CONTROL LOGIX

Description

This module takes a fundamental approach to a ControlLogix system. It begins with an overview of the architecture and migrates into an introduction of RSLogix5000, the programming environment. Students will receive a basic understanding of the structure of a ControlLogix program, which includes an introductory look at Routines and the Tag Database.

1. **Overview**
   - System Overview
   - Chassis and the backplane
   - Power Supplies
   - Logix5000 Processors and Memory options
   - Discrete and Analog I/O
   - Communication Modules
   - Motion Control Modules
   - Software Overview

2. **RSLogix5000 Introduction**
   - Software overview
   - Menus
   - Toolbars
   - RSLogix5000 configuration

3. **RSLogix5000 Project Basics**
   - Introduction to the Tag Database and Data Types
   - Programming Basics

4. **RSLogix5000 Tasks, Programs and Routines**
   - Routines
   - Programs
   - Tasks
   - Multitasking
   - Program I/O Scan

5. **RSLogix5000 Programming Basics**

6. **RSLogix5000 Communications**
   - Configure the DF1 Driver
   - Configure the EtherNet driver
   - Configure the EtherNet IP driver
   - Set the project path
   - Get online

7. **RSLogix5000 Discrete I/O**
   - The Producer Consumer Model
   - Connections and Ownership
   - Adding Discrete I/O
   - Interpreting I/O addresses in the tag database

CONTROL LOGIX INTRODUCTION – MODULE 2

Description

This module introduces configuration of analog I/O modules. Students will learn a variety of methods for editing ladder logic. Relay, Timer and Counter instructions will be presented in a way that meets the needs of programmers and maintenance personnel. The final lesson in this module introduces advanced features available in the Tag Database.

Lessons

1. **Adding Analog I/O**
   - Adding Analog I/O
   - Interpreting I/O addresses in the tag database

2. **Basic Relay Type Instructions**
   - XIC, XIO
   - OTE, OTL, OTU
   - ONS, OSR, OSF

3. **Editing Ladder Logic**
   - Offline editing
   - Online editing in Program mode
   - Online editing in Remote Run mode
   - Short cuts available when editing

4. **Timers and Counters**
   - Memory usage of a timer structure/tag
   - The TON, TOF, RTO and RES instructions
   - Memory usage of a counter structure/tag
   - The CTU, CTD and RES instructions

5. **Arrays and UDT's**
   - Instruction specific predefined data types
   - Arrays
   - User defined data types

CONTROL LOGIX INTRODUCTION – MODULE 3

Description

The objective of this module is to introduce program control instructions, comparison and math instructions and the importance of documenting an RSLogix5000 project.

Lessons

1. **RSLogix5000 Documentation**
   - Rung comments
   - Operand comments
   - Page titles
   - Import / Export of tags

2. **RSLogix5000 Program Control**
   - JMP and LBL
   - JSR, RET, SBR
   - MCR

3. **RSLogix5000 Comparison and Basic Math Instructions**
   - EQU, NEQ, LES, GRT, GEQ, NEQ
   - LIM, CMP, MEQ
   - ADD, SUB, MUL, DIV

CONTROL LOGIX INTRODUCTION – MODULE 4

Description

This module has been designed to teach students the two software tools that can be used in troubleshooting: searching and trending. Students are then introduced to status indicators on ControlLogix I/O and communication modules. The third lesson will focus on troubleshooting. Students will learn methods for monitoring and clearing latched diagnostic bits that originate from diagnostic I/O modules. Forcing as a troubleshooting tool is covered in the final lesson.

Topical Outline

1. **Searching and Trending**
   - RSLogix Search Utility
   - Search and Replace
   - Trending

2. **ControlLogix Indicators**
   - Discrete Input LEDs
   - Output Module LEDS
   - Analog I/O Module LEDS
   - Communication Module LEDS

3. **Troubleshooting**
   - Machine troubleshooting overview
   - Diagnostic indicators
   - Whole machine faults
   - Zone faults
   - Communication faults

4. Tag Database Diagnostic Bits

- Retrieving module fault information from the tag database
- Retrieving instruction fault information from the tag database

5. Forcing I/O

- Definition of forcing
- Effects of forcing
- Performing the Force function
- Guidelines when forcing
- Searching for Forces

6. Practice programming and documentation exercises