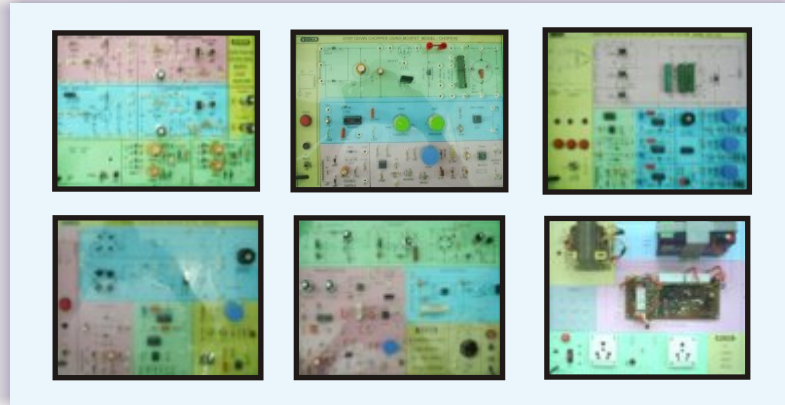




# POWER ELECTRONICS TRAINER

## MODEL - POWER200

This trainer has been designed with a view to provide practical and experimental knowledge of Power electronics parts.



### SPECIFICATIONS

- \* Built in power supply
- \* Unreg power supply 17V/750mA
- \* Regulated 13.5 V/3A O/P is provided as 12V Battery charging supply, In absence of battery same is used as simulated battery source to run experiment on invertors etc.
- \* Isolated DC supply +12V/300mA with isolated common.
- \* On board inverter transformer of primary : 230V & secondary 12-0-12, 2.5A.
- \* On board lamp load of 15W 100W provided.

#### AC SUPPLY :

- \* 230V AC line voltage is made available on two banana 4mm. sockets as well as 1.5A fuse extender for DIMMER.
- \* On board analog voltmeters : AC Voltmeter (0-300V) 1 No. DC Voltmeter (0-300V) 1 No.
- \* On board inverter transformer of primary 230V & secondary 12-0-12, 2.5A.
- \* On board lamp load of 15W to 100W provided.
- \* LPST Panel consisting of :  
Two pulse transformer of 1:1:1 are provided for isolation & supplying firing pulses along with required. DC Power supply to experiment panel under test through 15 pin female D connector. Selector switch of 2 pole 6 way for selecting different types of firing pulses like out of phase inverter for Cyclo converter. line synchronized UJT firing for converter etc.
- \* R-L-C Load panel :  
Load resistor of 10 ohms/40W 1 No. Center tapped 3A choke 4mH/16mH each 2 Nos. Commutation capacitors of 10F/100V 4 Nos. AC paper capacitors of 4F/440V 1 No.
- \* Accessories : Suitable required accessories must be made available.
- \* Operating voltage : 230V  $\pm$  10%, 50Hz, 70VA.

In keeping view of SIGMA policy of continuous development and improvement, the Specifications may be changed without prior notice or obligation.

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**Dealer:-**

Modular Experiment Panels offered :

1. Semiconductor & Power Semiconductor Devices Experiment  
Panel / P3 : Silicon Diode, Semiconductor Testing using Multimeter, Germanium diode, Zener diode, LED, DIAC, Bipolar transistor, field effect transistor(FET) MOSFET, UJT, Silicon controlled Rectifier (SCR) TRIAC, IGBT.
2. Power Semiconductor Application Experiment Panel / P20 :  
TRIAC lamp dimmer AC Fan regulator. SCR operation light sensitive switch using LDR, SCR operated temperature sensitive switch using Thermister. UJT relaxation oscillator. Half and Full wave (Phase shift controlled) rectifier using SCR. Timer using SCR & UJT.
3. CON/INV Panel / PEI :  
Supports following experiments :
  - (A) **SCR Converter :**
    - \* Half Wave SCR converter.
    - \* Full Wave Fully controlled converter.
    - \* AC voltage controller.
    - \* SCR Controlled converter 1 Phase with R-L Load effect of free wheeling diode (FWD) on SCR converter performance with inductive load.
    - \* Study of SCR Converter (Open loop) output with inductance input and capacitance input filters.
    - \* Effect of source impedance on performance of SCR converters.
    - \* Study of closed loop SCR converters with Resistive load.
    - \* Study of closed loop SCR converters with Motor load.
    - \* Study of full wave half controlled SCR bridge.
  - (B) **Advanced Firing Schemes :**
    - \* Study of H.F. getting type SCR Triggering
    - \* Study of relation between control voltage and SCR converter output DC Voltage
    - \* Study of linear relation between control voltage and SCR converter output DC voltage using cosine firing scheme.
  - (C) **SCR Forced Commutation Techniques :**  
Study of forced commutation technique for SCR class A,B,C,D,E.
  - (D) **SCR Based Inverters :**  
SCR Based parallel inverter SCR based series inverter, SCR based bridge inverter.
  - (E) **Cycloconverter :**  
SCR Based cycloconverter.
  - (F) **SCR Based Chopper :**  
SCR Based Jones Chopper.

Closed loop experiments with foot mounting DC motor (200W/2000RPM) with Tacho feedback (20 Vpp max) loading arrangement using spring balances.
4. Dv/dt Protection Panel / PE2 :  
Supports following experiments :
  - (A) SCR Triggering Scheme :  
Simple Resistance firing circuit for upto 90 SCR firing half wave. Resistance Capacitor with increased control SCR firing half wave. Resistance capacitor firing circuit full wave. UJT based SCR Trigger with series Transistor controlled ramp. UJT based SCR Trigger with shunt Transistor Controlled ramp. UJT based SCR Trigger with resistance controlled pedestal.
  - (B) dv/dt behaviors of SCR :  
Study of dv/dt behaviors of SCR, Study of SCR dv/dt protection using gate termination. Study of SCR dv/dt protection using gate reverse bias with resistance. Study of SCR dv/dt protection using gate reverse bias with resistance and diode study of SCR dv/dt protection using polarized snubber. study of SCR dv/dt protection using polarized RC snubber with discharge resistor.
5. SCR Application Panel/PE3 :  
Support following experiments :  
Study of Zero voltage Line switching & integral cycle control using SCR. Study of SCR based ring counter for sequential switching. AC voltage control using SCR based transformer tap selection, SCR based AC flasher , SCR based DC flasher. Application exercise "Over Voltage protection using SCR".

Included all accessories and operating manual.