

# ControlLogix/Studio 5000

Studio 5000 Logix Designer Advanced Level:  
Function Block, Structured Text &  
Sequential Function Chart Programming



## Course Number

KMT-CCP152

## Course Purpose

This course is a skill-building programming course that provides you with an understanding of Studio 5000 Logix Designer® function block diagrams and terminology. This course also provides you with the resources and hands-on practice required to efficiently program a Logix5000™ controller using function block diagrams.

You will have an opportunity to use Logix Designer application and perform software tasks to meet the requirements of a given functional specification. In addition to using function blocks, you will perform parameter modifications to individual function block instructions, as well as create and develop function block diagram programs and routines. You will also gain experience with a variety of function block instructions, including PIDE and add-on instructions.

Building on your project development skills, such as creating tags and programming control code, this course provides the skills and knowledge to program using the structured text and sequential function chart programming languages.

You will learn how to select instructions, expressions and constructs and then enter these elements and more into a routine. You will have an opportunity to translate a functional specification in to a sequential function chart. Also, you will learn how to test sequential function chart logic using forces and step throughs.

The instructor will demonstrate the relevant procedures required to program with structured text and sequential function charts. You will be provided ample opportunities to create and test their own projects.

## COURSE AGENDA

### DAY 1

- Creating a Function Block Diagram
- Programming Logical Function Block Instructions
- Programming Timer and Counter Function Block Instructions
- Programming Analog Function Block Instructions
- Programming Device Driver Function Block Instructions
- Selecting Timing Modes in a Function Block Instruction

### DAY 2

- Programming a Totalizer Function Block Instruction
- Programming and Monitoring an RMPS (Ramp/Soak) Function Block Instruction
- Controlling Program Flow Using Function Block Instructions
- Programming a PID Loop Using Function Block Diagram
- Tuning a PID Loop Using ActiveX Controls
- Developing an Add-On Instruction in Function Block Diagram

### DAY 3

- Programming Assignments, Expressions and Instructions in Structured Text within a Logix Designer Project
- Programming Constructs and Comments in Structured Text within a Logix Designer Project
- Designing a Sequential Function Chart

### DAY 4

- Programming a Sequential Function Chart in a Logix Designer Project
- Testing a Sequential Function Chart in a Logix Designer Project
- Storing and Resetting Sequential Function Chart Data in a Logix Designer Project
- Resetting and Pausing a Sequential Function Chart in a Logix Designer Project

## WHO SHOULD ATTEND

Individuals who are responsible for developing, debugging, and programming Logix5000 controllers using the Logix Designer application with function block diagrams should attend this course.

## PREREQUISITES

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

- Ability to perform basic Microsoft Windows tasks
- Understanding of basic measurement and control theory, including basic loop control
- Studio 5000 Logix Designer Intermediate Level: Project Development (Course No. KMT-CCP151)

## STUDENT MATERIALS

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

- Student Manual
  - Contains the topical outlines and exercises
  - Used to follow presentations, take notes, and work through exercises
- Studio 5000 Logix Designer and Logix5000 Procedures Guide
  - Provides the steps required to complete basic software tasks common to all Logix5000 controllers

## HANDS-ON PRACTICE

To gain real-world programming experience, you will be given a functional specification for a fictitious batch process mixer, where bulk ingredients are mixed to produce a product. You will be the programmer for this batch mixer and must follow the functional specification, which will be the basis for all hands-on exercises in this course.

After completing all exercises, you will have developed a Logix5000 project for the fictitious batch process mixer. As you develop your project, you will be given opportunities to run it using an ABT-TDCLX3-B workstation. This programming and process-based application experience can then be transferred to your own job responsibilities.

## COURSE LENGTH

This is a four-days course.

## FOR BOOKING

Training@kmt4is-eg.com



42R, El-Safa Tower- Abd El Hameid Gouda Al Sahar, 6<sup>th</sup> Sector, Zahraa El Maadi, Cairo.



+2 02 27320174/5/8



+2 02 27320260



+2 01028464665

42 ر - برج الصفا - ش عبد الحميد جوده السحار, الشطر السادس, زهراء المعادي, القاهرة



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