

CAMALOT Prodigy Programming & Operations Course

This course provides students with instruction of concepts and practices associated with set up, operation and programming of the CAMALOT Prodigy dispenser. Students learn in a distraction-free and well equipped classroom/lab environment. Basic dispensing fundamentals are covered for a variety of applications (SMT, Underfill, Encapsulation, etc...) with emphasis placed upon the needs of the audience. Students are supplied reference documentation to minimize note-taking, and help maintain focus during presentations. Our equipment courses offer valuable hands-on practice by following a specialized curriculum derived from PBET (*Performance Based Equipment Training*) standards. Each student, upon successful completion of skills performance and course objectives will receive a certificate of competence for the specific equipment course attended.

Intended Audience:

All individuals responsible for programming and operation of the CAMALOT dispensing system.

Objectives:

Upon completion of the course and accomplishment of the practical skills criteria, the student will be qualified to program and operate the CAMALOT dispenser system and will be able to:

- Define and use the Camalot Benchmark software to develop process parameters
- Explain the interaction and controls of the machine hardware through software
- Import data and CAD data file* into the system
- Construct a dispense pattern and utilize the dispense pump
- Identify machine component and hardware
- Perform vision system calibration and offsets
- Identify and program Locates (Fiducials)
- Perform auto-alignment and correction
- Perform conveyor and lift table operations
- Dispense dots, lines and arcs
- Install, setup and clean the dispense pump(s)
- Create sub-patterns
- Use Chip Definition*
- Operate chuck temperature controls and timers
- Use Z-Sensing device*
- Utilize templates and optimize patterns
- Analyze and correct process faults

* Denotes optional topic, which will be covered on a time permitting basis.

Programming courses are taught using standard CAMALOT provided examples. Please contact the training instructor for information and/or quotation on custom courses.

Prerequisites:

Preferably 30 days operational experience with the equipment and a basic understanding of the dispensing process. Basic understanding of Microsoft™ Windows 7 OS navigation.

Course Offered:

<u>Number</u>	<u>Name</u>
TR-PRD-PO	Prodigy Programming / Operations

Course Duration:

<u>Length</u>	<u>Start</u>	<u>End</u>
4.5 Days	Monday 9:00 a.m.	Friday 12:00 Noon

Please do NOT schedule your return flight departure time earlier than 3 p.m. on Friday to insure class is completed in its entirety. Any exceptions require instructor approval prior to the start of class.

Please do NOT make travel arrangements until you have registered and received a confirmation from ITW EAE that your class seat has been reserved.

All courses are structured according to PBET standards. The PBET standards, developed by the Technician Training Council and sponsored by SEMATECH and SEMI/SEMITECH and include the following six concepts that are integrated into every course:

- Derive performance objectives from analysis
- Establish course content from performance objectives
- Identify prerequisite skills
- Maximize hands-on practice
- Develop skill tests to measure competency
- Repeat practice and skill tests until mastery of each objective is achieved per course objectives.

CAMALOT Prodigy Troubleshooting & Calibrations Course

This course provides students with instruction of concepts and practices associated with maintenance, troubleshooting and calibrations of the CAMALOT Prodigy dispenser. Students learn in a distraction-free and well equipped classroom/lab environment. This course covers theory of operation, machine electrical and mechanical functionality, troubleshooting techniques and system calibrations. Practical exercises put to practice the topics covered and are reinforced with hands on diagnosis and fault finding techniques. Students are supplied reference documentation to minimize note-taking, and help maintain focus during presentations. Our equipment courses offer valuable hands-on practice by following a specialized curriculum derived from PBET (*Performance Based Equipment Training*) standards. Each student, upon successful completion of skills performance and course objectives will receive a certificate of competence for the specific equipment course attended.

Intended Audience:

All individuals responsible for the repair, maintenance and calibration of the CAMALOT dispensing system.

Objectives:

Upon completion of the course and accomplishment of the practical skills criteria, the student will be qualified to:

- Identify major assemblies
- Identify & use Modes of Operation
- Perform File Operations
- Perform Camera to Needle Offset
- Adjust basic Dispensing Parameters
- Test Basic I/O Operations
- Interpret wiring diagrams
- Perform machine Calibrations & Offsets
- Setup the Height Sensing Options*
- Troubleshoot the Electrical System
- Perform Vital Sign checks
- Troubleshoot the Motion Control System
- Teach Fiducials
- Perform Vision Calibration
- Troubleshoot the Vision System
- Perform System Preventative Maintenance
- Perform Basic Dispense Pump Maintenance
- Navigate and Utilize the CAMALOT Benchmark™ software

* Denotes optional topic, which will be covered on a time permitting basis.

Programming courses are taught using standard CAMALOT provided examples. Please contact the training instructor for information and/or quotation on custom courses.

Prerequisites:

Able to Use Meters, Hand Tools, etc.; Basic Electro-Mechanical Skills; Able to Read / Interpret Engineering Drawings and Schematics. Basic understanding of Microsoft™ Windows 7 OS navigation.

Course Offered:

<u>Number</u>	<u>Name</u>
TR-PRD-TSC	Prodigy Troubleshooting / Calibrations

Course Duration:

<u>Length</u>	<u>Start</u>	<u>End</u>
4.5 Days	Monday 9:00 a.m.	Friday 12:00 Noon

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- Derive performance objectives from analysis
- Establish course content from performance objectives
- Identify prerequisite skills
- Maximize hands-on practice
- Develop skill tests to measure competency
- Repeat practice and skill tests until mastery of each objective is achieved per course objectives.

CAMALOT XyFlexPro+ / FX-D Programming & Operations Courses

This course provides students with instruction of concepts and practices associated with set up, operation and programming of the CAMALOT model selected (FX-D or XyFlexPro+). Students learn in a distraction-free and well equipped classroom/lab environment. Basic dispensing fundamentals are covered for a variety of applications (SMT, Underfill, Encapsulation, etc...) with emphasis placed upon the needs of the audience. Students are supplied reference documentation to minimize note-taking, and help maintain focus during presentations. Our equipment courses offer valuable hands-on practice by following a specialized curriculum derived from PBET (*Performance Based Equipment Training*) standards. Each student, upon successful completion of skills performance and course objectives will receive a certificate of competence for the specific equipment course attended.

Intended Audience:

All individuals responsible for programming and operation of the CAMALOT dispensing system.

Objectives:

Upon completion of the course and accomplishment of the practical skills criteria, the student will be qualified to program and operate the CAMALOT dispenser system and will be able to:

- Define and use the Camalot Benchmark software to develop process parameters
- Explain the interaction and controls of the machine hardware through software
- Import data and CAD data file* into the system
- Construct a dispense pattern and utilize the dispense pump
- Identify machine component and hardware
- Perform vision system calibration and offsets
- Identify and program Fiducials
- Perform auto-alignment and correction
- Perform conveyor and lift table operations
- Dispense dots, lines and arcs
- Install, setup and clean the dispense pumps
- Create sub-patterns
- Use Chip Definition*
- Operate chuck temperature controls and timers
- Use Z-Sensing device*
- Utilize templates and optimize patterns
- Analyze and correct process faults

* Denotes optional topic, which will be covered on a time permitting basis.

Programming courses are taught using standard CAMALOT provided examples. Please contact the training instructor for information and/or quotation on custom courses.

Prerequisites:

Preferably 30 days operational experience with the equipment and a basic understanding of the dispensing process. Basic understanding of Microsoft™ Windows 7 OS navigation.

Courses Offered:

<u>Number</u>	<u>Name</u>
TR-XYPRO+PO	XyflexPro+ Programming / Operations
TR-FXD-PO	FX-D Programming / Operations

Due to complexity & time requirements only one machine type will be used per course (i.e. XyflexPro+ or FX-D).

Course Duration:

<u>Length</u>	<u>Start</u>	<u>End</u>
4.5 Days	Monday 9:00 a.m.	Friday 12:00 Noon

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- Identify prerequisite skills
- Maximize hands-on practice
- Develop skill tests to measure competency
- Repeat practice and skill tests until mastery of each objective is achieved per course objectives.

CAMALOT FX-D & XyflexPro+ Troubleshooting & Calibrations Courses

This course provides students with instruction of concepts and practices associated with maintenance, troubleshooting and calibrations of the CAMALOT model selected. Students learn in a distraction-free and well equipped classroom/lab environment. This course covers theory of operation, machine electrical and mechanical functionality, troubleshooting techniques and system calibrations. Practical exercises put to practice the topics covered and are reinforced with hands on diagnosis and fault finding techniques. Students are supplied reference documentation to minimize note-taking, and help maintain focus during presentations. Our equipment courses offer valuable hands-on practice by following a specialized curriculum derived from PBET (*Performance Based Equipment Training*) standards. Each student, upon successful completion of skills performance and course objectives will receive a certificate of competence for the specific equipment course attended.

Intended Audience:

All individuals responsible for the repair, maintenance and calibration of the CAMALOT dispensing system.

Objectives:

Upon completion of the course and accomplishment of the practical skills criteria, the student will be qualified to:

- Identify major assemblies
- Identify & use Modes of Operation
- Perform File Operations
- Perform Camera to Needle Offset
- Adjust basic Dispensing Parameters
- Test Basic I/O Operations
- Interpret wiring diagrams
- Perform machine Calibrations & Offsets
- Setup the Height Sensing Options*
- Troubleshoot the Electrical System
- Perform Vital Sign checks
- Troubleshoot the Motion Control System
- Teach Fiducials
- Perform Vision Calibration
- Troubleshoot the Vision System
- Perform lubrication and routine maintenance
- Perform Basic Dispense Pump Maintenance
- Navigate and Utilize the CAMALOT Benchmark™ software

* Denotes optional topic, which will be covered on a time permitting basis.

Programming courses are taught using standard CAMALOT provided examples. Please contact the training instructor for information and/or quotation on custom courses.

Prerequisites:

Able to Use Meters, Hand Tools, etc.; Basic Electro-Mechanical Skills; Able to Read / Interpret Engineering Drawings and Schematics. Basic understanding of Microsoft™ Windows 7 OS navigation.

Courses Offered:

<u>Number</u>	<u>Name</u>
TR-XYPRO+TSC	XyflexPro+ Troubleshooting / Calibrations
TR-FXD-TSC	FX-D Troubleshooting / Calibrations

Due to complexity & time requirements only one machine type will be used per course (i.e. XyflexPro+ or FX-D).

Course Duration:

<u>Length</u>	<u>Start</u>	<u>End</u>
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- Maximize hands-on practice
- Develop skill tests to measure competency
- Repeat practice and skill tests until mastery of each objective is achieved per course objectives.