

# ControlLogix/Studio 5000

Studio 5000 Logix Designer Level 4:  
Kinetix 6500 (CIP) Programming



## Course Number

CCN144

## Course Purpose

After completing this course, you should be able to configure, test, tune, and program CIP motion axes in the Studio 5000 Logix Designer® programming environment.

Building upon the skills gained in the Studio 5000 Logix Designer Level 3: Project Development (CCP143) course, you will learn how to apply the Logix5000™ architecture to a multi-axis CIP motion control system. You will also practice efficient programming skills necessary for translating a machine specification into reliable ladder logic code.

Because all Logix5000 products share common features and a common operating system, you will be able to apply the configuring and programming motion control skills you learn in this course to any of the Logix5000 controllers that are capable of motion control.

## COURSE AGENDA

### DAY 1

- Creating a Studio 5000 Logix Designer Project for Integrated Motion on an EtherNet/IP Network
- Adding Drives and Configuring Axes for Integrated Motion on an EtherNet/IP Network
- Testing Hardware for Integrated Motion on an EtherNet/IP Network
- Tuning Axes for Integrated Motion on an EtherNet/IP Network

### DAY 2

- Programming MSO and MSF Instructions
- Programming MAH Instructions
- Programming MAM Instructions
- Programming MAJ Instructions

### DAY 3

- Programming MAS and MASD Instructions
- Programming MAFR and MASR Instructions
- Programming MCD Instructions
- Merging Motion Instructions

### DAY 4

- Adding a Virtual Axis
- Programming Group Motion Instructions
- Programming Electronic Gearing
- Programming Electronic Position Camming
- Programming Electronic Time Camming

## WHO SHOULD ATTEND

Individuals who need to configure and program Logix5000 motion control systems should attend this course. In addition, only students who are already familiar with Logix5000 systems and general motion control should attend this course.

## PREREQUISITES

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

- Completion of the Motion Control Fundamentals course (Course No. CCN130) or equivalent knowledge of Kinetix® 6500 drives, feedback devices, and servo motion systems
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (Course No. CCP143) or equivalent experience.

## STUDENT MATERIALS

To enhance and facilitate the students' learning experiences, the following materials are provided as part of the course package:

- Student Manual
  - Includes the key concepts, definitions, examples, and activities presented in this course
- Lab Book
  - Provides learning activities and hands-on practice. Solutions are included after each exercise for immediate feedback.
- Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide
  - Provides the steps required to complete common motion-related tasks within a Logix Designer project, as well as basic project organization tasks.

## HANDS-ON PRACTICE

Throughout this course, you will have the opportunity to practice the skills you have learned through a variety of hands-on exercises using ABT-TDK6500EN2TR and ABT-TDCLX3 workstations. Exercises focus on the skills introduced in each lesson.

You will use the Kinetix and ControlLogix® workstations, containing real and simulated devices, to practice the tasks involved in programming a motion control application. After configuring a project that contains the required hardware, you will program a variety of motion routines and motion instructions commonly used in integrated motion applications. Finally, you will begin to employ dependent motion in the form of gearing and camming instructions.

## NEXT LEARNING LEVEL

Once you have an understanding of the topics and skills covered in this course, you may want to attend specific motion training such as:

- Studio 5000 Logix Designer Level 5: Advanced Motion Programming course (CCN190).

## COURSE LENGTH





This is a four-day course.

## 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>

To be respectful of the environment, Rockwell Automation is transitioning some of its training courses to a paperless format. Students are asked to complete downloads and bring personal devices to these classes. A full list of digital/paperless courses is currently available through your local distributor.

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