A Simplified PLC Training System Featuring
A Micro Controller

The MB640A Basic Programmable Controller Training System uses a Micro Controller for programmable control. The Micro Controller is an electronic control relay with PLC-like features: built-in logic, timer, counter, and real-time clock functionality. Unlike a PLC, the Micro Controller is easier to use and program. The MB640A system enables learners to develop competence in operating and programming a simplified industrial programmable controller. It includes a student activity manual written in a skill building format and understandable language, allowing a novice to rapidly attain programming competency.

The MB640A curriculum begins with basic wiring concepts and moves quickly through circuits, I/O, ladder logic and programming. Additional units focus on the special features of the Micro Controller.

Each unit in the curriculum includes programming and wiring experiments, which stimulate proficiency in controller operation and industrial applications. The experiment station design permits easy access to the input/output terminals with simple banana-jack connectors. This allows rapid set-up and testing of wiring changes, using the built-in input/output devices or user-identified external devices. The Pico Controller is programmed using ladder diagrams, and each programming element is entered directly using the keypad/display or the Windows-based programming software.

The MB640A's rugged design and portability means it will stand up to the most demanding training schedule. The trainer is enclosed in an impact-resistant case and the training panel is constructed of stainless steel.

Options to expand the MB640A training system capabilities include industrial sensors for input/interface (model MB600 and EM600 series), additional control modules (models 650AADCS, 650A-MPC, EP-250) and robots for more advanced applications.

SPECIFICATIONS

The learning system is enclosed in a portable storage case made of impact-resistant polyethylene. The interior panel contains the Micro Controller (internally fused), mounted in a steel training panel. Included on the panel is a 24-volt DC power supply (grounded and fused), 4 combination lights and switches (two momentary and two maintain - normally open or closed determined by user wiring configuration); banana-jack terminal strips with protective shields for the lights/switches and I/O (6 digital inputs, 2 analog inputs, and 4 relay outputs) from the Pico Micro Controller; 0 to 10 V panel meter and potentiometer. All features of the panel have been silkscreened for easy identification. The MB640A system can be programmed via keypad with LCD display or programming software and computer interface cable. The cable attaches to the front of the controller through a wire-jack connection. Both the keypad with display and programming software with computer interface cable are included as standard. The trainer also includes one set of wire patch cords for system simulations and external device interfacing.

Controller Specifications:

Programming Software:
      Windows based

Voltage: Line in:	115 VAC, 60 HZ	
	Optional:	230 VAC, 50 HZ
	System:	24 VDC (built-in power supply)

Inputs/Outputs:
Digital Input:	6 Inputs - 0 to 24 VDC
Analog Input:	2 Inputs - 0 to 10 VDC
Output:	4 Outputs – Relay

Memory:
Size:	164 Instruction Words
Type:	Built-in EEPROM

Counters/Timers
Counters:	8
Counter Range:	0000 – 9999
Timers:	8
Timer Range:	10 ms – 100 hours
Real Time Clock:	+/- 5 seconds/day (typical)

System Dimensions:
      Panel Size: 14" x 11"
      Case Size (closed): 15" x 12" x 4"
      Shipping Weight: 12 lbs.

CURRICULUM

The curriculum includes over 20 units of hands-on activities and instructional support. Each unit contains a series of modules with objectives that cover background study, observational and hands-on experiments and application exercises. The units in the first section have been developed to address the basics of controller operation. The second and third sections provide experience in programming and special features of the Pico Micro Controller. Courseware includes student activity manual and instructor's reference guide.

Introduction to Programmable Controllers

What is a Programmable Controller?
Introduction to the MB640A Trainer
Series and Parallel Circuits
Numbering Systems
Boolean Algebra
Ladder Logic Diagrams

Basic Controller Functions and Applications

Introduction to Programming
      Keypad
      Software
Inputs and Outputs
Internal Relays
"And" and "Or" Circuits
Latching   Relays
Program   Editing
Program Monitoring

Output Control Functions and Applications

Timers
Counters
Cascading Timers
Timer/Counter Programs
Controller Internal Operations

> Computer Requirements:
>   Pentium III or greater
>   128 MB RAM
>   VGA Graphics (256 color)
>   Windows 98 or greater
>   CD-ROM Drive
>   55 MB Hard Disk Space

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