AUPNE
Electro–pneumatics

exxer Skills for the Future

THE UNION OF EXPERTISE AND SKILLS A NEW LEVEL OF EXCELLENCE IN EDUCATION!

EXXER was born from the merger of two companies passionate **about technology, innovation, and education.**

With the purpose of offering more and more excellence tools to assist in technological education, we believe the union of practical and theoretical learning is what makes the difference in accelerating human and world develop–ment!

TECHNOLOGY ● INNOVATION ● EDUCATION

AUPNE
Electro–pneumatics

⚙ Pneumatics is a basic subject in the study of industrial automation, as pneumatic circuits make up a large part of the automation systems for moving and handling objects in manufacturing processes. In addition, the study of pneumatics allows the development of important skills and competencies in the area, such as the ability to design and implement pneumatic systems, analyze data and interpret results of laboratory trials. With the AUPNE electro–pneumatics series, students will have the opportunity to develop these skills in a practical and dynamic way.

⚙ Using devices from leading pneumatic manufacturers, the series features current components used in the industry. The workbench or rack design allows flexibility depending on the space available in the laboratory. The modular configuration allows to fit the components without using tools for assembling the pneumatic circuits.

Adding more technology to the pneumatics, sensor modules and programmable controllers are presented, thus allowing a deeper application of this technology.

Software and applications complement the learning solution, ensuring greater effectiveness through more dynamic and modern learning.

📚 All kits in this series have a comprehensive courseware, focused on teaching by skills and easy to use by teacher

We have complete solutions for training and updating teachers, ensuring the best use of the kit's resources.

👤 Ask our experts for more information and the detailed technical features of each equipment in the series.

MAIN SKILLS AND COMPETENCIE

– Interpret pneumatic diagrams;
– Know pneumatic devices;
– Know the air properties;
– Define force, pressure and flow;
– Work with units and measurement systems;
– Parameterize and use pressure switch and vacuum switch;
– Use the pressure drop sensor;
– Assemble pneumatic circuits;
– Work with valves and actuators;
– Ladder programming;
– FBD programming;
– Use counter and timer;
– Use PLC to control pneumatic devices;
– Implement bi–manual control.

TECHNOLOGY HIGHLIGHTS

The technical characteristics of solenoid valves, e.g., low consumption. Pressure and vacuum sensors, vacuum generator, and the XP325..

Modern solenoid valves with compact dimensions and low consumption use the latest technologies to occupy less space and consume less energy.

Analog sensors for measuring pressure variables (pressure switch) and vacuum (vacuum switch) expand the kit's applications and allow a better understanding of pneumatic phenomena.

Intelligent vacuum generator that saves compressed air, turning off the flow when it detects that the manipulated object is already pulled.

With the Nexto Xpress programmable logic controller, it is possible to add more intelligence and connectivity to the electro–pneumatic bench. In addition to programming in languages standardized by IEC 61131–3, this PLC allows several possibilities for communication with industrial networks and IoT protocols.

With SMC AutoSIM–200 simulator, educational possibilities are expanded through 2D and 3D simulation and integration with physical and simulated PLCs

![exxer - Skills for the Future]

PRODUCT

⚙ The usability and learning process of each student are extremely important, so we developed learning solutions to provide benefits and differentials for users.

KEY BENEFITS

- Modular
- Industrial devices
- Easy Storage

KEY DIFFERENTIALS

- Safety
- Ergonomics certificate
- No tools required
- Simulator
- Augmented Reality
- Courseware

⚙ DEVICE CONFIGURATIONS

| PRODUCT	DESCRIPTION	OPTIONS	DEVELOPMENT TOOLS	APPLICATIONS
AUPNE3000	electropneumatic bench	–	Mastertools	AutoSIM–200 Exxer App
AUPNE2000–L11–001	electropneumatic rack	–		AutoSIM–200 Exxer App

Note: in both design versions, it is equipped with a cabinet or drawer for storing the modules.

FEATURES

With modular configuration, Safety with NR–12, development software included, protection of main components and courseware included.

AUPNE2000
Kit of analog / digital electronics and sensors
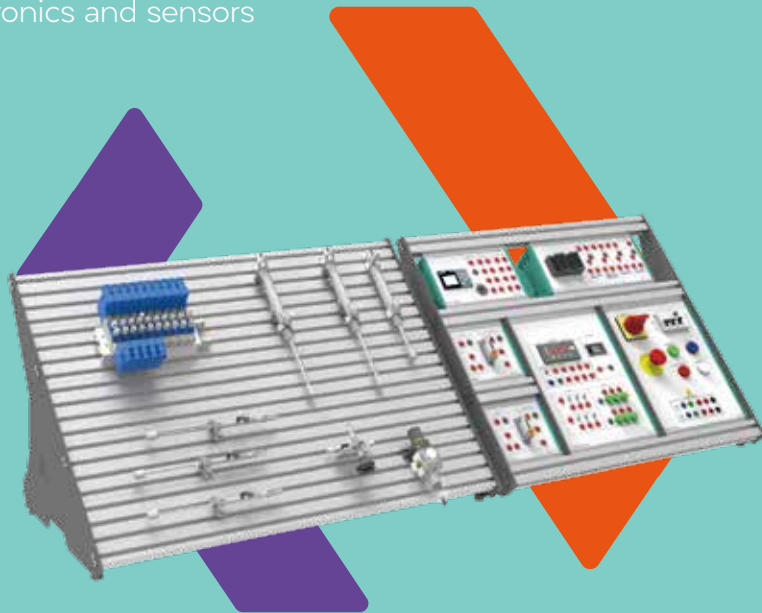
Settings

– Natural anodized aluminum rear closure;
– Plastic side closure;
– TS type front plate with indelible identification.

DIMENSIONS	
Height	330mm
width	1300mm
Depth	330mm
Weight	40Kg

ELECTRICAL FEATURES	
Energy	bivolt 110/220Vav – 50/60Hz
connections	4mm safety terminals

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⚙ FEATURES

With modular configuration, Safety with NR–12, development software included, protection of main components and courseware included.

AUPNE3000
Electro–pneumatic Rack

Settings

– Structure made of aluminum and steel profile, for fitting modules without using tools;
– Modules for connection to the aluminum profile without using tools.

DIMENSIONS	
height	1410mm
width	2000mm
Depth	840mm
Weight	150Kg

ELECTRICAL FEATURES	
Energy	bivolt 110/220Vav – 50/60Hz
connections	4mm safety terminals

⚙ MAIN DEVICES – PLC

The different models are equipped with the devices below, according to each configuration.

	Altus Nexto Xpress CPU XP340
Interfaces	1 puerta Ethernet RJ45 1 puerta USB 2.0 host 1 puerta serial RS–485 1 puerta CAN
Industrial networks	PROFINET, MODBUS/TCP, EtherCAT, EtherNet/IP, Modbus/RTU (master and slave) and CANOpen;
Protocols Internet	TCP/ IP,DHCP, SNMP, DCP, LLDP, UDP, WEB Server
IoT	OPC–UA Server and MQTT
Digital Inputs	16 (24 VDC) 4 being quick count
Digital Outputs	16 (24 Vdc, transistor) 4 fast outputs (PWM)
Analog inputs	5 (0..10Vcc / 4..20mA) 2 RTD
Analog outputs	4 (0..10Vcc / 4..20mA)
language of Programming	LD – Ladder Diagram, FBD – Function Block Diagram ST – Structured Text IL – Instruction List SFC – Graphical Sequencing of Functions

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DEVELOPMENT TOOLS
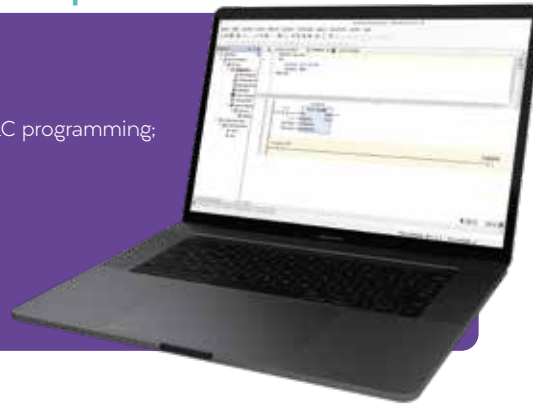
Our learning solutions are complemented with the development tools and professional software necessary for student training.

Para CLP Altus Nexto Xpress

Free Liscenses

MasterTools:
– Development and simulation tool for PLC programming;
  - Platform: Windows;
  - Licensing: freeware (free delivery).

USE

Guidelines on the recommended use of the Kit!

We suggest this configuration for better use in class. Kits and activities are designed according to the team sizes listed on the side.

The minimum necessary infrastructure is a prerequisite to fully use all functionalities of the training kits.

We recommend the computing and connectivity requirements below for using the software and applications provided with the kit.

Part number	Use	Team(student/kit)	Use
AUPNE3000–L11–001	Bank electropneumatics	3 to 4	frequent 1 kit per team
AUPNE2000–L11–001	Rack Eletropneumatic	2 to 3	frequent 1 kit per team

Infrastructure	
	AUPNE3000
Elétrelectricalica	1 single–phase plug
pneumatics	one point per kit, minimum pressure 6 BAR, minimum flow from 30 l/min

Connectivity	
Network connections by season work	2 Ethernet ports (for or kit and for or)
WiFi	recommended for computers
internet access	Recommended
Computer	Necessary; according to the minimum software requirements
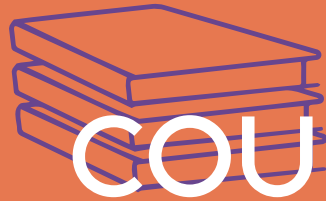
COURSEWARE

The training kits have a rich courseware with a pratical focus, containing pratical proposals aimed at training skills and competencies.

In addition to the **User Manual,** wich contains information on operation and maintenance, the **Student Guide** is also provided, with proposals for pratical activities to be carried out using the kit, and the **Facilitator Guide,** with answers to the proposed activities and guidelines to use the kit in a didactic way. In addition, **Video tutorials** are available to help you easily master the development tools and use the kit.

All of this content is available on our website at the **Facilitator Portal.**

SKILLS AND COMPETENCIES

– Interpret pneumatic diagrams;
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– Implement bi–manual command.

MOBILE APPLICATIONS

A current learning solution is not complete without software and applications. Along with the kits of this series, exclusive licenses are provided for applications on computer and mobile devices that complement and enhance the use of the kits.

Exxer App

AUGMENTED REALITY KITS

The solutions can be visualized in 3D through augmented reality, allowing the student to have a first contact with such technology and identify their main characteristics.

Exxer App

EDUCATIONAL ANIMATION

- Augmented reality animations that show the main devices in section, and their assembly/disassembly process.
- Viewing of operating principles.
- Animations that help to understand the physical processes involved and the application of technology.

Exxer App

DATA ACQUISITION AND CONTROL

Communication between the Exxer App and the kit's data acquisition and control boards allows for measurements and interaction across the apps.

DESKTOP APPLICATIONS

A current learning solution is not complete without software and applications. Along with the kits of this series, exclusive licenses are provided for applications on computer and mobile devices that complement and enhance the use of the kits.
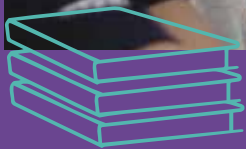
AutoSIM–200

AutoSIM–200 is an automation simulation software for assembling and testing pneumatic circuits. In addition to creating your own pneumatic circuits, AutoSIM––200 features 2D and 3D machine simulations. A virtual PLC allows creating programs interacting with the electro–pneumatic system.

- Platform: Windows
- Licensing: license included

TRAINING

As important as teaching resources and tools is teacher training. We have a complete package of solutions for your training and upgrading needs.

Quick Start and Tutorials
Quick start is a quick video guide to learn, test and put the product into operation. Tutorials are videos that teach common procedures needed in classes using the kit.

Technical Delivery
In the technical delivery, our experts present the product, its features, as well as maintenance and safety precautions, and put it into operation together with the customers.

Operational Training
The purpose of operational training is to teach facilitators on how to use the kit. The kit courseware is presented and some proposed practices are carried out. It also includes all technical delivery activities.

Technological Training
Technological training is a deeper learning of technology and applied concepts. These courses are not focused on kits but on topics and technical skills to update trainers.

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