



Unit: AE-PLC-MIT. MITSUBISHI PLC Application



Computer
(not included in
the supply)

Key features:

- **PLC 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 & COMPUTE MECHANICS

For more information about Key Features, click here



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

The Programmable Logic Controllers (PLCs) were introduced in the late 1960s to replace the old circuits made of relays. These new systems, based on digital electronic, improved flexibility, functionality and troubleshooting. In all these years the PLC systems have grown in memory, versatility of the inputs and the outputs signals, computing capacity, etc. At the same time, the price of this technology has been reduced over and over again. These and other improvements have allowed to keep the PLCs technology as a reliable option in the modern automation systems.

The MITSUBISHI PLC Application, "AE-PLC-MIT", is a PLC unit designed by EDIBON which use one of the last Mitsubishi PLC units. It allows the user to learn about PLC logic programming, different PLC programming languages, PLC to PC communication, etc.

The "AE-PLC-MIT" is provided with a set of practical exercises, through which the student will understand how to work with the PLC systems, without any background knowledge or experience.

GENERAL DESCRIPTION

The "AE-PLC-MIT" is a PLC application which contains one of the last Mitsubishi PLC models. The "AE-PLC-MIT", can be used alone, to study the PLC systems, or in conjunction with the EDIBON compatible units, to study a real application of the PLC systems.

The "AE-PLC-MIT" is a modular system with the common components that make up a complete PLC system. The MITSUBISHI PLC Base Unit, "AE-PLC-MIT-UB" always includes the power supply and the PLC CPU module, but there are also available a series of optional kits to complete the PLC system with the required functions of the programmable controller (test module, analog input and output signals, HMI devices, PLC internet connection, etc.). These kits allow the user to learn about HMI programming, testing analog inputs and outputs signals, etc.

SPECIFICATIONS

The AE-PLC-MIT-UB, **MITSUBISHI PLC Base Unit** includes:

- **N-ALIO2. Domestic Power Supply.**

Supply voltage (Single-Phase): 230 VAC, PH+N+G.

ON-OFF removable key.

Output Voltage Connections:

Two Single-Phase: 230 VAC.

Single-Phase supply wire connecting plug.

Differential magnetothermal, 2 poles, 25A, 30mA AC 6KA.



N-ALIO2

- **N-CPU-MIT. Mitsubishi CPU Module.**

Supply voltage (Single-Phase): 100-240Vac PH + N + G.

Overcurrent protection with fuse.

PLC device Mitsubishi FX3G:

Program memory:

32,000 steps EEPROM (internal).

Exchangeable EEPROM memory cassette.

Instruction time:

Up to 0.21 us per instruction.

Ethernet connectors with a communication rate of 10/100 Mbps

Digital inputs: 24 inputs of 24Vdc.

Digital outputs: 16 outputs of 24Vdc.

Analog input: 2 with a range of 0 to 10V

Analog output: 1 with a range of 0 to 10V

Connector for the digital input and output signals.

Connector to the Ethernet switch module (N-SWT-4 or N-SWT-8).



N-CPU-MIT

Specifications

• PLC Programming Software.

Easy programming with drag and drop editing with a complete library of preconfigured function boxes.

Easy backup and restore the projects.

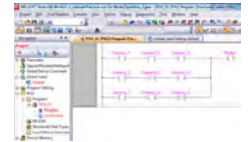
Multiple programs can be handled: The PLC program can be created with multiple program part.

Fully utilize the wide and easy-to-read screen.

Three programming languages:

Ladder diagrams (LD), Instruction list and Sequential function chart (SFC).

PLC programming through Ethernet or USB.



PLC Programming Software

There are available the following optionals Kits to work with the AE-PLC-MIT-UB:

The PLC-MIT-K1, **MITSUBISHI PLC Kit 1 (Optional)** includes:

• N-MT. Test module.

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

20 Digital Signal Generators:

10 Switches.

10 Push buttons.

Every output has attached a green LED.

Output voltage levels of 0Vdc and 24Vdc.

6 Analog Signal Generators:

6 Potentiometers.

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

Single-Phase supply wire connecting plug.

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



N-MT

The PLC-MIT-K2, **MITSUBISHI PLC Kit 2 (Optional)** includes:

• N-ESA-MIT. Mitsubishi Analog I/O Module.

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

Expansion unit for analog inputs:

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

4 analog inputs.

Resolution of 12 bits.

Expansion unit for analog outputs:

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

4 analog outputs.

Resolution of 12 bits.

Connector for the analog input and output signals.

Connector to the Ethernet switch module (N-SWT-4 or N-SWT-8).



N-ESA-MIT

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

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

Compact switch module:

4 Ethernet ports.

Work as Ethernet interconnection point.



N-SWT-4

Specifications

The PLC-MIT-K3, **MITSUBISHI PLC Kit 3 (Optional)** includes:

- N-HMIB-MIT. **Mitsubishi Small HMI Module.**

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

HMI device:

Touch screen.

TFT Monochrome LCD.

Memory for storage: 3 MB.

Display size: 89 x 35.6 mm (3.8 inches).

Screen resolution of 320 (W) x 128 (H) dots.

5 Backlight LED colors: white, green, pink, orange and red).

SDHC card slot up to 32 GB.

Connector to the Ethernet switch module (N-SWT-4 or N-SWT-8).



N-HMIB-MIT

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

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

Compact switch module:

4 Ethernet ports.

Work as Ethernet interconnection point.



N-SWT-4

- **HMI Programming software:**

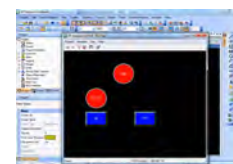
Reusable projects to a more efficient programming.

Reusable previous screens through a browser, and added to the new project through drag and place action.

Data browser shows a list of objects used in the current project, and allow to edit each object directly from the list.

Configuring the HMI communication through an easy drag and place method.

The software allows to create labels instead of using device, to configure a more understandable program.



HMI Programming Software

The PLC-MIT-K4, **MITSUBISHI PLC Kit 4 (Optional)** includes:

- N-HMIA-MIT. **Mitsubishi Large HMI Module.**

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

HMI device:

Touch screen.

TFT with 65536 colors.

Memory for storage: 9 MB.

Display size: 154 x 85.9 mm (7 inches).

Screen resolution of 800 (W) x 480 (H) dots.

5 Backlight LED colors: white, green, pink, orange and red).

SDHC card slot up to 32 GB.

Connector to the Ethernet switch module (N-SWT-4 or N-SWT-8).



N-HMIA-MIT

Specifications

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

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

Compact switch module:

4 Ethernet ports.

Work as Ethernet interconnection point.



N-SWT-4

- **HMI Programming software:**

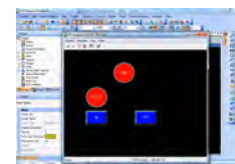
Reusable projects to a more efficient programming.

Reusable previous screens through a browser, and added to the new project through drag and place action.

Data browser shows a list of objects used in the current project, and allow to edit each object directly from the list.

Configuring the HMI communication through an easy drag and place method.

The software allows to create labels instead of using device, to configure a more understandable program.



HMI Programming Software

- **N-SWT-8. 8 Ports Ethernet Switch Module.**

Supply voltage (Single-Phase): 100-240Vac PH+N+G.

Compact switch module:

8 Ethernet ports.

Work as Ethernet interconnection point.



N-SWT-8

Cables and Accessories, for normal operation.

Manuals:

This unit **is supplied with 7 manuals**: Required Services, Assembly and Installation, Control Software, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Using variables.
- 2.- Using digital inputs I.
- 3.- Using digital inputs II.
- 4.- Testing digital inputs (PLC-MIT-K1).
- 5.- Using digital outputs.
- 6.- Testing digital outputs.
- 7.- Using analog signals I (PLC-MIT-K1 and PLC-MIT-K2).
- 8.- Using analog signals II (PLC-MIT-K1 and PLC-MIT-K2).
- 9.- Square wave generator.
- 10.- HMI simple program (PLC-MIT-K3 or PLC-MIT-K4).
- 11.- Using digital outputs with HMI device I (PLC-MIT-K3 or PLC-MIT-K4).
- 12.- Using digital outputs with HMI device II (PLC-MIT-K3 or PLC-MIT-K4).
- 13.- Reading data from a register with the HMI device (PLC-MIT-K3 or PLC-MIT-K4).
- 14.- Writing data to a register with the HMI device (PLC-MIT-K3 or PLC-MIT-K4).
- 15.- Switching screens of the HMI device (PLC-MIT-K3 or PLC-MIT-K4).

REQUIRED SERVICES

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

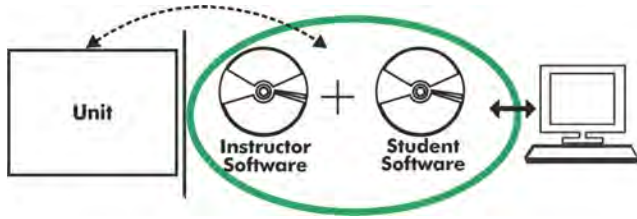
DIMENSIONS AND WEIGHTS

- AE-PLC-MIT:
- Dimensions: 490 x 330 x 310 mm approx.
(19.29 x 12.99 x 12.20 inches approx.)
 - Weight: 6 Kg approx.
(13 pounds approx.)

RECOMMENDED ACCESSORIES (Not Included)

- PLC-MIT-K1. MITSUBISHI PLC Kit 1. (Optional)
- PLC-MIT-K2. MITSUBISHI PLC Kit 2. (Optional)
- PLC-MIT-K3. MITSUBISHI PLC Kit 3. (Optional)
- PLC-MIT-K4. MITSUBISHI PLC Kit 4. (Optional)

AE-PLC-MIT/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.

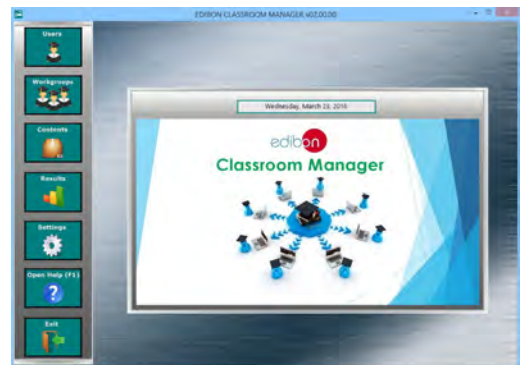
Instructor Software

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

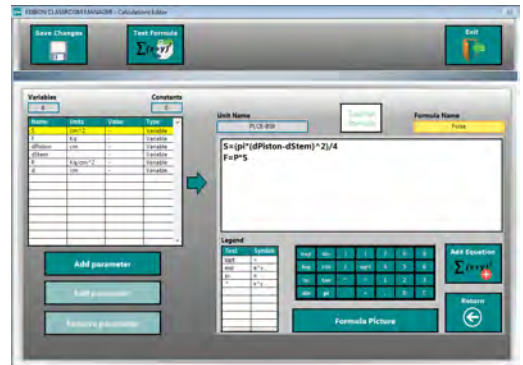
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

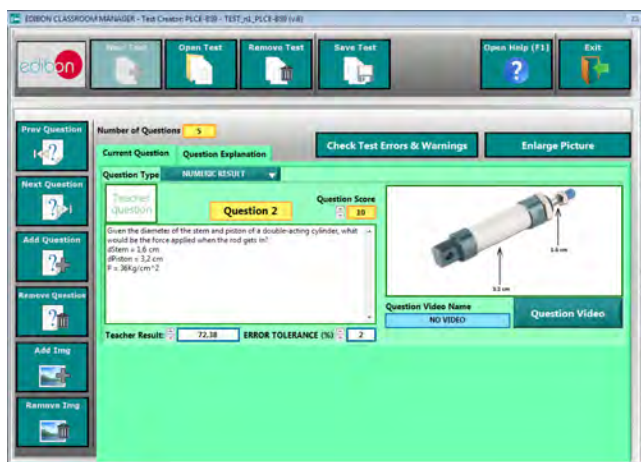
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.
- 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

Optional
Student Software

- 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:

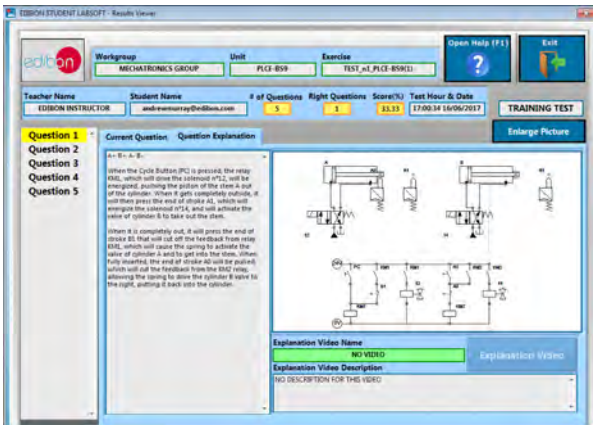
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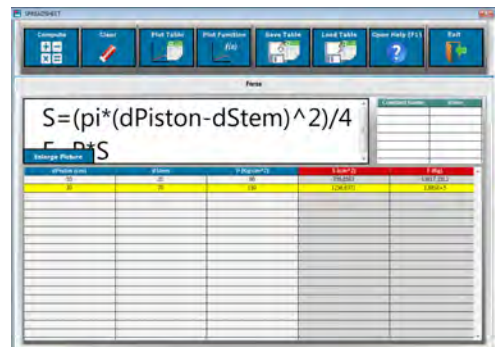
ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen



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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REPRESENTATIVE:

