IA 130
PLC module

Description

- **self-contained PLC module for basic exercises**
- **suitable for use in complex applications**
- **programming software to IEC 61131-3**

The IA 130 can be used to perform basic exercises on a PLC (programmable logic controller). A PLC is essentially a computer adapted to the needs of industry. Its inputs and outputs are not designed for humans, but for use in the control of machines. Machine and operator interact solely by way of limit switches, momentary-contact switches or photoelectric switches.

The front panel is designed as a laboratory patchboard, where the input ports and output ports of the PLC can be connected to switches and displays via laboratory cables. In order to write programs the PLC must be connected to a PC (not supplied) via a USB interface.

The PLC programming software conforms to the international standard IEC 61131-3, and permits programming in the following languages: Statement List (STL), Ladder Diagram (LD), Structured Text (ST) and Function Block Diagram (FBD).

Ladder Diagrams are based on graphical representations with contacts, coils and boxes, as per the circuit diagrams. Function Block Diagram language is based on graphical representation of the interlinking of logical function blocks, analogous to the logic diagrams. Statement List is an assembler-type language with a small, standardised non-hardware-dependent command set. Structured Text is a language similar to PASCAL, with mathematical expressions, assignments, function calls, iteration, condition selection, and PLC-specific add-ons. An example program is included in the module.

IA 130 can be used as a control element in conjunction with electrical, pneumatic or hydraulic applications, such as with the handling device IA 210 or the mixing process RT 800.

Learning objectives/experiments

- familiarisation with a PLC
- familiarisation with the essential fundamentals such as
  - Boolean algebra
  - compiling statement lists
  - interconnection diagrams and block diagrams
- exercises in
  - programming
  - logical “AND” / “OR” gates
  - logic relays
  - output and input
- configuration of program sequences by way of connectors, incorporating
  - timers
  - counters
  - cascade circuits
  - higher-order monitoring relays etc.
- fault finding

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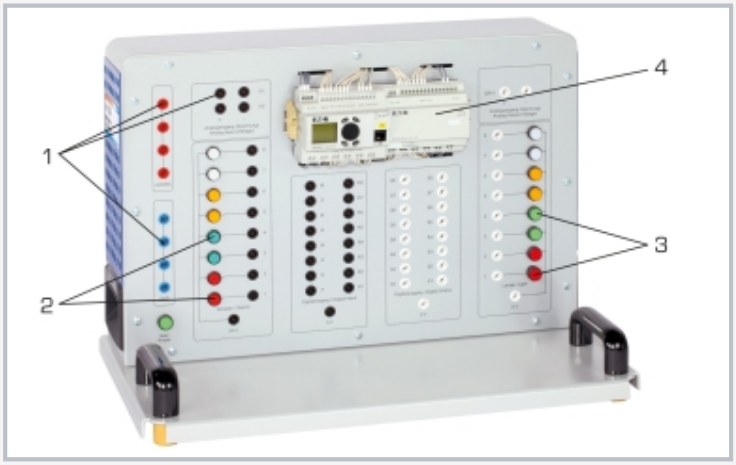
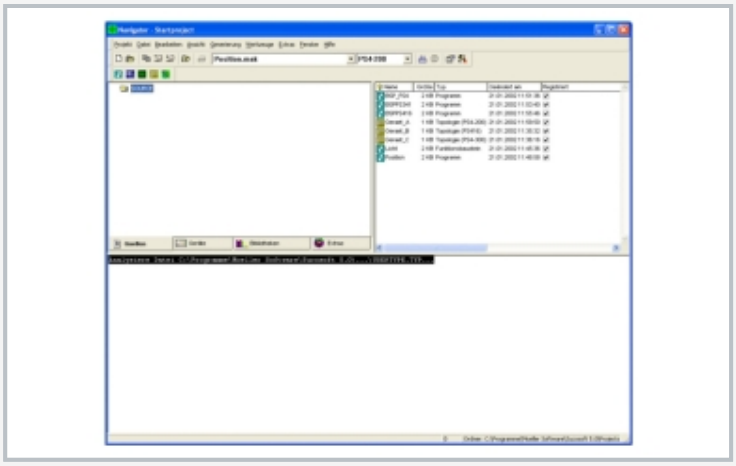
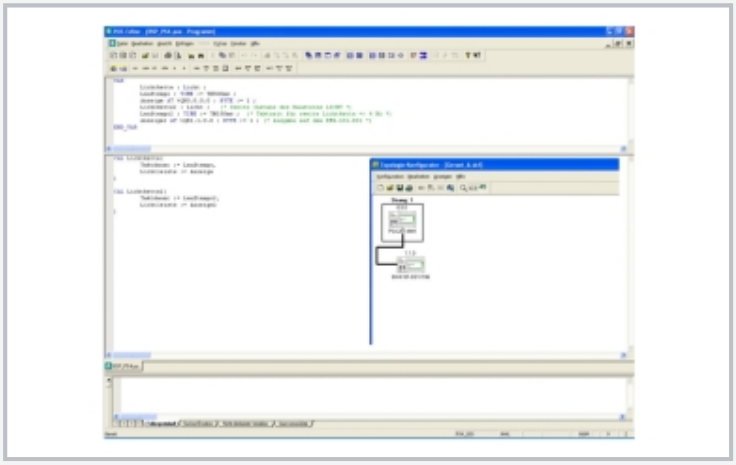


1 lab jacks, 2 pushbutton, 3 lamps, 4 PLC



Screenshot of PLC software: start screen



Screenshot of PLC software: POU editor (POU = Program Organisation Unit) and topology configurator

Specification

[1] module for basic exercises on a programmable logic controller (PLC)
[2] self-contained PLC module, usable as part of a complex system
[3] integrated patchboard for creating circuits with input and output elements
[4] PLC with 2 integrated set value encoders
[5] programming software to IEC 61131-3; software via USB under Windows 10
[6] example program supplied

Technical data

PLC
- connections
  - 16 digital inputs
  - 16 digital outputs
  - 2 analogue inputs
  - 1 analogue output
- memory type: PLC back-up battery for 32kByte RAM and clock
- Rated voltage: 24VDC

Software
- graphical user interfaces
- programming languages to IEC/EN 61131-3:
  - statement list (STL)
  - ladder diagram (LD)
  - function block diagram (FBD)
  - structured text (ST)
- multiple dialogue languages (German, English, French, Spanish)
- graphical topology configurator

230V, 50Hz, 1 phase
230V, 60Hz, 1 phase
120V, 60Hz, 1 phase
UL/CSA optional
LxWxH: 620x350x450mm
Weight: approx. 15kg

Required for operation

PC with Windows

Scope of delivery

1 experimental unit
1 PLC software + USB cable
1 set of laboratory cables
1 set of instructional material

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Optional accessories

020.30009	WP 300.09	Laboratory trolley