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<b>Software</b>	RSLogix + RSNetworkx
<b>Duration</b>	5 Days
<b>PLC-Type</b>	SLC500 PLC and DeviceNet
<b>Pre-Requisites</b>	Ideally previous PLC experience not suitable for absolute beginner
<b>Maximum Delegates</b>	4

## Brief Description

- \* Be able to recognise DeviceNet hardware and be able to replace modules when a fault occurs.
- \* Be able to operate the RSNetworkx software to make it perform certain tasks.
- \* Understand basic concept of nodes, commissioning, scanner cards , scan list, addressing etc and communications with the PLC
- \* Be able to replace DeviceNet nodes when required.
- \* Be able to perform basic system diagnostics when a problem occurs

## Course Documentation

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

## Course Content

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

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- \* Check and Change Modules if required (with spares and without spares)
  - \* System connection
  - \* Establish link to PLC (RSLinx, a major problem area these days)
  - \* 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 Status table
  - \* Identify if it is a hardware or software fault?
  - \* Identify if it is a PLC or Comms fault
  - \* Change the battery
  - \* Check all settings against a template, Node Address etc.
  - \* Check Hardware Configuration
  - \* Clear Memory and Download program
  - \* Check software against latest copy (Compare function)
  - \* Monitor program
  - \* Searching for specific operands and instructions
  - \* Changing timer, counter values On Line
  - \* Making minor mods Off Line and On line
  - \* Check or create a Custom Monitor table to establish parameter status
  - \* Create a Histogram to monitor address transitions
  - \* Create a Trend to trend address status or values
  - \* Altering timer, counter and other data table 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.
  - \* Configuration of DeviceNet Network
  - \* Basic communications, RS 232, baud rates etc.
  - \* Refresher on RS Linx
  - \* Connecting Communications Cables
  - \* Configuring Scanner Card
  - \* Understanding LED indications
  - \* Understanding error messages
  - \* Power requirements
  - \* Configuring Devices using RS Network
  - \* Online and Offline modes
  - \* Saving Configurations
  - \* Programming within the SLC 500
  - \* Reading and writing information to and from the PLC
  - \* Addressing of the Nodes on the Network
  - \* Node commissioning
  - \* EDS devices and libraries
  - \* Replacement of faulty input/ output cards
  - \* Replacement of faulty devices
  - \* Generation of documentation to assist fault finding Background information also covered
- Understanding of the following:
- \* Number formats, bits, words,
  - \* Binary, floating point, integer
  - \* Program blocks and Data Tables, B3, T4, N7 etc
  - \* How to monitor various blocks
  - \* Understand basic Ladder programs

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- \* Basic Instructions, contacts, Set, reset etc.
- \* Timers, Counters
- \* Comparators, Maths
- \* Altering values in a data table
- \* Toggling v Forcing
- \* Back tracking through a program to establish where power flow stops
- \* Overall reset procedure
- \* Fault finding tips

## Equipment

- \* SLC500 PLC
- \* DeviceNet Network
- \* PC or Laptop
- \* Simulator

*Solutions, Not Courses.*