.   Applications of DC Separately Excited Motors.
- AEL-DCGEA.   Applications of DC Generators.
- AEL-UMA.   Applications of Universal Motors.
- AEL-STMA.   Applications of Stepper Motors.
- AEL-DCPMA.   Applications of DC Permanent Magnet Motors.
- AEL-DCBRA.   Applications of DC Brushless Motors.
- AEL-ACRLA.   Applications of AC Three-Phase Reluctance Motors.
- AEL-ACSPA.   Applications of Asynchronous Single-Phase Motor with Split Phase.
- AEL-AI12.   Modular Application (AC Motors).
- AEL-IMSU.   General Applications of AC Induction Motors.

See catalogue of: **AEL-3. Electrical Machines Lab**

AEL-4. ELECTROMECHANICAL CONSTRUCTIONS LAB

AEL-4.1. **Transformers Construction**	AEL-4.2. **Electrical Motors Construction**

Applications

Single-Phase Transformers Construction
- AEL-SPTC.   Single-Phase Transformer Construction Kit.

Three-Phase Transformers Construction
- AEL-TPTC.   Three-Phase Transformer Construction Kit.

Professional Practices in wiring Transformers
- AEL-PSPTC. Single-Phase Transformer wiring.
- AEL-PTPTC. Three-Phase Transformer wiring.

Applications

Cut Away Electrical Motors
- AEL-EMT1-S.   Cut away DC independent excitation motor-generator.
- AEL-EMT2-S.   Cut away DC series excitation motor-generator.
- AEL-EMT3-S.   Cut away DC shunt excitation motor-generator.
- AEL-EMT4-S.   Cut away DC compound excitation motor-generator.
- AEL-EMT5-S.   Cut away DC shunt-series compound excitation motor.
- AEL-EMT6-S.   Cut away AC synchronous three-phase motor alternator.
- AEL-EMT7-S.   Cut away asynchronous three-phase motor of squirrel cage.
- AEL-EMT8-S.   Cut away asynchronous three-phase motor with wound rotor.
- AEL-EMT9-S.   Cut away Dahlander three-phase motor.
- AEL-EMT10-S.   Cut away asynchronous three-phase motor of two independent speeds.
- AEL-EMT11-S.   Cut away asynchronous single-phase motor with starting capacitor.
- AEL-EMT12-S.   Cut away universal motor.
- AEL-EMT14-S.   Cut away repulsion motor, single-phase with short circuited brushes.
- AEL-EMT15-S.   Cut away DC permanent magnet motor.
- AEL-EMT16-S.   Cut away asynchronous single-phase motor with starting and running capacitor.
- AEL-EMT17-S.   Cut away asynchronous three-phase motor of squirrel cage with "Y" connection.
- AEL-EMT18-S.   Cut away DC Brushless motor.
- AEL-EMT19-S.   Cut away stepper motor.
- AEL-EMT20-S.   Cut away asynchronous single-phase motor with split phase.
- AEL-EMT21-S.   Cut away three-phase reluctance motor.
- AEL-EMT22-S.   Cut away single-phase shaded pole motor.

Transparent and Functional Electrical Motors
- AEL-EMT1-T.   Transparent and functional DC independent excitation motor-generator.
- AEL-EMT2-T.   Transparent and functional DC series excitation motor-generator.
- AEL-EMT3-T.   Transparent and functional DC shunt excitation motor-generator.
- AEL-EMT4-T.   Transparent and functionalDC compound excitation motor-generator.
- AEL-EMT5-T.   Transparent and functional DC shunt-series compound excitation motor-generator.
- AEL-EMT6-T.   Transparent and functional AC synchronous three-phase motor alternator.
- AEL-EMT7-T.   Transparent and functional asynchronous three-phase motor of squirrel cage.
- AEL-EMT8-T.   Transparent and functional asynchronous three-phase motor with wound rotor.
- AEL-EMT9-T.   Transparent and functional Dahlander three-phase motor.
- AEL-EMT10-T.   Transparent and functional asynchronous three-phase motor of two independent speeds.
- AEL-EMT11-T.   Transparent and functional asynchronous single-phase motor with starting capacitor.
- AEL-EMT12-T.   Transparent and functional universal motor.
- AEL-EMT14-T.   Transparent and functional repulsion motor, single-phase with short circuited brushes.
- AEL-EMT16-T.   Transparent and functional asynchronous single-phase motor with starting and running capacitor.
- AEL-EMT17-T.   Transparent and functional asynchronous three-phase motor of squirrel cage with "Y" connection.
- AEL-EMT20-T.   Transparent and functional asynchronous single-phase motor with split phase.
- AEL-EMT21-T.   Transparent and functional three-phase reluctance motor.
- AEL-EMT22-T.   Transparent and functional single-phase shaded pole motor.

Removable Electrical Motors
- AEL-DIM-KIT.   4 Disassembly Induction Motors Kit.
- AEL-TPIC.   Three-Phase Induction Motor Construction.
- AEL-SPIC.   Single-Phase Induction Motor Construction with starting and running capacitor.
- AEL-DCMC.   DC Motor Construction.

Dissectable and Configurable Electrical Motors System
- AEL-EMT-KIT.   Dissectable and Configurable Advanced Electrical Motor.

Professional practices in wiring Electrical Motors
- AEL-PSPIM.   Single-Phase Induction Motor wiring.
- AEL-PTSIM.   Three-Phase Induction Motor wiring.

See catalogue of: **AEL-4. Electromechanical Constructions Lab**

AEL-5. POWER SYSTEMS AND SMART GRID TECHNOLOGY LAB

AEL-5.1. Generation Trainers	AEL-5.2. Distribution and Transmission Trainers	AEL-5.3. Loads Trainers
Applications	Applications	Applications
Basic Synchronization Applications	**Introduction to Transmission and Distribution Power Systems**	**Basic Load Controller Trainers**
• AEL-MOSC. Manual Operations of Synchronization Circuits.	• AEL-TI-01. Study of the Regulation of the Distribution Transformer (with TAP).	• AEL-MRPC. Manual Reactive Power Compensation.
Advanced Synchronization Applications	• AEL-TI-02. Analysis of Three-phase Power Lines.	• AEL-APFC. Single-phase Automatic Power Factor Compensation.
• AEL-EESD. Advanced Digital Synchronization Trainer.	**Basic Distribution and Transmission Trainers**	• AEL-EECFP. Advanced Power Factor Controller.
Wind Energy	• AEL-AE1A. Aerial Line Model.	• AEL-DLT. Dynamic Loads Trainer.
• AEL-WPP. Wind Power Plants with Double Feed Induction Generator.	• AEL-TDTR. Distribution Transformer with Voltage Regulator.	• AEL-AI8. Reactive Power Compensation (Power Factor Correction).
• AEL-WPT. Wind Power Trainer with Permanent Magnets Synchronous Generator.	• AEL-PSCL. Parallel and Series Transmission Lines.	• AEL-AE6. Energy Counters Control Trainer.
• AEL-WPPI. Wind Power Plants with Induction Generator.	**Advanced Distribution and Transmission Trainers**	**Advanced Loads Control**
	• AEL-TSSG. Transmission Systems with Synchronous Generator.	• AEL-FUSG. Final User Smart Grid Trainer.
	• AEL-HVDC. High Voltage DC Transmission Lines.	• AEL-FUSG-M. Final User Smart Grid-Smart Meter Trainer.
		• AEL-FUSG-E. Final User Smart Grid-Smart Energy Trainer.
		• AEL-FUSG-N. Final User Smart Grid-Net Metering Trainer.

AEL-5.4. Relays Protection Trainers

Applications	Applications
Fundamental Concepts	**Protection Systems for Transmission and Distribution Lines**
• AEL-CTFP. Current Transformer Fundaments for Protections Devices.	• AEL-TPT-01. Overcurrent Time Protection Relay for Lines.
• AEL-VTFP. Voltage Transformer Fundaments for Protections Devices.	• AEL-TPT-02. Overvoltage and Undervoltage Protection Relay.
Relays Protection Trainers	• AEL-TPT-03. Directional Power Protection Relay.
• AEL-ERP. Protection Relays Test Trainer.	• AEL-TPT-04. Earth-Fault Voltage Protection Relay.
Protection Systems in Electrical Loads	• AEL-TPT-05. Protection Relay of Parallel-Connected Lines.
• AEL-CPT-01. Electrical Machines Protection.	• AEL-TPT-06. High Speed Distance Protection Relay.
• AEL-CPT-02. Motor Management Relay.	
Protection Systems for Generators	
• AEL-GPRE. Generator Protection Relay Trainer.	

AEL-5.5. Compact Smart Grid Power Systems Applications

Applications

• AEL-CPSS-01S. Compact Smart Grid Power Systems Application, with Automatic Control Generation, Transmission Line and Loads, with SCADA.
• AEL-CPSS-02S. Compact Smart Micro-Grids Power Systems Application, with Automatic Control Generation and Loads, with SCADA.
• AEL-CPSS-03S. Compact Smart Grid Power Systems Application with Two Parallel Generators, Two Distribution Lines and Loads, with SCADA.

AEL-5.6. Modular Smart Grid Power Systems Applications

Generation Systems	Transmission/Distribution Systems	Loads Systems
Applications	Applications	Applications
Automatic Control Generation Systems options	**Transmission and Distribution Power Systems options**	**Conventional Loads options**
Synchronization Studies	One Line and Regulation Transformer Studies	• AEL-C-P-02S. Loads Systems with Automatic Power Factor Compensation and Protection Relays, with SCADA. (✱)
• AEL-GCA-P-02S. Generation System with Automatic Control of Synchronous Generator, Synchronization and Protection Relays, with SCADA. (✱)	• AEL-T-P-01S. Transmission and Distribution Power Systems with Regulation Transformer and Protection Relays, with SCADA. (✱)	• AEL-C-02S. Loads Systems with Automatic Power Factor Compensation, with SCADA. (✱)
• AEL-GCA-02S. Generation System with Automatic Control of Synchronous Generator and Synchronization, with SCADA. (✱)	• AEL-T-01S. Transmission and Distribution Power Systems with Regulation Transformer, with SCADA. (✱)	• AEL-C-P-01S. Loads Systems with Manual Power Factor Compensation and Protection Relays, with SCADA. (✱)
• AEL-GCA-P-03S. Automatic Synchronization System of Synchronous Generator with Servomotor and Protection Relays, with SCADA. (✱)	Two Aerial Lines Studies	• AEL-C-01S. Loads Systems with Manual Power Factor Compensation, with SCADA. (✱)
• AEL-GCA-03S. Automatic Synchronization System of Synchronous Generator with Servomotor, with SCADA. (✱)	• AEL-T-P-02S. Transmission and Distribution Power Systems with Two Aerial Parallel Lines and Protection Relays, with SCADA. (✱)	**Special Loads options**
Isolated Grid Studies	• AEL-T-02S. Transmission and Distribution Power Systems with Two Aerial Parallel Lines, with SCADA. (✱)	• AEL-C-03S. Complex Load, Power Consumption Measurement and Peak Load Monitoring, with SCADA. (✱)
• AEL-GCA-P-01S. Generation System with Automatic Control of Synchronous Generator in an Isolated Grid and Protection Relays, with SCADA. (✱)	Additional Studies Possibilities	(✱) Available application without SCADA, application reference without the last "S".
• AEL-GCA-01S. Generation System with Automatic Control of Synchronous Generator in an Isolated Grid, with SCADA. (✱)	• AEL-T-P-04S. Electrical Distribution Grids Trainer with Protections Relays, with SCADA. (✱)	Each application can work individually or combined with other applications to form systems simulators (Generation + Transmission/Distribution + Loads).
Manual Control Generation Systems options	• AEL-T-04S. Electrical Distribution Grids Trainer, with SCADA. (✱)	
Synchronization Studies	• AEL-T-03S. Power Flow Control in Meshed Networks, with SCADA. (✱)	
• AEL-GCM-P-02S. Generation System with Manual Control of Synchronous Generator, Synchronization and Protection Relays, with SCADA. (✱)	(✱) Available application without SCADA, application reference without the last "S".	
• AEL-GCM-02S. Generation System with Manual Control of Synchronous Generator and Synchronization, with SCADA. (✱)	Each application can work individually or combined with other applications to form systems simulators (Generation + Transmission/Distribution + Loads).	
• AEL-GCM-P-03S. Manual Synchronization System of Synchronous Generator with Servomotor and Protection Relays, with SCADA. (✱)		
• AEL-GCM-03S. Manual Synchronization System of Synchronous Generator with Servomotor, with SCADA. (✱)		
Isolated Grid Studies		
• AEL-GCM-P-01S. Generation System with Manual Control of Synchronous Generator in an Isolated Grid and Protection Relays, with SCADA. (✱)		
• AEL-GCM-01S. Generation System with Manual Control of Synchronous Generator in an Isolated Grid, with SCADA. (✱)		
Additional Generation Systems options		
• AEL-GAD-01S. Pumping Power Plant, with SCADA. (✱)		
• AEL-GAD-02S. Auto-Start Diesel Generator Trainer for Recovery of the Energy System due to Black-Outs, with SCADA. (✱)		
• AEL-GAD-03S. Automatic Generation System with Two Parallel Generators, with SCADA. (✱)	See catalogue of: **AEL-5. Power Systems and Smart Grid Technology Lab**	
• AEL-GAD-04S. Hydroelectric Power Plant, with SCADA. (✱)		
(✱) Available application without SCADA, application reference without the last "S".		
Each application can work individually or combined with other applications to form systems simulators (Generation + Transmission/Distribution + Loads).		

AEL-5.7. Modular Smart Grid Power Systems Simulators

• AEL-MPSS-01. Modular Smart Grid Power Systems Simulator, with Automatic Control Generation, Transmission Line, Loads and Protection Relays, with SCADA.
• AEL-MPSS-02. Modular Smart Grid Power Systems Simulator, with Automatic Control Generation, Transmission Line and Loads, with SCADA.
• AEL-MPSS-03. Modular Smart Grid Power Systems Simulator, with Manual Control Generation, Transmission Line, Loads and Protection Relays, with SCADA.
• AEL-MPSS-04. Modular Smart Grid Power Systems Simulator, with Manual Control Generation, Transmission Line and Loads, with SCADA.

Available Individual Modules

Alarms:
N-ALA01	Intrusion Alarm Station (8 circuits).
N-ALA02	Fire Alarm Station with battery.
N-ALA03	Coded Electronic key.
N-ALA04	Intrusion Alarm Station by radio with programming (PC).

Audio:
N-AUD01	Analog Sound Regulator.
N-AUD02	Digital Sound Regulator.
N-AUD03	Warnings Emitter Module.
N-AUD04	Speaker of 2", 2W, 8 ohm.
N-AUD05	Speaker of 4", 7W, 8 ohm.
N-AUD06	Basic Audio Central.
N-AUD07	Advanced Audio Central.
N-AUD08	Background Music Regulator 3W.
N-AUD09	Background Music Regulator 5W.
N-AUD10	Double Background Music Regulator.
N-AUD11	Plug for Mono Speaker.
N-AUD12	Plug for Stereo Speakers.
N-AUD13	Digital Controls, Walkman Input and Earphones Output.
N-AUD14	FM Digital Turner Controls + Earphones Output.
N-AUD15	Digital Controls for Transmission and Reception of Warnings, Earphones Output and Walkman Input.
N-AUD16	2 Channel Digital Controls with Inter-communicator and Display.
N-AUD17	FM Digital Tuner Controls.
N-AUD18	Warning Selector, 9 zones.
N-AUD19	Amplifier (30 W).
N-AUD20	Analog Sound Regulator (mono-stereo).

Bells:
N-TIM01	Bell 70 dB.
N-TIM02	Buzzer 80 dB, 230 V.
N-TIM03	2 Bells.
N-TIM04	2 Buzzers.
N-TIM05	Bell + Buzzer.
N-TIM06	2 Buzzers 125/230 V.
N-TIM07	2 Buzzers with Tone Regulator.
N-TIM08	2 Piezoelectric Buzzers.
N-TIM09	2 Tones domestic Bell (230 Vac).
N-TIM10	2 Buzzers 24 Vac.
N-TIM11	Bell 24 Vac.
N-TIM12	Bell 230 Vac.

Brakes:
FRE-FE	Electronic Brake.
DI-FRE	Pendular Dynamo Brake.
FREND	Dynamo Brake.
FRENP	Magnetic Powder Brake.
FRECP	Eddy Current Brake.
FYWL	Flywheel.

Busbars:
N-BUS01	Generation Busbar.
N-BUS02	Coupling Busbar.
N-BUS03	Grid Busbar.
N-BUS04	Emitter Transport Bursbar.
N-BUS05	Receptor Transport Busbar.
N-BUS06	Distribution Busbar.
N-BUS07	Power Circuit Breaker.

Commutators:
N-COM01	2 Positions Commutator, 1 inverter.
N-COM02	2 Positions Commutator, 2 inverters.
N-COM03	2 Positions Commutator, 1 NO + 1 NC.
N-COM04	3 Positions Commutator, 1 inverter.
N-COM05	3 Positions Commutator, 2 inverters.
N-COM06	2 Positions Rotary Commutator with return to 0 (Power).
N-COM07	2 Positions Rotary Commutator with return to 0 (Control).
N-COM08	2 Positions Rotary Commutator with Key.
N-COM09	4 Positions Rotary Commutator + Stop.
N-COM10	Rotary Commutator for Voltmeter.
N-COM11	Rotary Commutator for Ammeter.
N-COM12	Commutator/ Switch.
N-COM13	Double Commutator.
N-COM14	2 Commutators.
N-COM15	2 Commutators, 16 A.
N-COM16	2 Commutators with Light.
N-COM17	2 Inverters.
N-COM18	2 Inverters with Light.
N-COM19	Commutator + Inverter.
N-COM20	Commutator + Group of 2 Switches.
N-COM21	Inverter + Group of 2 Commutators.
N-COM22	Commutator with Light + Inverter with Light.
N-COM23	Commutator Group + Bell Push-Button + Switch.
N-COM24	Commutator + Push-Button with Symbol to be chosen by the Customer.
N-COM25	Removable Key Commutator, 2 Positions, 5A.
N-COM26	Key Commutator, 2 Positions, with Interlock, 5A.
N-COM27	Commutator with Label-Holder with Light.
N-COM28	Group of 2 Commutators.
N-COM29	Push-Button Group + Commutator.
N-COM30	Commutator with Puller.
N-COM31	4 Positions Rotary Commutator.
N-COM32	3 Positions Rotary Commutator.
N-COM33	Commutator with zero point.
N-COM34	Commutator 20 A.
N-COM35	Lighting Commutator.
N-COM36	Lighting Commutator with zero point.
N-COM37	Commutator with Luminous Screen (bell, bulb, wc, alarm...).

Contactors:
N-CON01	3-pole Contactor (24 Vac).
N-CON02	3-pole Contactor (220 Vac).
N-CON03	3-pole Contactor (12 Vdc).
N-CON04	3-pole Contactor, work retarded (24 Vac).
N-CON05	3-pole Contactor, work retarded (220 Vac).
N-CON06	3-pole Contactor, work retarded (12 Vdc).
N-CON07	3-poles Contactor, rest retarded (24 Vac).
N-CON08	3-poles Contactor, rest retarded (220 Vac).
N-CON09	3-poles Contactor, rest retarded (12 Vdc).
N-CON10	3-pole Contactor-Inverter (24 Vac).
N-CON11	3-pole Contactor-Inverter (220 Vac).
N-CON12	3-pole Contactor-Inverter (12 Vdc).
N-CON13	4-pole Contactor (24 Vac).
N-CON14	4-pole Contactor (220 Vac).
N-CON15	4-pole Contactor(12 Vdc).

Control:
N-CTR01	Basic Control Module.
N-CTR02	Advanced Control Module.
N-CTR03	Burglar Control Module.
N-CTR04	Power Module 15 W.
N-CTR05	Power Module 72 W.
N-CTR06	Modem Module.
N-PFD	Power Flow Distribution Module.
N-MSM	Manual Synchronization Module.
N-ASYB	Basic Synchronization Module.
N-AVR/P	Automatic Voltage Regulator.
N-ASY3PH	Three-phase Automatic Synchronoscope.
N-BTBINV	Back to Back Inverter.

Detectors:
N-DET01	Flooding Detector.
N-DET02	Gas Detector.
N-DET03	Fitted Power Supply.
N-DET04	Fitted Flooding Detector.
N-DET05	Gas Detector for domestic control.
N-DET06	Smoke Detector.
N-DET07	Ionization Smoke Detector.
N-DET08	Optic Smoke Detector.
N-DET09	Intrusion Detector for domestic control.
N-DET10	Water Electro-valve.
N-DET11	Probe for Water Electro-valve.
N-DET12	Gas Electro-valve.
N-DET13	Wireless Intrusion Detector RF.
N-DET14	Wireless Panic Push-button RF.
N-DET15	Wireless 1-channel Receptor RF.
N-DET16	Battery Module for domestic control.
N-DET17	Temperature Probe.
N-DET18	Passive Infrared Detector PIR.
N-DET19	Twilight Detector.
N-DET20	Light Detector.
N-DET21	Fire Detector through Ionization.
N-DET22	Fire Thermal Detector.
N-DET23	Gas Electronic Detector.
N-DET24	CO Detector with relay output (230 V, 50 Hz).
N-DET25	Microwaves Detector/Switch.
N-DET26	Open Door Magnetic Detector.
N-DET27	Glass Break Detector.
N-DET28	Inertia Detector.
N-DET29	Passive Infrared Presence Detector.
N-DET30	Microwave Presence Detector.
N-DET31	Thermo-velocimetric Detector.
N-DET32	Magnetic Proximity Detector.
N-DET33	Optic Proximity Detector.
N-DET34	CO Detector.
N-DET35	Passive Infrared Alarm-Detector.

EIB Technology modules:
N-LREG	Lighting regulator.
N-BOUT	Binary output.
N-UDIM	Universal dimmer.
N-PUSHM	Pushbuttons module.
N-ACTS	Actuator for the shutters.
N-MOTS	Motor for the shutters.
N-TREG	Temperature regulator.
N-AVAL	Actuator for the valve.
N-COMM	Communication module.
N-MOVS	Motion Sensor.
N-SMDE	Smoke detector.
N-PLAM	Plugs with lamps.
N-CSW	Clock switch.
N-TCH	Touch panel.
N-SEC	Scenery/event controller.

Faults Simulation:

N-SAV01	Simulation of 2 Earth Electrodes with Variable Resistance.
N-SAV02	Simulation Equipment of 3 different strange masses.
N-SAV03	Equipotential Collector with 2 strange masses.
N-SAV04	3-Phase + neutral System and AC/DC load, with earth fault simulation.
N-FAULT	Fault Injection module.
N-FMAC	Fault Injection module for three-phase induction motors.

Fuses:

N-FUS01	Fuses 20 A (include 2-5-10-20 A).
N-FUS02	Fuses 32 A (include 8-16-20-32 A).
N-FUS03	3 Fuse-holders16 A, 380 Vac (include 2,4,6,10,16A).
N-FUS04	3 Fuse-holders 10 A,230 Vac (include 2,4,6,10 A).
N-FUS05	5 Sectionalizing Fuse-holders (until 25 A, include fuses 6 A).
N-FUS06	Rail Mount Fuse-holder + Panel Mount Fuse-holder.
N-FUS07	3 Panel Mount Fuse-holders.
N-FUS10	Module with 3 fuse-holders and power fuses.
N-FUS11	4 Panel Mount Fuses.

Indicators:

N-IND01	Nurse Panel.
N-IND02	Patient Room Panel.
N-IND03	Luminous Calling Panel.

Intercom-Interphone System:

N-POR01	Phones Power Supply.
N-POR02	Phone.
N-POR03	Interphone.
N-POR04	Video Camera.
N-POR05	Phone / Monitor.
N-POR06	Lock.
N-POR07	Digital Station.
N-POR08	Video - Interphone Power Supply.

Lamps:

N-LAM01	Lamps.
N-LAM02	Auxiliary Lamps (3 lamps, 24 Vac).
N-LAM03	3 Push-buttons and Lamps.
N-LAM04	3 Push-buttons and Lamps (24 Vac).
N-LAM05	Lamp-holder.
N-LAM06	Signs Indicator.
N-LAM07	Emergency Light.
N-LAM08	2 Lamp-holders+ Incandescent Lamps.
N-LAM08B	Incandescent Lamp.
N-LAM09	Fluorescent Lamp.
N-LAM10	2 Halogen Lamps.
N-LAM11	2 Turning Halogen Lamps.
N-LAM12	Halogen Lamp with Transformer.
N-LAM13	2 Low Consumption Fluorescent Lamps.
N-LAM14	Direction Indicator Lamp (24 Vac).
N-LAM15	Number Indicator Lamp (24 Vac).
N-LAM16	Halogen Lamp.
N-LAM20	Auxiliary lamps (4 lamps).
N-LAM26	Lighting Module.
N-LAM30	Luminous panel, 24 V.
N-LAM32	LED Lamp.
LAMP4	4 Lamps Panel.

Loads:

N-CAR01	Fixed Resistive Load, 150 ohm, 500 W.
N-CAR02	Double Fixed Resistive Load, 150 ohm, 500 W.
N-CAR03	Fixed Resistive Load (custom-made).
N-CAR04	Variable Resistive Load, 150 ohm, 500 W.
N-CAR05	Double Variable Resistive Load, 150 ohm, 500 W.
N-CAR06	Variable Resistive Load (custom made).
N-CAR07	3-phase Variable Resistive Load, 3 x 150 ohm, 500 W.
N-CAR08	3-phase Variable Resistive Load (custom-made).
N-CAR09	Capacitive Load 4 x 7 µF.
N-CAR10	Capacitive Load.
N-CAR11	3-phase Capacitive Load.
N-CAR12	Inductive Load 0-33-78-140-193-236 mH.
N-CAR13	Inductive Load (custom-made).
N-CAR14	3-phase Inductive Load.
N-CAR15	Current Transformer Load.
N-CAR16	Voltage Transformer Load.
N-CAR17	Line Capacitor.
N-CAR18	Aerial Line Model.
N-CAR18/A	Rheostat for Equivalent Circuit of an Electric Line.
N-CAR18/B	Inductance for Equivalent Circuit of an Electric Line.
N-CAR18/C	Capacitor for Equivalent Circuit of an Electric Line.
N-CAR19	Single-phase Commutable Capacitor Load.
N-CAR20	Diodes and Thyristors.
N-CAR21	Inductive and Capacitive Loads.
N-CAR22	AC Starting Rheostat.
N-CAR23	DC Starting Rheostat.
N-CAR24	Field Rheostat.
N-CAR30	Inductances Module.
N-CAR31	Capacitors Module.
N-CAR32	Rectifier Diodes Module.
N-CAR33	Resistive Components Module.

N-CAR34	Single-phase rectifier diodes.
N-REF	Resistor Load with commutator.
N-REFT	Three-phase Resistor Load with commutator.
N-IND	Variable Inductive Load with commutator.
N-INDT	Three-phase Variable Inductive Load with commutator.
N-CON	Variable Capacitor Load with commutator.
N-CONT	Three-phase Variable Capacitor Load with commutator.
N-REV	Variable Resistor.
N-REVT	Three-phase Variable Resistor.
N-RCL3R	Resistive, Inductive and Capacitive Loads Module.
N-RCL3R/B	Universal Loads Module.
N-CAR19T3	Three-Phase Bank of Commutable Capacitors Module.
N-CAR19T3D	Three-Phase Digital Bank of Commutable Capacitors Module.
N-CAR35T3	Three-Phase Bank of Commutable Resistors Module.
N-CAR35T3D	Three-Phase Digital Bank of Commutable Resistors Module.
N-CAR36T3	Three-Phase Bank of Commutable Inductances Module.
N-CAR36T3D	Three-Phase Digital Bank of Commutable Inductances Module.
N-CAR19T4D	Three-Phase Digital Capacitor Banks Module.
N-CAR19S4D	Single-Phase Digital Capacitor Banks Module.
N-CAR35T3/1.2K	1.2KW Three-Phase step-variable resistor load Module.
N-CAR36T3/0.9K	0.9Kvar Three-Phase step-variable inductive load Module.
N-CAR19T3/0.8K	0.8Kvar Three-Pase step-variable capacitive load Module.

Meters:

N-MED01	DC Micro-ammeter (0-100 microA).
N-MED02	DC Micro-ammeter (0-600 microA).
N-MED03	DC Milliammeter (0-100 mA).
N-MED04	DC Milliammeter (0-600 mA).
N-MED05	DC Ammeter (0-1.5 A).
N-MED06	DC Ammeter (custom-made).
N-MED07	AC Milliammeter (0-100 mA).
N-MED08	AC Milliammeter (0-600 mA).
N-MED09	AC Ammeter (0-2.5 A).
N-MED10	AC Ammeter (0-5 A).
N-MED11	AC Ammeter (0-10 A).
N-MED12	AC Ammeter (custom-made).
N-MED13	DC Millivoltmeter (0-100 mV).
N-MED14	DC Millivoltmeter (0-600 mV).
N-MED15	DC Voltmeter (0-5 V).
N-MED16	DC Voltmeter (0-50 V).
N-MED17	DC Voltmeter (0-200 V).
N-MED18	DC Voltmeter (custom-made).
N-MED19	AC Voltmeter (0-10 V).
N-MED20	AC Voltmeter (0-60 V).
N-MED21	AC Voltmeter (0-250 V).
N-MED22	AC Voltmeter (0-400Vac).
N-MED23	AC Voltmeter (custom-made).
N-MED24	AC Double Voltmeter.
N-MED25	Pointer Frequency Meter (45-65 Hz).
N-MED26	Frequency Meter.
N-MED27	Reed Frequency Meter 60 Hz.
N-MED28	Reed Double Frequency Meter 46-64 Hz.
N-MED29	Tachymetric Voltmeter (custom made).
N-MED30	1-Phase Phasemeter 230 V.
N-MED31	3-Phase Phasemeter 400 V.
N-MED32	1-Phase Wattmeter 230 V.
N-MED33	3-Phase Balanced Wattmeter 440 V.
N-MED34	3-Phase Balanced Wattmeter (4 wires) 440 V.
N-MED35	3-Phase Unbalanced Wattmeter (3 wires) 440 V.
N-MED36	3-Phase Unbalanced Wattmeter with neutral (4 wires) 440 V.
N-MED37	3-Phase Unbalanced Wattmeter (3 systems) 440 V.
N-MED38	1-Phase Varmeter 230 V.
N-MED39	3-Phase Balanced Varmeter 440 V.
N-MED40	3-Phase Balanced Varmater (4 wires)440 V.
N-MED41	3-Phase Unbalanced Varmeter (3 wires) 440 V.
N-MED42	3-Phase Unbalanced Varmeter with neutral (4 wires) 440 V.
N-MED43	3-Phase Unbalanced Varmeter (3 systems) 440V.
N-MED44	Phase Sequence Indicator.
N-MED45	1-Phase Synchronization Equipment.
N-MED46	3-Phase Synchronization Equipment.
N-MED47	Pulse Counter.
N-MED48	Hour Counter 24 V / 50 Hz.
N-MED49	Hour Counter.
N-MED50	Hour Counter 12 - 36 Vdc.
N-MED51	Insulation Indicator 440 V.
N-MED52	Insulation Indicator 440 V with optic and acoustic signalling.
N-MED53	Sound Tester of Continuity.
N-MED54	1-Phase Maximum Current Meter +Alarm.
N-MED55	3-Phase Maximum Current Meter,4 wires.
N-MED56	Maximum Power Meter.
N-MED57	3-Phase Active Energy Meter.
N-MED58	3-Phase Reactive Energy Meter.
N-MED59	Chronometer.
N-MED63	Synchronoscope.
N-MED64	Phase Sequence Indicator.

Meters: (continuation)

N-MED65	Digital Multimeter.
N-MED65/A	Advanced Digital Multimeter.
N-MED66	Indicator of Phase Presence / Absence.
N-MED67	Thermometer (Room Temperature).
N-MED68	Hygrometer.
N-MED69	Hygrostat.
N-MED70	Quartz Analog Clock.
N-MED71	Digital Alarm Clock (with Thermometer and 2 Alarms).
N-MED72	Energy Counter.
N-MED73	1-Phase Light Counter.
N-MED74	3-Phase Light Counter.
N-MED75	Digital Meteorological Station.
N-MED76	Thermostat for Heating.
N-MED77	Thermostat for Heating and Refrigeration.
N-MEDV	Analog Voltmeter.
N-MEDI	Analog Ammeter.
N-TMEDV	Three-phase Analog Voltmeter.
N-TMEDI	Three-phase Analog Ammeter.
N-MPDM	Mechanical Power Digital Measurement Unit.
N-MUAD	Electric Power Data Adquisition System.
N-TM	Torque Measurement Unit.
STRO	Stroboscope.
TECNEL/T	Tachogenerator.
TECNEL/TM	Optical Speed Meter.
N-EAL	Network Analyzer Unit.
N-EALAR	Network Analyzer Unit with active and reactive energy counters.
N-EALD	Network Analyzer Unit with Computer Data Acquisition.
N-EALDG	Network Analyzer Unit with Computer Data Acquisition + Oscilloscope Display.
N-EAL-DC	DC Network Analyzer Unit.
N-EALDC/G	DC Generator Analyzer.
N-EAM-VA	Analog Measurement Unit.
N-EAM-DC	Analog Measurement Unit. (DC)
N-EME-SA	Advanced Synchronous Module.
LOCL	Load Cell.
N-DMM	Dynamometer.
N-ASY	Synchronoscope Module.
N-EMSD	Advanced Digital Synchronoscope Module.
N-MSM	Manual Synchronization Module.
N-CTT	Data Concentrator Module.
N-SM	Smart Meter Module.
N-BRLA	Compass to observe the rotating magnetic field.

Motor Controllers:

DC Motor Controllers

N-VVCC/M	DC Motor Speed Controller.
N-VVCC	Advanced DC Motor Speed Controller.
N-VVPP/B	Stepper Motor Controller (manual control).
N-VVPP	Stepper Motor Controller (manual control and automatic control).

AC Motor Controllers

N-VVCA/M	AC Motor Speed Controller.
N-VVCA	Advanced AC Motor Speed Controller.
N-VVCA4K	4 kW Motor Controller Module.
N-DFGC	Double-feed Generator Control Module.
N-VVCA5K.	5 kW Motor Speed Controller.

Motors:

DC Motors

EMT1	DC Independent excitation motor-generator.
EMT2	DC Series excitation motor-generator.
EMT3	DC Shunt excitation motor-generator.
EMT4	DC Compound excitation motor-generator.
EMT5	DC Shunt-series compound excitation motor.
EMT12	Universal Motor.
EMT15	DC Permanent magnet motor.
EMT18	DC Brushless motor.
EMT19	Stepper motor.

AC Motors

EMT6	AC Synchronous three-phase motor alternator.
EMT6-B	Permanent magnets synchronous three-phase generator.
EMT6/1K	1KW Three-phase Synchronous Machine.
EMT7	Asynchronous three-phase motor of squirrel cage.
EMT7-B	Asynchronous three-phase motor of squirrel cage (4 poles).
EMT7-C	Asynchronous three-phase motor of squirrel cage (8 poles).
EMT8	Asynchronous three-phase motor with wound rotor.
EMT8DF	Double Feed Induction Generator.
EMT8-DF	1.5KW Three-Phase Induction Motor with Slip Rings and Wound Rotor.
EMT9	Dahlander three-phase motor.
EMT10	Asynchronous three-phase motor of two independent speeds.
EMT11	Asynchronous single-phase motor with starting capacitor.

EMT12	Universal Motor.
EMT14	Repulsion motor, single phase with short circuited brushes.
EMT16	Asynchronous single-phase motor with starting and running capacitor.
EMT17	Asynchronous three-phase motor of squirrel cage with «Y» connection.
EMT20	Asynchronous single-phase motor with split phase.
EMT21	Three-phase reluctance motor.
EMT22	Single-phase shaded pole motor.
EMT23	Linear Motor.
GMG4K	4 kW Generator-Group.
GMG4.5K3PH	4.5 KW Generator-Motor Group.
GMG1.5K3PH	1.5KW Slip Ring Generator-Motor Group.
N-SERV1K	1 kW Servomotor Module.

Motors (cut away):

EMT1-S	Cut away DC independent excitation motor-generator.
EMT2-S	Cut away DC series excitation motor-generator.
EMT3-S	Cut away DC shunt excitation motor-generator.
EMT4-S	Cut away DC compound excitation motor-generator.
EMT5-S	Cut away DC shunt-series compound excitation motor.
EMT6-S	Cut away AC synchronous three-phase motor alternator.
EMT7-S	Cut away asynchronous three-phase motor of squirrel cage.
EMT8-S	Cut away asynchronous three-phase motor with wound rotor.
EMT9-S	Cut away Dahlander three-phase motor.
EMT10-S	Cut away asynchronous three-phase motor of two independent speeds.
EMT11-S	Cut away asynchronous single-phase motor with starting capacitor.
EMT12-S	Cut away universal motor.
EMT14-S	Cut away repulsion motor, single phase with short circuited brushes.
EMT15-S	Cut away DC permanent magnet motor.
EMT16-S	Cut away asynchronous single-phase motor with starting and running capacitor.
EMT17-S	Cut away asynchronous three-phase motor of squirrel cage with «Y» connection.
EMT18-S	Cut away DC Brushless motor.
EMT19-S	Cut away stepper motor.
EMT20-S	Cut away asynchronous single-phase motor with split phase.
EMT21-S	Cut away three-phase reluctance motor.
EMT22-S	Cut away single-phase shaded pole motor.

Motors (transparent and functional):

EMT1-T	Transparent and functional DC independent excitation motor-generator.
EMT2-T	Transparent and functional DC series excitation motor-generator.
EMT3-T	Transparent and functional DC shunt excitation motor-generator.
EMT4-T	Transparent and functional DC compound excitation motor-generator.
EMT5-T	Transparent and functional DC shunt-series compound excitation motor.
EMT6-T	Transparent and functional AC synchronous three-phase motor alternator.
EMT7-T	Transparent and functional asynchronous three-phase motor of squirrel cage.
EMT8-T	Transparent and functional asynchronous three-phase motor with wound rotor.
EMT9-T	Transparent and functional Dahlander three-phase motor.
EMT10-T	Transparent and functional asynchronous three-phase motor of two independent speeds.
EMT11-T	Transparent and functional asynchronous single-phase motor with starting capacitor.
EMT12-T	Transparent and functional universal motor.
EMT14-T	Transparent and functional repulsion motor, single phase with short circuited brushes.
EMT16-T	Transparent and functional asynchronous single-phase motor with starting and running capacitor.
EMT17-T	Transparent and functional asynchronous three-phase motor of squirrel cage with «Y» connection.
EMT20-T	Transparent and functional asynchronous single-phase motor with split phase.
EMT21-T	Transparent and functional three-phase reluctance motor.
EMT22-T	Transparent and functional single-phase shaded pole motor.

Motors (disassembly):

EMT5-D	Disassembly DC shunt-series compound excitation motor.
EMT7-D	Disassembly asynchronous three-phase motor of squirrel cage.
EMT8-D	Disassembly asynchronous three-phase motor with wound rotor.
EMT16-D	Disassembly asynchronous single-phase motor with starting and running capacitor.
EMT20-D	Disassembly asynchronous single-phase motor with split phase.

Overvoltage:

N-SOB01	1-Pole Transient Overvoltage Limiter.
N-SOB02	1-Pole +neutral Transient Overvoltage Limiter.
N-SOB03	3-Pole Transient Overvoltage Limiter.
N-SOB04	3-Pole + neutral Transient Overvoltage Limiter.
N-SOB05	2-Pole Transient Overvoltage Limiter (Analog Telephonic Lines).
N-SOB06	2-Pole Transient Overvoltage Limiter (Digital Telephonic Lines).
N-SOB07	2-Pole Permanent Overvoltage Limiter.
N-SOB08	Transient Overvoltage Double Limiter.

PLC modules:

N-EME-PLCE	Electrical Machines PLC Unit.
N-EME-PLCEA	Advanced PLC Unit.
N-PLC01	PLC01 Control Module.
N-PLC02	PLC02 Control Module.
N-PLC03	PLC03 Control Module.
N-PLC04	PLC04 Control Module.
N-PLC05	PLC05 Control Module.
N-PLC06	PLC06 Control Module.

Power Supply:

N-ALI01	Industrial Main Power Supply.
N-ALI02	Main Power Supply.
N-ALI03	AC Auxiliary Power Supply.
N-ALI04	DC Auxiliary Power Supply (+12,0,-12Vdc).
N-ALI05	Jumpers.
N-ALI06	Adjustable AC Power Supply.
N-ALI07	Adjustable DC Power Supply.
N-ALI08	Standby Battery, 12 Vdc.
N-ALI10	Power Supply Module.
N-ACPWS	AC Motor Power Supply.
N-DCPWS	DC Motor Power Supply.
N-EME-U	Electrical Machines Unit - Universal Power Supply.
N-PWFI	Three-phase supply with low voltage protection 400 V/16A.

Push Buttons:

N-PUL01	Emergency Stop Push-Button (220 Vac).
N-PUL02	Mushroom Push-Button (24 Vac).
N-PUL03	Push-Buttons with Light (220 Vac).
N-PUL04	Push-Buttons with Light (24 Vac).
N-PUL05	Power Circuit 3 Push-Buttons.
N-PUL06	Control Circuit 3 Push-Buttons.
N-PUL07	Box of 3 Push-Buttons for Industrial use.
N-PUL08	Box of 3 Auxiliary Push-Buttons.
N-PUL09	Push-Button with Auxiliary Light (230 Vac).
N-PUL10	Push-Button with Auxiliary Light (24 Vac).
N-PUL11	2 Double Push-Buttons (230 Vac).
N-PUL12	2 Double Push-Buttons(24 Vac).
N-PUL13	2 Positions Actuators.
N-PUL14	4 Positions Actuators.
N-PUL15	Hanging Push-Button.
N-PUL16	Push-Button for Industrial use.
N-PUL17	Double Push-Button for Industrial use.
N-PUL18	Waiter Push-Button.
N-PUL19	Bell Push-Button /Open the Door.
N-PUL20	2 Bell Push-Buttons.
N-PUL21	2 Bell Push-Buttons with Light.
N-PUL22	2 Light Push-Buttons.
N-PUL23	2 Push-Buttons with Symbol to be chosen by the Customer.
N-PUL24	2 Light Push-Buttons with pilot-light.
N-PUL25	2 Disconnecting Push-Buttons (NC) with Symbol to be chosen by the Customer.
N-PUL26	2 Push-Buttons with Green/Red pilot-light 24 Vdc.
N-PUL27	Neutral Push-Button.
N-PUL28	Neutral Push-Button with Light.
N-PUL29	2 Push-Buttons Group for Blinds (without Interlock).
N-PUL30	2 Push-Buttons Group for Blinds (with Interlock).
N-PUL31	2 Push Buttons Group (2 inputs + 2 outputs).
N-PUL32	2 Push Buttons Group (1 input + 2 outputs).
N-PUL33	Push-Button with Label-holder with Light.
N-PUL34	Pull Push-Button.
N-PUL35	Push-Button with Label-holder/Commutator with Label-holder.
N-PUL36	Push-Button / Key Commutator.
N-PUL37	Push-Buttons with / without Interlocking, 1NO+1NC.
N-PUL38	Push-Buttons with / without Interlocking, 2NO.
N-PUL39	Lighting Push-Button with Light, NO+NC.
N-PUL40	Lighting Push-Button with Light, NC.
N-PUL41	Lighting Push-Button without Light, NC.
N-PUL42	Push-Button with Luminous Screen (bell, bulb, wc, alarm...).
N-PUL43	Touch-Type Push-Button with Time Delay.
N-PUL44	Numbered Light Push-Buttons (24 Vac).
N-PUL45	2 Double Chamber Push-Buttons.
N-PUL48	3 Double Chamber Push-Buttons.
N-PUL50	3 Luminous pus-buttons for stairs lighting.
N-PUL51	Switch pus-button type and buzzer of 24 V.

Regulators:

N-REG01	Continuous Voltage Regulator 5-12-24 Vdc.
N-REG02	Voltage Electronic Regulator (300 W).
N-REG03	Voltage Electronic Regulator (1000 W).
N-REG04	Voltage Electronic Regulator (500 VA).
N-REG05	Reactive Energy Regulator.
N-REG06	Voltage Electronic Regulator (Switch) Module.
N-REG07	Voltage Electronic Regulator (Switch/Commutator) 40 to 500W/230 Vac.
N-REG08	Electronic Regulator for Fluorescent Lamps (Switch / Commutator).
N-REG09	Electronic Regulator for Halogen Lamps with Transformer.
N-REG10	Universal Electronic Regulator (Switch/Commutator) 40 to 420W/230 Vac.
N-REG11	Touch Type Voltage Electronic Regulator.
N-REG12	Infrared Voltage Regulator.
N-REG13	Infrared Remote Control.
N-REG14	Light Intensity Regulator (1000 W, 230 Vac).
N-REG15	Tap Regulator Module.
N-VREG	Voltage Regulator Module.
N-CNV	Level controller.
N-CFP	Advanced Power Factor Controller Module.
N-CFPS	Single-phase Automatic Power Factor Controller.

Relays:

N-REL01	Thermal Relay (1 - 1.6 A).
N-REL02	Thermal Relay (1.6 - 2.5 A).
N-REL03	Thermal Relay (2.5 - 4 A).
N-REL04	Thermal Relay (4 - 6 A).
N-REL05	Thermal Relay / 3-pole Phase fault (0.8 - 1.2 A).
N-REL06	Thermal Relay / 3-pole Phase fault (1.8 - 2.6 A).
N-REL07	Thermal Relay / 3-pole Phase fault (2.6 - 3.7 A).
N-REL08	Time Overcurrent Electronic Relay (0.3 -1.5 A).
N-REL09	Time Electronic Relay against Overcurrents (1.2 - 7 A).
N-REL10	Instantaneous Relay.
N-REL11	Time Relay (0.6-60 sec.).
N-REL12	Time Relay (3 - 300 sec.).
N-REL13	Monostable Relay.
N-REL14	Bistable Relay.
N-REL15	Astable Relay.
N-REL16	Solid-state Relay, 10 A, 230 V.
N-REL17	Solid-state Relay, 25 A, 230 V.
N-REL18	Solid-state Relay, 12 A, 400 V.
N-REL19	2 Solid-state Relays,10 A,230 V.
N-REL20	1-Phase Directional Relay.
N-REL21	Overvoltage Relay.
N-REL21B	Subvoltage Relay.
N-REL22	Multi-function Protection Relay (software included).
N-REL23	Overcurrent Relay and Fault to Earth.
N-REL23/A	Earth Leakage Relay.
N-REL23/B	Overcurrent Relay.
N-REL24	Auxiliary Relay.
N-REL25	Detection Relay of Insufficient Voltage.
N-REL26	Reactive Energy Regulator Relay.
N-REL27	Current Control Relay.
N-REL28	Voltage Control Relay.
N-REL29	Harmonics Detector Relay.
N-REL30	Synchronization Relay.
N-REL31	Domestic Control Relay 16 A, 230 Vac, 1NO + 1NC.
N-REL32	Domestic Control Relay 16 A, 230 Vac, 2NO.
N-REL33	Switch Relay 230 Vac.
N-REL34	Commutator Relay 230 Vac.
N-REL35	Switch Relay 24 Vdc.
N-REL36	Commutator Relay 24 Vdc.
N-REL37	Relay with Buzzer.
N-REL38	Current Relay (custom made).
N-REL39	Programmable Relay with Display and Software for PC computer.
N-REL41	Auxiliary relay with disconnection button.
N-REL45	Module with disjunctor.
N-REL46	Thermal Electric Motor Protection Module.
N-REL47	Thermal Relay.
N-REL50	Relays Module.
N-REL51	Reverse power relay.
N-DIF	Differential Protection.
N-DIFVS	Differential Protection with variable sensitivity.
N-DIFR	Differential Protection with automatic resetting.
N-TDIF	Three-phase Differential Protection.
N-TDIFVS	Three-phase Differential Protection with variable sensitivity.
N-TDIFFR	Three-phase Differential Protection with automatic resetting.
N-TSTF	Tester Protection module.
N-TSTF3	Tester Protection module (3-phase).

Relays: (continuation)

N-MPS	Motor protection module.
N-GDP	Generator differential protection module.
N-REP	Rotor earth-fault protection module.
N-TOP	Time Overcurrent protection module.
N-ULP	Unbalanced Load protection module.
N-ERP-PGC01	Generator Protection and Control Relay Module.
N-ERP-PDF01	Differential Protection Relay Module.
N-ERP-MA01	Feeder Management Relay Module.
N-ERP-MF01	Digital Fault Simulator Module.
N-ERP-SFT01	Overcurrent Protection Relay Module.
N-ERP-PD01	Distance Protection Relay Module.
ERP-UB	Protection Relays Test Unit.
ERP-PDF	Differential Protection Relay Module.
ERP-MA	Feeders Management Relay Module.
ERP-SFT	Overcurrent and Earth Fault Protection Relay Module.
ERP-SDND	Directional/Non Directional Overcurrent Protection Relay Module.
ERP-PD	Distance Protection Relay Module.

Sensors:

N-SEN01	Instantaneous Micro-switch.
N-SEN02	MBB Micro-switch.
N-SEN03	BBM Micro-switch.
N-SEN01 / N-SEN02 / N-SEN03	Module Control.
N-SEN04	Inductive Proximity Sensor type PNP.
N-SEN05	Cylindrical Inductive Proximity Sensor.
N-SEN06	Flat Inductive Proximity Sensor Type PNP.
N-SEN07	Flat Inductive Proximity Sensor Type NPN.
N-SEN08	Cylindrical Inductive Rotation Control Sensor.
N-SEN09	Flat Inductive Rotation Control Sensor.
N-SEN10	Cylindrical Inductive Proximity Sensor (4 - 20 mA).
N-SEN11	Flat Inductive Proximity Sensor (4 - 20 mA).
N-SEN12	Flat Inductive Proximity Sensor (0 - 10 V).
N-SEN13	DC Cylindrical Capacitive Proximity Sensor.
N-SEN14	Cylindrical Capacitive Proximity Sensor.
N-SEN15	DC Rectangular Capacitive Proximity Sensor.
N-SEN16	AC Rectangular Capacitive Proximity Sensor.
N-SEN17	Ultrasonic Proximity Sensor.
N-SEN18	Cylindrical Photoelectric Sensor.
N-SEN19	Miniature Photoelectric Sensor.
N-SEN20	Compact Photoelectric Sensor.
N-SEN21	Barrier Photoelectric Sensor (Emitter).
N-SEN22	Barrier Photoelectric Sensor (Receptor).
N-SEN23	Reflecting Photoelectric Sensor (Emitter).
N-SEN24	Reflecting Photoelectric Sensor (Receptor).
N-SEN25	Level Magnetic Sensor.
N-SEN26	Presence and Motion Sensor (Wall).
N-SEN27	Presence and Motion Sensor (Ceiling).
N-SEN28	Cylindrical Inductive Proximity Sensor (2 wires).
N-SEN29	Cylindrical Inductive Proximity Sensor.

Signal Plugs:

N-TSE01	Telephony 4 Plugs.
N-TSE02	Telephony 6 Plugs.
N-TSE03	Radio -TV Plug (inductive) Unique.
N-TSE04	Radio -TV Plug (inductive) Intermediate.
N-TSE05	Radio -TV Plug (inductive) Final.
N-TSE06	Radio -TV Plug (inductive) Series.
N-TSE07	Radio -TV + Satellite Plug Unique.
N-TSE08	Radio -TV + Satellite Plug Intermediate.
N-TSE09	Radio -TV + Satellite Plug Final.
N-TSE10	Computer Connection RJ-45.
N-TSE11	Computer Connection RJ-11/12.
N-TSE12	Shaver Plug 115 / 230 V.

Signalling:

N-SEL01	Light Signalling Beacons (lamps).
N-SEL02	Blinking Signalling Beacons.
N-SEL03	3 Pilot-Lights.
N-SEL04	4 Pilot- Lights.
N-SEL05	Rotatory Light Halogen Lamp 70 W.
N-SEL06	Rotatory Light Incandescent Lamp 25 W.
N-SEL07	Industrial Siren.
N-SEL08	Autonomous Emergency Beaconing.
N-SEL09	Double Luminous Signalling red-green.
N-SEL10	Double Luminous Signalling red-green 24 Vac.
N-SEL11	Stop / Go Signalling.
N-SEL12	Digital Indicator Voltmeter / Ammeter.
N-SEL13	Luminous Indicator, 1-Phase Voltage 230 Vac.
N-SEL14	Luminous Indicator of 3-Phase Voltage Fault.
N-SEL15	Lighting Luminous Indicator 230 Vac.

N-SEL16	Siren with Blinking Beacon 24 Vdc.
N-SEL17	Fire Indicators, Bell type.
N-SEL18	Emergency Fluorescent Lamp.
N-SEL19	2 Blinking Beacons.
N-SEL20	Water Proof Hublot + Water Proof Switch / Commutator.
N-SEL21	Indoor Siren.
N-SEL22	Beacon with Flasher Filament and Pyramidal Len.
N-SEL24	3 Blinking lamps, 24 V.
N-SEL40	Sound Element.

Sockets:

N-ENC01	1-Phase European Socket.
N-ENC02	1-Phase American Socket.
N-ENC03	1-Phase Industrial Socket.
N-ENC04	3-Phase Socket.
N-ENC05	3-Phase Socket with ground terminal + neutral.
N-ENC06	3-Phase Socket with ground terminal.
N-ENC07	3-Phase Industrial Socket with ground terminal.
N-ENC08	Universal Socket.
N-ENC09	2-pole European Socket with Safety Device.
N-ENC10	2-pole European Socket with Displaced ground terminal.
N-ENC11	2-pole European Socket with Lateral ground terminal and Safety Device.
N-ENC12	2-pole European Socket, French System.
N-ENC13	Mixed (European-American) 2-pole Polarized Socket with ground terminal.
N-ENC14	Wireless Socket / Receptor.
N-ENC15	British Socket with ground terminal.
N-ENC17	2 Domestic Sockets.
N-ENC18	2 Industrial Single-phase Sockets.
N-ENC20	2 industrial Three-phase Sockets.

Starters/Commutators:

N-ARR01	Manual Star-Delta Starter.
N-ARR02	Temporized Star-Delta Starter.
N-ARR03	Manual Auto-transformer Starter.
N-ARR04	Temporized Auto-transformer Starter.
N-ARR05	Manual Star-Delta Starter with Inversion.
N-ARR06	Temporized Star-Delta Starter with Inversion.
N-ARR07	Manual Dahlander Commutator, 2 Speeds.
N-ARR08	Temporized Dahlander Commutator, 2 Speeds.
N-ARR09	Manual Independent Windings Commutator, 2 speeds.
N-ARR10	Temporized Independent Windings Commutator, 2 speeds.
N-ARR11	Poles Commutation with Inversion.
N-ARR12	Direct Starter.
N-ARR13	Direct Starter with Inversion.
N-ARR14	Switches and Push-buttons Module for motor control.
N-ARR15	Compact Direct Starter.
N-ARR16	Electronic Soft Starter.

Switches: Differential Automatic Switches:

N-IAD01	1-pole + neutral Differential Automatic Switch, 6A, 30 mA, class A.
N-IAD02	1-pole + neutral Differential Automatic Switch, 10A, 30 mA, class A.
N-IAD03	1-pole + neutral Differential Automatic Switch, 10A, 30 mA, class AC.
N-IAD04	1-pole + neutral Differential Automatic Switch, 16A, 30 mA, class A.
N-IAD05	1-pole + neutral Differential Automatic Switch, 16A, 30 mA, class AC.
N-IAD06	1-pole + neutral Differential Automatic Switch, 25A, 30 mA, class A.
N-IAD07	1-pole + neutral Differential Automatic Switch, 25A, 30 mA, class AC.
N-IAD08	1-pole + neutral Differential Automatic Switch, 40A, 30 mA, class A.
N-IAD09	1-pole + neutral Differential Automatic Switch, 40A, 30 mA, class AC.
N-IAD10	2-pole Differential Automatic Switch 16A, 10 mA, class AC.
N-IAD11	2-pole Differential Automatic Switch 25A, 30 mA, class AC.
N-IAD12	2-pole Differential Automatic Switch 40A, 30 mA, class AC.
N-IAD13	3-pole + neutral Differential Automatic Switch, 25A, 300mA, class AC, instantaneous.
N-IAD14	3-pole + neutral Differential Automatic Switch, 25A, 300mA, class AC, selective.
N-IAD15	3-pole + neutral Differential Automatic Switch, 40A, 300mA, class AC, instantaneous.
N-IAD16	3-pole + neutral Differential Automatic Switch, 40A, 300mA, class AC, selective.
N-IAD17	4-pole + neutral Differential Automatic Switch, 63A, 300mA, class AC, instantaneous.
N-IAD18	4-pole + neutral Differential Automatic Switch, 63A, 300mA, class AC, selective.

Switches: Magneto-thermal Automatic Switches:

N-IAM01	1-pole Magneto-thermal Automatic Switch 0.5 A, Curve C.
N-IAM02	1-pole Magneto-thermal Automatic Switch 1 A, Curve C.
N-IAM03	1-pole Magneto-thermal Automatic Switch 4 A, Curve C.
N-IAM04	1-pole Magneto-thermal Automatic Switch 10 A, Curve C.
N-IAM05	1-pole Magneto-thermal Automatic Switch 25 A, Curve C.
N-IAM06	1-pole Magneto-thermal Automatic Switch 40 A, Curve C.
N-IAM07	1-pole + neutral Magneto-thermal Automatic Switch, 1 A, Curve C.
N-IAM08	1-pole + neutral Magneto-thermal Automatic Switch, 4 A, Curve C.
N-IAM09	1-pole + neutral Magneto-thermal Automatic Switch, 10A, Curve C.
N-IAM10	1-pole + neutral Magneto-thermal Automatic Switch, 25A, Curve C.
N-IAM11	1-pole + neutral Magneto-thermal Automatic Switch, 40A, Curve C.
N-IAM12	2-pole Magneto-thermal Automatic Switch, 0.5A, Curve C.
N-IAM13	2-pole Magneto-thermal Automatic Switch, 1 A, Curve C.
N-IAM14	2-pole Magneto-thermal Automatic Switch, 4 A, Curve C.
N-IAM15	2-pole Magneto-thermal Automatic Switch, 10 A, Curve C.
N-IAM16	2-pole Magneto-thermal Automatic Switch, 25 A, Curve C.
N-IAM17	2-pole Magneto-thermal Automatic Switch, 40 A, Curve C.
N-IAM18	3-pole Magneto-thermal Automatic Switch, 0.5A, Curve C.
N-IAM19	3-pole Magneto-thermal Automatic Switch, 1 A, Curve C.
N-IAM20	3-pole Magneto-thermal Automatic Switch, 4 A, Curve C.
N-IAM21	3-pole Magneto-thermal Automatic Switch, 10 A, Curve C.
N-IAM22	3-pole Magneto-thermal Automatic Switch, 25 A, Curve C.
N-IAM23	3-pole Magneto-thermal Automatic Switch, 40 A, Curve C.
N-IAM24	3-pole + neutral Magneto-thermal Automatic Switch, 6A, Curve C.
N-IAM25	3-pole +neutral Magneto-thermal Automatic Switch, 10 A, Curve C.
N-IAM26	3-pole +neutral Magneto-thermal Automatic Switch, 16 A, Curve C.
N-IAM27	3-pole +neutral Magneto-thermal Automatic Switch, 25 A, Curve C.
N-IAM28	3-pole+neutral Magneto-thermal Automatic Switch, 40 A, Curve C.
N-IAM29	4-pole Magneto-thermal Automatic Switch, 0.5A, Curve C.
N-IAM30	4-pole Magneto-thermal Automatic Switch, 1 A, Curve C.
N-IAM31	4-pole Magneto-thermal Automatic Switch, 4 A, Curve C.
N-IAM32	4-pole Magneto-thermal Automatic Switch, 10 A, Curve C.
N-IAM33	4-pole Magneto-thermal Automatic Switch, 16 A, Curve C.
N-IAM34	4-pole Magneto-thermal Automatic Switch, 25 A, Curve C.
N-IAM35	4-pole Magneto-thermal Automatic Switch, 40 A, Curve C.

Switches: General Switches:

N-INT01	1-pole Load Switch.
N-INT02	2-pole Load Switch.
N-INT03	3-pole Load Switch.
N-INT04	4-pole Load Switch.
N-INT05	1-pole Rotary Switch.
N-INT06	3-pole Section Switch, 12 A.
N-INT07	3-pole Section Switch, 20 A.
N-INT08	3-pole Section Switch +Safety Stop, 12 A.
N-INT09	3-pole Section Switch +Safety Stop, 20 A.
N-INT10	Twilight Switch.
N-INT11	Twilight Switch with programmer clock.
N-INT12	Analogical Hour Switch.
N-INT13	Digital Hour Switch.
N-INT14	1-pole 2 Switches.
N-INT15	2 Switches with Light.
N-INT16	2-pole Switch (16 A).
N-INT17	2-pole Switch (16 A) with Light.
N-INT18	1-pole Switch + 1-pole Switch with Light.
N-INT19	1-pole Switch + 2-pole Switch.
N-INT20	1-pole Switch with Light + 2-pole Switch with Light.
N-INT21	Switch + Commutator Group + Bell Push-Button.
N-INT22	2 Switches for Blinds.
N-INT23	Group of 2 Switches.
N-INT24	Switch / Commutator for Card.
N-INT25	Wireless Switch / Commutator (Emitter).
N-INT26	Pastille Receptor (Receptor).
N-INT27	Touch Type Electronic Switch / Commutator by TRIAC.
N-INT28	Touch Type Electronic Switch / Commutator by Relay.
N-INT29	Infrared Switch / Commutator by TRIAC.
N-INT30	Infrared Switch / Commutator by Relay.
N-INT31	Intrusion Switch /Detector from 40 to 300W.
N-INT32	Intrusion Switch / Detector.
N-INT33	1-pole Fuse Switch, 16 A.
N-INT34	1-pole Fuse Switch with neutral, 16 A.
N-INT35	2-pole Fuse Switch, 16 A.
N-INT36	3-pole Fuse Switch, 16 A.
N-INT37	3-pole Fuse Switch with neutral, 16 A.
N-INT38	1-pole Lighting Switch, 16 A.
N-INT39	2-pole Lighting Switch, 16 A.
N-INT40	3-pole Lighting Switch, 16 A.
N-INT41	3-pole Lighting Switch with neutral, 25 A.
N-INT42	Lighting Switch with Control Lamp.
N-INT43	1-pole Telecontrol Switch.
N-INT44	2-pole Telecontrol Switch.
N-INT45	3-pole Telecontrol Switch.
N-INT46	Remote Control Switch (heating, refrigeration…).
N-INT47	Switch with Luminous Screen (bell, bulb, wc, alarm…).
N-INT48	1-pole Switch + 1-pole Push-button.
N-INT51	2 Switches, push-button type.
N-SFC	Limit switch.
N-SWT4	Four position selector (measuring point selector).

Switches: Special Switches:

N-INX01	DC 1-pole Special Automatic Switch 1 A, Curve C.
N-INX02	DC 1-pole Special Automatic Switch 2 A, Curve C.
N-INX03	DC 1-pole Special Automatic Switch 6 A, Curve C.
N-INX04	DC 1-pole Special Automatic Switch 10 A, Curve C.
N-INX05	DC 2-pole Special Automatic Switch 1 A, Curve C.
N-INX06	DC 2-pole Special Automatic Switch 2 A, Curve C.
N-INX07	DC 2-pole Special Automatic Switch 6 A, Curve C.
N-INX08	DC 2-pole Special Automatic Switch 10 A, Curve C.
N-INX09	Remote-controlled Switch.
N-INX10	1-pole + neutral Overvoltage Protection.
N-INX11	3-pole + neutral Overvoltage Protection.
N-INX12	Overvoltage Switchable Protection with Luminous Indicator.
N-INX13	RJ-11 Fine Protection - Analog Telephony.
N-INX14	RJ-45 Fine Protection - Digital Telephony.

Test Units:

N-UND01	Brake Control Unit.
N-UND02	Differential Switches Test Unit.
N-UND03	Automatic Switches Test Unit.

Time Control:

N-CTI01	Multi-function Timer.
N-CTI02	24 Hours Timer without Operation Reserve (1NO).
N-CTI03	24 Hours Timer with Operation Reserve (1NO).
N-CTI04	Weekly Timer per hours with Operation Reserve (1NO).
N-CTI05	24 Hours Timer without Operation Reserve (1NONC).
N-CTI06	24 Hours Timer with Operation Reserve (1NONC).
N-CTI07	24 Hours / Week Digital Timer (2NONC).
N-CTI08	Astronomical Digital Timer (2NO).
N-CTI09	Stairs Timer.
N-CTI10	Automatic of Stairs.

Transformers:

N-TRA01	1-Phase Power Transformer 220-400/12-24 Vac, 100 VA.
N-TRA02	1-Phase Power Transformer 220-400/115-230 Vac, 1000 VA.
N-TRA03	1-Phase Power Transformer.
N-TRA04	3-Phase Power Transformer 380 / 220 V, 630 VA.
N-TRA05	3-Phase Power Transformer 220 / 127 V, 1000 VA.
N-TRA06	3-Phase Power Transformer.
N-TRA07	Isolating Transformer 230 / 24-12 Vac, 16 A.
N-TRA08	Isolating Transformer 230 / 24-12 Vac, 40 A.
N-TRA09	3-Phase Isolating Transformer 230 - 380/230-380, 500VA.
N-TRA10	Current Transformer 25 / 5 A.
N-TRA11	Current Transformer 40 / 5 A.
N-TRA12	3-Phase Current Transformer.
N-TRA13	1-Phase Auto-transformer.
N-TRA14	3-Phase Auto-transformer.
N-TRA15	Current Adding Transformer, 2 inputs, 15 VA.
N-TRA16	Current Adding Transformer, 3 inputs, 15 VA.
N-TRA17	Current Adding Transformer, 4 inputs, 15 VA.
N-TRA18	Petersen Coil.
N-TRA19	Transformer for Experiments (custom made).
N-TRA20	1-Phase Variable Voltage Transformer 220 / 350 VA.
N-TRA21	Electronic Transformer 60 W.
N-TRA22	Electronic Transformer 105 W.
N-TRA23	Transformer with Switch 230/12V, 16 A.
N-TRA26	Module with 110-220V input transformer and 24V, 3A output.
TRA28	Three-phase Transformer.
N-TRA29	Three-phase Transformer.
N-TRA30	Three-phase Isolating Transformer 24Vac/380Vac.
N-TRA31	Current Transformer 1000/1.
N-TRANS01	Single-phase Power Transformer.
N-TRANS03	Three-phase Autotransformer.
N-TRANS/3	Three-phase Transformer.
TRANS3/5KGR	5KW Three-Phase Grid Transformer.
N-TRANS3/5KSU	5KW Three-Phase Step-Up Transformer Module.
TRANS3/5KR	5kW Step-Down Transformer with voltage regulator.
N-TRANS3/1KR	Three-Phase Regulation Transformer.
TRANS3/5KSU	5KW Three-Phase Step-Up Transformer.
N-TRMC	Current Transformer.
N-TRTC	Three-Phase Current Transformer.
N-TRMV	Voltage Transformer.
N-TRTV	Three-Phase Voltage Transformer.
N-AUTR	Variable Auto-Transformer.
N-AUTR3PH	Three-phase Variable Auto-transformer.
N-EMPTA	Auxiliary Transformer and Protection Module.
N-ETT	Three-phase and Single Phase Transformer Unit.
N-TPPT	Three-phase Power Transformer Unit.
STC	Single-phase transformer core.
TTC	Three-phase transformer core.

Wireless modules:

N-IOWM	Wireless Outputs Module.
N-WISM	Wireless Intrusion Sensor Module.
N-WLDM	Wireless Leak detector Module.
N-WLSM	Wireless Light Sensor Module.
N-WMSM	Wireless Motion Sensor Module.
N-WSDM	Wireless Smoke Detector Module.
N-WSM	Wireless Switches Module.

Others:

N-VAR01	Motor for Blinds / Curtains.
N-VAR05	Tones Dialing Telephone.
N-VAR07	Kit: Burglar Alarm Central.
N-VAR08	Monitor.
N-VAR09	Frequency Variator.
N-VAR16	Electromagnetism Kit with group of motor/generator.
VAR17	Dismantled Transformer Kit.
VAR18	Electrostatic Kit.
N-HPM	Home Power Module.
MWMT	Manual Winding Machine for Motors and Transformers.
CWC	Copper wire coil.
DPP	Water tank.
N-CPUB	Electrical Control Panel Basic Unit.
CPKIT1	Electrical Control Panel Kit 1.
FTT	Flooding transparent tank.
OTT	Output transparent tank.
WP	Water pump.
N-ADAM	AC/DC/AC Converter Module.
N-AE1	Transmission Lines Simulation Module.
N-AE1C	Commutable Transmission Line Simulation Unit.
N-AE1CD	Commutable Transmission Line Simulator.
N-AE1CD-L1	Line Model 1.
N-AE1CD-L2	Line Model 2.
N-DCTL	DC Transmission Line.
N-FRT	Fault Ride Through Module.
BAT	Battery.
N-INV01	Power Inverter (300W).
N-DCTL	DC Transmission Line.
N-PFD	Power Flow Distribution Module.
EH	Electric Heating Module.
PPINV	Photovoltaic Panel with Inverter.
SWTI	Small Wind Turbine with Inverter.
FVP85	85W Photovoltaic Panel.

✱ Specifications subject to change without previous notice, due to the convenience of improvements of the product.

REPRESENTATIVE: