





ProWORX³²

ProWORX[®] 32 Software

2 DAYS

Course Code: S101M1
 On-site Course P/N: OSS101M1
 Scheduled Course P/N: SCS101M1

Objectives:

Upon completion of this course, the student will have the skills to:

- Utilize all of the comprehensive tools available in the ProWORX 32 software
- Create and modify logic, I/O configuration and processor configuration
- Create and modify a project
- Create and edit application documentation
- Upload and download ladder logic
- Demonstrate the use of advance tools and troubleshooting tools available in the software

Equipment used:

- Modicon[®] Quantum, Compact[™], Momentum[™], or 984 Series PLCs
- ProWORX 32 Software
- Modbus[®] Plus[™] Communications

Contents:

- Data registers
- ProWORX 32 software help screens
- Controller and I/O configuration
- Communicating with the Controller
- Ladder Logic features
- Logic Display features
- Controller operations
- Loader features
- Advanced ProWORX 32 features
- ProWORX 32 Utilities

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using the programming software ProWORX 32.

Prerequisites:

Attendees should have completed Introduction to PLCs (S114M2), as well as basic Microsoft[®] Windows[®] operating system navigation skills. Programming experience with the 984 ladder logic instruction set and other software packages such as Modsoft[®], ProWORXPlus[®], or ProWORX NXT would be helpful.

ProWORX^{NXT}

ProWORX[®] NXT Software

2 DAYS

Course Code: S102M1
 On-site Course P/N: OSS102M1
 Scheduled Course P/N: SCS102M1

Objectives:

Upon completion of this course, the student will have the skills to:

- Utilize all of the comprehensive tools available in the ProWORX NXT software
- Create and modify logic, I/O configuration and processor configuration
- Create and modify an project application
- Create and edit documentation
- Upload and download ladder logic
- Demonstrate the use of advance tools and troubleshooting tools available in the software

Equipment used:

- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- ProWORX NXT Software
- Modbus Plus Communications

Contents:

- Data registers
- ProWORX NXT software help screens
- Controller and I/O configuration
- Communicating with the Controller
- Ladder Logic features
- Logic Display features
- Controller operations
- Loader features
- Advanced ProWORX NXT features
- ProWORX NXT Utilities

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using ProWORX NXT.

Prerequisites:

Attendees should have completed Introduction to PLCs (S114M2), as well as basic Microsoft[®] Windows[®] operating system navigation skills. Programming experience with the 984 ladder logic instruction set and other software packages such as Modsoft[®], ProWORXPlus[®], would be helpful.

ProWORX³²

ProWORX[®] 32 Programming Level 1

3 DAYS

Course Code: S110E1
On-site Course P/N: OSS110E1
Scheduled Course P/N: SCS110E1

Objectives:

Upon completion of this course, the student will have the skills to:

- Develop a system configuration and 984 ladder program on one of the following PLC platforms: Modicon[®] Quantum, Compact, or Momentum
- Record, load, verify, and document a PLC program
- Basic programming functions
- Backing up the program
- Optimizing the program
- Configuration of the controller for a program

Equipment used:

- ProWORX 32 Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- PLC hardware description
- PLC system hardware configurations
- Introduction to the programming software
- PLC theory of operation
- Practical programming techniques
- System design and planning
- Timers and counters
- Calculation instruction set and BLKM
- Travelling within and debugging the program

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using ProWorx 32 software with the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC.

Prerequisites:

Attendees should have completed the ProWORX 32 Software course (S101M1) or have equivalent experience with industrial controls.

ProWORX[®] 32 Programming Level 2

3 DAYS

Course Code: S110E2
On-site Course P/N: OSS110E2
Scheduled Course P/N: SCS110E2

Objectives:

Upon completion of this course, the student will have the skills to:

- Perform advanced programming on one of the following PLC platforms: Modicon Quantum, Compact or Momentum
- Manipulate data with DX Move - R-T; T-R; T-T; BLKM
- Manipulate data with DX Move - FIN; FOUT; SRCH
- Manipulate data with DX Move - BLKT; TBLK; IBKR; IBKW
- Develop Matrix Function programs; And, Or, XOR, Complement; Compare, Extended Memory Read and Write
- Develop advanced math function programs

Equipment used:

- ProWORX 32 Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- Review of system configuration and Level 1 programming functions
- DX Matrix - MBIT; BROT; SENS
- Sequential Control Interface: SCIF; DRUM; ICMP
- STAT and DIOH Functions
- Extended Math (EMTH)
- JSR; LAB; RET; SKIP
- Extended Memory Function

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using the advanced instruction set with ProWORX 32 software and the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC.

Prerequisites:

Attendees should have completed the ProWORX 32 Programming Level 1 course (S110E1) or have equivalent experience.



ProWORX® NXT Programming Level 1

3 DAYS

Course Code: S111E1
On-site Course P/N: OSS111E1
Scheduled Course P/N: SCS111E1

Objectives:

Upon completion of this course, the student will have the skills to:

- Develop a system configuration and ladder program on one of the following PLC platforms: Modicon® Quantum, Compact or Momentum
- Record, load, verify, and document a PLC program
- Basic programming functions
- Backing up the program
- Optimizing the program
- Configuration of the controller for a program

Equipment used:

- ProWORX NXT Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- PLC hardware description
- PLC system hardware configurations
- Introduction to the programming software
- PLC theory of operation
- Timers and counters
- Calculation instruction set and BLKM
- Travelling within and debugging the program

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using ProWORX NXT software with the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC

Prerequisites:

Attendees should have a basic understanding of industrial controls, and completed ProWORX NXT Software Course (S102M1), as well as basic Microsoft® Windows® operating system navigation skills.

ProWORX® NXT Programming Level 2

3 DAYS

Course Code: S111E2
On-site Course P/N: OSS111E2
Scheduled Course P/N: SCS111E2

Objectives:

Upon completion of this course, the student will have the skills to:

- Perform advanced programming on one of the following PLC platforms: Modicon Quantum, Compact or Momentum.
- Manipulate data with DX Move - R-T; T-R; T-T; BLKM
- Manipulate data with DX Move - FIN; FOUT; SRCH
- Manipulate data with DX Move - BLKT; TBLK; IBKR; IBKW
- Develop Matrix Function programs; And, Or, XOR, Complement; Compare, Extended Memory Read and Write
- Develop advanced math function programs

Equipment used:

- ProWORX NXT Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- Review of system configuration and Level 1 programming functions
- DX Matrix - MBIT; BROT; SENS
- Sequential Control Interface: SCIF; DRUM; ICMP
- STAT and DIOH Functions
- Extended Math (EMTH)
- JSR; LAB; RET; SKIP
- Extended Memory Function

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using the advanced instruction set with ProWORX NXT software and the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC.

Prerequisites:

Attendees should have completed the ProWORX NXT Programming Level 1 course (S111E1) or have equivalent experience .



Concept™ 984™ Ladder Logic Programming Level 1

3 DAYS

Course Code: S113E1
On-site Course P/N: OSS113E1
Scheduled Course P/N: SCS113E1

Note: Concept IEC languages will NOT be covered in this course.

Objectives:

Upon completion of this course, the student will have the skills to:

- Develop a system configuration and ladder program on one of the following PLC platforms: Modicon® Quantum, Compact or Momentum
- Record, load, verify, and document a PLC program
- Basic programming functions
- Backing up the program
- Optimizing the program
- Configuration of the controller for a program

Equipment used:

- Concept Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- PLC hardware description
- PLC system hardware configurations
- Introduction to the programming software
- PLC theory of operation
- Timers and counters
- Calculation instruction set and BLKM
- Travelling within and debugging the program

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using Concept software with the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC

Prerequisites:

Attendees should have a basic understanding of industrial controls, or completed Introduction to PLCs (S114M2), as well as basic Microsoft® Windows® operating system navigation skills.

Concept™ 984™ Ladder Logic Programming Level 2

3 DAYS

Course Code: S113E2
On-site Course P/N: OSS113E2
Scheduled Course P/N: SCS113E2

Note: Concept IEC languages will NOT be covered in this course.

Objectives:

Upon completion of this course, the student will have the skills to:

- Perform advanced programming on one of the following PLC platforms: Modicon Quantum, Compact or Momentum
- Manipulate data with DX Move - R-T; T-R; T-T; BLKM
- Manipulate data with DX Move - FIN; FOUT; SRCH
- Manipulate data with DX Move - BLKT; TBLK; IBKR; IBKW
- Develop Matrix Function programs; And, Or, XOR, Complement; Compare, Extended Memory Read and Write
- Develop advanced math function programs

Equipment used:

- Concept Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- Review of system configuration and Level 1 programming functions
- DX Matrix - MBIT; BROT; SENS
- Sequential Control Interface: SCIF; DRUM; ICMP
- STAT and DIOH Functions
- Extended Math (EMTH)
- JSR; LAB; RET; SKIP
- Extended Memory Function

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using the advanced instruction set of the Concept software with the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC

Prerequisites:

Attendees should have completed the Concept 984 Ladder Logic Programming Level 1 course (S113E1) or have equivalent experience.

Modsoft® Programming Level 1

3 DAYS

Course Code: S112E1
 On-site Course P/N: OSS112E1
 Scheduled Course P/N: SCS112E1

Objectives:

Upon completion of this course, the student will have the skills to:

- Develop a system configuration and ladder program on one of the following PLC platforms: Modicon® Quantum, Compact or Momentum
- Record, load, verify, and document a PLC program
- Basic programming functions
- Backing up the program
- Optimizing the program
- Configuration of the controller for a program

Equipment used:

- Modsoft Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- PLC hardware description
- PLC system hardware configurations
- Introduction to the programming software
- PLC theory of operation
- Timers and counters
- Calculation instruction set and BLKM
- Travelling within and debugging the program

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using Modsoft software with the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC

Prerequisites:

Attendees should have a basic understanding of industrial controls, or completed Introduction to PLCs (S114M2), as well as basic Microsoft® Windows® operating system navigation skills.

Modsoft® Programming Level 2

3 DAYS

Course Code: S112E2
 On-site Course P/N: OSS112E2
 Scheduled Course P/N: SCS112E2

Objectives:

Upon completion of this course, the student will have the skills to:

- Perform advanced programming on one of the following PLC platforms: Modicon Quantum, Compact or Momentum
- Manipulate data with DX Move - R-T; T-R; T-T; BLKM
- Manipulate data with DX Move - FIN; FOUT; SRCH
- Manipulate data with DX Move - BLKT; TBLK; IBKR; IBKW
- Develop Matrix Function programs; And, Or, XOR, Complement; Compare, Extended Memory Read and Write
- Develop advanced math function programs

Equipment used:

- Modsoft Programming Software
- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- Student Job Aides

Contents:

- Review of system configuration and Level 1 programming functions
- DX Matrix - MBIT; BROT; SENS
- Sequential Control Interface: SCIF; DRUM; ICMP
- STAT and DIOH Functions
- Extended Math (EMTH)
- JSR; LAB; RET; SKIP
- Extended Memory Function

Intended Audience:

This course is designed for Engineering personnel who need to integrate and design control systems with Modsoft Software and who need to program Modicon Quantum or Premium Series PLCs using the advanced instruction set.

Prerequisites:

Attendees should have completed the Modsoft Programming Level 1 course (S112E1) or have equivalent experience.

Maintaining a Modicon® Quantum™ 984™ PLC System

4 DAYS

Course Code: H101M1
On-site Course P/N: OSH101M1
Scheduled Course P/N: SCH101M1

Objectives:

Upon completion of this course, the student will have the skills to:

- Troubleshoot and maintain the Modicon Quantum Automation Series Controller and associated hardware
- Name the major components of a PLC system
- Apply the basic principles of a PLC
- Configure a PLC
- Identify the PLC I/O Map
- Program basic ladder logic functions
- Transfer and save applications on PC
- Utilize the system diagnostics, maintenance, and fault finding

Equipment used:

Modicon Quantum PLCs

Software available:

All four of the following programming software packages are available to be used with this class.

- ProWORX® NXT
- ProWORX® 32
- Modsoft™
- Concept™ (984™ Ladder Logic only)

**Note: (Concept IEC Languages
will NOT be covered in this class)**

Contents:

- Principles of programmable control
- Overview of PLC hardware
- Configuring of applications
- PLC system theory
- Ladder Programming language and methodology
- Practical examples and applications
- PLC trouble shooting techniques
- Overview of Modicon networking

Intended Audience:

This course is designed for Maintenance Skill Trades personnel who need to support the production environment equipped with Modicon Quantum Series PLCs.

Prerequisites:

Attendees should have a basic understanding of industrial controls, or completed Introduction to PLCs (S114M2), as well as basic Microsoft® Windows® operating system navigation skills.



984™ Ladder Logic Programming Level 2

3 DAYS

Course Code: S115E2
On-site Course P/N: OSS115E2
Scheduled Course P/N: SCS115E2

Objectives:

Upon completion of this course, the student will have the skills to:

- Perform advanced programming on one of the following PLC platforms: Modicon Quantum, Compact, or Momentum
- Manipulate data with DX Move - R-T; T-R; T-T; BLKM
- Manipulate data with DX Move - FIN; FOUT; SRCH
- Manipulate data with DX Move - BLKT; TBLK; IBKR; IBKW
- Develop Matrix Function programs; And, Or, XOR, Complement; Compare, Extended Memory Read and Write
- Develop advanced math function programs

Equipment used:

Modicon Quantum, Compact, Momentum, or 984 Series PLCs

Software available:

All four programming software packages are available to be used with this class.

- ProWORX NXT
- ProWORX 32
- Modsoft
- Concept

Note: (Concept IEC Languages will NOT be covered in this class)

Contents:

- Review of system configuration and Level 1 programming functions
- DX Matrix - MBIT; BROT; SENS
- Sequential Control Interface: SCIF; DRUM; ICMP
- STAT and DIOH Functions
- Extended Math (EMTH)
- JSR; LAB; RET; SKIP
- Extended Memory Function

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using the advanced instruction set of the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC

Prerequisites:

Attendees should have completed any one of the following level 1 programming courses (S110E1), (S111E1), (S112E1),(S113E1) or have equivalent experience.

Introduction to PLCs

Self-paced Web Based

Course Code:S114M2
On-site Course P/N: OSS114M2
Scheduled Course P/N: SCS114M2

Description:

This web-based training course takes the mystery out of PLC systems. Upon completing this course, you will be familiar with PLC fundamentals, PLC applications, and Square D PLC products.

This introduction is provided so that anyone, regardless of job responsibilities, will be better informed about PLC technologies.

Objectives:

Upon completion of this course, you will be able to:

- Identify the role of the PLC in a control system
- Define the operation and architecture of a PLC
- Identify the basic programming languages.
- Define the type of communications and interfaces used with PLCs
- Identify the options for I/O modules
- Describe a simple control system
- Know the characteristics and types of PLCs available from Square D

Content:

- Equipment used in a PLC systems
- Essential characteristics of a PLC system
- PLC Memory and Structure
- Addressing and variables
- Hardware and software configuration
- IEC 1131 programming languages

Intended audience:

This course is designed for all personnel who interested in, how PLCs work and their typical uses in the industry.

Prerequisites:

none

984™ Ladder Logic PID Control

1 DAY ADD-ON/STAND ALONE

Course Code: S130E1

On-site Course P/N: OSS130E1

Scheduled Course P/N: SCS130E1

Objectives:

Upon completion of this course, the student will have the skills to:

- Create a program utilizing PID functions
- Verify the operation of a closed-loop system
- Troubleshoot a working application
- Optimize and tune a PID loop

Equipment used:

- Modicon Quantum, Compact, Momentum, or 984 Series PLCs
- ProWORX 32

Contents:

- Closed-loop theory
- Software Turning parameters
- System response
- Ladder logic

Intended Audience:

This course is designed for Engineering and Maintenance Skill Trades personnel who need to maintain and integrate control system programs using the advanced instruction PID. Attendees will configure, program, tune, and troubleshoot a block using the Modicon Quantum Series, 984 Series, Momentum, or the Compact PLC.

Prerequisites:

Attendees should have completed any one of the following level 2 programming courses (S110E2), (S111E2), (S112E2), (S113E2) or have equivalent experience.

