PLC Industrial Control System

PLC-IN

Industrial PLC Applications for working with PLC-IN

The EDIBON PLC-IN is a PLC Industrial Control System that use Allen-Bradley ControlLogix system. The ControlLogic system allows to connect elements like HMI (Human Machine Interface), drives, frequency controllers, starters, sensors, safety elements and much more other devices for simulating real situations in the industry.

* Note: This PLC-IN system can work with any other PLC, as: Siemens, Omron, Panasonic, etc.

www.edibon.com
Products
Products range
Units
6.-Automation & Systems

ISO 9000: Quality Management
(for Design, Manufacturing, Commercialization and After-sales service)

European Union Certificate
(total safety)

Certificates ISO 14000 and **ECO-Management and Audit Scheme**
(environmental management)

Worlddidac Quality Charter Certificate
(Worlddidac Member)

SPECIFICATIONS

The EDIBON PLC-IN is a PLC Industrial Control System that use Allen-Bradley ControlLogix system. The ControlLogic system allows to connect elements like HMI (Human Machine Interface), drives, frequency controllers, starters, sensors, safety elements and much more other devices for simulating real situations in the industry.
The system is composed by a PLC connected to a switch for creating an EtherNet/IP network. HMI touch screen is integrated in this network.
The system will allow to program different real industrial situations like use of PID and analogue signal and digital inputs/outputs.
The system admits four different programming languages:

Relay Ladder programming language.
Function block diagram.
Sequential function chart.
Structured text.

The system also shows how to program HMI and configure different front panels and applications. During practices user learns how to program faults and status messages and inputs and outputs variables.
There is also a panel with AC and DC busbars for supply different voltage levels. And also the inputs and Outputs of the PLC will be easily presented for making connections.
Additionally in this panel there are typical elements like pushbuttons, lights, and other to simulate inputs and outputs to the PLC.
Some of the elements presented in this panel will be used in the assembly of different typical electrical applications.

Technical Data:

Allen-Bradley ControlLogix system:

- 32 Digital Inputs to 24Vdc (36 pins).
- 32 Digital Outputs to 24 Vdc (36 pins).
- 8 Analogue Inputs of current or voltage (36 pins).
- 4 Analogue Outputs of current or voltage (20 pins).
- Logix Processor 5561 with memory 2 Mbytes.
- Bridge EtherNet Module 10/100.
- Power supply 110/220 Vac for PLC.
- Software.

Allen-Bradley Versa View 1200P. Integrated Display and Workstation (HMI):

- Touchscreen Option: Resistive anti-glare.
- Display Type & Size: 12.1" color TFT.
- Resolution: 800 x 600.
- Bezel Type: Aluminium.
- Processor Type: Celeron M 1.06 GHz.
- RAM: 512 MB DDR2.
- I/O: 4 USB 2.0, 2 10/100/1000 EtherNet, 1 serial port, audio in/out and microphone.
- Operating System: Windows XP.
- Electrical and Environmental Power Requirements: 90-264V AC, autoranging; 47-63 Hz.
- Software.

Stratix 2000 Unmanaged EtherNet Switch:

For network, and all devices communication (included some devices from the applications).

- Very easy to apply it does not required any configuration.
- 5 ports for RJ 45 EtherNet/IP standard cables.

Additional elements:

- 8 Pushbuttons (different colours) with NO/NC contacts.
- 2 Start/Stop push buttons.
- 3 ON/OFF switches.
- 1 Cylinder lock operator.
- 2 End switches.
- 2 Power relays.
- 4 Contactors.
- 1 Timer.
- 2 Emergency pushbutton.
- 8 lights (different colours).
- 2 Buzzers.
- Three-phase 380/220 V. transformer.

Cables and Accessories, for normal operation.

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

EXERCISES AND PRACTICAL POSSIBILITIES

Some PLC Practical Possibilities:

1.- PLC Programming and Download to the PLC. Running Applications.

PLC Programming with different languages:

2.- Relay Ladder (LD).

3.- Function Block Diagram (FBD).

4.- Sequential Function Chart (SFC).

5.- Structured Text (ST).

Using math and arithmetic instructions:

6.- Addition.

7.- Subtraction.

8.- Multiplication.

9.- Division.

10.- Aditional instructions.

Studying Number Systems and Data Types:

11.- Decimal, Binary, Octal, Hexadecimal Systems.

12.- Bool, Integer, Word, Double, etc.

Studying the fundamentals of logic:

13.- AND, OR, and NOT Functions and Bool Algebra.

14.- Developing Circuits from Boolean Expressions.

15.- Producing the Boolean Equation from a Given Circuit.

16.- Hardwired Logic versus Programmed Logic.

17.- Programming Word-Level Logic Instructions.

18.- Use of Functions Blocks and libraries.

19.- Timer/Counter instructions and function blocks.

Creating basic applications to test the analog I/O modules:

20.- Using the analog input to read real analog signals.

21.- Using the analog outputs to generate analog signals and waveforms.

Creating basic applications to test the digital I/O modules:

22.- Connecting hardware inputs (push buttons, timers, etc).

23.- Connecting hardware outputs (lamps, contactor coils, etc.).

Configuration of control loops:

24.- An open loop (start end switch stop).

25.- An analogue input PID with analogue output and alarm.

26.- An analogue input PID with PWM output.

27.- Configuring single and dual loops.

* Some applications related to these practices are included in the supply.

Some HMI (Human Machine Interface) Practical Possibilities:

28.- Connection of the HMI to the PLC.

29.- Ethernet/IP connection and starting.

30.- How to create a simple application for the HMI screen.

31.- How to simulate digital / analog inputs from the HMI

32.- How to operate digital/analog outputs from the HMI.

33.- Industrial type applications simulation.

Some Electrical Applications Practical Possibilities:

34.- Programmable interlocks in control circuits.

35.- Relay operation from control line to power line.

36.- Contactors and power elements control from the PLC.

37.- Timer configuration for on delay, off delay, etc.

38.- Contactors actuated by hardware timers.

39.- Manoeuvre Counters and actuation according to pushbutton pulses.

40.- Alarm actuation caused by end switches detection.

41.- Emergency stop and acoustic and light alarms.

SPECIFICATIONS

PLC-IN-1. **Motor Control Application:**

- Direct Starter:
  - Three-pole Magnetothermal Switch of 2.5..4 A.
  - Contactor 4 KW/400 VAC, 1 NA, Voltage 230V 50/60Hz.
  - Communication Modules for EtherNet/IP.
- Soft Starter:
  - Static Starter SMC-FLEX, 1..5A, Three-phase, 200..480V AC, Voltage 100..240V AC.
  - Comunication Module 7, for EtherNet/IP.
- Frequency Drive:
  - Powerflex Frequency Drive 40, 480V, 3PH, 4.0A, 1.5KW, Ip20.
  - Comunication Module 4, for EtherNet/IP.
- Squirrel Cage AC Motor:
  - Power: 370W.
  - Speed: 2730 r.p.m. (50/60Hz).
  - Connections: Star/triangle.
  - V.Armature: 230/400V (50Hz), 250/440V (60Hz).
  - I.Armature nominal: 1.67/0.97A.

EXERCISES AND PRACTICAL POSSIBILITIES

Some PLC-IN-1 Practical Possibilities:

1.- Connecting devices to the Ethernet / IP.
2.- Squirrel cage Delta/Star connection and parameters measurement.
3.- Electrical protections wiring associated to the electrical machine installation.
4.- Delta/Star running of a squirrel cage asynchronous machine.
5.- Direct/Inverse rotation of motor.
6.- Connecting a Direct Starter. Local Mode start and setting adjustment.
7.- Connecting a Direct Starter. Remote Mode start and setting adjustment.
8.- Connecting a Soft Starter. Local Mode start and setting adjustment.
9.- Connecting a Soft Starter. Remote Mode start and setting adjustment.
10.- Connecting a Frequency Drive. Local Mode start and setting adjustment.
11.- Connecting a Frequency Drive. Remote Mode start and setting adjustment.
12.- Ramps up and slow down program of the Frequency converter.
13.- Programming steps in motor control devices, according to external signals.
14.- Alarm wiring and programming of Electrical machines control devices.

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

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

Issue: ED01/11
Date: January/2011

REPRESENTATIVE: