



VERITAS Engineering

Catalog
Of

Digital Logic LAB

Brand: VERITAS

Model: VDLT-002



Digital Logic LAB

Technical Specifications:

Module One:

Chapter 1: Basic Logic Gates Circuits

Experiment 1: Logic Gates Structure Circuits (DL, RTL, TTL, CMOS)

- Input Data Length: 2 bits;
- Input Data Mode: Dip Switch

Experiment 2: Logic Gates Circuits

- Include Logic Gates: AND Gate; NANO Gate; NOT Gate; OR Gate; NOR Gate; XOR Gate

Experiment 3: Voltage and Current Measurement (TTL, CMOS)

- Voltage Measurement: V_{IH} , V_{IL} , V_{OH} , V_{OL} ;
- Current Measurement: I_{OH} , I_{OL} ;

Experiment 4: Interface between Logic Gates Circuits (TTL and CMOS Transform)

- TTL to CMOS Transform: Input: 5 V; Output: 12 V;
- CMOS to TTL Transform: Input: 12 V; Output: 5 V

Experiment 5: Transmission Delay Measurement (TTL, CMOS)

- TTL Transmission Delay: 20.8 nS;
- CMOS Transmission Delay: 99.1 nS

Module Two:

Chapter 2 Combinational Logic Circuits

Experiment 1: 4 Bits Comparator Circuit

- Input Data Length: 4 bits;
- Input Data Mode: Dip Switch,
- Output Data Length: 3 bits;
- Data Display Mode: LED Display



Experiment 2: 9 Bits Parity Generator

- Input Data Length: 9 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 2 bits;
- Data Display Mode: LED Display

Experiment 3: Tristate and Schmitt Gate Circuits

- Tristate Gate: Data Length: 1 bits;
- Input Data Mode: Dip Switch; Schmitt Gate;
- Measurement V_{IH} , V_{IL} , V_{OH} , V_{OL}

Experiment 4: Half Adder and Full Adder

Half Adder:

- Input Data Length: 2 bits;
- Input Data Mode: Dip Switch
- Output Data Length: 2 bits;
- Data Display Mode: LED Display

Full Adder:

- Input Data Length: 3 bits;
- Input Data Mode: Dip Switch
- Output Data Length: 2 bits;
- Data Display Mode: LED Display

Experiment 5: Half Subtractor and Full Subtractor

Half Subtractor:

- Input Data Length: 2 bits;
- Input Data Mode: Dip Switch
- Output Data Length: 2 bits;
- Data Display Mode: LED Display

Full Subtractor:

- Input Data Length: 3 bits;
- Input Data Mode: Dip Switch
- Output Data Length: 2 bits;
- Data Display Mode: LED Display

Module Three:

Chapter 3: Extended Combinational Logic Circuits

Experiment 1: Arithmetic Logic Unit (ALU) Circuit

- Input Data Length: 4 bits;
- Input Data Mode: Dip Switch
- Output Data Length: 4 bits;
- Data Display Mode: LED Display;
- Operation instruction: 16 Types

Experiment 2: Encoder Circuit

- Input Data Length: 8 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 3 bits;
- Data Display Mode: LED Display

Experiment 3: Decoder Circuit

- Input Data Length: 3 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 8 bits;
- Data Display Mode: LED Display

Experiment 4: Multiplexer Circuit

- Input Data Length: 4 bits;
- Input Data Mode: Dip Switch
- Output Data Length: 1 bits;
- Data Display Mode: LED Display

Experiment 5: Demultiplexer Circuit

- Input Data Length: 1 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 4 bits;
- Data Display Mode: LED Display

Experiment 6: Digitally Controlled Analog Multiplexer and Demultiplexer Circuits

Multiplexer:

- Input Voltage: 0 V-5 V;
- Input Quantity: 2;
- Output Voltage: 0 V - 5 V;
- Output Quantity: 1

Demultiplexer:

- Input Voltage: 0 V-5 V;
- Input Quantity: 1;
- Output Voltage: 0 V-5 V;
- Output Quantity: 2

Module Four:

Chapter 4: Clock Generator Circuit

Experiment 1: Constructing Oscillator Circuit with Basic Logic Gates and Schmitt Gates

- Basic Logic Oscillator: Output Frequency: 3.58 MHz;
- Schmitt Gates Oscillator: Output Frequency: 3.58 MHz

Experiment 2: Voltage Controlled Oscillator Circuit (Output Frequency: 26.8 kHz - 35.5 kHz)

Experiment 3: BJT Astable Multivibrator Oscillator Circuit (Output Frequency: 160 kHz)

Experiment 4: Operational Amplifier Oscillator Circuit (Output Frequency: 2.56 kHz)

Experiment 5: 555 Astable Multivibrator and Monostable Multivibrator Oscillator

- Astable Multivibrator: 4.75 Hz;
- Monostable Multivibrator: User Controlled

Module Five:

Chapter 5: Sequential Logic Circuits

Experiment 1: RS Flip-flop Circuit

- Input Data Length: 2 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 1 bits;
- Data Display Mode: LED Display

Experiment 2: JK Flip-flop Circuit

- Input Data Length: 2 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 2 bits;
- Data Display Mode: LED Display

Experiment 3: D Flip-flop Circuit

- Input Data Length: 1 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 2 bits;
- Data Display Mode: LED Display

Experiment 4: Asynchronous Counter Circuit

- Output Data Length: 4 bits;
- Data Display Mode: LED Display

Experiment 5: Synchronous Counter Circuit

- Input Data Mode: Dip Switch;
- Output Data Length: 5 bits;
- Data Display Mode: LED Display

Experiment 6: Presetably Synchronous Counter Circuit

- Presetably Data Length: 4 bits;
- Input Data Mode: Dip Switch
- Output Data Length: 5 bits,
- Data Display Mode: LED Display:
- Count Mode: Up Count or Down Count

Module Six:

Chapter 6: Memory Circuits

Experiment 1: Constructing ROM Circuit with Diodes Store

- Data Length: 2 bits;
- Data Display Mode: LED Display

Experiment 2: Constructing RAM Circuit with D Flip-flop

- Input Data Length: 4 bits;
- Input Data Mode: Dip Switch:
- Output Data Length: 4 bits;
- Data Display Mode: LED Display

Experiment 3: Programmable ROM Circuit

Experiment 4: 64 Bits RAM Circuit

- Input Data Length: 4 bits;
- Input Data Mode: Dip Switch;
- Output Data Length: 4 bits;
- Data Display Mode: LED Display

Module Seven:

Chapter 7: Converter Circuits

Experiment 1: OPA ADC Circuit

- Analog Input: 0 V-5 V;
- Data Display Mode: LED Display;
- Resolution: 4 bits

Experiment 2: ADC0804 ADC Circuit

- Analog Input: 0 V-5 V;
- Data Display Mode: LED Display;
- Resolution: 8 bits

Experiment 3: 4 Bits R-2R DAC Circuit (Digital Input: 4 bits; Analog Output: 0 V-5 V)

Experiment 4: Uni-polar DAC0800 DAC Circuit

- Digital Input: 8 bits;
- Input Data Mode: Dip Switch;
- Analog Output: 0 V-5 V;
- Step Value: 0.019 V

Experiment 5: Bipolar DAC0800 DAC Circuit

- Digital Input: 8 bits;
- Input Data Mode: Dip Switch;
- Analog Output: - 5 V - 5 V;
- Step Value: 0.038 V

Module Eight:

Chapter 8: Logic Application Circuits

- Experiment 1: Electronic Voting Circuit (7408, 7404, 7432, 7486)
- Experiment 2: Electronic Wheel-amusement Circuit ($V_{cc} = 12\text{ V}$; IC: 555, CD4017B)
- Experiment 3: Electronic Competition-answer Circuit ($V_{cc} = 12\text{ V}$; IC: CD4011 B)
- Experiment 4: Traffic Light Circuit ($V_{cc} = 12\text{ V}$; IC: 555, CD4017B)

Power Supply:

- Power source: 220V AC +10 percent, 50Hz
- Constant Voltage Output: +5V, $\pm 12\text{V}$
- Variable Voltage Output: 0V - $\pm 15\text{V}$

Function Generator &

- DC Power Supply Module: Waveforms: Sine, Triangle, Square, TTL Pulse
- Amplitude: 10 Vpp
- Impedance: $50\Omega \pm 10\%$.
- Duty Control: 30% - 60%
- Display: 6-Digit LED Display
- Frequency Range: 10Hz to 100 kHz (4 Ranges), 100Hz to 1 MHz (4 Ranges)
- Frequency Control: Superlatively Coarse and Fine Tuning