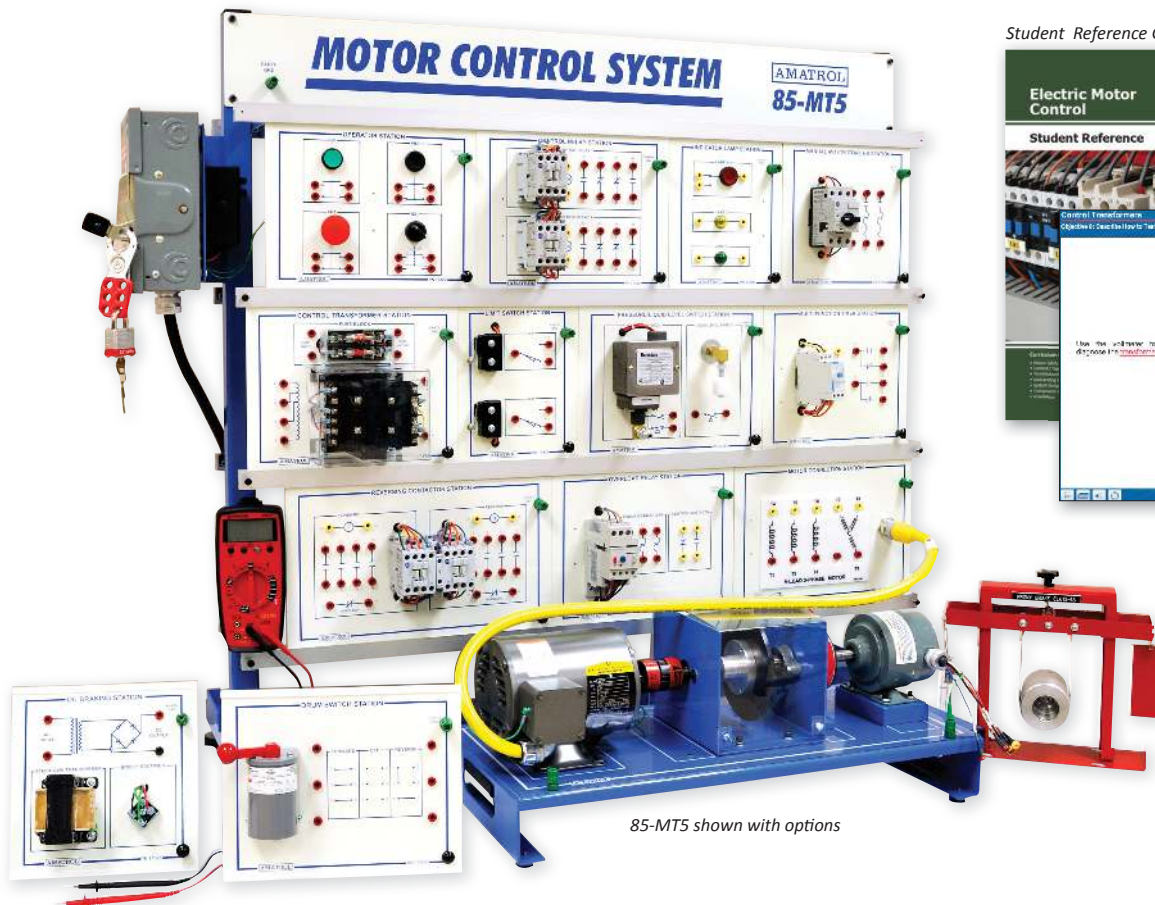


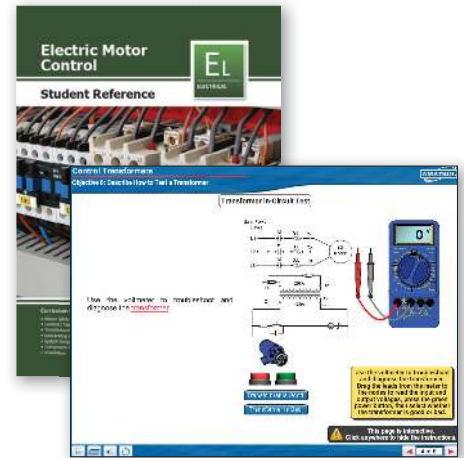
# Electric Motor Control Learning System

85-MT5



85-MT5 shown with options

Student Reference Guide



Optional Interactive Multimedia

## Learning Topics:

- Electric Motor Control
- Electrical Safety
- Manual Motor Control
- Overload Protection
- Control Transformers
- Control Ladder Logic
- Control Relays
- Motor Starters
- Troubleshooting
- Reversing Motor Control
- Automatic Input Devices
- Basic Timer Control

Amatrol's Electric Motor Control Learning System (85-MT5) covers electric relay control of AC electric motors found in industrial, commercial, and residential applications. Learners study industry-relevant skills including how to operate, install, design, and troubleshoot AC electric motor control circuits for various applications.

The 85-MT5 includes a bench top-mount control workstation, motor workstation, AC induction motor, control component panels, multi-meter, lead set, and student curriculum that is unmatched within the industry. This system uses industrial quality components to help learners become better prepared for what they will encounter on the job. Some of the major components that learners will work with include a control transformer, reversing contactors, manual motor starter, multi-function timer, and control relays.

The 85-MT5 teaches learners how to troubleshoot motor control circuits under realistic conditions. Circuit faults can be introduced using either the manual fault insertion, supplied as a standard, or through the optional Computer-Based Fault Insertion System (890-FTS-1) which includes Amatrol's FaultPro, the industry's only electronic-fault insertion software.



## Technical Data

Complete technical specifications available upon request.

### Control Workstation

Heavy Duty Steel Frame  
Dimensions: 36 in. H x 20 in. W x 46.5 in. L (910 mm H x 510 mm W x 1180 mm L)  
11 Gauge Steel Panels  
Fault Module with (2) faults

### Safety Switch Power Station

Fused 3-phase safety switch  
Lockout/Tagout System  
Pre-attached power cord (4 pole, 5 wire)

### Operator Station Panel

Green flush push button  
Black flush push button  
Red mushroom push button  
Three position selector switch  
Fault Module with (5) faults

### Indicator Lamp Station Panel

Green indicator lamp  
Push to test red indicator lamp  
Yellow indicator lamp  
Fault Module with (5) faults

### Control Transformer Station Panel

80 VA control transformer with protective cover  
Dual fuse block with protective cover  
1-AMP class CC fuses (2 installed, 2 loose)  
Fault Module with (3) faults

### Reversing Contactor Station Panel

4-pole contactors (2)  
Mechanical/electrical interlock  
Fault Module with (5) faults

### Overload Relay Station Panel

A-B overload relay

### Manual Motor Starter Station Panel

Manual starter

### Multifunction Timer Station Panel

Multi-function timer with on delay, off delay timing, interval, single shot timing, repeat cycle timing, pulse timing  
Fault Module with (4) faults

### Drum Switch Station Panel

Three phase reversing drum switch

### Limit Switch Station Panel

Industrial grade limit switch (SPDT) (2)  
Fault Module with (3) faults

### Control Relay Station Panel

Four pole relays (2)  
Fault Module with (5) faults

### Pressure/Liquid Level Switch Station Panel

Liquid Level Switch (Hall-Effect)

### Motor Connection Station

Multi-pin industrial motor connector  
Fault Module with (3) faults

### Hand-Held Digital Multi-Meter

### Stackable Banana Lead Set

50 Leads

### Three Phase AC Motor

Squirrel Cage Induction Type  
115 VAC/60 Hz  
1/3 Hp Rating

### Motor Mounting Frame

Dimensions: 4.0-in H x 12-in W x 27-in L (100 mm x 304 mm x 685 mm)

### Student Curriculum (B17401)

### Instructor's Guide (C17401)

### Student Reference Guide (H17401)

### Optional Interactive Multimedia (M17401)

### Additional Requirements

Prony Brake (EL613-43)  
Hand Tool Set (41202)

### Product Options

Mobile Technology Workstation (82-610)  
Computerized Fault Insertion System (890-FTS-1)

### Utilities

Electricity (208 VAC / 60 Hz / 3 phase)  
Compressed Air (50 psi)

## Industry-Standard Motor Control Components

The 85-MT5's electric motor and control components are off-the-shelf industrial standard components that provide learners with real world experience in installation and control of industrial motors. The motor is rated at 1/3 Hp and uses industrial standard T-number wiring terminology. Units are connected to load devices through an industrial standard flexible coupling that provides for learning of shaft alignment techniques.

Safety is emphasized throughout the curriculum and in the hardware design. Safety devices include a lockout/tagout system and grounded connections for individual components in the system. Learners use these safety devices each time they set up a circuit.

## Heavy Duty Workstation with Storage



85-MT5's Workstation

The 85-MT5 Motor Control System Workstation's welded-steel construction provides a sturdy work surface for mounting control components. Each component is mounted directly onto an individual heavy-duty steel panel, which easily slides into the workstation and locks into place, allowing learners to quickly set up a variety of circuit applications.

## Extensive Curriculum Builds Industry Skills

The 85-MT5's curriculum is unmatched within the industry for its breadth and depth of motor control topics and hands-on skills. This curriculum advances through topics like three-wire start/stop control, reversing magnetic motor starter, and on-delay and off-delay timers that can then be used to practice hands-on skills. As an example, learners will study about the function, operation, and types of control relays and then practice hands-on skills by actually connecting and operating a control relay in a circuit.

The 85-MT5's also offers optional multimedia curriculum that combines text, audio, 3D illustrations, and loads of interaction to fully engage learners as they begin at the foundation of motor control knowledge.



85-MT5 Curriculum

## Superb Troubleshooting Skills

The 85-MT5 features a variety of manual faults that allows learners to practice real world troubleshooting on actual industrial components. Troubleshooting skills include testing an indicator lamp, manual switch, control relay, motor contactor, overload relay, and many more!



890-FTS-1 with FaultPro

Optionally, the 85-MT5 offers electronically inserted faults using the 890-FTS-1 Computer-Based Fault Insertion System. The 890-FTS-1 uses Amatrol's electronic fault insertion software, FaultPro, which allows learners to practice troubleshooting over 35 faults on this learning system.

