

Maintenance and Repair Training

Field Level Advanced Controls

General Information

Course Number:	3-150
Format:	Instructor Led
Length:	64 hours
Maximum Students:	8

Audience

This course is for controls personnel who will be responsible for maintaining, troubleshooting, and repairing facility controls systems.

Customer Requirements

- Transportation and lodging of students to Grand Rapids Dematic facility.

Prerequisites

- An intermediate knowledge of electrical systems, controls systems, and drawing sets.
- A general knowledge of safety and Lockout/Tag out procedures.
- A working knowledge of electrical test equipment.

Benefits

Participants in this course will learn to perform maintenance, troubleshooting, and repair procedures on the electrical and controls equipment. Knowledge gained will enable controls personnel to minimize system downtime and optimize system performance.

Course Objectives

Upon completion of this course, the student should be able to:

- Safely perform electrical and controls maintenance, troubleshooting and repair procedures.
- Identify the components, function, and troubleshooting techniques of controls systems from different generations of automation.
- Describe how different components of automation are used to control the movement of product through a distribution system.

- Back up, restore troubleshoot, and replace PLC systems, VFDs, Communications Devices, and other components.
- Explain the use and configuration of specialized controls for Modular (DMC, ECC) and Accumulation (9265, 9365) conveyor systems.
- Troubleshoot fieldbus systems with a focus on AS-i and AS-i Functional Safety.
- Troubleshoot the SL2 and SC3 sorter systems.

Topics

1. General

- a. Safety
- b. Controls Hierarchy
- c. Evolution of Automation

2. Components

- a. Motors and Circuit Protection
- b. Relays
- c. Programmable Logic Controllers
- d. System Flow Control Devices
- e. Variable Frequency Drives
- f. Distributed Controls Architecture (DCA Non-FS and DCA Functional Safety)

3. Communications

- a. Architecture
- b. Process Field Bus (Profibus)
- c. Controller Area Network (CAN)
- d. Actuator Sensor Interface (AS-i Non-FS and AS-I Functional Safety)

4. Specialized Conveyor Controls

- a. MCS, 9265, 9365
- b. Visualization

5. Sorter Controls

- a. SL2 Sorter with FlexSort
 - i. Function and Operation
 - ii. Diagnostics and Training Functions
- b. SC3 (both E and ECO configurations)
 - i. Function and Operation
 - ii. Power, Control and Communications
- c. Alarms and Troubleshooting