

PLC Programming: RS Logix 500, HMI & PID Control

Learn to program PLCs with RS Logix 500, covering IO, process logic, alarms, HMI development, PID control and debugging.

32 Hours

DURATION

11

MODULES

58

TOPICS

COURSE OVERVIEW

This course, titled “PLC Programming Fundamentals,” is designed to provide an in-depth understanding of Programmable Logic Controllers (PLCs) and their programming principles. The course covers topics such as basic functionality of PLC programs, IO modules, programming fundamentals, process logic, alarms and notifications, HMI development, and debugging techniques. Participants will learn to program PLCs using RS Logix 500 software and gain hands-on experience in setting up programs, configuring modules, and troubleshooting issues. Upon completion of this course, participants will have the skills and knowledge required to design, develop and maintain PLC-based systems.

WHO THIS COURSE IS FOR

The target audience for this course is individuals who want to learn about Programmable Logic Controllers (PLCs) and their role in automation. This course is designed for beginners with no prior experience in PLC programming and automation, as well as those with some knowledge who want to expand their skills. The course covers the basic concepts of PLC programming, programming fundamentals, program setup, IO programming, process logic, alarms and notifications, HMI programming, analyzing an existing PLC program in detail, and shakedown/debugging. Students will gain a solid understanding of PLC programming and automation, which will be useful for entry-level positions in the field.

PREREQUISITES

- A basic understanding of electrical circuits and logic.
- Familiarity with programming concepts and software would also be beneficial.

What You Will Learn

- The objective of this course is to provide participants with a comprehensive understanding of Programmable Logic Controller (PLC) programming and its applications in industrial automation
- Participants will learn the fundamentals of PLC programming and how to develop PLC programs from scratch using RS Logix 500 software
- They will also gain hands-on experience in IO programming, process logic, alarms, notifications, and human-machine interface (HMI) programming
- Upon completion of the course, participants will have the skills and knowledge required to design, implement, and troubleshoot basic PLC control systems in industrial settings

COURSE SYLLABUS

11 Modules, 58 Topics

01

Introduction

TOPICS

Software and Course Notes

02

PLC Programming Overview

TOPICS

- PLC Automation
- RS Logix 500 Environment
- Basic Functionality of a Program (Inputs, Outputs, Conversion)

03

IO (Inputs and Outputs)

TOPICS

IO Overview · Digital IO · Analog IO · IO Modules

04

Programming Fundamentals

TOPICS

- Data Management
- A Bit More on Addresses
- Rungs and Branches
- Conditions and Outputs (Left to Right)
- XIO, XIC, OTE, OTL, OTU, ONS, OSR, OSF, TON, TOF, RTO, CTU, RES, Comparators, Mathematical Operators, CPT, SCP
- A Bit More on Analog Scaling
- MOV, JMP, LBL
- PID (Proportional Integral Derivative) Control Loops

05

Program Setup

TOPICS

Setup Program / Processor · Module Configurations · Scaling / Resolution · Function Files · Program Files

06

IO Programming

TOPICS

Programming Digital IO · A Bit More on Digital Control Logic · Programming Analog IO · Analog Process Control (LL, L, H, HH)

07

Process Logic

TOPICS

Process Programming Overview · Blower HOA (Hand / Off / Auto) Control · A Bit More on HOA Controls · Digital Tank / Pump Control · Analog Tank / Pump Control · PID Heater Control

08

Alarms and Notifications

TOPICS

Alarms Overview · Considerations · Dual-bit Alarm / Notification Programming · Setpoints

09

HMI (Human Machine Interface)

TOPICS

HMI Overview · HMI Alternatives · Basic Flow of an HMI Program · Setting Up a Screen · Alarms / Events / Notifications · Permissions

10

Analyzing an Existing PLC Program in Detail

TOPICS

- Overview
- Main
- D Input
- D Output
- A Input
- A Output
- Controls
- Alarms
- Display
- Demo Test Program Report

11

Shakedown / Debugging

TOPICS

Emulation · Dry Run · Forcing IO · Electromechanical Checks · Full-function Test · Troubleshooting
Methodology · Consequences

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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