Multiple Pieces Feeder Workstation

AE-PLC-MA

PLC programming software

Computer
(not included in the supply)

Unit: AE-PLC-MA. Multiple Pieces Feeder Workstation

Key features:

➤ **PLC and HMI device programming software**

➤ **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

For more information about Key Features, click here

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INTRODUCTION

Since the 1950s, the computer integration in the manufacturing systems has been a complete revolution, increasing productivity and quality of all type of products. These computer integration systems include a lot of component from very different technologies as hydraulic, pneumatic, electrical, robotics, chemical, etc. For this reason, these types of systems require workers with specific skills to ensure that they are working properly.

The Multiple Pieces Feeder Workstation, "AE-PLC-MA", has been designed by EDIBON to study a feeder station for a robotic arm system.

The "AE-PLC-MA" provides different pieces to the Robotic Arm Workstation "AE-BR". The unit provides a clear space with three different pieces feeder, input and output pieces zones and mounting zone where the "AE-BR" will assemble the three pieces into one.

The "AE-PLC-MA" workstation includes a set of practical exercises through which the student will understand how an industrial automatic system perform the process to provide pieces to an industrial Robot arm.

GENERAL DESCRIPTION

The "AE-PLC-MA" is a Multiple Pieces Feeder Workstation commanded by a PLC, which provides three different types of pieces to be assembled in one piece by the industrial robot of the "AE-BR" unit.

The "AE-PLC-MA" contains an input pieces area, an output pieces area and an assembling zone where the three pieces can be mounted in one.

The "AE-PLC-MA" workstation is designed as a modular system to facilitate the understanding of the unit. The main components are:

 • The PLC: is composed by the CPU PLC unit and all the extra modules needed to perform a correct working of the workstation.

 • The control panel: with start/stop button, emergency pushbutton, reset button, light indicators to show current state of the process, etc.

 • The pneumatic circuit: contains the required solenoid valves, filters and regulators to assure the correct working and safety of the unit.

 • The workstation: is composed by real industrial components used by the industrial feeder systems such as limit switches, IR beam detectors, vertical storage for pieces, etc.

The "AE-PLC-MA" is designed to work with the "AE-BR" unit. The "AE-PLC-MA" is also included in several Flexible Manufacturing systems*.

*The Flexible manufacturing systems product list is available at "Flexible Manufacturing Systems (FMS)" area of the general catalogue.

SPECIFICATIONS

Mounted with aluminum profiles.

15 pieces made of aluminum and plastic of different colors.

Vertical storage for pieces.

 Control panel:

  Emergency pushbutton.

  Start/Stop pushbuttons.

  Manual/automatic switch.

  Light indicators.

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

Pneumatic circuit:

 Air treatment unit:

  Filter-regulator with water trap.

  Manometer with double scale indicator.

  Shut-off valve.

 3 Double acting pneumatic actuators.

 3 Pneumatic monostable 5/2 solenoid valves.

Sensors:

 3 IR beam detectors.

 6 reed effect limit switches.

Fault generation module:

 Box with lock with key.

 Allows generating 20 different faults.

 Each fault is generated through toggle switches.

Recommended accessories: (Not included)

• AE-PLCB. **Basic PLC Trainer (optional).**

  The AE-PLCB is available with different PLC manufacturer models. All models contain the following modules:

    N-ALI02: is the Main power supply.

    N-CPU: is the PLC CPU that contain the digital In/Out terminals. All CPUs types allow to connect with the PC (for programming and monitoring) and the other modules of the trainer through an Ethernet network.

    N-ESA: is the analog In/Out module used to acquire and generate analog signals.

    N-HMIB: is the Human Machine Interface module with a touch screen.

    N-MT: is the test module with switches, push buttons and potentiometers to generate digital and analog signals.

    Software to program the PLC and the HMI device.

• AE-CP. **Air compressor module (optional).**

  Low noise level: 40 dB maximum.

  Capacity of the boiler: 9 l.

  Power: 340 W.

  Air intake: 50 l/min.

  Maximum pressure: 8 bar or 0.8 MPa.

  It Includes hoses to easy connect with the EDIBON units.

• AE-BR. **Robotic Arm Workstation (optional).**

  Six degrees of liberty robotic arm.

  Console to program the robotic arm.

  Electric drill to install in the robotic arm.

  Pneumatic double acting gripper to install in the robotic arm.

Cables and Accessories, for normal operation.

Manuals: This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Introduction to flexible manufacturing system (FMS).

2.- Introduction to pneumatics and electro-pneumatics.

3.- Study of the sensor detection.

4.- Configuration of a pneumatic application.

5.- Manual control of a Feeding system.

6.- Automatic control of a Feeding system.

7.- Change the parameters of the Feeding process.

8.- Optimize the process time.

9.- Study and analysis of the faults inserted in the process with the fault generation module.

10.- Configuration of the robotic arm as a pick and place system (AE-BR).

11.- Change the parameters of the pick and place process (AE-BR).

12.- Optimize the pick and place process (AE-BR).

13.- Configuration of the robotic arm as a mounting system (AE-BR).

14.- Change the parameters of the mounting process (AE-BR).

15.- Optimize the mounting process (AE-BR).

REQUIRED SERVICES

- Electrical supply: single-phase, 220V/50 Hz or 110V/60 Hz.
- Computer.
- PLC unit with at least 16 D.I. and 16 D.O.
- Compressed air with a 50 l/min of air flow and 8 bar of pressure.

DIMENSIONS AND WEIGHTS

AE-PLC-MA:

-Dimensions: 600 x 800 x 1200 mm approx.

(23.62 x 31.49 x 47.24 inches approx.)

-Weight: 48 Kg approx.

(105 pounds approx.)

RECOMMENDED ACCESSORIES (Not included)

- AE-PLCB. Basic PLC Trainer (optional).
- AE-CP. Air compressor module (optional).
- AE-BR. Robotic Arm Workstation (optional).

AE-PLC-MA/ICAI. Interactive Computer Aided Instruction Software System:
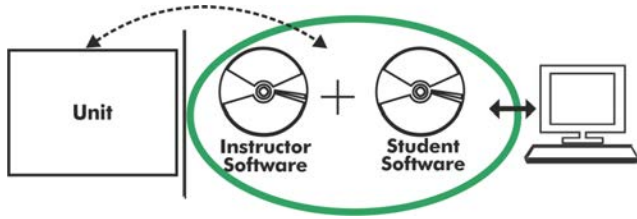
With no physical connection between unit and computer (PC), **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.
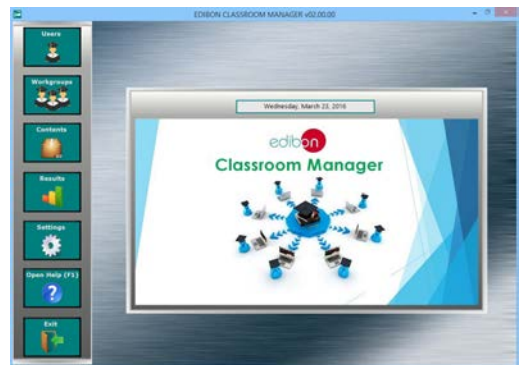
Instructor Software

### - 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 Workgroup, Task 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
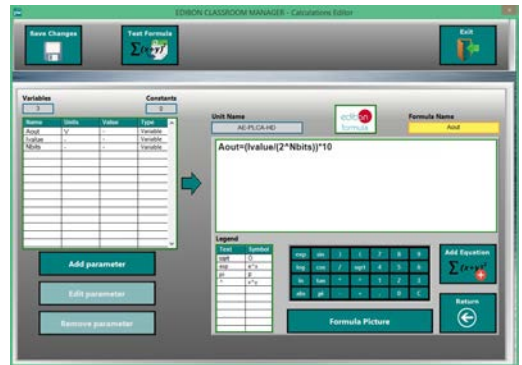
ECAL. EDIBON Calculations Program Package - Formula Editor Screen
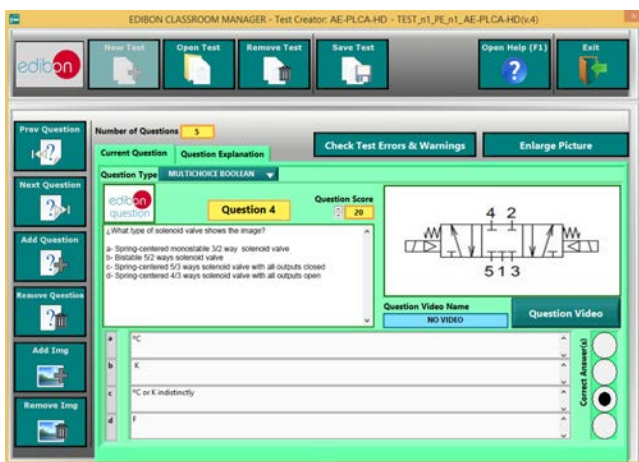
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

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:
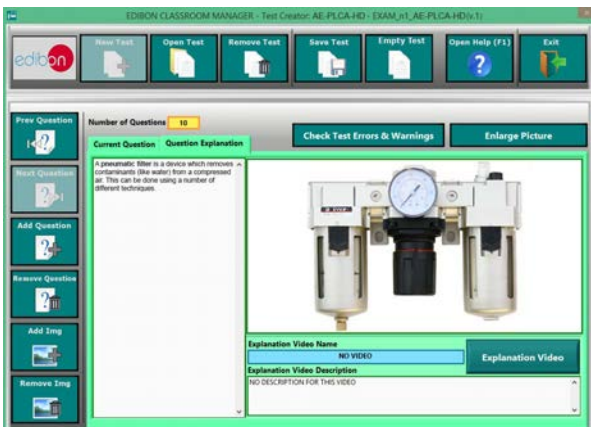
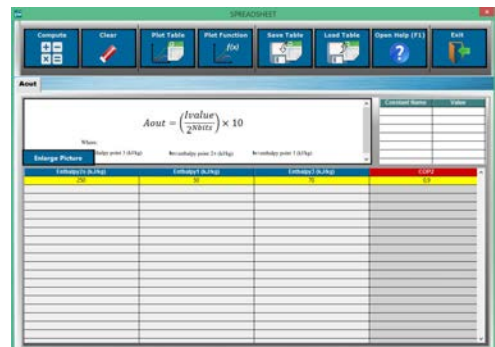www.edibon.com/en/files/expansion/ICAI/catalog

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.

REPRESENTATIVE: