

OMEGA TYPE PET-400 Power Electronics Lab is used to perform power electronics circuit experiments. It is very useful in power electronics laboratories for performing power experiments in colleges and universities. It is very for student to know about the characteristics of power electronics devices and the applications of power devices. The applications or power devices are in alarm circuit, lamp flasher, rectifiers, choppers, inverters. It is also used for commutation circuits.

The Equipment is Useful for Students at level in engineering / technical institutes (EC & Telecom) Technical training centers in communication organizations, R&D personal and practicing engineering in research labs and industry.

TECHNICAL SPECIFICATIONS

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| 01 Bread Board | : Unique solder-less large size, spring loaded breadboard consisting of two Terminal Strips with 1280 tie points and 4 Distribution Strips with 100 tie points each, totaling to 1680 tie points. Size: 112mm x 170mm approx) |
| 02 DC Power Supply | : $\pm 5V$ at 100mA, $\pm 12V$ at 150Ma, $\pm 15V$ at 50mA & $\pm 35V$ at 50mA |
| 03 AC Power Supply | : 18V - 0V - 18V at 50mA, & 15V - 0V - 15V at 50mA |
| 04 Triggering Circuit | : 5 gate signal output |
| 05 Frequency range | : 40Hz to 900Hz Variable |
| 06 Amplitude | : 12V PWM control of G1, G2, G3 and G4 Duty cycle control of "Gate" Signal is 0 to 100% |
| 07 Single Phase Rectifier | : Firing angle control 0°-180° variables |
| 08 Pulse amplifier and | : Firing Circuit Four gate signal output with isolation Isolation transformer |
| 09 SCR Assembly | : 2P4M/ 04, 600V, 2A |
| 10 Power Devices | : IGBT-G4BC20S, MOSFET-IRF540, UJT-2N2646, DIAC-DB3, TRIAC-BT136, PUT-2N6027, SCR-TYN-612/02 |
| 11 Circuit Components | : Capacitor 0.01uF, 0.047uF, 0.1uF, 0.33uF, 1uF/63V/04, 2.2uF/50V Diode IN4007/08, Zener Diode 9V, Inductors 10mH, 68Mh/02. Resistance 22E/5W, 100E/2W, 220E/2W Resistance 0.25W 10K/03, 22K, 33K, 47K, |
| 12 Potentio Meter | : 4K7/02, 1M, |
| 13 Load Resistance | : 120E, 270E, 1K, 2K2, each 5W, |
| 14 Pulse Transformer | : 1:1/02 and 1:1:1 |
| 15 Toggle Switch | : SPST |
| 16 Power Requirements | : 230V $\pm 10\%$, 50Hz |
| 17 Accessories | : Multimeter-4 Pcs., Mains cord, Patch cords 2mm Red & Black 50cm 10 each, Patch cord 2mm to 1mm Red & Black 5 each connecting wire 1/25 Five colour 1 meter each & Component Set . Resistance (1/4W) 47E/02, 100E/02, 220E/02, 510E/04, 820/02, 1K/02, 2K7/04, 5K1/02, IC NE -555/02, IC LM-741/02, MOSFET IRF-540/04, IGBT-G4BC20S/4 |
| 18 Instruction manual | : Strongly supported by detailed operating instructions |



EXPERIMENTS ON BOARD USING BREADBOARD

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| 01 To study the characteristics of SCR and plot its V-I Characteristics. | 17 To study the Triggering of SCR using 555 IC. |
| 02 To study the Gate control characteristics of SCR and It's graph. | 18 To study the Triggering of SCR using Op-Amp 741 IC. |
| 03 To study the characteristics of UJT and calculate inter-base resistance and intrinsic standoff ratio. | 19 To study of the ramp and pedestal triggering using anti-parallel SCR in AC load. |
| 04 To study the characteristics of MOSFET. | 20 To study of the UJT relaxation oscillator. |
| 05 To study the characteristics of IGBT. | 21 To study of the voltage commutated chopper. |
| 06 To study the characteristics of DIAC and plot its V-I Characteristics curve. | 22 To study of the Bedford inverter. |
| 07 To study the V-I characteristics of TRIAC. | 23 To study of the single phase PWM inverter using MOSFET. |
| 08 To study the characteristics of PUT. | 24 To study of the single phase PWM inverter using IGBT. |
| 09 To study of class B commutation circuit. | 25 To study the half-wave controlled rectifier with resistive load. |
| 10 To study of class C commutation circuit. | 26 To study the half wave controlled rectifier with RL load. |
| 11 To study of class D commutation circuit. | 27 To study the full-wave controlled rectifier (mid-point configuration) with resistive load. |
| 12 To study of class F commutation circuit. | 28 To study the full-wave controlled rectifier (mid point configuration) with RL load. |
| 13 To study the Resistor Triggering circuit. | 29 To study the fully controlled bridge rectifier with resistive load. |
| 14 To study the Resistor-Capacitor Triggering Circuit (Half wave). | 30 To study the fully controlled bridge rectifier with RL load |
| 15 To study the Resistor-Capacitor Triggering Circuit (Full wave). | |
| 16 To study the triggering of SCR using UJT. | |

We are committed to the continuous development of our products, and therefore reserve the right to amend specifications without prior notice.

OMEGA ELECTRONICS