PLC programming software

Computer (not included in the supply)

Unit: AE-PLC-CTCA. AC Conveyor Belt 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.**

www.edibon.com
↳PRODUCTS
 ↳60.- MECHATRONICS &
  COMPUMECHATRONICS
  AND
 70.- MECHANICS

For more information about Key Features, click here

INTRODUCTION

Since the 1950s, the computer integration in the manufacturing systems it 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 AC Conveyor Belt Workstation, "AE-PLC-CTCA", has been designed by EDIBON to study how manage an AC conveyor system. The "AE-PLC-CTCA" include industrial components to conform the system such as PLCs, positioners, industrial sensors, etc.

The "AE-PLC-CTCA" workstation includes a set of practical exercises through which the student will understand how control an automatic AC powered conveyor system.

GENERAL DESCRIPTION

The "AE-PLC-CTCA" is an AC powered conveyor system commanded by a PLC. The "AE-PLC-CTCA" is composed by a conveyor, 4 position sensors to stop the conveyor at different positions, motor positioner, AC motor driver and three-phased motor to a complete control of the conveying.

The "AE-PLC-CTCA" workstation has been designed as a modular system to facilitate the understanding of the equipment operation:

- 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 workstation: is composed by real components used by the industrial automatic conveyor systems such as: capacitive sensors, limit switch sensors, position sensor, etc.

The "AE-PLC-CTCA" workstation that can work alone and/or in conjunction with other workstations to make up a complete Flexible Manufacturing system*.

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

SPECIFICATIONS

The Workstation include the following components:

- AE-PLCB. **Basic PLC Trainer**:

    N-ALI02. **Domestic Power Supply.**

    Single-Phase power supply: 110-240 Vac PH+N+G.

    Keyed ON-OFF switch with removable key.

    Single-Phase connector and cable.

    Differential magneto-thermal switch, 2 poles, 25A, 30mA CA 6KA.

    N-MT. **Test Module.**

    Single-Phase power supply: 110-240 Vac PH+N+G.

    20 Digital Signal Generators:

        10 Switches.

        10 Push buttons.

        Each digital signal generator has a green LED attached.

        Output voltage level of 0 Vdc and 24 Vdc.

    6 Analog Signal Generator.

    6 Potenciometers.

    Output voltage level from -10V to +10V.

N-CPU-PAN. **CPU Module.**

Single-Phase power supply: 110-240 Vac PH+N+G.

Fuse protection.

PLC CPU device: PANASONIC FP7 CPS31E.

High processing speed: 11ns per basic instruction (step).

Program capacity: 120k basic instructions (steps).

Data register capacity: 256k words.

Independent comments memory: 3 MB.

Allows to use generics SDHC memory card up to 32 GB.

Expansion Unit for digital inputs, PANASONIC FP7 AFP7X16DW:

16 Digital inputs: with allowed signal input from 12V to 24V.

Expansion Unit for digital outputs, PANASONIC FP7 AFP7Y16R:

16 Digital outputs: Relay type with 24V of voltage level.

Ethernet connector to PC (for programming and monitoring signals).

Ethernet connector to N-ESA module.

Serial connector to N-HMIB module.

Connector for the digital input/output signals.

N-ESA-PAN. **Analog I/O Module.**

Single-Phase power supply: 110-240 Vac PH+N+G.

Expansion Unit for analog inputs; PANASONIC 7BH21:

Input voltage range from -10V to +10V.

8 Analog inputs.

16 bit resolution.

Expansion Unit for analog outputs, PANASONIC 4AD01:

Output voltage range from -10V to +10V.

4 Analog outputs.

12 bit resolution.

Ethernet connector to N-CPU module.

Connector for the analog input/output signals.

N-HMIB-PAN. **Basic HMI Module.**

Single-Phase power supply: 110-240 Vac PH+N+G.

HMI device:

Touch screen.

Monochromatic LCD display.

Display size: 95 x 53.9 mm (4 inches).

Screen resolution of 128 x 64.

3 different backlight colors.

USB connector.

Serial connector to N-CPU module.

N-SWT-4. **4 Ports Ethernet Switch Module.**

Single-Phase power supply: 110-240 Vac PH+N+G.

Compact switch module:

4 Ethernet ports.

Work as Ethernet interconnection point.

N-SV. **Servomotor Module.**

Single-Phase power supply: 110-240 Vac PH+N+G.

Industrial servomotor positioner controller.

Fuse protection.

PLC CPU device: PANASONIC FP7 CPS31E:

High processing speed: 11ns per basic instruction (step).

Program capacity: 120k basic instructions (steps).

Data register capacity: 256k words.

Independent comments memory: 3MB.

Allows to use generics SDHC memory card up to 32GB.

Positioning device: PANASONIC FP7 MXY32DWDH:

16 Digital inputs.

16 Digital outputs.

4 Pulsed outputs (PWM).

8 Comparison mode outputs.

4 Positioning outputs.

It allows to control up to 4 independent axes.

16 output signals with relay: with 24V of voltage level.

Conector Ethernet para conectar entre CPUs.

Connector for the analog and digital input/output control signals

Ethernet connector to link the unit CPUs.

PLC Programming Software:

Programming software developed according to the standard IEC 61131-3.

Compatible with Windows operating systems.

Five programming languages:

Ladder Diagram (LD). Structured Text (ST). Instructions List (IL). Sequential Function Chart (SFC). Function Block Diagram (FBD).

Remote programming, service, and diagnostics.

Minimum program size.

Powerful debugging and monitoring tools.

Supports user created functions and function blocks.

Saves project files inside the PLC.

Examples and Quick Start Tutorial included.
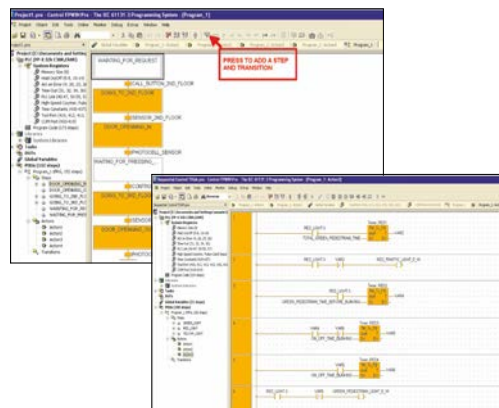
HMI Touch Screen Programming Software:

Tools for Screen Creation:

This Software is a tool designed for programming touch type screens.

Thanks to this tool, suitable screens and images can be created and designed. It allows to transfer the program to the screen, load projects done from the terminal and print screens created.

Plenty of functions. Screens Creation:

This Software has plenty of programming tools. Devices for visualizing texts, diagrams or data; drawing a button, graph, pilots. This Software allows to create functional screens adaptable to each application.

Drawing Functions: It can be done different programming elements through suitable icons and bitmaps.

Easy Operativity (Click and slip):

A library of elements allows to program through the mouse, simply slipping an element and locating it in its place. (Click and Slip).

Easy creation of user libraries:

User libraries can be registered and stored with suitable elements to be used in next projects.

Printing. The different screens of the project can be printed:

It is possible to visualize a preliminary view. It is also possible to select the screens or configurations to be printed.

Easy use. Bitmaps Editor:

There is a tool that allows to create, read and modify bitmaps in order to use them as screen programming elements. Suitable buttons created from images can be easily made.
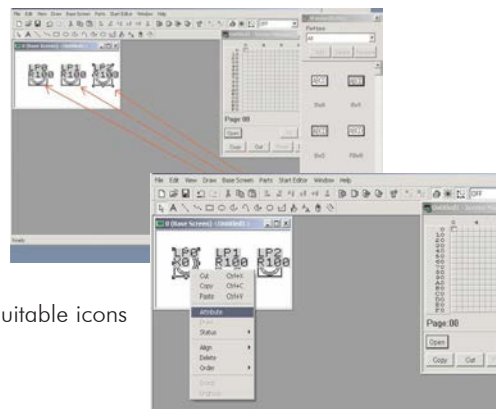
Control panel:

Mushroom head emergency stop push button switch.

Start and Stop pushbuttons.

Switch for manual or automatic operation.

Light indicator.

Led stack light.

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

Electrical components:

AC Three phased motor.

Sensors:

2 Capacitor sensors.

2 Limit switches.

Fault generation module:

Box with lock.

Allows to generate 20 different faults.

Each fault is generated through toggle switch.

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.- Study of the sensor detection.

3.- Manual control of an AC conveyor.

4.- Automatic control of an AC conveyor.

5.- Change the parameters of the conveyor system

6.- Optimize the process time.

7.- Study the faults inserted in the process with the fault generation module.

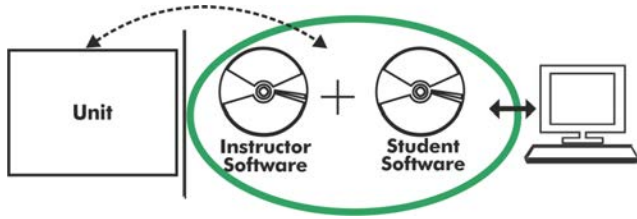## REQUIRED SERVICES

- Electrical supply: single-phase, 220V/50 Hz or 110V/60 Hz.

- Computer.

DIMENSIONS AND WEIGHTS

AE-PLC-CTCA:

-Dimensions: 600 x 800 x 1200 mm approx.

(23.62 x 31.49 x 47.24 inches approx.)

-Weight: 40 Kg. approx.

(88 pounds approx.)

AE-PLC-CTCA/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.
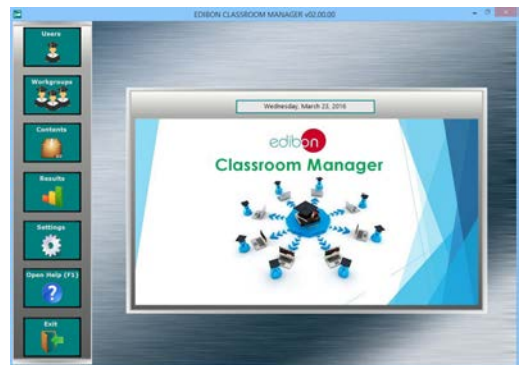
Instructor Software

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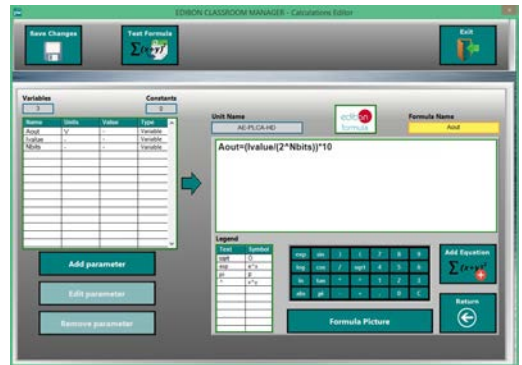
ECAL. EDIBON Calculations Program Package - Formula Editor Screen
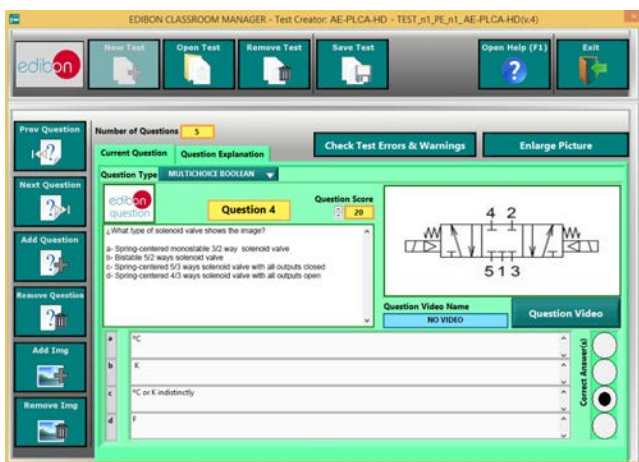
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

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

www.edibon.com

- 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.

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

For more information see **ICAI** catalogue. Click on the following link:
www.edibon.com/en/files/expansion/ICAI/catalog

EPE. EDIBON Practical Exercise Program Package Main Screen
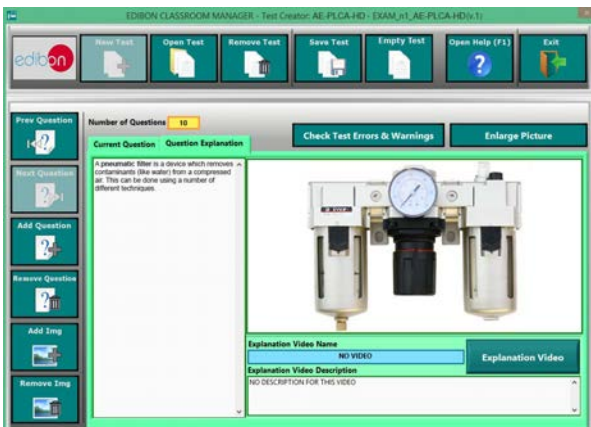
ERS. EDIBON Results & Statistics Program Package - Question Explanation
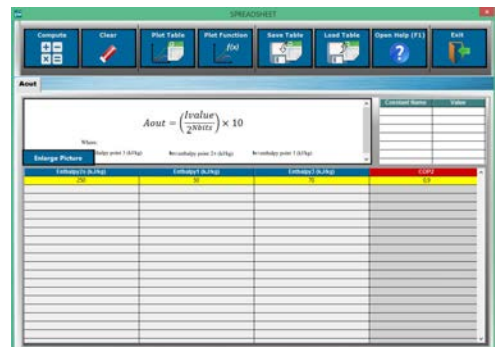
ECAL. EDIBON Calculations Program Package Main Screen

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

REPRESENTATIVE: