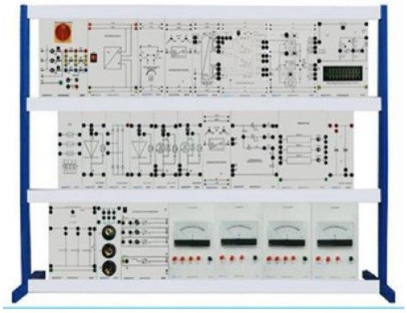
Power Electronics Training Kit

Category: Electronic Engineering · Model reference: MZM-3005



SPECIFICATIONS

Description:
The Power Electronics Training Kit has been designed to control of electrical energy with the greatest efficiency possible. In fact, it allows the implementation of theoretical-practical courses, for the study of power electronics. The individual units of an experimental set-up are connected via 4mm safety sockets which are arranged in large, synoptically graphical symbols and current flow diagrams. Due to the vertical arrangement of the experimental panels, the experimental set-up can be seen from a far distance and can be adapted step by step to the course of the lessons or lectures.
The experiments permit practice-oriented, hands-on training to be carried out, thus assuring the trainees of the proficiency needed to handle the tasks and the equipment found in this field. The training panels and functional units with block circuit diagrams and signal diagrams permit clear and understandable assembly of the experiment circuits.
DESCRIPTION
Power electronics is the application of solid-state electronics for the control and conversion of electric power. It also refers to a subject of research in electronic and electrical engineering which deals with design, control, computation and integration of nonlinear, time varying energy processing electronic systems with fast dynamics.
POWER CONVERSION SYSTEM
1. AC to DC Converters
a. Single-phase half-wave controlled rectifier
b. Single-phase bridge fully-controlled rectifier
c. Single-phase full-wave controlled rectifier
d. Single-phase bridge half-controlled rectifier
2. DC to DC Converters
a. Buck converter (Step-down converter)
b. Boost converter (Step-up converter)
c. Buck-Boost converter (Step-down/step-up converter) and Cuk converter.
3. AC to AC Converters (AC Controllers an Frequency Converters)
a. AC controller
b. Frequency converter (Cycloconverter)
4. NDC to AC Converters (Inverters)
a. Square-wave inverters
b. PWM inverters
5. Composite Converters
a. Indirect AC to AC converters (AC-DC-AC converters)
b. Indirect DC to DC converters (Isolated DC to DC converters)
EXPERIMENTS
1. Power Supply Experiments
a. AC Voltage measurement
b. DC Voltage measurement
2. UJT Experiments
a. UJT introduction
b. UJT characteristics
c. UJT equivalent circuit
d. CDS trigger
e. RTH trigger
f. UJT relaxation oscillator
g. UJT timer switch
3. PUT Experiments
a. PUT introduction
b. PUT characteristics
c. PUT equivalent circuit
d. CDS trigger
e. RTH trigger
f. PUT circuit oscillator
g. PUT timer switch
4. PUT & SCR Experiments
a. PUT staircase generator circuit
b. PUT Voltage control ramp circuit
c. SCR principle
d. SCR characyeristic curve
e. SCR construction
f. SCR trigger mode
g. SCR RC shift control circuit
5. SCS Experiments
a. SCS construction and operation mode
b. Using VOM meter for SCS measurement
c. SCS Schmitt circuit
d. SCS simulating PUT circuit
e. CDS trigger
f. RTH trigger
6. UJT & PUT Trigger SCR Experiments
a. Shift control basic circuit
b. Shift control analysis
c. AC shift control circuit analysis
d. UJT trigger SCR shift control circuit
e. PUT trigger SCR shift control circuit
7. SCR Control DC Motor, DIAC and TRIAC Chracterisitic
a. SCR cut-off principle
b. SCR control DC motor forward/reverse control experiment
c. DIAC construction and characterisics
d. DIAC operation mode and measurement
e. TRIAC construction and characteristics
f. TRIAC trigger mode
g. TRIAC static measurement
8. Automatic Control Lamp and TRIAC Control Speed Experiments
a. TRIAC shift control
b. TRIAC automatic control lamp experiment
c. TRIAC contolled motor introduction
d. TRIAC controlled motor speed experiment
9. Temperature Ratio, Photo-Couple and Touch Control Experiments
a. Electronic thermal converter
b. SCR bridge temperature ratio control experiment
c. Photo-couple control circuit
d. FET construction and characterisitics
e. Touch alarm circuit
10. Over/Under Voltage Breaker and Flasher Control Experiments
a. OPA characteristics and reverse and non-reverse circuit
b. Voltage comparation circuit
c. TRIAC power control application
d. AC circuit control
e. Multivibrator
11. TRIAC Overflow and IC Timer Switch Experiments
a. Digital circuit introduction
b. TRIAC overflow control experiment
c. 555 IC circuit introduction
d. IC timer switch experiment
12. Digital Signal Driver and Zero-Voltage Switch Experiments
a. Digital signal driver control experiment
b. Ideal half-wave zero-Voltage switch experiments
13. Zero-Voltage Switch Experiments
a. TRIAC zero-Voltage switch experiments
b. IC mode zero-Voltage switch experiments
14. SCR Converter Experiments
a. Parallel converter introduction
b. Series converter introduction
c. Converter trigger source
d. Converter Voltage adjust
e. Converter output-waveform improvement
Features
· Ideal for teaching power and industrial electronics.
· Integrated training system, with complete curriculum.
· Includes power supply, meter, and motor units.
· 13 experiment modules form basis for nearly 60 fully documented experiments.
· Main units and experiment modules also available separately for economical construction of class sets.
· Option rack frame and oscilloscope (illustrated)
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