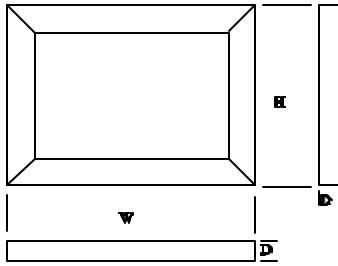


# POWER ELECTRONIC TRAINER

Model: PET-1700



## III. MODULE BOARD

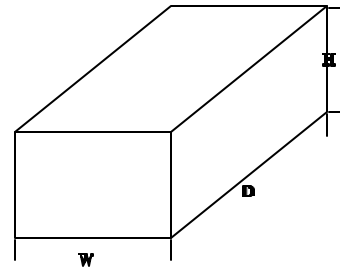
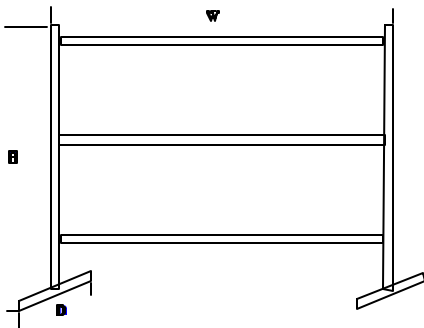
1. Size: 13.4"/.34m X 9.45"/.24m X 1.9"/.048m Approx.
2. Board frame: PS plastic extrusion, 0.118"/3mm thick.
3. Dimensions shown BELOW.

## I. FEATURES

1. This device includes some basic experiment units and can be expanded to the advanced one. Modular design makes it easy to use and maintain.
2. Each experiment unit consists of several module boards. All Input and output signals, control flows and wirings are shown on the module boards.
3. Circuit diagrams, or block diagrams, are silkscreenprinted on the module board.
4. All the test points and connection terminals are brought out on the front for easy access and measurement,
5. Connection terminals are standard .16"/4mm diameter jacks.

## IV. ELECTRICAL BOX

1. Boxes are for heavy and/or large components.
2. Size: 250mm (W) x 200mm (H) x 300mm (D)



6. Main panel frame (stand) is molded, specially treated and painted for long-lasting and beautification.

3. Material: Steel.

## II. MAIN PANEL FRAME

1. Size: 44.1"/1.12m(W) X 30.7"/.78m(H) X 11.8"/.3m(D)
2. Material: Stainless steel and square steel tubing.
3. Demonstration panel structure: Module boards can be slid in and out of the holding slots. It is designed to allow the instructors conveniently demonstrate the circuits and let the students practice on the panel easily.

## V. THIS TRAINER CONTAINS FOLLOWING EXPERIMENTS:

1. SINGLE-PHASE, HALF-WAVE RECTIFIER CIRCUIT
2. SINGLE-PHASE, FULL-WAVE RECTIFIER CIRCUIT
3. SINGLE-PHASE, HALF-WAVE CONTROLLABLE RECTIFIER
4. SINGLE-PHASE, FULL-WAVE CONTROLLABLE RECTIFIER
5. SINGLE-PHASE, HALF-WAVE AC REGULATION CIRCUIT
6. SINGLE-PHASE, FULL-WAVE ACREGULATION CIRCUIT
7. THREE-PHASE, HALF-WAVE RECTIFIER CIRCUIT
8. THREE-PHASE, FULL-WAVE RECTIFIER CIRCUIT
9. THREE-PHASE, HALF-WAVE CONTROLLABLE RECTIFIER
10. THREE-PHASE, FULL-WAVE, HALF-CYCLE RECTIFIER
11. THREE-PHASE, FULL-WAVE, FULL-CYCLE RECTIFIER

12. THREE-PHASE, HALF-CYCLE AC POWER SUPPLY REGULATION CIRCUIT
13. THREE-PHASE, FULL-CYCLE AC POWER SUPPLY REGULATION CIRCUIT
14. AUTOMATIC VOLTAGE REGULATION (AVR) CIRCUIT
15. TEMPERATURE CONTROL CIRCUIT
16. DC WAVE CHOPPING CIRCUIT
17. ELECTROMAGNETIC STOVE CONTROL CIRCUIT
18. PHOTOELECTRIC CONTROL CIRCUIT
19. VOLTAGE TO FREQUENCY (V/F) CONVERTER CIRCUIT
20. FREQUENCY TO VOLTAGE (F/V) CONVERTER CIRCUIT
21. SINGLE-PHASE FREQUENCY CONVERTER CIRCUIT
22. UNINTERRUPTED POWER SUPPLY (UPS) SYSTEM
23. THREE-PHASE INDUCTION MOTOR CONTROL USING FREQUENCY CONVERTER
24. MOTOR SPEED MONITOR CIRCUIT

2. DC Power Supply ----- EE - 202
  - a. Three outputs: +12V/2A, -12V/2A, and +5V/2A.
  - b. Connection terminals on 4 edges of board for easy wiring.
  - c. Input voltage: AC 110V, 60 Hz.
  - d. Module board assembly.
3. Three-phase Phase Control ----- EE - 203
  - a. Input AC voltage: Three-phase, 220V and single-phase 110V 60 Hz.
  - b. Six 110V, 60 Hz, single-phase outputs
  - c. Three-phase output voltage 63V, 110V and 127V, Y-connection.
  - d. Three-phase isolated transformer, 1.5KVA.
  - e. Module box assembly.
4. Inductive Load Box ----- EE - 204
  - a. Inductors: Two 50mH in series.
  - b. Current Rating: 5A.
  - c. Module box assembly.
5. Resistive Load Box ----- EE - 205
  - a. Resistors: Three 2000Ohm, 300W
  - b. Module box assembly.
6. Capacitive Load Box -- EE - 206
  - a. Capacitors: Two 2700 uf, 350V
  - b. Module box assembly.
7. Frequency Counter and Function Generator----- EE - 207
  - a. Function generator:
    - (1) Waveforms: Sine, sawtooth, square and pulse.
    - (2) Frequency range: 2Hz to 200KHz
    - (3) Frequency adjustment: 5 ranges and 1 fine adjustment.
    - (4) Duty cycle adjustment.
    - (5) Attenuation (0 - 20db) and fine adjustments.
  - b. Frequency meter:
    - (1) 4 digits, 999.9KHz Max.
    - (2) INTERNAL and EXTERNAL switch.
8. Power Meter and Digital Multimeter ----- EE - 208
  - a. Power meter:
    - (1) 1200W and 600W scales
    - (2) 120V and 240V input voltages
    - (3) Input current rating: 5A.
  - b. Digital multimeter:
    - (1) 3.5, LCD display.
    - (2) Measures ACV, DCV, ACA, DCA and Ohms.
  - c. Module board assembly.

25. DIGITAL TO ANALOG (D/A) CONVERTER CIRCUIT
26. ANALOG TO DIGITAL (A/D) CONVERTER CIRCUIT
27. STEP MOTOR CONTROL

## VI. MODULE BOARD DESCRIPTION AND CODE

1. Three-phase Phase Control ----- EE - 201
  - a. Pulse output: voltage isolated, can drive 6 SCRs.
  - b. Input AC voltage: Three-phase, 220V.
  - c. Single or three phase trigger from 0 to 180.
  - d. Module board assembly.
9. Digital Multimeter ----- EE - 212
  - a. 3.5, LCD display.
  - b. Measure ACV, DCV, and Ohms.
  - c. Quantity: 2 pieces.
  - d. Module board assembly.
10. Load and Lamps ----- EE - 210
  - a. Lamps: 220V, 100W.
  - b. Load wiring diagram shown on PCB.
  - c. Module board assembly.
11. Three-phase Induction Motor ----- EE -232
  - a. Input voltage rating: 220V, 60Hz.
  - b. 1 HP.
  - c. Photocouple sensing, 60 pulses per rotation.
  - d. Flat board assembly.
12. SCR and Diode ----- EE - 214
  - a. SCR: 8 pieces, 800V, 15A.
  - b. Diode: 4 pieces, 800V, 15A.
  - c. Module board assembly.
13. SCR, Diode and VL/IL ----- EE - 215
  - a. SCR: 4 pieces, 800V, 15A.
  - b. Diode: 2 pieces, 800V, 15A.
  - c. Module board assembly.
14. AC Voltage Setting Box ----- EE - 216
  - a. Input voltage: AC 110V.
  - b. Output voltage: 0 - 125V.
  - c. Current rating: 3A
  - d. Overload protection: 2A
  - e. Module box assembly.
15. Automatic Voltage Regulation ----- EE - 217
  - a. Regulator: +/- 10%.
  - b. Input voltage: 90V - 130V.
  - c. Driving device: DC motor + speed reducing gear.
  - d. Output voltage: AC 100V.
  - e. Output current: 2A
  - f. Module box assembly.
16. Thermal Controller ----- EE - 218
  - a. Sensor: PT100.
  - b. Includes detection, setting and control circuits
  - c. Output on relay contact a.
  - d. Module board assembly.
17. DC Chopping Circuit ----- EE - 219
  - a. Input voltage: AC 110V, 60Hz.
  - b. Chopped DC voltage: 150V.
  - c. Chopping transistor: SW type, 800V, 10A, 2 pieces.
  - d. Module board assembly.

18. PWM Generation Circuit ----- EE - 220
- a. Provides EE-219 with high-frequency circuit.
  - b. PWM regulation.
  - c. Module board assembly.
19. Photoelectric Controller ----- EE - 223
- a. Using a pair of transmitting and receiving infrared transistors.
  - d. Output Current: 3.5A.
  - e. Chopper PAM controlled output.
  - f. Load: 200% of current rating of electrical code.
  - g. Input voltage variation tolerance: 220V +/-15%
  - h. Input frequency variation tolerance: 60Hz +/- 5%.
  - i. Full-wave rectification and automatic voltage regulation,  $F/V = C$ .
  - j. Module board assembly.
21. D/A Converter ----- EE - 234
- a. 8 bits digital input.
  - b. Analog output.
  - c. Module board assembly.
22. A/D Converter ----- EE - 235
- a. Analog input.
  - b. 3.5 digital output.
  - c. Module board assembly.
23. V/F Converter ----- EE - 224
- a. Analog input.
  - b. Voltage Control Oscillator (VCO) frequency output.
  - c. Module board assembly.
24. F/V Converter ----- EE - 225
- a. Analog input.
  - b. Analog output.
  - c. Module board assembly.
25. Uninterruptable Power System (UPS) ----- EE - 226
- a. Output power: 200W. EE - 227
  - b. Back-up time: 10 minutes.
  - c. Input voltage: 120V, 60Hz.
  - d. Efficiency: 80%.
  - e. Waveform: step wave.
  - f. Output: 120V +/- 3%, 60Hz.
  - g. Converting time: 0 ms.
  - h. Batteries: two 12V, 6.5A.
  - i. Driving component: power MOSFET.
  - j. EE - 226 is a module board.
  - k. EE - 227 is a module box.
26. Inductive solder melting stove ----- EE - 222
- a. 1 heating coil.
  - b. 1 steel stove.
  - c. Power: 200W
  - d. Capacitor: .1 uf, 1000V.
27. Step Motor ----- EE - 213
- a. Voltage rating: 3.9V.
  - b. Current rating: 1A
  - c. 1.8 per step.
  - d. Terminals on PCB can be used for manual/automatic operation.
  - e. Module board assembly.
28. Step Motor Driving Controller ----- CK - 230
- a. Driving voltage: +12V to +25V.
  - b. Speed control and forward/reverse control.
- b. Includes transmitter, receiver, demodulation and LED flip-flop circuits.
- c. Module board assembly.
20. Three-phase Frequency Inverter ----- EE - 229
- a. Darlington switch.
  - b. Output frequency: 0 - 90Hz, continuous adjustment.
  - c. Output voltage: 3-phase, 0 - 220V.
  - d. Includes distribution circuit and high power transistor driving circuit.

## VII. ACCESSORIES

1. Connection wires:
  - a. Extruded banana plugs, standard .16"/4mm dia.
  - b. Total 40 wires of length 7.9"/.2m, 19.7"/.5m and 47.2"/1.2m.
2. One Instructor's Experiment Manual.

Specification is subject to change without prior notice.

