



46900 High Voltage Power Electronics Lab is a compact, ready to use experiment workbench. In this particular workbench there are various applications and experiments of Power Diode and SCR on the workbench with different load configuration.

46900 High Voltage Power Electronics Lab covers the principles and operation of Single Phase and Three Phase Thyristor control circuits.

46900 High Voltage Power Electronics Lab has economically designed in vertical position and with sufficient space for working, this workbench is available with table and without table .

Features

- On Board (Mains) Single & Three Phase AC Power Supplies
- On Board Step down Single & Three Phase AC Power Supplies
- MCB Protected Single and Three Phase AC Supply
- Three Phase indicator (R-Y-B) at front panel
- On Board Oscilloscope with Power Scope
- On Board DC/AC Voltmeter and DC/AC Ammeter
- On Board Single Phase, Three Phase & Cycloconverter Firing Circuits
- Test point are provided to observe waveforms at different blocks in Firing

Circuit

- On Board Power Devices Diode, SCR & IGBT Assembly
- Diode Assembly SCR Assembly IGBT Assembly
- Internal RC snubber circuit in Power Circuit Module
- 2 mm and 4 mm Socket provided to make different connections
- Easily replaceable Firing Circuit and Power Circuit Module
- Four 200 W Bulb as Lamp Load
- Universal Motor 1/8 HP as Motor Load
- Short Circuit Protection
- Easy to operate and understand
- Exhaust fan at back panel for cooling

Experiments

01. Study of Single Phase Supply and Single Phase Low voltage Power Supply
02. Study of Three Phase Supply and Three Phase Low voltage Power Supply
03. Study of Single Phase Half Wave Uncontrolled Rectifier with Lamp Load
04. Study of Single Phase Half Wave Uncontrolled Rectifier with Motor Load
05. Study of Single Phase Half Wave Uncontrolled Rectifier (Effect of Freewheeling Diode) with Motor Load
06. Study of Single Phase Full Wave Uncontrolled Rectifier with Lamp Load
07. Study of Single Phase Full Wave Uncontrolled Rectifier with Motor Load
08. Study of Single Phase Full Wave Uncontrolled Rectifier Freewheeling Diode with Motor Load
09. Study of Single Phase Bridge Uncontrolled Rectifier with Lamp Load
10. Study of Single Phase Bridge Uncontrolled Rectifier with Motor Load
11. Study of Single Phase Bridge Uncontrolled Rectifier Freewheeling Diode with Motor Load.

Note: Specifications are subject to change.

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12. Study of Ramp Comparator Firing Circuit
13. Study of Single Phase Half Wave Controlled Rectifier with Lamp Load.
14. Study of Single Phase Half Wave Controlled Rectifier with Motor Load
15. Study of Single Phase Half Wave Controlled Rectifier (Effect of Freewheeling Diode) with Motor Load
16. Study of Single Phase Full Wave Controlled Rectifier with Lamp Load
17. Study of Single Phase Full Wave Controlled Rectifier with Motor Load.
18. Study of Single Phase Full Wave Controlled Rectifier (Effect of Freewheeling Diode) with Motor Load
19. Study of Single Phase Bridge Controlled Rectifier with Lamp Load.
20. Study of Single Phase Bridge Controlled Rectifier with Motor Load
21. Study of Single Phase Bridge Controlled Rectifier (Effect of Freewheeling Diode) with Motor Load
22. Study of Single Phase Semi converter (Common Cathode Configuration) with Lamp Load
23. Study of Single Phase Semi converter (Common Cathode Configuration) with Motor Load
24. Study of Single Phase Semi converter Freewheeling Diode with Motor Load
25. Study of Single Phase Semi converter (Common Anode Configuration) with Lamp Load
26. Study of Single Phase Semi converter (Common Anode Configuration) with Motor Load
27. Study of Single Phase Semi converter Freewheeling Diode with Motor Load
28. Study of Single Phase Semi converter (Asymmetrical configuration) with Lamp Load
29. Study of Single Phase Semi converter (Asymmetrical configuration) with Motor Load
30. Study of Single Phase Semi converter Freewheeling Diode with Motor Load
31. Study of Single Phase Semi converter Half Wave Controlled (Asymmetrical configuration) with Lamp Load
32. Study of Single Phase Semi converter Half Wave Controlled (Asymmetrical configuration) with Motor Load
33. Study of Single Phase Semi converter Half Wave Controlled Freewheeling Diode with Motor Load.
34. Study of Single Phase AC Voltage On-Off Control with Lamp Load
35. Study of Single Phase AC Voltage On-Off Control with Motor Load
36. Study of Single Phase Half Wave AC Voltage Controller with Lamp Load
37. Study of Single Phase Half Wave AC Voltage Controller with Motor Load
38. Study of Single Phase Full Wave AC Voltage Controller with Lamp Load
39. Study of Single Phase Full Wave AC Voltage Controller with Motor Load
40. Study of PWM Circuit
41. Study of Cycloconverter Firing Circuit
42. Study of Single Phase Cycloconverter with Lamp Load
43. Study of Single Phase Cycloconverter with Motor Load
44. Study of Three Phase Half Wave (Common Cathode Configuration) Uncontrolled Rectifier with Lamp Load
45. Study of Three Phase Half Wave (Common Cathode Configuration) Uncontrolled Rectifier with Motor Load
46. Study of Three Phase Half Wave (Common Cathode Configuration) Uncontrolled Rectifier Freewheeling Diode with Motor Load
47. Study of Three Phase Half Wave (Common Anode Configuration) Uncontrolled Rectifier with Lamp Load
48. Study of Three Phase Half Wave (Common Anode Configuration) Uncontrolled Rectifier with Motor Load
49. Study of Three Phase Half Wave (Common Anode Configuration) Uncontrolled Rectifier Freewheeling Diode with Motor Load
50. Study of Three Phase Bridge Uncontrolled Rectifier with Heater Load
51. Study of Three Phase Firing Circuit
52. Study of Three Phase Half Wave Controlled Rectifier with Lamp Load.
53. Study of Three Phase Half Wave Controlled Rectifier with Motor Load.
54. Study of Three Phase Half Wave Controlled Rectifier (Effect of Freewheeling Diode) with Motor Load
55. Study of Three Phase Semi converter with Heater Load
56. Study of Three Phase Half Wave AC Voltage Controller with Lamp Load (**Optional - 2 Motor for Motor Load**)
57. Study of Three Phase Half Wave AC Voltage Controller with Motor Load
58. Study of Three Phase Full Wave AC Voltage Controller with Lamp Load
59. Study of Three Phase Full Wave AC Voltage Controller with Motor Load (**Optional - 2 Motor for Motor Load**)

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Technical Specifications

MCB (Power Switch)	:	Single Phase 10A
MCB (Power Switch)	:	Three Phase 10A
Single Phase		
AC Power Supply	:	230V, $\pm 10\%$, 50Hz, 115V - 0 - 115V $\pm 10\%$, 2A
Single Phase Low Voltage		
AC Power Supply	:	18V - 0 - 18V, 15V-0
Low Voltage DC Power Supply	:	+30V, -30V 250mA
	:	+15V, -15V 250mA
	:	+12V, -12V 500mA
	:	+5V, -5V 500mA
Three Phase AC Power Supply	:	230V Phase voltage $\pm 10\%$ 50Hz 440 Line voltage $\pm 10\%$ 50Hz
Three Phase Low Voltage	:	15V Each Phase $\pm 10\%$, 50Hz Power Supply
Interconnections	:	2mm & 4mm Safety Socket
Diode Assembly	:	Diode 6A10 1000V/6A
SCR Assembly	:	TYN 616 600V/16A
IGBT Assembly	:	IGBT G4BC20S 600V/10A Gate Firing Circuits
Single Phase Firing Circuit	:	Ramp Comparator Firing Circuit 0 (Firing Angle Control 30-180)
Three Phase Firing Circuit	:	Three Phase Firing Circuit 0 (Firing Angle Control 30-150)
Cycloconverter Firing Circuit	:	Cycloconverter Firing Circuit 0 (Firing Angle Control 30-180)
Single Phase and Three Phase Inverter firing circuit	:	Firing Pulse - 50Hz Square Wave with 10Vpp

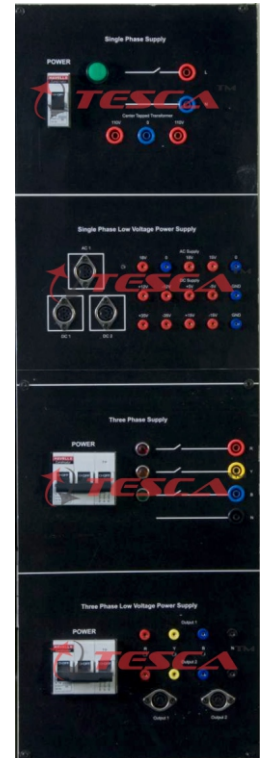
Measuring Instruments

Digital Storage Oscilloscope

Bandwidth	:	50MHz
Realtime Sample Rate	:	500MSa/s (Single Channel)
Equivalent Sample Rate	:	50GSa/s
Number of Channels	:	2 CH +1 Ext
Memory Depth	:	32 Kpts (Single Channel)
Acquisition Modes	:	Normal/Average/Peak Detect
Average	:	Selectable from 4 to 256
Vertical Sensitivity	:	2mV/div - 10V/div
Vertical Resolution	:	8bits
Input Impedance	:	1 MW $\pm 2\%$ II 17 pF ± 3 pF
Input Coupling	:	DC, AC and GND
Maximum Input Voltage	:	± 400 Vpp

Power Scope:

	:	1500V Isolated measurement
Digital AC Voltmeter	:	0-500V AC Voltage Measurement
Digital AC Ammeter	:	0-25A AC Current Measurement
Digital DC Voltmeter	:	0-650V DC Voltage Measurement
Digital DC Ammeter	:	0-25A DC Current Measurement
Load Assembly	:	R Load- Lamp Load (200W)-4nos. L Load -Inductive Load 300-350-400mH, 1.5A



Order code - 47001-47002

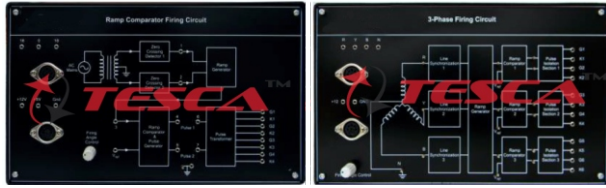


Order code - 47003-47004

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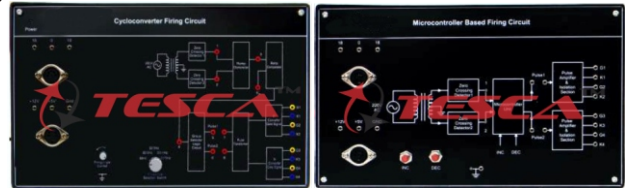
Ramp Comparator & Three Phase Firing Circuit
Order Code - 47005

Ramp Comparator Firing Circuit

Power Supply : 15 V - 0 (AC Supply)
 +12V & Gnd (DC Supply)
Firing Angle : 30 -180° variable
Snubber : RC Snubber Protected

Three Phase Firing Circuit

Power Supply : R, Y, B & N output1,
 Three Phase Low Voltage Power supply
 +12V & Gnd (DC Supply)
Firing Angle : 30 -150° variable
Terminal Socket: 2 mm.



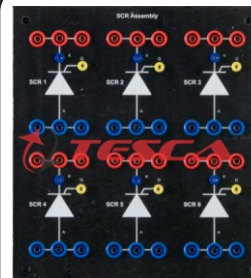
Cycloconverter & Microcontroller Based Firing Circuit
Order Code - 47006

Power Supply : 18 V - 0 - 18 V (AC Supply)
 +12 V, +5 V & Gnd (DC Supply)
Firing Angle : 30 -180° variable
Terminal Socket : 2 mm.



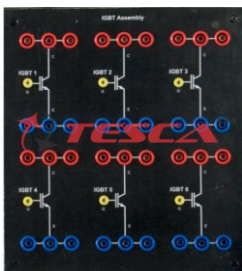
Diode Assembly

Order Code - 47101
Diode : 6A10
Voltage : 1000 V
Current : 6 A
Safety Terminal : 4 mm socket



SCR Assembly

Order Code - 47102
SCR : TYN 616
Voltage : 600 V
Current : 16 A
Safety Terminal : 4 mm socket
Snubber : RC Snubber



IGBT Assembly

Order Code - 47103
IGBT : G4BC20S
Voltage : 600 V
Current : 10 A
Safety Terminal : 4 mm socket
Snubber : RC Snubber Protected

1 & 3 Phase Inverter Firing circuit
Order Code - 47104



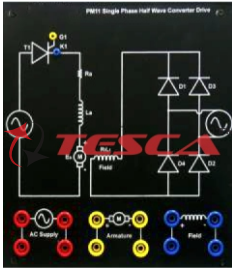
Mains Supply : 230 V ± 10%,
 50 Hz
Firing Pulse (V_{GE}) : 50Hz Square
 Wave with
 10Vpp
Fuse : 1A
Test points : 24 numbers

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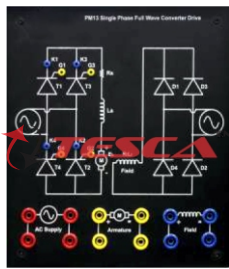
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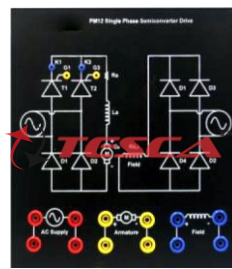
OPTIONAL FIRING CIRCUIT



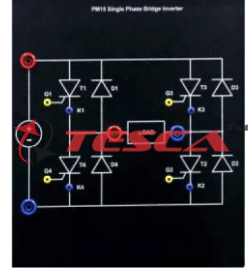
1 Phase Half Wave Converter Drive
Order Code 47105



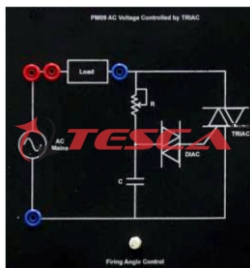
1 Phase Full Wave Converter Drive
Order Code 47106



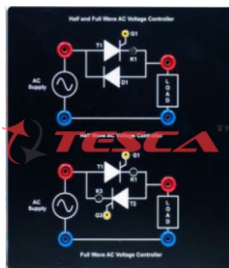
1 Phase Semiconductor Drive
Order Code 47107



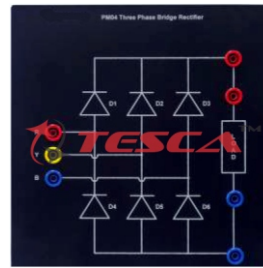
1 Phase Bridge Inverter
Order Code 47108



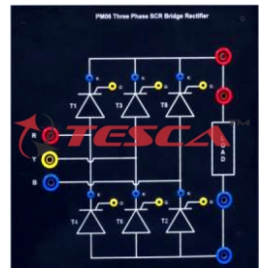
AC Voltage Control By TRIAC
Order Code 47109



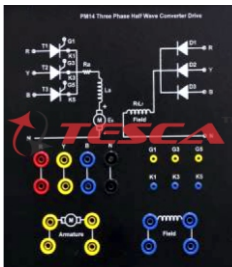
1 Phase Half and Full Wave AC Voltage Controller
Order Code 47110



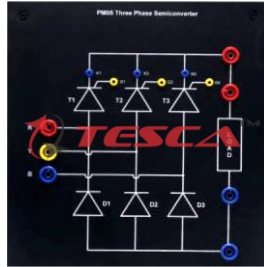
3 Phase Diode Bridge Rectifier
Order Code 47111



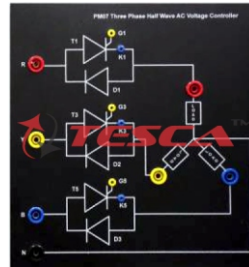
3 Phase SCR Bridge Rectifier
Order Code 47112



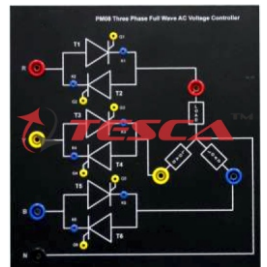
3 Phase Half Wave Converter Drive
Order Code 47113



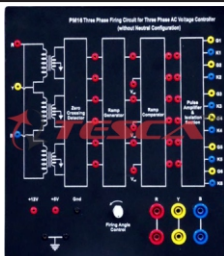
3 Phase Semiconductor
Order Code 47114



3 Phase Half Wave AC Voltage Controller
Order Code 47115



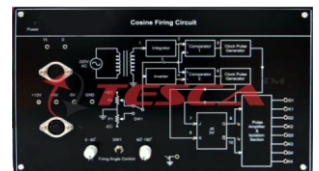
3 Phase Full Wave AC Voltage Controller
Order Code 47116



3 Phase Firing Circuit for Three Phase AC Voltage Controller without Neutral Configuration
Order Code 47117



Ramp & pedestal triggering
Order Code 47119



Cosine firing circuit
Order Code 47120

Cyclconverter Firing Circuit with variable frequency
Order Code 47118

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