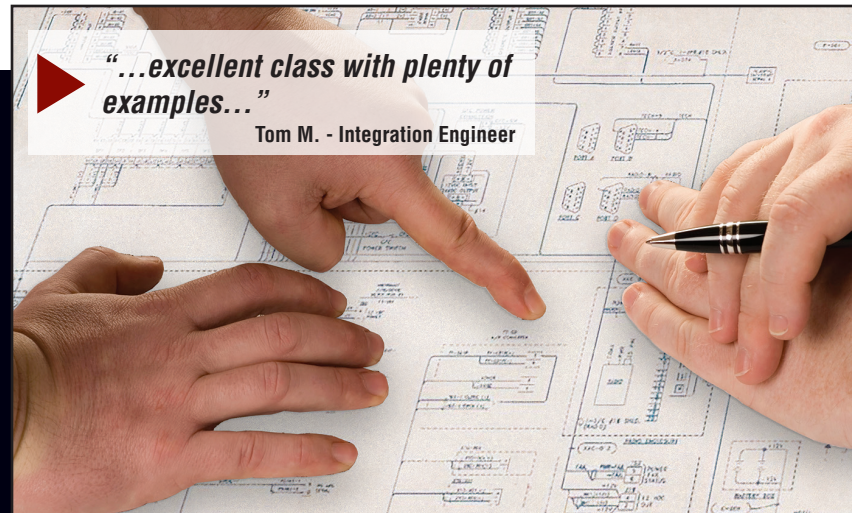


**Learn About:**

- Block Diagrams
- Pictorials
- Electrical Formulas
- One-line Diagrams
- Wiring Diagrams
- Terminal Diagrams
- Schematics
- Electrical Symbols
- Power Distribution
- Electrical Floor Plans
- PLC Ladder Logic
- Industrial control drawings
- How to use drawings for troubleshooting
- How to use drawings for planning new systems or equipment
- How to use drawings for efficiency and uptime

# Electrical **LADDER DRAWINGS** **SCHEMATICS & DIAGRAMS**™

**Specifically Designed  
for Maintenance  
Personnel and  
Electricians in Plants,  
Facilities and  
Commercial Buildings**



## **A 2-Day Course to Understand the Electrical Languages that Run Facility & Equipment**

- Reserve your space now! **CALL 1-877-978-7246**
- Check us out online at [live.tpctraining.com](http://live.tpctraining.com) for a complete listing of all seminars coming to your area
- This seminar is also available as an **Online Simulcast** or can be brought **On-Site** to your facility



## SEMINAR OVERVIEW

This two-day course delivers an essential skill in the field of equipment maintenance, installation or modification: the ability to read and understand electrical ladder drawings, schematics and diagrams. The course covers several types of industrial control prints for a variety of different motor-driven processes, with an emphasis on the differences between type and the purposes and flow of each. Students will participate in exercises to create schematic diagrams based on circuit descriptions and will learn to interpret schematic drawings in order to provide verbal or written circuit descriptions.

## WHAT YOU WILL TAKE HOME

- A laminated, full-color TPC Training Reference Guide detailing all the “must-know” information covered in the class. Keep this with you while on the job for immediate knowledge recall.
- Comprehensive classroom materials
- A Personalized Training Certificate with 0.8 TPC Training Continuing Education Units for each day attended, 1.6 for both days.
- All the information you need from asking our instructors specific questions about your own unique equipment or facility.

## CONTINUING EDUCATION

Upon completion of this seminar, the student will receive a Certification of Completion and .8 TPC Training CEUs per day attended. Most employers and many government agencies accept TPC Training CEUs to fulfill their continuing education requirements. If the student needs CEUs to renew a state license, please contact us at 303-867-5039 to ensure the state licensing board has approved the seminar. If we are currently not approved by your state licensing board, we are happy to begin the process as long as we receive your request at least one month before the training date.

▶ **“...great instructor and training”**

John D. - Maintenance

▶ **The instructor, material and equipment was great...**

Jonathan C. - Electrical Engineer

## DISCUSSION TOPICS

### Electrical Fundamentals for Print Reading

- Types and Uses of Electrical Drawings
- Clarifying Terminology
- Effects of Current Flow
- Voltage Drop Calculations
- Understanding Ampacity Tables
- Importance of Electrical Drawings
- NEC® Drawing Requirements
- Ohm’s Law

### Industrial Control Prints

- Component Symbols
  - Transformers
  - Fuses
  - N.O. and N.C. Relay Contacts
  - Relay Coils
  - Switches
  - Automatic Control Devices
  - Timers
  - Sensors
  - Motors
  - Solenoids
  - Heaters
  - Grounds
  - Others
- Understanding Single-Line Diagrams
- Understanding Relay Operation
- Electrical Schematic Diagrams
- Motor Termination Diagrams
- Electrical Ladder Diagrams for Control Circuits
- International Drawings: IEC Symbols
- NEMA and IEC Circuit Comparison
- Reading and Interpreting Basic Motor Control Circuits
- Forward-Reverse Motor control

### Real-World Applications

- Conveyor Timing
- Air Compressors
- HVAC Controls
- Fluid Level Controls
- Material Handling Systems
- Process Temperature Controls
- Exterior Lighting Controls
- Generator Controls
- Chemical Process Controls
- Variable Frequency Drives
- Others

### PLC Ladder Diagrams

- PLC Basics - Inputs and Outputs
- Comparison of Relay Logic and PLC Ladder Logic
- Real-World Applications

## SEMINAR FEE & AGENDA

This 2-day course is just \$1195 (Earn 1.6 CEUs)

7:30 am	Registration
8:00 am	Class Begins
12:00 -1:00 pm	Lunch (on your own)
4:30 pm	Class Ends

## NO RISK REGISTRATION & MONEY-BACK GUARANTEE

You can reserve your space in the class at any time and cancel without penalty. Cancellations made more than 14 days prior to the seminar may be refunded or rescheduled. Cancellations made within 14 days may be rescheduled for any future topic and/or date. If you’re not satisfied with the course, we’ll promptly refund your payment.

## JOIN OUR CLASSROOM SEMINARS FROM VIRTUALLY ANYWHERE

[live.tpctraining.com/simulcast](http://live.tpctraining.com/simulcast)

Our simulcast option allows students to connect to a live classroom seminar via a web link, with the ability to participate fully in the classroom dialogue, exercises, and Q&A. Online participants get all the benefits of the full classroom experience, plus the convenience of remote access.

### Features include

- Two full days of live, interactive instruction from a TPC Training instructor
- All classroom materials in PDF format
- Certificate of completion for 16 hours of live training
- Full technical support to ensure your online experience is a rewarding one

## BRING THE TRAINING ON-SITE TO YOUR FACILITY

[live.tpctraining.com/on-site](http://live.tpctraining.com/on-site)

Every public seminar class in our Course Catalog can be conducted on-site, with the same expert instructors. To arrange an on-site training, call or email us at [onsite@tpctraining.com](mailto:onsite@tpctraining.com).

### Some Advantages of On-Site Training

- Cost Savings — Save time and travel costs by keeping workers on-site
- Customized Content — Tailor the seminar to your facility and equipment
- Flexibility — Accommodate multiple shifts and different start and end times

