edibon

Engineering and Technical Teaching Equipment

Unit: AE-PLC-APS. Pieces Feeder Workstation

PLC programming software

Computer
(not included in the supply)

Key features:

➤ **Projector and/or electronic whiteboard compatibility allows the unit to be explained and demonstrated to an entire class at one time.**

➤ **Suitable for applied research, real industrial simulation, training courses, etc.**

➤ **Totally safe, using three safety systems (mechanical, electrical and electronic).**

➤ **Designed and manufactured under several quality standards.**

➤ **Optional ICAI software to create, edit and carry out practical exercises, tests, exams, calculations, etc., apart from supervising the knowledge and progress achieved by the user.**

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➥PRODUCTS
➥60.- MECHATRONICS & COMPUMECHATRONICS AND
70.- MECHANICS

ISO 9001: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)

European Union Certificate (total safety)

Certificates ISO 14001 and ECO-Management and Audit Scheme (environmental management)

Certificate and Worlddidac Member

INTRODUCTION

Current manufacture systems gradually tend to complete automation. These fully automated processes are named computer-integrated manufacturing (CIM). The CIM systems are the most efficient manufacturing systems in many current cases, particularly the manufacturing systems that require large series of very similar pieces.

The "AE-PLC-APS", Pieces Feeder Workstation, has been designed to obtain the knowledge required to understand the operation of a CIM system basic unit.

The "AE-PLC-APS" includes a set of practical exercises that will help the students to understand how a fully automated system works (PLC programming, tuning, etc.).

GENERAL DESCRIPTION

The "AE-PLC-APS", Pieces Feeder Workstation, is a unit that works with pneumatics and electro-pneumatics technologies.

The function of the "AE-PLC-APS" is to supply a piece and to verify that it is acceptable. The pieces will be supplied one by one by a pneumatic cylinder, and then the position of the piece will be verified in order to activate the mechanism that checks whether the piece is acceptable. Afterwards, the piece is displaced to the outlet area if it is correct or discarded if it is wrong.

The "AE-PLC-APS", designed by EDIBON, allows the user to learn about the basic concepts of pneumatics and electro-pneumatics (operation, elements of each circuit, etc.) without any previous knowledge or experience.

SPECIFICATIONS

The "AE-PLC-APS" includes:

Table with four wheels with brake.

Mounted with aluminum profiles.

10 pieces made of aluminum.

Individually identified tubes and push in fittings.

Unit wired and programmed for the correct operation of the system.

Control panel:

Differential magneto-thermal switch.

Emergency pushbutton.

Start/Stop pushbuttons.

Manual/automatic switch.

Light indicators for signaling.

Terminal block to connect the individually identified inputs and outputs of the unit.

Power supply of 24 VDC.

Air treatment unit:

Filter-regulator and water trap.

Manometer with double scale indicator.

Shut-off valve.

Purge valve.

Piece feeding module:

Vertical storage for pieces.

Cylindrical simple effect pneumatic actuator:

Material: stainless steel.

Normally retracted rod.

Diameter: 20 mm.

Stroke of 100 mm.

Pneumatic monostable 3/2 solenoid valve.

Inductive effect sensor to check the position of the piece.

Two reed effect limit switches to check the position of the pneumatic actuator.

Piece verifier module:

   Profile pneumatic double effect actuator.

     Material: stainless steel and aluminum.

     Stroke of 100 mm.

   Pneumatic bistable 5/2 solenoid valve.

   Inductive effect sensor to check the position of the piece.

   Three reed effect limit switches to check the position of the pneumatic actuators.

Piece displacement module:

   Profile pneumatic double effect actuator:

     Material: stainless steel and aluminum.

     Stroke of 100 mm.

   Pneumatic bistable 5/2 solenoid valve.

Piece classification module:

   Cylindrical pneumatic simple effect actuator:

     Material: stainless steel.

     Normally retracted rod.

     Diameter: 10 mm.

     Stroke of 50 mm.

   Pneumatic monostable 3/2 solenoid valve.

     Inductive effect sensor to check the position of the piece.

• AE-PLC. **PLC trainer (Optional).**

   Available PLC models of different manufacturers.

   The AE-PLC include all required components to start to work with the PLC:

     Electrical power supply.

     PLC CPU with the digital input and output signals.

     PLC programming software.

   There are available several optional kits to configure a complete PLC system.

• SAC. **Silent Air Compressor Unit (Optional).**

   Noiseless air compressor.

   Capacity of the boiler: 9 l.

   Power: 340 W.

   Air intake: 50 l./min.

   Maximum pressure: 8 bar.

   Low noise level: 40 dB maximum.

   Designed to be located under the bench.

Cables and accessories for a correct operation.

Manuals:

This unit **is supplied with the following manuals:** Required services, Installation, Starting-up, Safety regulations, Maintenance and Practical exercises.

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Introduction to computer-integrated manufacturing (CIM).

2.- Introduction to pneumatic and electro-pneumatic technology.

3.- Configuration of a pneumatic application.

4.- Provision of pieces to an automated system.

REQUIRED SERVICES

- Supply: single-phase, 220V/50Hz or 110V/60Hz.
- Computer.
- Compressed air with a 50 l/min of air flow and 8 Bar of pressure.
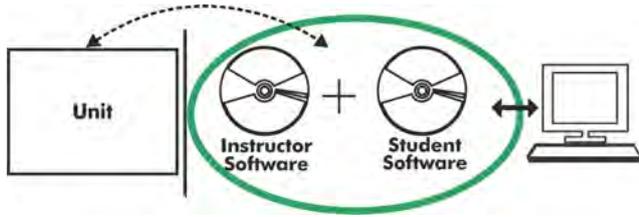- PLC unit.

DIMENSIONS AND WEIGHTS

-Dimensions: 1000 x 600 x 1500 mm. approx.
              (39.36 x 23.62 x 59.05 inches approx.)
-Weight: 85 Kg. approx.
              (187 pounds approx.)

RECOMMENDED ACCESSORIES (Not included)

- AE-PLC. PLC trainer (Optional).
- SAC. Silent Air Compressor Unit (Optional).

AE-PLC-APS/ICAI. Interactive Computer Aided Instruction Software System:

Whit no physical connection between unit and computer, **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.
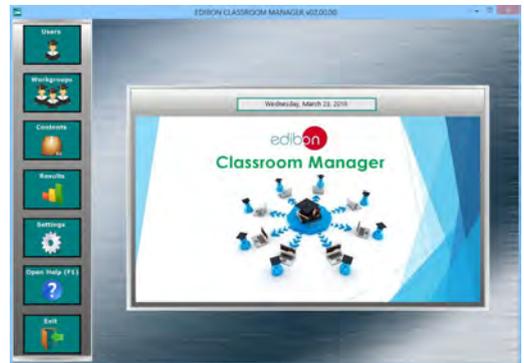
<u>Instructor Software</u>

-ECM-SOF. EDIBON Classroom Manager (Instructor Software).

ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc… so the teacher can know in real time the level of understanding of any student in the classroom.
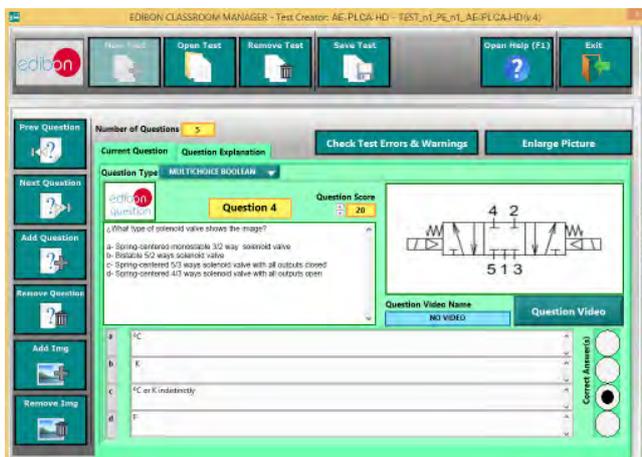
Innovative features:

> User Data Base Management.
>
> Administration and assignment of Workgroups, Tasks and Training sessions.
>
> Creation and Integration of Practical Exercises and Multimedia Resources.
>
> Custom Design of Evaluation Methods.
>
> Creation and assignment of Formulas & Equations.
>
> Equation System Solver Engine.
>
> Updatable Contents.
>
> Report generation, User Progression Monitoring and Statistics.

ECM-SOF. EDIBON Classroom Manager
(Instructor Software) Application Main Screen

ECAL. EDIBON Calculations Program Package - Formula
Editor Screen

ETTE. EDIBON Training Test & Exam Program Package - Main Screen with
Numeric Result Question

ERS. EDIBON Results & Statistics Program
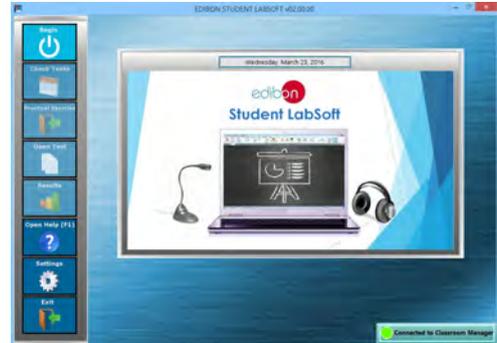Package - Student Scores Histogram

-ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

Student Log-In & Self-Registration.

Existing Tasks checking & Monitoring.

Default contents & scheduled tasks available to be used from the first session.

Practical Exercises accomplishment by following the Manual provided by EDIBON.

Evaluation Methods to prove your knowledge and progression.

Test self-correction.

Calculations computing and plotting.

Equation System Solver Engine.

User Monitoring Learning & Printable Reports.

Multimedia-Supported auxiliary resources.

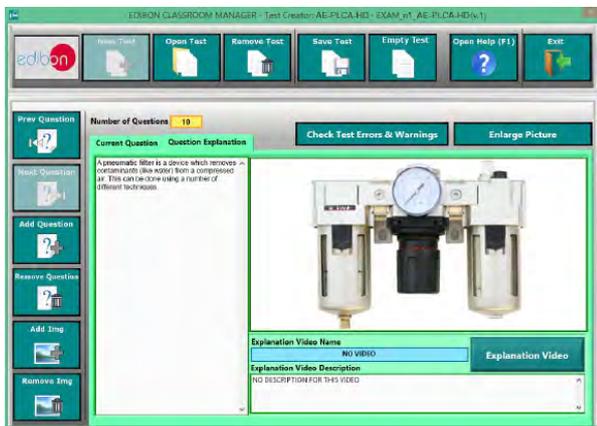For more information see **ICAI** catalogue. Click on the following link:

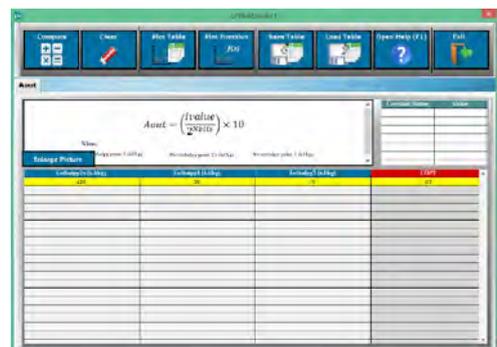**www.edibon.com/products/catalogues/en/ICAI.pdf**

ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen

EPE. EDIBON Practical Exercise Program Package Main Screen

ERS. EDIBON Results & Statistics Program Package-Question Explanation

ECAL. EDIBON Calculations Program Package Main Screen

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

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