



# GE PLC Basic Training

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The GE Basic Training Course is a two-day instructor-led course designed to teach the basic principles of how to configure, program, and troubleshoot GE 'PAC' series PLCs using 'Machine Edition' software.

### Objective

Upon completion of this course, you will be able to:

- Configure a typical PLC system and common modules
- Program a typical PLC application using Relay Ladder Logic and other languages
- Create and use User-Defined Data Types
- Up/Download programs, perform backups, and generate reports
- Do basic troubleshooting and maintenance

### Audience

Engineers, application developers, system integrators, and other individuals whose jobs include developing and/or maintaining GE PLC systems.

### Prerequisites

There are no prerequisites for this course.

### Course Outline

#### Day One

##### Introduction

- Intro to PLCs, IEC programming languages, hardware concepts
- Intro to GE hardware
- Overview of bits, bytes, words...
- Memory types (I, R, Q, M, S...)
- Overview of Relay Ladder Logic

##### Machine Edition software Labs

- Lab 1. Hardware Configuration, Communication Setup, Up/Download
- Lab 2. Faults Tables, Errors/Warnings, "Feedback Zone"
- Lab 3. Using both Hard References and Symbolic
  
- Lab 4. Create a basic latching program using Relay Ladder language
- Lab 5. Edit Lab (Modify Lab 4 rungs) With Sets/Resets
- Lab 6. Edit Lab (Modify Lab 5 rungs) With Reversing Logic and then adding Pos/Neg Coils
- Lab 7. Create Subroutines and Move Logic (Subroutine Call is not Always on) Mixing Sub for Bread Machine
- Lab 8. Create Subroutine for Counter Function (Counting Ingredients are all present) Insert Ingredients Sub
- Lab 9. Modify Mixing Sub to Add Timer Functions
  
- Lab 10. Create Sub for Adding Ingredients. As each one is added (Measure sub)
- Lab 11. Create Sub for Compare; validate all Ingredients have been added. (Validate Sub)
- Lab 12. Create Sub for Move Functions (Move Mixing weight into 5 separate pans) and then reset weight

Lab 13. Troubleshooting with View Tables

Lab 14. Review of Day 1

## **Day Two**

Lab 15. Create Sub for Baking; Hi/Low Range, Time Inputs, Alarm, Done Outputs (Baking Sub)

Lab 16. Create Sub for Cooling using Baking Logic to create Function Block (Time/Temp)

Lab 17. Create UDT for UDFB (Time/Temp Block) from Lab 15 and 16

Lab 18. Fix it lab (Students fix a broken program)

Lab 19. Create a Sub to calculate the last 5 cool or cook times

Lab 20. IEC61131 Languages (FDB/LD/ST) Create new Average Sub using ST

Lab 21. IEC61131 Languages (FDB/LD/ST) Create a Sub using LD

Lab 22. IEC61131 Languages (FDB/LD/ST) Create New Sub using FDB

Lab 23. Individual Task (Build complete application) Create Project/Target/Variables/Logic/Subs

Lab 24. Storage of other files (drawings/layouts...) in Controller and Project

Lab 25. Copy to USB from PLC

Lab 26. Backup and Restore

Lab 27. Fix it lab (Students fix a broken program)

Lab 28. Copy to PLC from USB

Lab 29. Generate Reports from Machine Edition software

Lab 30. Support Resources