

**MB655  
Principles of Programmable  
Logic Controllers**



**A Complete PLC Training System Featuring  
The Allen-Bradley MicroLogix 1000 With Built-In Applications**

The MB655 Programming Logic Controller Training System enables learners to develop competence in operating, programming and troubleshooting a true industrial programmable logic controller (PLC). It includes a student activity manual written in a skill building format and understandable language, allowing a novice to rapidly attain programming competency.

The MB655 curriculum begins with basic wiring concepts and quickly moves through circuits, ladder logic and programming. Additional units focus on troubleshooting and the special features of the Allen-Bradley MicroLogix 1000.

The learning system includes RSLogix 500 ladder logic programming software, interface cable, input and output devices, a wiring kit, and two **BUILT-IN PLC APPLICATIONS** (Motor/Screw Motion and Traffic Intersection) for practical programming experience.

Each unit in the curriculum includes programming and wiring experiments, which simulate proficiency in PLC operation and industrial applications.

The experiment station design permits easy access to the input/output terminal strips 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 MB655's rugged design and portability allow it to stand up to the most demanding training schedule. The programmable controller training system can be used stand-alone or interfaced to TII's pneumatic/hydraulic electromechanical controls, sensors, or advanced PLC application modules. Options to expand the MB655's capabilities include a Hand Held Terminal (HHT), industrial sensors for input/interface and robotics for more advanced applications. TII offers training systems for other PLC's including Mitsubishi and other Allen-Bradley models.

## SPECIFICATIONS

The entire learning system is enclosed in a portable and lockable impact-resistant polyethylene storage case. The steel panel contains the Allen-Bradley MicroLogix 1000 (internally fused), mounted in a steel training frame. Included on the panel is the 24-volt DC power supply (grounded and fused), 8 combination lights and switches (4 momentary (2 normally open, 2 normally closed) and 4 maintained switches (2 normally open, 2 normally closed), and banana jacks terminal strip with protective shields for the lights/switches and 10 inputs/6 outputs from the MicroLogix 1000.

These are two built-in applications mounted to the steel front panel: Motor/Screw Motion and Traffic Light Intersection. The Motor/ Screw application consists of a DC motor operated screw mechanisms with limit switches and sensors. The Traffic Light application is a silkscreened pictorial of a traffic light controlled four-way intersection with vehicle representations, LEDs, and sensors.

All features of the panel have been silk-screened for easy identification. The programming interface cable attaches to the front of the PLC. The unit also includes one set of wire patch cords. The panel is designed for use on a table, bench or as part of a flexible manufacturing system.

### **Allen-Bradley MicroLogix 1000 Specifications**

Programming Software:

RSLinx  
RSLogix 500

Voltage:

Line In: 115 VAC, 60 HZ  
Inputs: 24 VDC  
Outputs: 24 VDC

Inputs/Outputs:

10 Digital Inputs  
6 Digital Outputs

Memory Size and type:

1K EPROM

Counters: 32 Counters Up and Down

Timers: 32

Case Size Closed: 20" x 16" x 8"

## CURRICULUM

The Principles of Programmable Logic Controllers curriculum was designed and reviewed by a panel of experienced community college instructors and industrial trainers. It includes 22 units of hands-on activities and instructional support. Each unit contains a series of modules with objectives that cover background study, observational and hand-on experiments and application exercises. The unit in the first section has been developed to address the basics of PLC operation. The second and third sections provide experience in programming and special features of the PLC. The fourth section has an additional 8 practical programming exercises using the built-in applications. Courseware includes a student activity manual, an instructor's reference guide and assessment testing.

Introduction to Programmable Logic Controllers	What is A Programmable Logic Controller? PLC Internal Operations Introduction to the MB650 Series and Parallel Circuits Numbering Systems Boolean Algebra Ladder Logic Diagram
Basic PLC Functions And Their Applications	Introduction to RSLogix PLC Programming Software Inputs and Outputs Internal Relays "And" and "Or" Circuits Latching Relays
Output Control Functions And Their Applications	Timers Counters Cascading Timers Timer/Counter Programs Master Control Relay Output Sequencing Shift Registers Introduction to Special Functions
Practical Applications: Motor/Screw Motion Traffic Light Intersection	Time Based Motor Control Motor Control Using Sensors Logic "AND" Motor Control Traffic Light with Timers/Sequencer Three-Wire Motor Control Motor Reversing Motion Control

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