



Power electronics lab 33517B is an universal learning platform which is very useful to understand various concepts of power electronics like VI characteristics of the power electronic devices, single phase controlled rectifiers, DC to DC choppers etc. This Lab is provided with a bread board for testing their own circuits, built in AC & DC power supplies and exhaustive learning material.

### Features

1. Self contained & easy to operate
2. Functional blocks indicated on board mimic
3. Breadboard provided for own circuit development
4. In built AC/DC Power Supplies
5. Onboard pulse generator with frequency and duty cycle control.
6. On board single phase controlled rectifier firing circuit
7. On board thyristor devices
8. On board pulse amplifier and isolation transformer
9. On board variable load and circuit components

### Object

01. VI characteristics of power devices
02. Study of Single Phase Thyristor Firing Scheme
03. Single Phase Controlled Rectifiers
04. DC to DC Chopper
05. Single Phase Inverter
06. Own circuit Development
07. Optional circuit components for breadboard related experiments

### Optional modules

#### Study of:

01. V-I characteristics of SCR
02. V-I characteristics of UJT
03. V-I characteristics of MOSFET
04. V-I characteristics of IGBT
05. V-I characteristics of DIAC
06. V-I characteristics of TRIAC
07. V-I characteristics of PUT
08. SCR triggered by 74121IC
09. SCR triggered by Op-Amp 741IC
10. UJT relaxation oscillator
11. R, RC (half wave & full wave) triggering circuit
12. SCR triggered by UJT

Note: Specifications are subject to change.

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13. SCR triggered by 555IC
14. SCR triggered by PUT
15. SCR triggered by 74121IC
16. SCR triggered by Op-Amp 741IC
17. Lamp flasher using SCR
18. SCR alarm circuit

**Technical Specifications**

Size of Breadboard	:	172.5 mm × 128.5 mm
DC Power Supply	:	+5 V, -5 V 500 mA, +12V, -12 V 500 mA +15 V, 250 mA +35V, -35V, 250 mA
AC Power Supply	:	18V-0V-18V 0V-15V On board Firing Circuits
Frequency range	:	30Hz to 900Hz variable
Amplitude	:	12V
PWM control of G1, G2, G3 and G4	:	
Duty cycle control of "Gate"	:	
Signal is 0 to 100%	:	
SCR Assembly	:	4 SCRs 2P4M, 400V/2A
Power Devices	:	IGBT-G4BC20S, MOSFETIRFZ44N, UJT-2N2646, DIACDB3, TRIAC-BT136, PUT- 2N6027
Pulse transformer on board	:	2 nos. PT4502 1:1 and one is PT4503 1:1:1
Circuit Components on board	:	Electrolytic Capacitor 1uF, 63V Metalized Capacitor 0.1uF, 63V Metalized Capacitor 0.33uF, 63V Diode 1N4007, Inductor 68mH, Inductor 68mH, Inductor 10mH
Load selector	:	6 load resistances- 47E/7W, 120E/5W, 270E/5W, 2K2/2W, 1K/1W, 1K/10W
Test points	:	10 nos
Power Supply (Mains)	:	220V/110V, 50Hz/60Hz

**Included Accessories :**

Bread boards	:	2 nos.
Connecting wires	:	20 nos.
2mm to 1mm Patch cords	:	15 nos.
2mm Patch cords (Red) 16"	:	4 nos.
2mm Patch cords (Black) 16"	:	4 nos.
2mm Patch cords (Blue) 16"	:	12 nos.
Mains cord	:	1 no.

**Optional :**

1. Simtel Power Electronics Software
2. Digital Multimeter

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