Basic Power Electricity

The JobMaster® Basic Power Electricity Training teaches the specialized skills required for today’s industrial technicians. JobMaster provides a superior blended learning solution for automated manufacturing training by combining industrial-grade components with engaging e-learning content. JobMaster courses are entirely skill-based, consisting of individual exercises that reproduce essential tasks performed by maintenance technicians, equipment operators, and machine repairmen.

Course List

Electrical Circuits

Electrical Circuits introduces students to concepts including lockout/tagout and safety; connecting circuits and measuring electrical quantities like voltage and current.

Course Outline

- Performing Lockout/Tagout
- Connecting a Basic Circuit
- Identifying Switches
- Connecting a Momentary Switch
- Connecting a Toggle Switch
- Identifying Sources of Electricity
- Measuring DC Voltage
- Constructing a Series Circuit
- Constructing a Parallel Circuit
- Applying DC Voltage Principles
- Testing an Electrolytic Cell
- Testing a Battery
- Testing a Thermocouple
- Testing a Photo voltaic (PV) Cell

Materials Required (sold separately)

- JobMaster Learning Station
- Power Control Panel: (120V)*

* International step-down transformer package (Order #10-PC09-0000) required for international applications.

Materials Included

- Electrical Circuits, LearnMate course, Lab
- Teachers’ Guide
- Digital Multimeter
- (5) Flexponent™ panels:
  - Panel E040: Switch, Lamp and Buzzer
  - Panel E045: Sources of Electricity
  - Panel E047: Heat and Light Source
  - Panel E151: Series/Parallel Lamp Circuits
  - Panel E152: Adjustable Power Supply

Hardware Specifications

- Digital Multimeter
  - True-rms
  - CAT III 600 V safety rated
  - AC/DC volts, millivolts, amps
  - Continuity
  - Resistance
  - Diode test
  - Capacitance
  - Hz (V or A input)

Panel E040: Switch, Lamp and Buzzer
- Panel type: Single
  - 1 87dB Piezo pulse buzzer
  - 1 12V jumbo lamp
  - 1 SPST toggle switch
  - 1 DPDT toggle switch
  - 1 NO pushbutton switch
  - 1 NC pushbutton switch

Panel E045: Sources of Electricity
- Panel type: Single
  - 1 Encapsulated PV cell
  - 1 J-type surface thermocouple
  - 1 Battery box
  - 4 D-cell batteries

Panel E047: Heat and Light Source
- Panel type: Single
  - 1 Heat gun
  - 1 Flashlight

Panel E151: Series/Parallel Lamp Circuits
- Panel type: Single
  - 6 Miniature bulb sockets
  - 3 3.7V@0.30A bulbs
  - 3 6.3V@0.30A bulbs

Panel E152: Adjustable Power Supply
- Panel type: Single
  - 1 8V/16V/24V transformer
  - 1 1000µF 50V 20% axial-lead electrolytic capacitor
  - 1 4A 50V/IV bridge rectifier
  - 1 100-ohm rheostat

Resistors & Conductors

Resistors and Conductors teaches circuit troubleshooting and testing skills including measuring resistance, calculating wire size and determining losses in a wire.

Course Outline

- Measuring Resistance
- Measuring Resistance in Series Circuits
- Measuring Resistance in Parallel Circuits
- Drawing and Reading Resistor Symbol
- Testing an Adjustable Resistor
- Measuring Wire Size
- Applying Resistance and Wire Size
- Calculating Wire Size
- Determining Losses in a Conductor

Materials Required (sold separately)

- JobMaster Learning Station
- Power Control Panel: (120V)*

* International step-down transformer package (Order #10-PC09-0000) required for international applications.

Prerequisite Courses

- Electrical Circuits [EA01A]

Materials Included

- Resistors and Conductors, LearnMate course, Lab
- Teachers’ Guide

Panel E042: Resistance
- Panel type: Double
  - 1 Wire gauge, US standard
  - 1 Resistance coils package
  - 1 Rheostat, 100ohm
  - 1 5k-ohm linear taper potentiometer
  - 1 10k-ohm linear taper potentiometer
  - 1 Knob, hexagon
  - 1 Resistor, wire wound, 10ohm, 5%, 5W, ceramic
  - 1 Resistor, wire wound, 400ohm, 5%, 5W
  - 1 Resistor, wire wound, 900ohm, 5%, 5W
  - 1 Resistor, wire wound, 10kohm, 5%, 5W, ceramic
  - 1 Resistor, carbon film, 15kohm, 5%, 1/4W
LCR Circuits

LCR Circuits teaches the relationships between electrical properties such as inductance, capacitance and reactance.

Course Outline
- Discharge a Capacitor
- Testing a Capacitor
- Determining Capacitance
- Applying Capacitance Principles
- Inducing a Magnetic Field
- Assembling an Electromagnet
- Applying Electromagnetic Principles
- Inducing Voltage
- Inducing DC Voltage
- Assembling & Operating Transformers
- Applying Inductance Principles
- Operating Electromagnets
- Drawing Inductance Symbols

Materials Required (sold separately)
- JobMaster Learning Station
- Power Control Panel: (120V)*

Ordering Information

Electrical Series Bundles
- Electrical Circuits JM-BASE-EA01A
- Resistors & Conductors JM-BASE-EA01B
- LCR Circuits JM-BASE-EA01C
- Motors & Generators JM-BASE-EA01D
- Complete Basic Electrical Series with 2-Sided Bench JM-BASE-ELEC

LCR Circuits

Materials Included
- LCR Circuits, LearnMate course, Lab Teachers’ Guide

Prerequisite Courses
- Resistors and Conductors

Materials Required (sold separately)
- Panel E029: Magnetism
- Panel E043: Capacitance
- Panel E044: Inductance
- Panel E057: Motor/Generator
- Panel E150: Relay/Contactor

Prerequisite Courses
- Resistors and Conductors

Materials Required (sold separately)
- JobMaster Learning Station
- Power Control Panel: (120V)*

Motors and Generators

Motors and Generators delivers a complete understanding of phase relationships and the practical operation of motors and generators through activities including operating AC and DC generators, operating a series motor and demonstrating reactance and impedance.

Course Outline
- Operating a PMDC Motor
- Operating a DC Generator
- Operating an AC Generator
- Operating a Series Motor
- Demonstrating Principles of Reactance and Impedance
- Applying Phase Relationship Principles
- Illustrating Three-Phase Power
- Measuring AC Voltage

Materials Required (sold separately)
- JobMaster Learning Station
- Power Control Panel: (120V)*
- Learning Management System (LMS)

Contact Us:

Toll Free: 800-221-2763
Phone: 603-413-2600
Fax: 603-437-2137
Email: info@intelitek.com

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