

# Drives

## AC/DC Motors and Drives Fundamentals Course Description

### COURSE AGENDA

#### Day 1

- Identifying Electromechanical System Components and Concepts
- Recognizing DC Motor Hardware and Operation
- Recognizing AC Motor Hardware and Operation
- Selecting a Replacement Motor
- Recognizing Line Protection and Filtering Device Hardware and Functions
- Preventing Electrostatic Damage to Drive Components

#### Day 2

- Recognizing DC Drive Hardware and Functions
- Recognizing AC Drive Hardware and Functions
- Recognizing AC and DC Motor Braking Methods
- Testing a Drive Using Electrical Measuring Tools
- Performing Pre-Power and Power-On Checks
- Monitoring and Controlling a Drive Using The HIM
- Selecting a Drive for Basic Applications



### COURSE NUMBER: CCA101

#### *Course Purpose*

This course is a skill-building course that provides you with a basic understanding of AC and DC motor and drive concepts and terminology. At the completion of this course, you will have the necessary fundamental knowledge and skills required to attend other Rockwell Automation AC and DC drives courses.

During class, you will gain the hands-on skills required to build a miniature DC motor and investigate how a variable-speed drive controls the speed and direction of an attached motor. You will also become familiar with the drive's Human Interface Module (HIM), which allows programmers, maintainers, and troubleshooters access to information stored within the drive.

This course will provide you with a broad-based set of skills and knowledge that apply to AC and DC motors and drives. Although this course will not give you all the skills needed to program, maintain, or troubleshoot an AC or DC drive, it will prepare you for the Rockwell Automation courses that emphasize those skills.

### ***Who Should Attend***

Individuals new to the control of AC and DC motors using drives who need to gain a fundamental understanding of motor and drive concepts before they learn to program, maintain, and/or troubleshoot AC and DC drives should attend this course.

### ***Prerequisites***

To successfully complete this course, the following prerequisites are required:

- Working knowledge of electricity, and knowledge of electrical and industrial safety (including PPE requirements and safe practices).
- Ability to perform basic Microsoft® Windows® tasks

Familiarity with the use of electrical measuring tools is helpful, but is not required.

### ***Technology Requirements***

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending this course.

### ***Student Materials***

To enhance and facilitate each student's learning experience, the following materials are provided as part of the course package:

- *Student Manual*, which contains the topical outlines and exercises. Students will use this manual to follow presentations, take notes, and work through the exercises.
- *Miniature DC Motor Kit*, which students will use to construct a working motor that they can keep.
- *AC and DC Motor and Drive Glossary*, which contains a listing of AC and DC drives and motor terms.
- *AC and DC Drive Print Set*, which contains schematics of selected Allen-Bradley drives.

### ***Hands-On Practice***

Hands-on practice is a necessary part of learning and this course offers hands-on opportunities to perform fundamental motor and drive tasks. Students will then see the workings of DC motors firsthand as they build a miniature DC motor.

Once students learn the basic components of AC and DC drives and motors, they will begin to work with the Human Interface Module (HIM), a common programming panel found on most drives. Students will have the opportunity to monitor drive parameters and control a drive with the HIM, which will build the valuable skills required to continue more in-depth drives training.

### ***Next Learning Level***

After mastering the skills covered in this course, students will be ready to attend Rockwell Automation product-specific drives training courses. One such course is *PowerFlex 700 Vector Control Maintenance and Troubleshooting Course Description* (Course No. CCA163), which prepares students to make changes to the setup, and troubleshoot drive malfunctions.

### ***Course Length***

This is a two-day course.

### ***Course Number***

The course number is CCA101.

### ***IACET CEUs***

CEUs Awarded: 1.4



### ***To Register***

To register for this or any other Rockwell Automation training course, contact your local authorized Allen-Bradley Distributor or your local Sales/Support office for a complete listing of courses, descriptions, prices, and schedules.

You can also access course information via the Web at <http://www.rockwellautomation.com/training>

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