

**Specifications:****Built In Power Supply**

- DC Supply : 5v / 1a. & $\pm 12v$, 1a. 0 To 15v Dc (Variable), 100 Ma (Isolated), 0 To 30v DC (Variable), 100 Ma (Isolated), High Volt Dc 15V To 110V, 100mA
- AC Supply : 12-0-12v Ac, 150 Ma. Short Circuit Protected

Built In Function Generator

- O/P Waveform : Sine, Triangle & Ttl O/Ps Output Frequency : 1 Hz To 1mhz In 6 Ranges, With Amplitude & Frequency Control Pots. O/P Voltage 20vp-P Max. (sIN/trg)

Modulation I/P : Am : - I/P Voltage + 5v (100% Modulation) O/P - For 0v (MIN), + 5v (MAX.) - 5v (PHASE Reversal Of O/P) Fm : I/P Voltage $\pm 400mv$ (+ 50% Modulation)

- Clock Generator : 10 Mhz Ttl Clock.
- Data Switches (10 No.) & Bi-Colour Led Status Indicators 10x2 Nos, For High/Low Indication.
- Pulser Switches (2 Nos.) With Four Debounced Outputs - 2no.
- Bnc To 2 Channel Banana Adapter - 2no
- Logic Probe To Detect High/Low Level Pulses Upto 1mhz, With Bi-Colour Leds To Indicate Status.
- 2 / 4 Digit 7 Segment Display With Bcd To 7 Segment Decoder.

Onboard Dpms Provided With Mode/Range Selection.

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- Dc Volt : 2v/200v - 1no.
- Dc Current : 2ma/200ma - 1no.
- Dc Volts/Current : 20v/200ma - 1no

Onboard Moving Iron Meters Provided For

- Accurrent : 1 Amp - 1no.
- Ac Voltage : 15v - 1no.
- Onboard Speaker : 8 Ohms, 0.5 Watt (1nO.)
- Onboard Pots : 1k - 1no. ,1m - 1no.

Mechanical Dimensions

- Master Unit : 460mm(W), 160mm(H), 350mm(D) Net Weight : 6.5 Kg. Gross Weight : 8.5 Kg.
- Panel : 215mm(W), 165mm(H), 40mm(D) Net Weight : 700 Gm Approx.
- Operating Voltage: 220/240vac Switch Settable $\pm 10\%$, 50hz/60va.
- Salient Features : Aesthetically Designed Injection Molded Electronic Desk (mASTER Unit)

Carrying Useful Experiment Resources Variable Power Supplies / Status / Pulsar / Function Generator, Dpms Etc. While The Central Slot Will Carry Replaceable Experiment Panel Secured In An Abs Molded Plastic Sturdy Enclosure, And Has Colorful Screw Less Overlay Showing Circuit & Its Connection Tag Numbers For Easy Connectivity. Connection Through Sturdy 4mm Banana Sockets & Patch Cords. Hands On Learning By Constructing Circuits Using Built In Power Board Panel As Well As Optionally Using Discrete Component Panel. Set Of Users Guide Provided With Each Unit. Order 10 Master Units & Multiples Of 10 Or More Panels Set,



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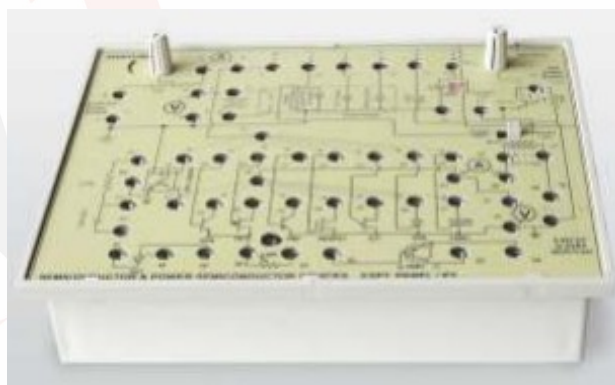
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Discrete Component Panel [DCP] :

- Panel With Following Discrete Components : 7 Resistors, 5 Diodes, 1 LDR, 1 Zener, 3 NPN Transistors, 1 PNP Transistors, 1 Ujt, 4 Capacitors, 1 HV Capacitors, 2 SCR, 2 FET & MOSFET, 1 12v Relay, 3 Inductors, 1 Linear Pot, 1 Triac, 1 Audio Transformer, 1 Pot, 1 HW Resistor, 1 Diac, 92 Banana Sockets For Patch Cording To Construct Various Circuits.

**Liner IC Trainer Panel (LIT) :**

- IC Used : LM339, TI084, 741, 555,
- Sockets : 142, Discrete Component Used : Resistors. -15 Nos,
- Capacitors -15 Nos., Transistors - 2 Nos, Diode - 4 Nos Zener Diode
- 1 No., Regulators- 3 Nos. Pot- 1, Experiment >40.

**Semiconductor & Power Semiconductor Devices Experiment Panel (pROVIDED With 41 Banana Tags)**

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- Characteristics Of Following Devices : Silicon Diode, Semiconductor Testing Using Multimeter, Germanium Diode, Zener Diode, LED, Diac, Bipolar Transistor (NPN, PNP), Field Effect Transistor (FET), MOSFET, IGBT, UJT, Silicon Controlled Rectifier (SCR), Triac, Optocoupler, Thermistor, V-I Character Istics On CRO Of SCR, Triac, Transistor As A Switch & Mosfet As A Switch. Optionally Band Gap Energy Calculations.



Sensors & Transducers Experiment Panel (Provided With 17 Banana Tags)

- Temperature Sensors: Ad 590 (ic Sensor), Rtd (pt100), Thermistor, (ntc).
- Light Sensor: Photo Transistor & Photo Diode, Ldr, Photovoltaic Cell.



Transistor H-Parameters & CB / CC / CE Amplifiers Experiment Panel (Provided With 53 Banana Tags)

- Thermal Stability (Transistor Bias Stability), Determination Of Parameters, Common Base, Common Collector, Common Emitter, Cascade Amplifier, Boot-Strapping & Transistor Switching.

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Technical Specifications of Standalone Power Supply

Sr. No.	Power Supplies	Current Rating	Common	Connection
1.	±12V fixed	500mA	GND	No separate sockets, but internally connected
2.	±5V fixed	300mA (shared with +12V)	GND	No separate sockets, but internally connected
3.	0-12V variable	100mA	Isolated COM1	Pot knob & 2 sockets on the front plate
4.	0-12V variable	100mA	Isolated COM2	Pot knob & 2 sockets on the front plate
5.	15-100V variable	120mA	GND but common with +5V (only for P3)	Pot knob on front plate & 2 sockets on the hind plate



Transistor Amplifier Experiment Panel (pROVIDED With 48 Banana Tags)

- Differential Amplifier, 2 Stage R-C Coupled Amplifier, Transformer Coupled Amplifier, Common Source Fet Amplifier, Common Drain Fet Amplifier (Source Follower) Push Pull Amplifier, Complementary Symmetry Amplifier, Class-D Amplifier.

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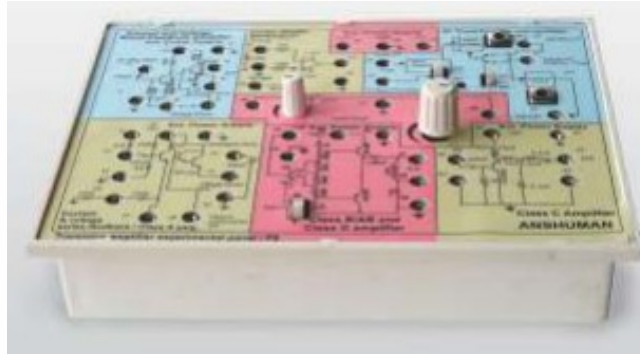
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Transistor Signal & Feedback Amplifiers Experiment Panel (pROVIDED With 40 Banana Tags)

- Current & Voltage Shunt Feedback Amplifier And Direct Coupled Amplifier, Current & Voltage Series (dARLINGTON Transistor Amplifier) Feedback Amplifier, Rf Tuned Amplifier / Oscillator With Am-Fm Facility, Class A Amplifier, Class B Amplifier, Class Ab Amplifier Class C Amplifier, Class D Or Switching Amplifier, Pulse Width Modulator.



Oscillator & Multivibrator Experiment Panel (pROVIDED With 25 Banana Tags)

- Hartley Oscillator, Colpitts Oscillator, Crystal Oscillator, Clapp Oscillator, Blocking Oscillator, Astable Multivibrator, Monostable Multivibrator, Bistable Multivibrator, Twin T Oscillator, Rf Tuned Oscillator, Miller Ramp Generator.

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**Operational Amplifier Circuit Experiment Panel (pROVIDED With 68 Banana Tags)**

- Inverting Amplifier, Non-Inverting Amplifier, Summing Amplifier, Difference Amplifier, Integrater Circuit, Differentiator Circuit, Precision Rectifier: Half Wave & Full -WAVE, Voltage To Current Converter, Current To Voltage, Converter Op-Amplifier Characteristics, Instrumentation Amplifier, Schmitt Trigger, Comparator, Sign Changer, Offset Null, Peak Detector, Clipping Circuit, Clamping Circuits (dc Restorer), Waveform Generator.

**Timer (555) & Frequency (565) Application Experiment Panel (pROVIDED With 54 Banana Tags)**

- Using 555: Timer (1 Shot/Monostable), Free Running (Astable), Bistable. Applications Of 555: Pam, Pwm, Ppm, Buzzer, Saw Tooth Generation, Long Duration Timer, Tachometer, Missing Pulse Detector. Using Pll (IC 565), Vco, Phase Detector, Determination Of Lock Freq., Capture Freq., & Freq. Multiplier / Synthesizer, FM Demodulation (Using Pll).

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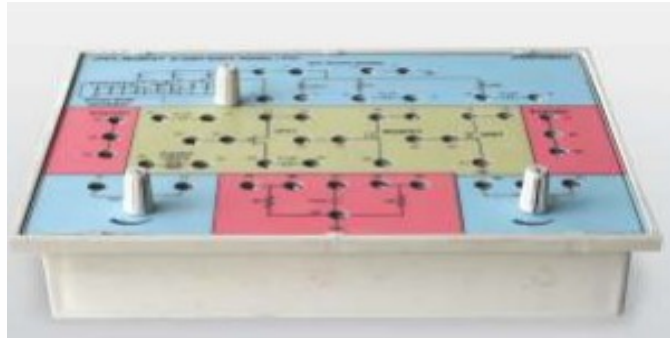
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JFET, Mosfet & IGBT Expt. Panel (Provided With 49 Banana Tags)

- MOSFET : Drain Characteristics Of MOSFET, MOSFET Amplifier, MOSFE switch, Current Mirror Using MOSFET.
- JFET : Characteristics Of JFET, JFET Amplifier, JFET Crystal Oscillator, Phase Shift OSC. Using FET, Phase Splitter Using FET, Fetanalog Switch, Current Mirror Using MOSFET.
- IGBT : Characteristics Of IGBT, IGBTAS Switch.


Passive / Active / M Derived Filter Panel (pROVIDED With 114 Banana Tags)

- Passive (RC) Filters- Low Pass , High Pass, Notch Filter, Active Filters- Low Pass, High Pass, Unity Gain Phase Shifting, Butterworth, Bessel, Chebyshev Filter
- LC (m Derived / Constant K Type Filters)- T Type High Pass Active Filters, High Pass M Derived, Band Stop, Band Pass, M Derived Band Pass, Constant K Type Pass Band, Band Elimination, Composite Low/High Pass S Filter Can Construct Above Filters & Plot Their Characteristics.

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**Power Semiconductor Application Expt. Panel (pROVIDED With 29 Banana Tags)**

- Triac Lamp Dimmer, AC Fan Regulator, SCR/Diac Operated Light Sensitive Switch Using LDR, SCR/Diac Operated Temperature Sensitive Switch Using Thermistor, UJT Relaxation Oscillator, Half And Full Wave (Phase Shift Controlled) Rectifier Using SCR, Timer Using SCR & UJT.

**Power Semiconductor Application Expt. Panel (Provided With 17 Banana Tags & 11 TPS)**

- SCR Phase Shift Controlled Converter Using IC 555 Through Opto Isolator (Potentiometric), Triac AC Power Control Using IC 555 (Potentiometric) (Optoisolated), SCR AC Power Control Using UJT/Put (Potentiometric) Triac AC Power Control Using UJT/Put (Potentiometric), SCR/Triac Temperature Control Using Thermister, SCR/Triac Intensity Control Using Ldr, Opto Isolated Dc Switch & Photo Relay & Thermal Relay (Street Light Control). Power Control Using Ujt/Put (Potentiometric) Triac AC Power Control Using UJT/Put (Potentiometric), SCR/Triac Temperature Control Using Thermister, SCR/Triac Intensity Control Using LDR, Opto Isolated DC Switch & Photo

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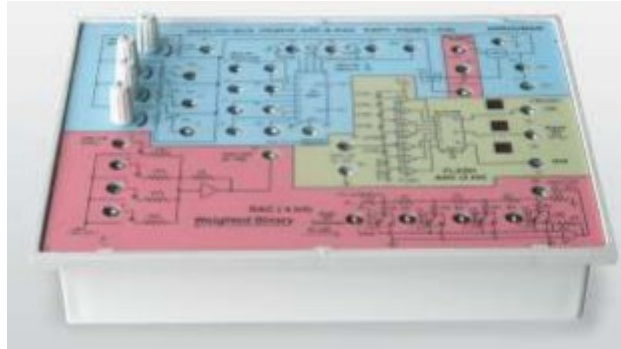


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Relay & Thermal Relay (Street Light Control).



Analog Multiplexer / Demultiplexer & ADC, Dac Expt. Panel (Provided With 40 Banana Tags)

- 8 Channel Analog Multiplexer, 1 Of 8 Analog Demultiplexer, Flash Ato D Converter (3 Bit), D To Aconverter (4 Bit) : Weighted Binary And R- 2R.

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