Unit: PLC-PI. PLC Module for the Control of Industrial Processes (for working with EDIBON Computerized Teaching Units).

**DESCRIPTION**

This PLC-PI unit contains a metallic box, with a front panel in order to manipulate the unit in a simple and easy way, the power supply and all necessary connectors and cabling and, additionally, the PLC itself with its own touch screen. We have design and supply the proper software for any particular application (for each particular EDIBON Computerized Teaching Unit).

**Available wide range of PLC Applications (PID Control)**

**Example**

PID Control from PLC.

PID Control from Computer

PID Control from PLC
**SPECIFICATIONS**

**PLC-PI. Unit:**  
Metallic box.  
Circuit diagram in the front panel.  
Front panel:  
- Digital inputs (X) and Digital outputs (Y) block:  
  - 16 Digital inputs, activated by switches and 16 LEDs for confirmation (red).  
  - 14 Digital outputs (through SCSI connector) with 14 LEDs for message (green).  
  - Analog inputs block:  
    - 16 Analog inputs (-10V to +10V) (through SCSI connector).  
  - Analog outputs block:  
    - 4 Analog outputs (-10V to +10V) (through SCSI connector).  
  - Touch screen:  
  - Back panel:  
    - Power supply connector. Fuse 2A.  
    - RS-232 connector to PC.  
  - Inside:  
    - Power supply outputs: 24 Vdc, 12 Vdc, -12 Vdc, 12 Vdc variable.  
    - Panasonic PLC:  
      - High-speed scan of 0.32 µsec. for a basic instruction.  
      - Program capacity of 32 Ksteps, with a sufficient comment area.  
      - Free input AC voltage (100 to 240 V AC).  
      - DC input: 16 (24 V DC).  
      - Relay output: 14 (250 V A AC/2 A).  
      - Program capacity: 32 ksteps.  
      - Equipped with a USB communication port.  
      - High-speed counter.  
      - Multi-point PID control.  
    - Digital inputs/outputs and analog inputs/outputs Panasonic modules.  
    - Communication RS232 wire, to computer (PC).  

**PLC-SOF. PLC Control Software:**  
For each particular EDIBON Computerized Teaching Unit.  

**Cables and Accessories:** for normal operation.  

**Manuals:**  
This unit is supplied with 8 manuals: Required Services, Assembly and Installation, Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.

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**EXERCISES AND PRACTICAL POSSIBILITIES**

Some General Practical Possibilities:

1. Control of the particular unit process through the control interface box without the computer.  
2. PID control.  
3. Visualization of all the sensors values used in the particular unit process.  
4. Calibration of all sensors included in the particular unit process.  
5. Hand on of all the actuators involved in the particular unit process.  
6. Realization of different experiments, in automatic way, without having in front the particular unit. (These experiments can be decided previously).  
7. Simulation of outside actions, in the cases do not exist hardware elements. (Example: test of complementary tanks, complementary industrial environment to the process to be studied, etc).  
8. PLC hardware general use.  
9. PLC process application for the particular unit.  
10. PLC structure.  
11. PLC inputs and outputs configuration.  
12. PLC configuration possibilities.  
13. PLC program languages.  
14. PLC different programming standard languages (ladder diagram (LD), structured text (ST), instructions list (IL), sequential function chart (SFC), function block diagram (FBD)).  
15. New configuration and development of new process.  
16. Hand on an established process.  
17. To visualize and see the results and to make comparisons with the particular unit process.  
18. Possibility of creating new process in relation with the particular unit.  
19. PLC Programming Exercises.  
20. Own PLC applications in accordance with teacher and student requirements.

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**REQUIRED SERVICES**

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

**DIMENSIONS & WEIGHTS**

PLC-PI Unit:  
- Dimensions: 490 x 330 x 310 mm. approx.  
- Weight: 30 Kg. approx.

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www.edibon.com
Available wide range of PLC Applications
(PID Control)

Units which can use PLC-PI:

4.- Electricity

4.4.- Electrical Machines

EME. Electrical Machines Unit

5.- Energy

5.3.- Renewable (Alternative) Energies

EESFC. Computer Controlled Photovoltaic Solar Energy Unit

EESTC. Computer Controlled Thermal Solar Energy Unit

EEEC. Computer Controlled Wind Energy Unit

Continue …

www.edibon.com
8.- Fluid Mechanics & Aerodynamics

8.2.- Fluid Mechanics (General)

**AFTC.** Computer Controlled Fluid Friction in Pipes, with Hydraulics Bench (FME00)

**AMTC.** Computer Controlled Pipe Network Unit, with Hydraulics Bench (FME00)

**EGAC.** Computer Controlled Water Hammer Unit

**8.3.- Fluid Mechanics (Flow Channels)**

**CFC.** Computer Controlled Flow Channels (section: 80 mm)

**CFG.** Computer Controlled Flow Channels (section: 300 mm)
8.- Fluid Mechanics & Aerodynamics

8.4.- Hydraulic Machines (Pumps)

PBOC. Computer Controlled Multipump Testing Bench

PBCC. Computer Controlled Centrifugal Pump Bench

PBSPC. Computer Controlled Series/Parallel Pumps Bench

PBEC. Computer Controlled Gear Pump Bench

PBAC. Computer Controlled Axial Pump Bench

PBRC. Computer Controlled (Reciprocating) Plunger Pump Bench

Available wide range of PLC Applications

Units which can use PLC-PI: (continuation)
8.- Fluid Mechanics & Aerodynamics

8.5.- Hydraulic Machines (Fans)

HVCC. Computer Controlled Centrifugal Fan Teaching Trainer

HVAC. Computer Controlled Axial Fan Teaching Trainer

8.6.- Hydraulic Machines (Turbines)

TFRC. Computer Controlled Radial Flow Turbine

TPC. Computer Controlled Pelton Turbine

TFAC. Computer Controlled Axial Flow Turbine

TTVC. Computer Controlled Steam Turbine

Available wide range of PLC Applications (PID Control)

Units which can use PLC-PI: (continuation)
8. Fluid Mechanics & Aerodynamics

8.6. Hydraulic Machines (Turbines)

HTIC. Computer Controlled Experimental Impulse Turbine

HTRC. Computer Controlled Experimental Reaction Turbine

HTVC. Computer Controlled Solar/Heat Source Vapour Turbine

TFC. Computer Controlled Francis Turbine

TKC. Computer Controlled Kaplan Turbine

8.7. Aerodynamics (Basic)

TA50/250C. Computer Controlled Aerodynamic Tunnel, 50 x 250 mm
9.- Thermodynamics & Thermotechnics

9.1.- Refrigeration

TCRC. Computer Controlled Refrigeration Cycle Demonstration Unit

THAR22C. Computer Controlled Refrigeration and Air Conditioning Unit (two condensers and two evaporators)

THAR2LC. Computer Controlled Refrigeration and Air Conditioning Unit (two condensers and one evaporator)

THARL2C. Computer Controlled Refrigeration and Air Conditioning Unit (water condenser and two evaporators)

THARLLC. Computer Controlled Refrigeration and Air Conditioning Unit (water condenser and water evaporator)

Units which can use PLC-PI: (continuation)

Available wide range of PLC Applications
(PID Control)
9.- Thermodynamics & Thermotechnics

9.1.- Refrigeration

THARALC. Computer Controlled Refrigeration and Air Conditioning Unit (air condenser and water evaporator)

THARA2C/1. Computer Controlled Capacity Control Methods in Refrigeration

THARA2C/2. Computer Controlled Double Chamber Refrigerator Module

THALAC/1. Computer Controlled Multiple Compressor Refrigeration Control
9.- Thermodynamics & Thermotechnics

9.1.- Refrigeration

TCPISC. Computer Controlled Cooling Plant with Ice Store

TPVC. Computer Controlled Vortex Tube Refrigerator Unit

TPCC. Computer Controlled Contact Plate Freezer

TEVC. Computer Controlled Ventilation Trainer

9.3.- Heating

EACC. Computer Controlled Hot Water Production and Heating Teaching Unit
9. Thermodynamics & Thermotechnics

9.4. Heat Pumps

THIBAR22C. Computer Controlled Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve

THB22C. Computer Controlled Heat Pump Unit (two condensers and two evaporators)

THB2LC. Computer Controlled Heat Pump Unit (two condensers and water evaporator)

THBL2C. Computer Controlled Heat Pump Unit (water condenser and two evaporators)
9.- Thermodynamics & Thermotechnics

9.4.- Heat Pumps

THBLLC. Computer Controlled Heat Pump Unit (water condenser and water evaporator)

THBALC. Computer Controlled Heat Pump Unit (air condenser and water evaporator)

THBLAC. Computer Controlled Heat Pump Unit (water condenser and air evaporator)

THBAAC. Computer Controlled Heat Pump Unit (air condenser and air evaporator)

TBTC. Computer Controlled Thermo-Electric Heat Pump
9.- Thermodynamics & Thermotechnics

9.5.- Air Conditioning

THAAAC. Computer Controlled Air Conditioning Unit (air condenser and air evaporator)

THALAC. Computer Controlled Air Conditioning Unit (water condenser and air evaporator)

TAAC. Computer Controlled Air Conditioning Laboratory Unit

TARC. Computer Controlled Recirculating Air Conditioning Unit

TAAUC. Computer Controlled Automobile Air Conditioning Trainer

Available wide range of PLC Applications

Units which can use PLC-PI: (continuation)
9.- Thermodynamics & Thermotechnics

9.6.- Cooling Towers
TTEC. Computer Controlled Bench Top Cooling Tower

9.7.- Heat Exchange
TICC. Computer Controlled Heat Exchangers Training System:

9.8.- Heat Transfer (Basic)
TSTCC. Computer Controlled Heat Transfer Series:

Units which can use PLC-PI: (continuation)
9.- Thermodynamics & Thermotechnics

9.9.- Heat Transfer (General)

**TRTC. Computer Controlled Thermal Radiation Unit**

**TTLC. Computer Controlled Fluidisation and Fluid Bed Heat Transfer Unit**

**TCEC. Computer Controlled Boiling Heat Transfer Unit**

**TCCC. Computer Controlled Heat Conduction Unit**

**TCLGC. Computer Controlled Thermal Conductivity of Liquids and Gases Unit**

Available wide range of PLC Applications

(PID Control)

Units which can use PLC-PI: (continuation)
9.- Thermodynamics & Thermotechnics

9.9.- Heat Transfer (General)

TCPGC. Computer Controlled Film and Dropwise Condensation Unit

TCLFC. Computer Controlled Free and Forced Convection Heat Transfer Unit

TIFCC. Computer Controlled Cross Flow Heat Exchanger

TCMC. Computer Controlled Thermal Conductivity of Building and Insulating Materials Unit

9.10.- Heat Transfer (Special)

TFLVC. Computer Controlled Laminar/Viscous Flow Heat Transfer Unit
9.- Thermodynamics & Thermotechnics

9.10.- Heat Transfer (Special)

TIVAC. Computer Controlled Steam to Water Heat Exchanger

TFEC. Computer Controlled Flow Boiling Demonstration Unit

TRLC. Computer Controlled Recycle Loops Unit

TSPC. Computer Controlled Saturation Pressure Unit

TFUC. Computer Controlled Batch Filtration Unit

Available wide range of PLC Applications

Units which can use PLC-PI: (continuation)
9.- Thermodynamics & Thermotechnics

9.10.- Heat Transfer (Special)

TCFUC. Computer Controlled Continuous Filtration Unit

TEPGC. Computer Controlled Expansion Processes of a Perfect Gas Unit

9.11.- Nozzles & Steam

TFTC. Computer Controlled Nozzle Performance Test Unit

9.12.- Combustion

TVCC. Computer Controlled Combustion Laboratory Unit

TVPLC. Computer Controlled Flame Propagation and Stability Unit

Available wide range of PLC Applications
(PID Control)

Units which can use PLC-PI: (continuation)
**10.- Process Control**

**10.1.- Process Control. Fundamentals**

UCP: Computer Controlled Process Control System, with electronic control valve:

UCPCN: Computer Controlled Process Control System, with pneumatic control valve:

Available wide range of PLC Applications (PID Control)

Units which can use PLC-PI: (continuation)
10.- Process Control

10.1.- Process Control. Fundamentals

UCPCV. Computer Controlled Process Control System, with speed controller:

UCPCNV. Computer Controlled Process Control System, with electronic control valve + pneumatic control valve + speed controller:

UCP-P. Computer Controlled Process Control Unit for the Study of Pressure (Air)
Units which can use PLC-PI: (continuation)

10.- Process Control

10.2.- Industrial Process Control

CPIC. Computer Controlled Process Control Plant with Industrial Instrumentation and Service Module (Flow, Temperature, Level and Pressure)

CPIC-C. Computer Controlled Process Control Plant with Industrial Instrumentation and Service Module (only Flow)

CPIC-T. Computer Controlled Process Control Plant with Industrial Instrumentation and Service Module (only Temperature)

CPIC-N. Computer Controlled Process Control Plant with Industrial Instrumentation and Service Module (only Level)

CPIC-P. Computer Controlled Process Control Plant with Industrial Instrumentation and Service Module (only Pressure)
11.- Chemical Engineering

11.1.- Chemical Engineering (Basic)

CAGC. Computer Controlled Gas Absorption Column

UELLC. Computer Controlled Liquid-Liquid Extraction Unit

UDCC. Computer Controlled Continuous Distillation Unit

UDDC. Computer Controlled Batch Distillation Unit

Available wide range of PLC Applications
(PID Control)

Units which can use PLC-PI: (continuation)
11.- Chemical Engineering

11.2.- Chemical Engineering (General)

UESLC. Computer Controlled Solid-Liquid Extraction Unit

EPAC. Computer Controlled Rising Film Evaporator

EDPAC. Computer Controlled Double Effect Rising Film Evaporator

CAPC. Computer Controlled Wetted Wall Gas Absorption Column
11.- Chemical Engineering

11.2.- Chemical Engineering (General)

QDTLC. Computer Controlled Liquid Mass Transfer and Diffusion Coefficient Unit

QDTGC. Computer Controlled Gaseous Mass Transfer and Diffusion Coefficient Unit

QCCC. Computer Controlled Cracking Column

QUCC. Computer Controlled Crystallisation Unit

Available wide range of PLC Applications
(PID Control)

Units which can use PLC-PI: (continuation)
11.- Chemical Engineering

11.3.- Chemical Reactors

QRQC. Computer Controlled Chemical Reactors Training System:

QRQC. Computer Controlled Chemical Reactors Trainer:

11.4.- Chemical Process

LFFC. Computer Controlled Fixed and Fluidised Bed Unit
11. Chemical Engineering

11.4. Chemical Process

QEDC. Computer Controlled Batch Solvent Extraction and Desolventising Unit

TFUC. Computer Controlled Batch Filtration Unit

TCFUC. Computer Controlled Continuous Filtration Unit

SBANC. Computer Controlled Tray Drier

SSPC. Computer Controlled Spray Drier
12.- Food & Water Technologies

12.1.- Food Technology (Basic)

PADC. Computer Controlled Teaching Autonomous Pasteurization Unit

SBANC. Computer Controlled Tray Drier

SSPC. Computer Controlled Spray Drier

AEHC. Computer Controlled Hydrogenation Unit

AEDC. Computer Controlled Deodorising Unit

Available wide range of PLC Applications (PID Control)

Units which can use PLC-PI: (continuation)
12.- Food & Water Technologies

12.1.- Food Technology (Basic)

**TFDC. Computer Controlled Teaching Frigorific Tank**

**EDLC. Computer Controlled Teaching Machine for Putting in Plastic Packing Liquids**

**EDSC. Computer Controlled Teaching Machine for Putting into a Container Solids**

**ROUC. Computer Controlled Reverse Osmosis/Ultrafiltration Unit**

**VPMC. Computer Controlled Multipurpose Processing Vessel**

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Available wide range of PLC Applications (PID Control)

Units which can use PLC-PI (continuation)
12.- Food & Water Technologies

12.1.- Food Technology (Basic)

TPCC. Computer Controlled Contact Plate Freezer

QEDC. Computer Controlled Batch Solvent Extraction and Desolventising Unit

12.2.- Food Technology (Milk)

DSNC. Computer Controlled Teaching Cream Separator

EMANC. Computer Controlled Butter Maker Teaching Unit

AUHTC. Computer Controlled UHT Unit
12.- Food & Water Technologies

12.2.- Food Technology (Milk)

CCDC. Computer Controlled Teaching Curdled Tank

PVQC. Computer Controlled Teaching Cheese Vertical Press

IVDC. Computer Controlled Teaching Yogurt Incubator

RDC. Computer Controlled Teaching Cottage Cheese Maker

12.3.- Food Technology (Oil)

PACC. Computer Controlled Continuous Cycle Oil Production Plant
13. Environment

13.1. Water Handling

**ESHC. Computer Controlled Hydrologic Systems, Rain Simulator and Irrigation Systems Unit**

Available versions:
- ESHC (2x1m). Hydrologic Systems, Rain Simulator and Irrigation Systems Unit (2x1m).
- ESHC (4x2m). Hydrologic Systems, Rain Simulator and Irrigation Systems Unit (4x2m).

**PAHSC. Computer Controlled Soil Moisture Suction Sand Unit**

**PDFDC. Computer Controlled Drainage and Seepage Tank**

**PDSC. Computer Controlled Sedimentation Tank**

Available wide range of PLC Applications (PID Control)

Units which can use PLC-PI: (continuation)
13.- Environment

13.2. Water Treatment

EFLPC. Computer Controlled Deep Bed Filter Unit

PDAC. Computer Controlled Aerobic Digester

PDANC. Computer Controlled Anaerobic Digester

PEFC. Computer Controlled Flocculation Test Unit
Available wide range of PLC Applications
(PID Control)

### 13.- Environment

#### 13.2.- Water Treatment

PEAIC. Computer Controlled Aeration Unit

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*Specifications subject to change without previous notice, due to the convenience of improvements of the product.*

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**edibon INTERNATIONAL**

C/ Del Agua, 14. Polígono Industrial San José de Valderas.
28918 LEGANÉS (Madrid) SPAIN.
Phone: 34-91-6199363  FAX: 34-91-6198647
E-mail: edibon@edibon.com  WEB site: www.edibon.com

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