

[Allen Bradley ControlLogix Systems Course Level 1](#)

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<b>Software</b>	RSLogix 5000
<b>Duration</b>	5 Days
<b>PLC-Type</b>	Allen Bradley ControlLogix
<b>Pre-Requisites</b>	No prerequisites this is a beginners course
<b>Maximum Delegates</b>	6

### Brief Description

- \* To understand exactly how a PLC works
- \* To understand basic PLC concepts
- \* Be able to troubleshoot a ControlLogix/CompactLogix and/or FlexLogix PLC systems in a competent and confident manner
- \* Be able to understand ControlLogix hardware configuration and be able to add or replace modules when a fault occurs.
- \* Be able to operate the Allen Bradley software to make it perform common tasks.
- \* Understand basic instruction set and be able to make minor modifications to software.
- \* Be able to backup and restore a PLC program when required.
- \* Be able to perform basic system diagnostics when a problem occurs.
- \* Be able to understand and back track through a simple programs
- \* Understand Basics and be able to troubleshoot DeviceNet Network
- \* Use of RSNetworkx
- \* Understand Basics and be able to configure and troubleshoot ControlNet Network
- \* Understand Basics and be able to configure and troubleshoot EtherNet Network

### Course Documentation

- \* Training Log
- \* Pre Course Exercises
- \* Course Exercises
- \* Post Course Exercises
- \* Filofax Pocket Reference Guides

### Course Content

Course Content can be tailored accordingly dependent upon customers specific requirements To fault find a system you need to know EXACTLY how it works HOW EXACTLY DOES A PLC WORK?

- \* Am I getting the input to the PLC?
- \* The Led on the output card means i am getting voltage out right? does it?
- \* What exactly happens in between? ,theres more than just a program in the CPU
- \* How exactly does it scan the program?
- \* What is this Watchdog Timer? Is it that important?
- \* Can I use the same output twice? That's bad programming isn't it?
- \* A PLC is a logic controller, so use a logical approach to fault find it.

- \* What are the 8 simple test points to check?
- \* The PLC is in RUN, that means theres a program right? does it?
- \* FORCING a bit and toggling a bit is pretty much the same yeah? depends on which PLC

Then you need to Know the specifics HOW DO I DO THE FOLLOWING? (some straight forward some not so)

- \* Check power is ON and PLC is in right mode (RUN or Program)
- \* Check LEDs for fault definition ( what exactly does the LED tell me)
- \* Check and Change Modules if required (with spares and without spares)
- \* Removing modules with power ON ( will I blow anything up)
- \* Establish link to PLC (RSLinx)
- \* Link to CPU via RS232 port, Ethernet or DH+ module
- \* Checking Ethernet connections using PING instruction (very useful)
- \* Create a blank project and take a backup (just in case I mess up)
- \* Open the correct project Off Line and link to PLC
- \* Interrogate errors in Controller Properties, common faults
- \* Identify if it is a hardware or software fault?
- \* Identify if it is a PLC or Comms fault
- \* Access fault information about I/O cards
- \* Change the battery, (with power ON of course)
- \* Working with CPUs with Non Volatile (EEPROM) memory
- \* Check all settings against a template, Node Address etc.
- \* Check Hardware Configuration, I/O errors
- \* Clear Memory and Download program
- \* Monitor program
- \* Is it Latched or Unlatched I'm never quite sure?
- \* Altering values in Tag tables
- \* Back tracking through a program to establish where power flow stops
- \* Searching for specific operands and instructions
- \* Using Bookmark function
- \* Changing timer, counter values On Line
- \* Making minor mods Off Line and On line
- \* Creat a Trend to trend address status or values
- \* Altering timer, counter and other values if required
- \* Force a parameter if required
- \* Toggling addresses to move program on in sequence
- \* Call up documentation to assist with software diagnostics
- \* Printing Cross Reference / Program Listings etc. DEVICENET
- \* An Appreciation of DeviceNet cabling options
- \* Using RSNetworkx for DeviceNet
- \* Understand the difference between polled, strobed, change of state (COS), and cyclic data production
- \* Understanding data mapping
- \* Map a 1756-SDN scanner data table
- \* Verify operation of the network
- \* Change device parameters via the parameter list, test for change in functionality
- \* Work with a variety of I/O devices
- \* Troubleshoot DeviceNet Network CONTROLNET
- \* Introduction to ControlNet
- \* ControlNet cabling options
- \* Configure ControlNet Flex I/O modules

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- \* Understanding data mapping
- \* Verify operation of the network
- \* Troubleshoot ControlNet Network ETHERNET
- \* Basics of EtherNet, IP addresses, Subnet Mask, use of ping function
- \* An Appreciation of EtherNet cabling options, hubs, routers
- \* Configure EtherNet Flex I/O modules
- \* Understanding data mapping
- \* Verify operation of the network
- \* Troubleshoot EtherNet Network Background information also covered Understanding of the following:
  - \* Number formats, bits, words, double words
  - \* Binary, Real, Integer, DINT,
  - \* Basic Communications, RS232 and Ethernet
  - \* Network Basics
  - \* Setting up a simple Ethernet network
  - \* Tasks, Programs and Routines
  - \* How to monitor various blocks
  - \* Understand basic Ladder programs
  - \* Basic Instructions, contacts, Latch, Unlatch etc.
  - \* Timers, Counters
  - \* Comparators, Maths
  - \* Fault finding tips

## Equipment

- \* ControlLogix, CompactLogix or FlexLogix PLC ( systems designated to suit delegates requirements)
- \* PC or Laptop
- \* Simulator

*Solutions, Not Courses.*