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Cable Shield Grounding Techniques

View Course Details

COURSE DATES AND TIMES

This Cable Shield Grounding Techniques Course stresses the fundamental electromagnetic compatibility principles involved in typical grounding and shielding problems. Understanding the objectives and techniques for grounding and shielding will reduce misconceptions and allow a more systematic approach to replace trial and error methods. For example, the course explains why a signal ground is not the same as a signal return.

Also, solutions for the numerous problems caused by wiring inductance are described and demonstrated. The course emphasizes the development of logical diagnostic techniques for identifying various types of noise problems. Often, the correct identification of the problem is more difficult than the solution. The course is at an introductory level; however, some knowledge of electronic circuits and system design is assumed. Several interference mechanisms and shielding techniques are demonstrated.

COURSE OBJECTIVES

This Cable Shield Grounding Techniques course is designed to enable participants to:

- Define electrical ground, signal ground, and signal return
- Describe various grounding techniques
- Diagnose noise problems
- Identify methods to reduce and filter noise
- Define inductive and capacitive shielding
- Describe techniques for reducing electromagnetic coupling
- Select appropriate cabling
- Identify methods to ensure impedance matching
- Identify noise coupling mechanisms

WHO SHOULD ATTEND

This Cable Shield Grounding Techniques Course is recommended for electrical engineers, technicians, designers and release engineers responsible for electronic or electromechanical products.

STUDENTS RECEIVE

- **FREE** 100-Page Digital Electrical Grounding Handbook (Value $20)
- **$100** Coupon Toward any Future Electricity Forum Event (Restrictions Apply)
- 1.4 Continuing Education Unit (CEU) Credits
- **FREE** Magazine Subscription (Value $25.00)
- Course Materials in Paper Format

COURSE OUTLINE

Cable Shield Grounding Techniques Training Course

DAY ONE

Session 1: Basic Principles of Noise Reduction

- Importance of wiring inductance
- Bandwidth of pulse waveforms
- Noise coupling mechanisms
- How to identify the mechanism
- Common and differential modes

Session 2: Grounding: Why and How?

- What is electrical ground?
- Reasons for grounding
- Signal ground, signal return
- Ground grid technique
- Isolated grounding technique
- Ground loop noise reduction

Session 3: Signal Ground Techniques

- Ground each current only once
- Unsafe signal grounding
- Single point versus ground grid
- Signal isolation techniques

Session 4: How to Diagnose Noise Problems

- Ringing, rounding, and reflections
- Effects of signal impedance distribution on susceptibility
- Practical diagnostic techniques
- Noise coupling examples

DAY TWO

Session 5: Noise Reduction Techniques

- Filtering and shielding
- Reducing mutual inductance

Session 6: Filtering Conducted Noise<

- CM and DM filter techniques
- Improving circuit balance
- 1 GHZ filtering techniques
- DC power bus design

Session 7: Inductive and Capacitive Shielding

- Self-shielding techniques
- Misuse of twisted pair
- Grounding cable shields
- Shielding examples

Session 8: Reducing Electromagnetic Coupling

- Identifying EM coupling
- Controlling CM currents

Review of expectations
Questions and Answers

COURSE TIMETABLE

Both days:

Start: 8:00 a.m.
Coffee break: 10:00 a.m.
Lunch: 12:00 noon
Finish: 4:30 p.m.

Contact us Today for a FREE quotation to deliver this course at your company’s location.

Request Quote