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Digital logic circuits, lab equipment

LogicLAB-D

Digital logic circuits

HANBACK ELECTRONICS

Since 1984

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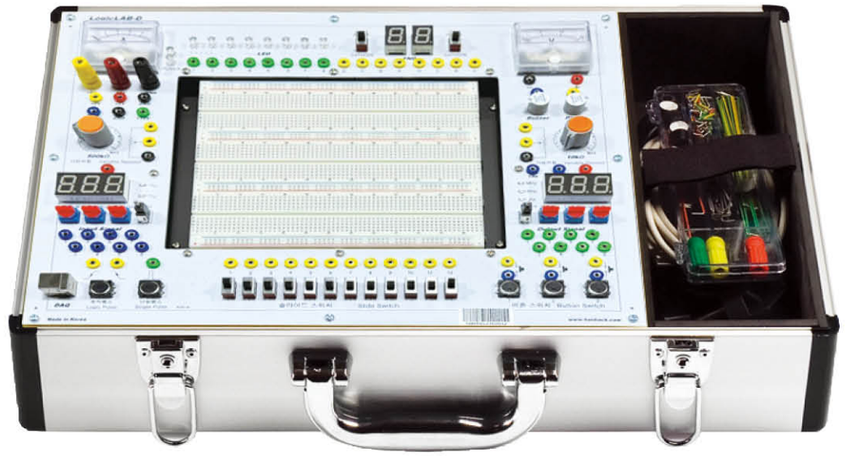
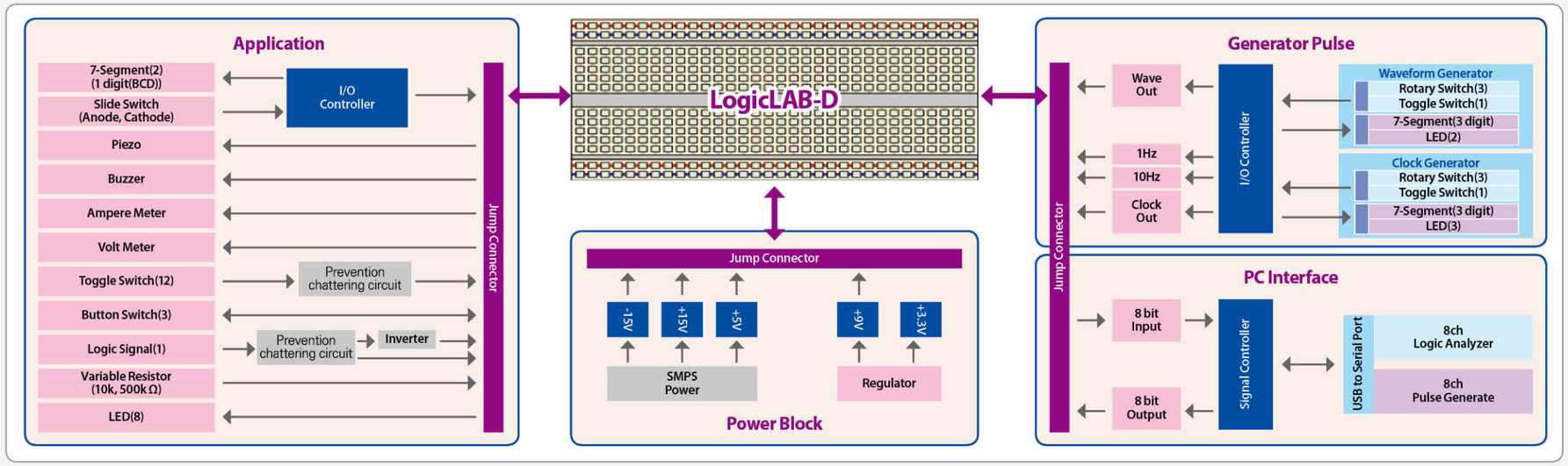
LogicLAB-D



LogicLAB-D uses a breadboard consisting of 3 Terminal Strips and 4 Bus Strips to support various experiments at once. It generates Sine Wave and Triangle Wave through Waveform Generator. It is possible to apply frequency of 0 ~ 999 Hz band to the logical circuit which the user configured selectively

Block Diagram



Features

Uses Bread Board composed of 3 Terminal Strips and 4 Bus Strips to perform diverse experiments at a time.

Sine Wave and Triangle Wave Waveform Generator makes the frequency between 0~999Hz enabled to logic circuit composed by a user.

Variable Clock Generator with range 0Hz~1MHz. Provides 1Hz clock and 10Hz clock as basic clocks and separately creates Clock with the range of 0Hz~1MHz to use 3 kinds of clocks simultaneously for a circuit composed by a user.

Supports Interface between PC and Equipment via DAQ. Receives 8 bit Signal created from PC to use implemented logic circuit and conversely sends 8 bit Signal outputted from the implemented logic circuit to PC to analyze the signal on the monitor.

Supports an experiment interlocking with various input devices. Uses Logic Signal to input Rising edge and Falling edge signal and uses Single Pulse button to enable Pulse signal with 1ms. And provides 12 Toggle Switches and 2 Button Switches for a user to control the signal.

Supports Display experiment using LED and 7-Segment. LED. LED is Green High-brightness Diffusible type for distinguished visibility. 7-Segment controls 2 devices from BCD input. And Slide Switch can change the input conditions of Anode and Cathode selectively depending on the experiment of display methods.

Supports Piezo and Buzzer as signal output devices. Signal Control Experiments using Variable Resistor with 500kΩ and 10kΩ. Embedded Piezo and Buzzer can be used to generate the sound.

Voltage and Ampere measurement Analog Panel support to measure Volt(0v~15v) and Ampere(0A~1A).

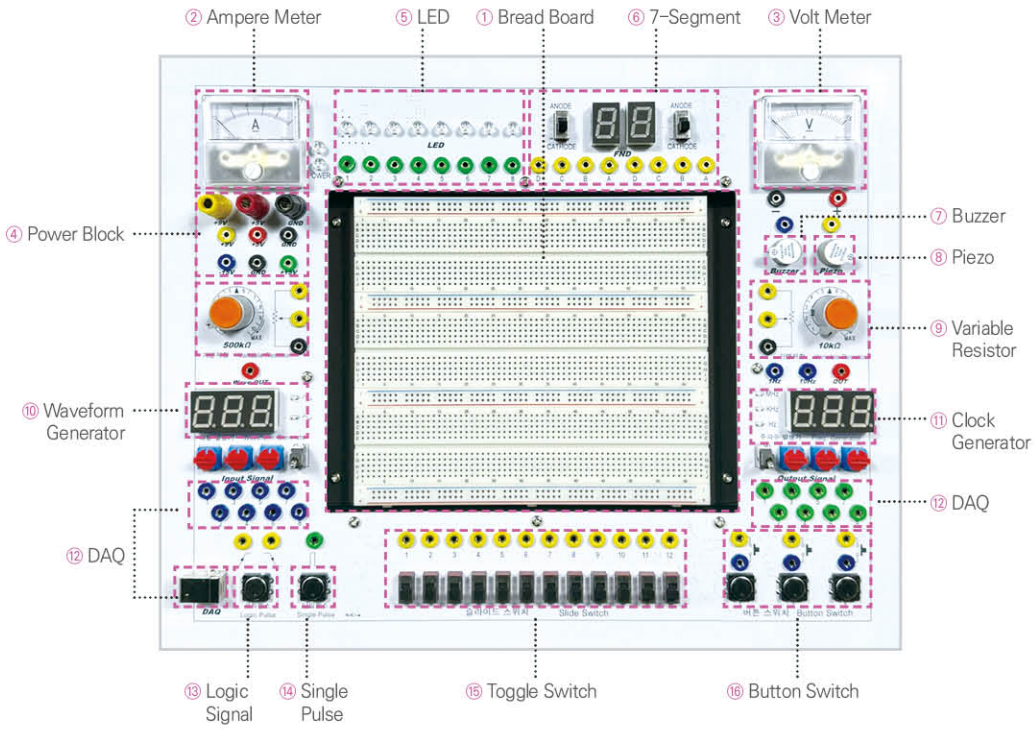
Hardware Specifications

List	Specifications
Power	+5V (Embedded Current Protection Circuit), +9V, +15V, -15V
Frequency Generator	0Hz~1MHz, Display : 7-Segment (3 digit) & LED (Hz, kHz, MHz), Control : Rotary SW(3) & Toggle SW(1)
Waveform Generator	0Hz~999Hz, Display : 7-Segment (3 digit) & LED (Sine Wave, Triangle Wave), Control : Rotary SW(3) & Toggle SW(1)
DAQ	8bit Input, 8bit Output, PC Data Interface
LED	5mm High brightness LED 8EA
FND	BCD Input 7-segment (Anode, Cathode) 2EA
Logic Signal	Rising Edge & Falling Edge 1EA
Single Pulse	1ms Single Pulse Generator 1EA
Toggle Switch	User Toggle Switch 12EA
Button Switch	User Button Switch 3EA
Variable Resistor	10kΩ 1EA, 500kΩ 1EA
Buzzer	Input 5V, Output 2.4kHz
Piezo	Input range 20Hz~22kHz
Volt Meter	DC 0~15V 1EA
Ampere Meter	DC 0~1A 1EA
Bread Board	Terminal Strip 3EA & Bus Strip 4EA
Board Size	Base : 336 x 273(mm), Base Board : 167 x 146(mm)

Training Contents

- Digital Circuit and Signal
- Digital Signal and Information
- Generation of Digital Signal
- Basic Logic Gate
- Combinational Logic Circuit
- Sequential Logic Circuit
- Memory
- Digital Logic Circuit Application

Configuration and Names



① **Bread Board**	Composed of 3 Terminal Strips and 4 Bus Strips. Various logic circuits are experimented on only one Bread Board
② **Ampere Meter**	Displays Current for +5V power (0~1A)
③ **Volt Meter**	Displays DC +15V power. Connected by Jumper Connector for measuring Power
④ **Power Block**	Power Input Block via Banana Jack and Jumper Connector. Supplies the power of +5V, +9V, +15V and -15V
⑤ **LED**	Composed of 8 High-brightness LEDs with 5mm
⑥ **7-Segment**	Implements the operation of 7-Segment using BCD Input and selects Anode and Cathode
⑦ **Buzzer**	Sound Output Device depending the signal input with +5V
⑧ **Piezo**	Controls high and low of Sound by inputted frequency
⑨ **Variable Resistor**	Variable Resistor of 10kΩ and 500kΩ
⑩ **Waveform Generator**	Creates Sine Wave and Triangle wave. Selects the frequency band width with 0Hz~999Hz. Selects the frequency with Rotary switch and Toggle switch
⑪ **Clock Generator**	Selects the frequency, with the clock output for 1Hz, 10Hz and 0Hz ~ 1MHz, and also selects the frequency via Rotary and Toggle switch
⑫ **DAQ**	Communication device between PC and equipment by 8 bit input and 8 bit output Data Interface. Sends the signal from PC to the equipment and outputs the signal from it on PC monitor
⑬ **Logic Signal**	Rising Edge and Falling Edge Outputs can be select according to the input selection button control
⑭ **Single Pulse**	Input button Generate Outputs Pulse with 1ms
⑮ **Toggle Switch**	12 kinds selectable Toggle Switches for Signal Input Selection
⑯ **Button Switch**	3 kinds Button Switches for Signal Control Selection

Product Components

LogicLAB D

AC Power Cable

USB Cable

Jumper Wire