PROGRAMMABLE LOGIC CONTROLLER – 10 IN/8 OUT
DL 2110ATN

DESCRIPTION

The DL 2110ATN is a programmable controller that combines high performance and ease of use for those who are entering the world of PLCs for the first time.

It allows controlling machines and plants using the sequential logic that replaces traditional electromechanical panels, saving relays, timers and counters.

Flexibility, as it can be reprogrammed, the possibility of its use in environments with harsh working conditions, reliability and safety, as well as the ability to process both digital and analog signals, are its main advantages.

With this module, students can perform experiments commonly used in the industrial automation environment and, in particular, in electro-pneumatics.

All sections (power supply, digital and analog I/O, and interfaces) are identified through clear blocks that show their types and symbols.

TECHNICAL FEATURES

The DL 2110ATN configuration includes the following components:

- 1 power supply, 24Vdc/1A,
- 1 power supply integrated in the CPU, 24Vdc/300mA,
- 1 CPU (model Siemens 1212C of the S7-1200 series) with 8 digital inputs, 6 relay outputs and 2 analog inputs,
- 1 analog expansion module (model SM 1232) with 2 analog outputs,
- 1 Ethernet LAN port for programming.

The front panel also features input/output terminals to facilitate connections between the DL 2110ATN module and the hardware applications in the automation laboratory and, in particular, those of electro-pneumatics.

It is complete with the software STEP 7 (TIA Portal) for programming with single license and Ethernet cable, supply cable, 2mm cables and connectors.

Power supply: single-phase from mains.

GENERAL EXPERIMENTS:

- How to create a simple latch circuit,
- How to create a simple latch circuit (with timer),
- Countdown experiment,
- Simulation and control of a conveyor belt,
- Simulation with detection of the direction of a conveyor belt,
- Simulation of a traffic light,
- How to implement an equation,
- Simulation of starting and stopping a motor,
- Simulation of starting a motor clockwise and counterclockwise,
- Simulation of Y/Δ starting a three-phase motor,
- Simulation of control in sequence of starting and stopping a motor,
- Simulation of a stepper motor.

EXPERIMENTS FOR THE ELECTRO-PNEUMATICS LABORATORY DL 8115EP:

- A+/A- sequence of a Simple Effect (S.E.) cylinder with unstable electric command,
- A-/A+ sequence of a S.E. cylinder with unstable electric command,
- A+/A- sequence of a S.E. cylinder with stable electric command,
- E-/E+ sequence of a Double Effect (D.E.) cylinder with monostable solenoid valve and unstable electric command,
- E+/E- sequence of a D.E. cylinder with monostable solenoid valve and stable electric command,
- E+/E- sequence of a D.E. cylinder with bistable solenoid valve and unstable electric command,
- A+/A- sequence of a S.E. cylinder with OR function,
- A+/A- sequence of a S.E. cylinder with AND function,
- A+/A- sequence of a S.E. cylinder with NOT function,
- E+/E- single cycle of a D.E. cylinder without safety at starting and with bistable solenoid valve,
- E+/E- single cycle of a D.E. cylinder with safety at starting and with bistable solenoid valve,
- Identity function for controlling a S.E. cylinder (YES),

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AUTOMATION AND CONTROL

- Negation function for controlling a S.E. cylinder (NOT),
- Opposite functions of the same signal for the control of a D.E. cylinder,
- Self-holding circuit for "dominant insertion" on the stable command of a D.E. cylinder,
- Self-holding circuit for "dominant exclusion" on the stable command of a D.E. cylinder,
- Outgoing stroke of an S.E. cylinder after a delay time t,
- Ingoing stroke of an S.E. cylinder after a delay time t,
- Timed E+/E- sequence of a D.E. cylinder with monostable solenoid valve without position sensors,
- Timed E-/E+ sequence of a D.E. cylinder with monostable solenoid valve without position sensors,
- Continuous E+/E- cycle of a D.E. cylinder with monostable solenoid valve and with Start and End of run pushbuttons,
- Single E+/E- cycle of a D.E. cylinder without safety at starting and with monostable solenoid valve,
- Single E-/E+ cycle of a D.E. cylinder without safety at starting and with monostable solenoid valve,
- Single E+/E- cycle of a D.E. cylinder with full run safety and with monostable solenoid valve,
- Single E+/E- cycle of a D.E. cylinder with anti-repeat and with monostable solenoid valve,
- Single E+/E- cycle of a D.E. cylinder with stable electric command and with monostable solenoid valve,
- Continuous E+/E- cycle of a D.E. cylinder with bistable solenoid valve and with Start and End of run pushbuttons,
- Positive timed E+/E- stroke of a D.E. cylinder with monostable solenoid valve and with limit switch sensor,
- Positive timed E+/E- stroke of a D.E. cylinder with monostable solenoid valve and with two limit switch sensors,
- E+/E- sequence of a D.E. cylinder with monostable solenoid valve and with two-hand safety command,
- Continuous E+/E- cycle of a D.E. cylinder with bistable solenoid valve and with emergency pushbutton to stop the E+ stroke and return the stem immediately,
- Continuous E+/E- cycle of a D.E. cylinder with bistable solenoid valve and with emergency pushbutton to stop the cycle at the end of the sequence,
- Single E+/F+/E-/F- cycle of two D.E. cylinders with bistable solenoid valves and with safety at starting,
- Continuous E-/F+/E+/F- cycle of two D.E. cylinders with bistable solenoid valves,
- Single/continuous E+/F+/E-/F- cycle of two D.E. cylinders with monostable solenoid valve of E cylinder,
- Continuous E+/E-F+/E+/E-F- cycle of two D.E. cylinders with bistable solenoid valves and with repetitive and contemporary runs,
- Continuous E+/F+/F-/E- cycle of two D.E. cylinders with bistable solenoid valves and with blocking signals.