## Modicon Combined Unity Intermediate I
## Programming and Troubleshooting
## Module 152

Module 152 is a programming and troubleshooting course for the Unity programmable automation controller (PAC) system. This Intermediate I course is the second course in Intertech's Combined Unity series and is designed for industrial automation and control systems technical personnel. This course will challenge each person attending and will present a better understanding of the features and specifications of EcoStruxure Control Expert programming software. This course has direct application to all industrial control systems covering tasks common to all systems that use Unity Pro software and hardware. Students will be introduced to the programming languages available in Unity Pro software: Ladder Diagram (LD), Function Block Diagram (FBD), Instructional List (IL), Structured Text (ST) and Sequential Function Chart (SFC). This course is designed, to provide you with the necessary knowledge of the installation, system configuration, hardware layout, basic programming concepts, troubleshooting procedures, and maintenance procedures for the Modicon Unity programmable automation controller and the Input / Output systems. Course length is four (4) days.

## Course Objectives

- Understand the major functional components of the Modicon programmable automation controller system as it relates to your facility's installation.
- Configure and layout a Modicon system including input/output modules, local and remote input/output drops, extended input/output drops and Ethernet input/output drops.
- Understand system addressing discrete input/output bits, input/output words, Topological and State RAM and tag addressing.
- Evaluate communication methods Modbus serial, USB, Ethernet, wireless communications, Modbus Plus bridged to Ethernet and security settings for communications.
- Discuss Unity file formats, project file extensions, archive files and application exchange files.
- Understand how field inputs and outputs relate to the control system address bits and words.
- Learn to build and configure a project for your programmable automation controller (PAC).
- Document and add comments to your program for ease of understanding and future reference.
- Convert your legacy programs to Unity Pro software projects and upload and download these projects to and from a Unity processor.
- Learn to use Unity Pro software and the programming computer as a diagnostic and troubleshooting tool.
- Identify the differences in the types of function blocks and data types and the purpose of the data type manager.
- Use system diagnostics to distinguish between hardware, software and field problems identify and isolate fault bit and words in the Unity hardware and software isolating the problems at all levels of the system and determine the course of action.
- Disassemble, reassemble, and start up a controller from dim awareness.
- Discuss, demonstrate and test important safety considerations related to your PAC system.
- Engineering and Maintenance Skill Trades Personnel who need to maintain and integrate control system programs using Unity Pro software.

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