

2500 Series™ System Training

APT® Maintenance and Troubleshooting



Description

This 3-1/2 day course is intended for students that have experience with Automation and Control Systems including control devices and PLCs. The student should also have some basic knowledge of RLL or control programming and be competent using a PC with XP Pro OS.

The following topics are covered:

- Overview of APT®
- PLC architecture
- Overview of program architecture
- Troubleshooting an existing program

Hands-On Experience

The student will receive hands on experience with a live training system. Each Training System will provide a 2500 Series™ Base, power supply, processor, digital input module, digital output module, and an analog input/output module connected to a PC Application Development Station.

Course Outline

1. Overview of APT®
2. Basics of APT®
3. Philosophy/History of APT
4. What APT® is:
5. APT® and TISOFT®
6. APT® and DOS®
7. APT® strengths
8. APT® limitations
9. Setting up APT®
10. "Installing" the program
11. Configuring the DOS® environment
12. Enabling communications to PLCs

APT® Manual set

- Navigating the APT® toolbar
- F1 : Help
- Finding your way around
- F2 : CTLS (controls)
- F3 : OPTs (options)
 - What can you do?
 - How can you do it?
- F10 : Explore
- ESC : Cancel / Back out
- F4 : Completion aids : What are they?
 - How do they help?

Interacting with APT®

- Retrieving Saved program
- Saving program
- How to check to see if a program is the program on a PLC
- What is a download?
- What can cause a download to fail
- Can a failed download be restarted?
- How does APT® know a download was in progress and failed?
- Determining what is going to change on a download : Verify
- Running TISOFT®
- Looking at the APT® program in TISOFT®
- Finding an APT® point in TISOFT®
 - Generating reports
 - Compiler Reports
- Symbol to address
- Address to symbol

- Online versus offline (Debug) point of view
- Going online
- Function Keys
- How keys differ in online from offline
- Aux functions
- What they are / what they do
- Charts
- Building
- Viewing
- Trending

- PLC architecture
- Scan
- Total
- Discrete
- SF
- Time slice
- Looking at the various queues
- Discrete
- Loop
- Analogs



- What is it and why is it important
 - How it works
- Tuning
- Knowing when there is a problem
- Image register
- When is it updated
- Why is this important to know
- Status words
- Overruns
- What are they
- Loops
- What is an overrun
- How to evaluate a loop for overrun potential
- Analog alarms
- Cyclic : Over runs are a real problem
- How do you know when they are occurring
- How to clear
- What to do?
- Setting up sample times to avoid overruns
- Queues
- What are queues
- Normal
 - Cyclic
- APT® extensions : what are they and how to use them

Overview of Program Architecture (Layout of APT®)

Global versus Unit : What are they what's the purpose

Tables

Module Table (Hardware)

- Normal I/O Cards
- Profibus I/O cards

Comm Profibus

I/O Tables

Points

Connections to module tables

Device Tables

What are devices

Devices and real world points

Recipe Tables

What is a recipe and how can it be used

SFC - Sequential Flow Charts

CFC - Continuous Flow charts

CFB's what are they

Standard Blocks

Loops

Analog Alarms

Math blocks

Interlock

Math

Event

- Continuous
- Sampled

How do items in I/O table connect to CF Blocks

Trouble shooting an existing program

Types of problems

Discrete I/O failures : Limit / Proximity switch failures, Normally open/ closed points

Analog failures

Current loops

4 -20

Broken transmitter alarms

Finding the source of the problem

HMI alarms

Tracking down the problem

Cross reference

Debug charts

Forcing variables

Knowing what is forced

Unforcing

Ordering Information

2500-TR-S3 APT Maintenance and Troubleshooting

Contact your CTI distributor for pricing and training schedule.