

Interactive Learning CD

UR Applications I



The Interactive UR Applications I Learning CD provides comprehensive training and helps maximize your training budget thanks to its convenient and cost-effective format.

Interactive Learning

- Rich multimedia environment uses leading edge graphics, sound and animation to illustrate concepts
- Interactive tests and lab exercises provide immediate feedback
- Intuitive navigation makes it easy to steer through course information
- Users learn at their own pace and can review materials as often as they like

Stretch your Training Dollars

- No travel time or days off work required
- Train large groups of students cost-effectively
- Reduce learning time and improve retention of material

Featured Topics

- UR Hardware
- URPC Software
- Protection
- FlexLogic™
- Communication

Additional Learning and Reference Resources

- Lab Exercises
- Product Videos
- Technical Publications
- UR Related Web-links
- *The Art & Science of Protective Relaying* textbook
- Electronic Course Training Manual



Interactive Advantage

GE Multilin invites you to learn about the Universal Relay using a unique interactive multi-media approach. With **UR Applications I** training on CD-ROM, you can now cost-effectively extend the benefits of the training course to your entire team. The content contained on the CD leverages the contributions of GE Multilin's trainers and senior engineering staff to provide a highly interactive, content-rich learning experience.

The learning tool on the CD:

- Provides a cost effective means to learn about the UR for users who cannot attend the in-person training course.
- Uses a multi-media approach with cutting-edge moving graphics and animation to simplify complex concepts
- Allows the student to review in-class course material and lab exercises as often as they choose
- Serves as a companion to the product manual bringing information to life through interactive tutorials, quizzes and labs.

The Learning Experience

The **UR Apps I Interactive Learning CD** is designed to be extremely user-friendly. The interface is built with navigation controls that enable the user to set the pace of the course and take control of the learning experience. Interactive tests and lab exercises allow students to stay focused and motivated as they navigate through the material. The CD's usability is even further enhanced through its intuitive user interface, simple navigation and logically structured material.

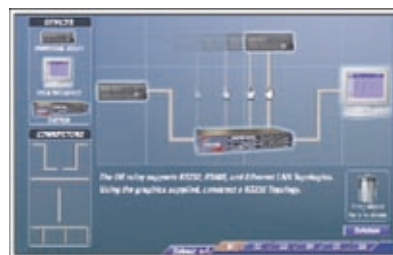
Course Structure

The learning material on the **UR Apps 1 Interactive Learning CD** follows a logical flow that increases in complexity as the user progresses through the course material.

- Clearly defined learning objectives serve as a reference
- Summaries at the end of each Learning Section re-enforce key learning topics
- Sectioned learning topics that allow easy accessibility
- Interactive quizzes determine the user's understanding of the material covered

- Lab exercises challenge the user to apply the material
- Software-based tutorials encourage hands-on commissioning of the device

The CD incorporates a wide range of advanced graphics, audio & video including instructional sessions, animated examples of applications, testing, and interactive training exercises. Each Learning Section includes instruction from a qualified expert, along with 3-D renderings of equipment, logic and wiring diagram exercises. Interactive testing encompasses everything from multiple choice and fill in the blank quizzes to hands-on problem solving exercises such as creating a network.



Test Question: Create a network

User Interface



- ① **Main Graphical Display:**
The course material is displayed in this area
- ② **Navigation Toolbar:**
Allows the user to control the learning pace
- ③ **Training Host:**
Orients you with the learning material
- ④ **Learning Modules:**
The course material is categorized into *Learning Modules*
- ⑤ **Learning Sections:**
Each module is broken down into *Learning Sections*
- ⑥ **Course Material:**
Each *Learning Section* opens an *Overview* (Learning Objectives), *Section Content* (Course Material) & *Conclusion* (Summary and Test)

What's Included

The material on the CD follows the same structure as classroom-based training. Each of the modules is divided into Learning Sections with clearly defined learning objectives.

Hardware

The Hardware Section introduces the student to the hardware platform of the Universal Relay. Topics covered include:

- UR Block Diagram
- Modular Concept
- Faceplate/LED Panels
- Module Removal
- Circuit Monitor
- Power Supply
- Terminal Number Assignment Convention
- CT/VT Wiring
- CT Characteristics
- Digital I/O Wiring
- IRIG-B Standard Time Coding

Software

The Software Section includes a discussion of the fundamentals of URPC: The Universal Relay set-up program. Step-by-step tutorials cover:

- Introduction the URPC interface
- Configuration of URPC to communicate with a UR over an RS232 connection
- Configuration of URPC to communicate with a UR over the Ethernet using Modbus over TCP/IP
- The set-up of UCA Peer-to-Peer communication between two relays.

The student is also introduced to Device settings within URPC with an emphasis on:

- Functional Grouping of settings

- Product Set-up
- System Set-up

The discussion then moves to the Oscillography and Event Log with tutorials on:

- The Oscillography Viewer
- Retrieval of an Oscillography reading in URPC
- The use of Preferences
- Playback functions and phasor playback
- Exporting URPC Comtrade files to an external program.

Protection

The Protection module covers basic protective elements included in UR products. Topics Include:

- Protection, monitoring and metering elements are used in the UR environment
- The architecture and characteristics of protection
- Sources and their context in the UR environment
- How CT and VT inputs are used to create a Source
- How CT's and VT's are characterized in the UR environment.

Also covered are the characteristics of Protection Elements, including their:

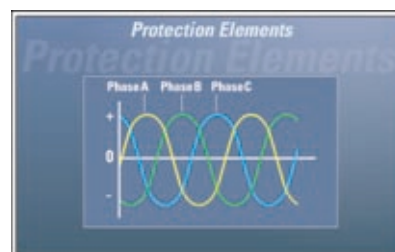
- Major components
- Primary characteristics
- Scheme logic diagrams
- Settings

FlexLogic™

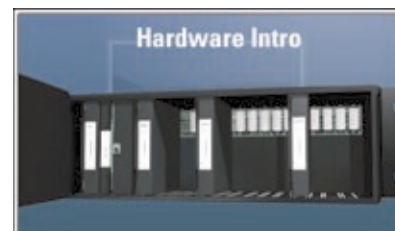
The FlexLogic™ Module covers the critical role of FlexLogic™ within the UR. Topics include:

- Intro to Logic
- Analog/Digital Signal Conversion
- Logic Comparison Examples
- FlexLogic™ and the UR Block diagram
- UR Programming process

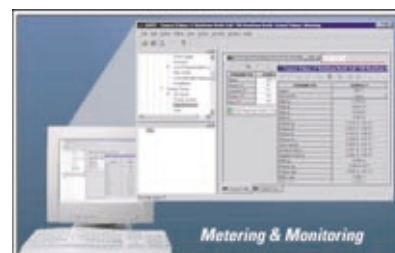
- Functional Block Diagrams
- Wiring Diagrams
- Block and Logic Diagrams
- Introduction to Writing FlexLogic™ Equations
- Operands
- Remote I/O
- FlexLogic™ Rules
- Example FlexLogic™ Implementation
- FlexElements™
- Operators



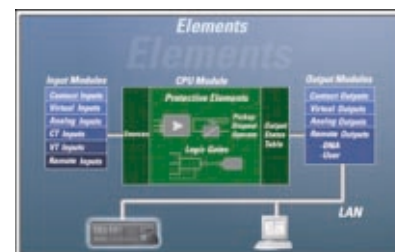
Protection Introduction: General



Hardware Basics: Introduction



URPC Settings: Product Setup



Protection Introduction: Elements

Communication

The Communication module introduces the student to the communication capabilities of the UR and various concepts associated with LAN topologies and LAN networking. Topics in this section include:

- Basic Data Terminology
- Communication Relationships
- LAN Access Methods
- Communication Ports
- CPU Ports
- Serial Bus
- Half Duplex
- 10BaseT Topology
- 10BaseF Topology
- Redundant 10BaseF Topology
- UR WANs
- Distance limitations of different media
- Power Budgeting
- Single and Multi Mode Fibers
- 10BaseF LAN Installation
- Redundant 10BaseF LAN Installation
- Peer-to-Peer / GOOSE Messaging
- Remote Outputs
- Multicast Messaging
- Application Example

Additional Resources

The Resources section contains a variety of references and information applicable to the UR Family:

A series of Lab Exercises challenge the student to apply the material from UR Apps I to a particular application. Based on given set of functional requirements, the student must:

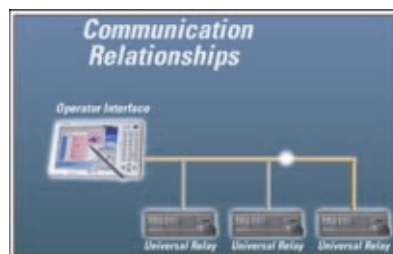
- Choose the appropriate device for the application
- Configure the device
- Create the appropriate wiring and logic diagrams
- Write the FlexLogic™ Equation
- Select the appropriate settings in URPC

Also available on the CD are UR Product Resources:

- Product Videos that feature Generation, Distribution and Feeder Management Relays
- A convenient reference section to Technical Publications applicable to the UR family
- A handy WebLinks section that includes valuable URL's pertinent to the Universal Relay family
- The Art and Science of Protective Relaying textbook
- The course Training Manual

To order your CD today, go to:

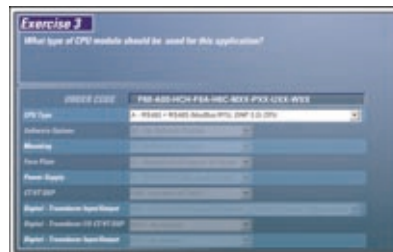
www.geindustrial.com/multilin/trainingcd/buynow/



Terminology: Communication Relationships



Lan Networking: Distance



Lab Exercises: Device Configuration



Video: Hi-Z Fault Detection



GE Multilin

**Power Management
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