The **DIGITAL-ANALOG LAB** is intended for elementary as well as advance training of Digital & Analog electronics. The trainer covers regular digital & analog circuits by solder-less interconnections on breadboard and as well as compatible with all optional modules, through use of 2mm brass terminals and patch cords. Various clock generators, logic level input/output indicators and DC regulated power supplies etc. are in-built. The unit housed in attractive enclosure is supplied with mains cord, patch cords, Instruction manual and **Component Set**.

Experimental Coverage:
Analog
- 001. Study of Diodes in DC circuits
- 002. Study of Light Emitting Diodes in DC Circuits
- 003. Study of Half wave rectifier
- 004. Study of Full wave rectifier
- 005. Study of Zener Diode as a voltage regulator
- 006. Study of transistor series voltage regulator
- 007. Study of transistor shunt voltage regulator
- 008. Study of Low pass filter
- 009. Study of High pass filter
- 010. Study of band pass filter
- 011. Study of CE configuration of NPN transistor
- 012. Study of CB configuration of NPN transistor
- 013. Study of CE amplifier
- 014. Study of Monostable multivibrator using transistor
- 015. Study of Bistable multivibrator using transistor
- 016. Study of Astable multivibrator using transistor

Digital
- 001. Logic gates operation
- 002. To verify De-morgan's theorem With boolean logic equations
- 003. Binary to Gray code conversion
- 004. Gray code to Binary conversion
- 005. Binary to Excess-3 code conversion
- 006. Binary Addition and Subtractor
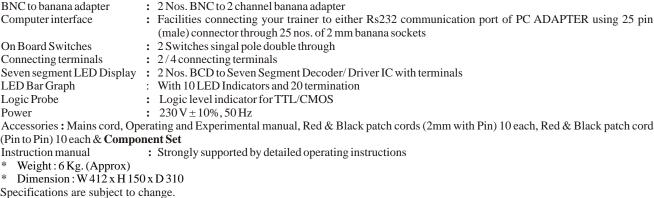
Digital
- 007. Binary Multiplier
- 008. EX-OR gate implementation
- 009. Application of EX-OR gate
- 010. Johnson Counter
- 011. To verify the dual nature of Logic Gates
- 012. Study of Flip-Flops RS, JK, D&T
- 013. Multiplexer and Demultiplexer
- 014. 4 Bit Binary up and down counter
- 015. Study of 8 to 3 Line Encoder
- 016. Study of 3 to 8 Line Decoder
- 017. Study of Shift Register (SIPO)
- 018. CMOS-TTL Interfacing
- 019. Study of Crystal oscillator
- 020. Study of pulse stretcher circuit

FEATURES:

Bread Board	:	Unique solder-less large size, spring loaded breadboard consisting of two Terminal Strips with 1280 tie points and 4 Distribution Strip swith 100 tie points each, totaling to 1680 tie points. (Size:112mm x170mm)
Regulated DC Power Supply	:	+5 V at 1 Amp, -5 V at 1Amp, +12 V / 0 to 20V at 500mA, and -12 V / 0 to -20 V at 500 mA
AC Supply	:	5-0-5V, 10-0-10V at 100mA. Can be used as 5V, 10V, 15V, 20V, and also as center tap
Function Generator	:	Sine / Square / Traingular / Pulse waveform frequency 1 Hz to 110 Khz in 5 Steps. Variable in between steps. Sine / Square / Traingular waveform output 50mV ~ 10Vpp variable
Clock Generators	:	0.1Hz and 100 Hz, Independent fixed TTL 5V outputs
Variable Clock Generators	:	low frequency variable clock 1 Hz to 10 Hz Fixed TTL 5V output
Pulser Switch	:	2 independent buffered bounce free manual pulser (useful for freezing the action of each stage of the counter after every clock pulse)
Data Switch	:	16 independent logic level inputs to select High / Low TTL levels, each with a LED to indicate high / low status and termination
Logic Indicators	:	16 independent buffered logic level indicators for High / Low status indication of digital outputs
Speaker	:	8 ohms miniature speaker with terminations
Digital meter (3½Digit)	:	Dual range DC Voltmeter 0-20V / Ammeter 0-200mA
Continuity Tester	:	For testing the continuity. Provided with Beeper Sound
Potentiometers	:	6 Potentiometers (1K, 22K, 47k, 100K, 100K and 1Meg) with terminals
BNC to banana adapter	:	2 Nos. BNC to 2 channel banana adapter
Computer interface	:	Facilities connecting your trainer to either Rs232 communication port of PC ADAPTER using 25 pin (male) connector through 25 nos. of 2 mm banana sockets
On Board Switches	:	2 Switches singal pole double through
Connecting terminals	:	2 / 4 connecting terminals
Seven segment LED Display	:	2 Nos. BCD to Seven Segment Decoder/ Driver IC with terminals
LED Bar Graph	:	With 10 LED Indicators and 20 termination
Logic Probe	:	Logic level indicator for TTL/CMOS
Power	:	230 V ± 10%, 50 Hz

Accessories **:** Mains cord, Operating and Experimental manual, Red & Black patch cords (2mm with Pin) 10 each, Red & Black patch cord (Pin to Pin) 10 each & **Component Set**

Instruction manual	:	Strongly supported by detailed operating instructions

* Weight : 6 Kg. (Approx)
* Dimension : W 412 x H 150 x D 310

Note: Specifications are subject to change.

Optional Modules:

Apart from above given experimental coverage of 16 + 20 experiments on breadboard, customers can purchase these optional modules. These are ready to use modules with wired components & circuit schematic drawn on top compatible to use with Digital-Analog Lab.

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36013	Study of CE amplifier
36014	Study of Monostable multivibrator using transistor
36015	Study of Bistable multivibrator using transistor
36016	Study of Astable multivibrator using transistor
36017	Study CB amplifier (PNP)
36018	Study CC amplifier (PNP)
36019	Study of FET amplifier.
36020	Study power supply having two zener diodes in series
36021	Study dual polarity voltage regulated power supply
36022	To study the characteristics of photo transistor
36023	To practically understood the operation of a 7-segment LED display
36024	To Study CC configuration of NPN transistor
36025	To study CE configuration of PNP transistor
36026	To study CB configuration of PNP transistor
36027	To study CC configuration of PNP transistor
36028	Study full wave dual polarity supplies
36029	Study of FET charactersistic
36030	Verify superposition theorem
36031	Verify thevonin's theorem
36032	Verify receprocity theorem
36033	Study of Phase shift audio oscillator
36034	Verify kirchoff's law (V& I)
36035	Verify ohm's law
36036	Ideal resistance characteristics
36037	Verification of series law of resistance
36038	Verification of parallel law of resistance
36039	Verification of maximum power transfer theorem
*	Weight : 0.7 Kg. (Approx)
*	Dimension : W 176 x H 131 x D 37

Digital

38501	Logic gates operation
38502	To verify De-morgan's theorem with boolean logic equations
38503	Binary to Gray code conversion
38504	Gray code to Binary conversion
38505	Binary to Excess-3 code conversion
38506	Binary Adder and Subtractor
38507	Binary Multiplier
38508	EX-OR gate implementation
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38518	CMOS-TTL Interfacing
38519	Study of Crystal oscillator
38520	Study of pulse stretcher circuit
38521	4 Bit Ring Counter
38522	Modulo 12 Counter By Direct Clearing
38523	Decade counter
38524.	Shift Register SISO and PIPO
38525	Decimal to BCD Converter
38526	Astable Multivibrator using Digital IC
38527	Bistable Multivibrator using Digital IC
38528	Monostable Multivibrator using Digital IC
38529	Octal to binary Encoder
38530	4 Bit Magnitude Comparator
38531	Interface of TTL-IC to CMOS-IC & CMOS IC to TTL-IC

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