



Power Electronics and Electric Drive Technology Trainer



Note :
Due to keeping innovation,
the specification and
Machine pictures or color
are subject to alteration
without notice!

Equipment Overview

- This trainer covers specialized courses such as 'Power Electronics Technology (Semiconductor Converting Technology)', 'DC Speed Governing Technology', 'Motor Control Technology', 'Electric Drive Automatic Control System', 'Control Theory' and so on.
- It adopts modular designed structure so that each experimental training modules can be replaced freely according to different training purposes. The connecting sockets are 4mm in diameter with pluggable cables.
- Safety protection: Three phase isolation transformer is adopted for the power supply treatment. Two voltage mode leakage protectors and one current mode leakage protection device are used to ensure personal safety, which is stable and safe.

Training Content

- Single phase bridge type semi-controlled rectifier circuit and unijunction transistor (UJT) trigger circuit
- Thyristor DC speed control system
- IGBT tube driving & protecting circuit testing and DC chopping circuit & buck-boost circuit research
- Single-phase AC voltage regulating circuit and integrated sawtooth wave trigger circuit
- BJT single-phase parallel inverter circuit
- Single-phase AC (zero-crossing trigger) power control circuit
- Three-phase thyristor full (semi) control bridge (zero) rectifier circuit and three-phase integrated trigger circuit
- Debugging of double closed-loop three phase full controlled rectifying DC speed control system
- Three phase AC voltage control circuit
- SPWM controlled single phase AC-DC-AC frequency changer circuit
- The performance of pwm controlled switching mode voltage stabilized power supply
- Given integrator circuit
- SG3731 dedicated PWM integrated circuit controlled DC position servo system
- Sawtooth wave phase shifting trigger circuit
- Power electronics experimental circuit diagram

Technical Parameters

1. Input power supply: Three phase 380V $\pm 10\%$, 50Hz
2. Work environment: Temperature: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$, relative humidity: $< 85\%$ (25°C), altitude: $< 4000\text{m}$
3. Installed capacity: $< 1000\text{W}$
4. Boundary dimension: $1600\text{mm} \times 800\text{mm} \times 1800\text{mm}$ (approx.)



Current & Voltage Display Module



- (1). Voltmeter AC 0-300V (2pcs)
- (2). Voltmeter DC 0-300V (2pcs)
- (3). Ammeter: AC 0-3A (2pcs)
- (4). Ammeter: DC 0-3A (2pcs)
- (5). Meter switch (2pcs)
- (6). Overcurrent protection
- (7). Size: 490mm×300mm×105mm

UJT Trigger / DC Speed Control Module



- (1). Single phase bridge type semi-controlled rectifier circuit & UJT trigger circuit
- (2). DC speed control system main circuit / detection and protection circuit
- (3). Size: 490mm×300mm×105mm

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DC Chopper and Single Phase Inverter Module



- (1). Insulated gate bipolar translator (IGBT) DC chopper circuit
- (2). Bipolar junction transistor (BJT) single phase parallel inverter circuit
- (3). Size: 490mm×300mm×105mm

PWM Circuit Control Module



- (1). SPWM controlled single phase AC-DC-AC frequency changer circuit
- (2). SG1731 pwm integrated circuit controlled DC position servo system
- (3). Size: 490mm×300mm×105mm

Thyristor Circuit Control Module



- (1). Three phase current transformer circuit
- (2). Three phase full-controlled bridge rectifier circuit
- (3). Three phase AC voltage control circuit
- (4). Size: 490mm×300mm×105mm

STW Phase Shifting Trigger & Given Integrator Circuit Module



- (1). Sawtooth wave (STW) phase shifting trigger circuit
- (2). LM324 given integrator circuit
- (3). Size: 490mm×300mm×105mm

STW Trigger and Power Control Unit



- (1). Single phase AC voltage control circuit integrated STW trigger circuit
- (2). Single phase AC (zero-crossing trigger) power control circuit
- (3). Size: 490mm×300mm×105mm

KC785 Trigger Circuit & Switching Power Supply Module



- (1). Three phase thyristor KC785 integrated trigger circuit
- (2). Switching mode voltage stabilized power supply circuit
- (3). Size: 490mm×300mm×105mm

Current, Speed Regulator and Current Protection Module



- (1). Rotate speed feedback circuit
- (2). Dspeed regulator circuit
- (3). Phase inverter circuit
- (4). Current signal conversion circuit
- (5). Overcurrent protection circuit
- (6). Current regulator circuit
- (7). Current signal amplification circuit
- (8). Size: 490mm×300mm×105mm

Main Power Supply Module

Three Phase Isolation & Synchronous Transformer Module

Single Phase AC/DC Adjustable & AC Power Supply Module

AC/DC Power Supply Module

Variable Resistor Module

DC generator

DC shunt motor

Three phase squirrel cage asynchronous motor