

**LOGIC TRAINING BOARD ON  
COUNTERS & SHIFT REGISTERS**  
OMEGA TYPE LTB-811

**OMEGA TYPE LTB-811** Computer Logic Training Board has been designed specifically for the study of Counters & Shift Registers to make the student familiar with the design and practical aspects of all types of counters, shift registers and their applications in frequency measurements and computers etc. This board with gates and Flip-Flops can be used to construct any type of counter, shift register etc. and the output of each circuit can also be observed in decimal code with the help of decoder and Seven Segment Display. More than 25 experiments can be conducted on this training board. These experiments cover several aspects of computer, input and output devices, memories, arithmetic and control units. Once the student understands these basic circuits, he can combine them in infinite varieties of complex circuits.

Practical experience on this board carries great educative value for Science and Engineering Students.

**OBJECT**

To design, fabricate and test the following:

**COUNTERS**

**Ripple Counters:**

- 01 4-Stage binary ripple up-counter.
- 02 4-Stage binary ripple down-counter.
- 03 4-Stage binary ripple up-down counter.
- 04 Variable modules ripple counter by direct clearing.
- 05 4-Stage decade ripple up-counter by direct clearing.
- 06 4-Stage decade ripple down counter by direct clearing.

**Synchronous Counters:**

- 07 4-Stage binary synchronous up-counter with parallel carry.
- 08 4-Stage binary synchronous down-counter with parallel carry.
- 09 4-Stage binary synchronous up-counter with series carry.
- 10 4-Stage binary synchronous down-counter with series carry.
- 11 4-Stage binary synchronous up-down counter with parallel carry.
- 12 4-Stage synchronous up-down counter with series carry.
- 13 4-Stage synchronous decade counter with parallel carry.

**Series Parallel Counters:**

- 14 3-Stage mod-5 series parallel counter.
- 15 4-Stage mod-10 series parallel counter.

**Ring Counter:**

- 16 4-Stage ring counter.

**Johnson Counters:**

- 17 4-Stage Johnson or shift counter.
- 18 Decade counter using 5-stage shift counter.

**Miscellaneous Counters:**

- 19 Higher Modules counter by combining two lower modules counter.
- 20 2421 BCD counter.

**SHIFT REGISTERS**

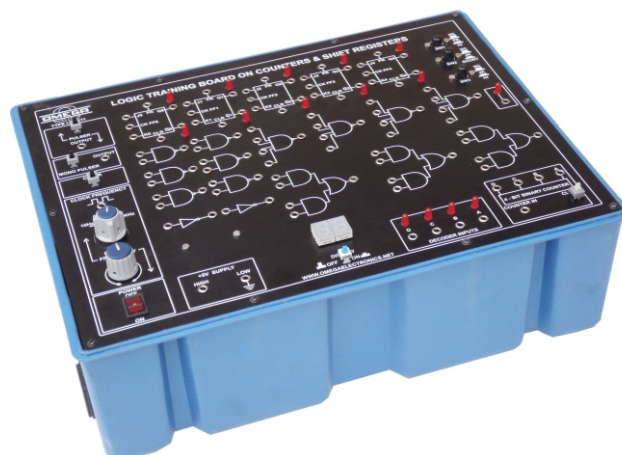
To study the operation of:

- 21 Serial to parallel converter.
- 22 Series-in-series output register.
- 23 Parallel to serial converter.
- 24 Parallel-in-parallel out register.
- 25 Right shift and left-shift register.

**APPLICATION OF COUNTERS.**

- 26 To study the basic principle of frequency measurement.
- 27 To study the operation of frequency division by counter.

We are committed to the continuous development of our products, and therefore reserve the right to amend specifications without prior notice.



- 28 To study the principle of Random Access Memory by constructing its basic cell.

**FEATURES**

The board consists of the following built-in parts:

- 01 + 5V D.C. at 1Amp, IC Regulated Power Supply Internally connected.
- 02 Five, J-K master slave flip-flops with preset and clear arrangement.
- 03 Six, 2-input NAND gates.
- 04 Four, 4-input NAND gates.
- 05 Three, 4-input AND-OR gates.
- 06 Two inverters (NOT gates).
- 07 A 4-bit binary counter to demonstrate the basic principles of frequency measurement.
- 08 A square wave oscillator of frequency 10 Hz, 1 KHz and 10 KHz with coarse and fine variations, demonstrate the basic principle of frequency division.
- 09 Completely programmable panel to make any type of counter or shift register.
- 10 Two pulser switches for clear and clock arrangement.
- 11 One Mono Pulser to give a 1 sec pulse.
- 12 Three Band switches for various interconnections required in the circuit to provide greater convenience and avoiding wrong connections.
- 13 Two, 7-segment displays to monitor the output in decimal code.
- 14 LEDs for visual indication of output status of each flip-flop.
- 15 Adequate no. of other Electronic Components.
- 16 Mains ON/OFF switch, Fuse and Jewel light.
- 17 The unit is operative on 230V  $\pm 10\%$  at 50Hz A.C. Mains.
- 18 Adequate no. of patch cords stackable from rear both ends 4mm spring loaded plug length 50cm.
- 19 Good Quality, reliable terminal/sockets are provided at appropriate places on panel for connections /observation of waveforms.
- 20 Strongly supported by detailed Operating Instructions, giving details of Object, Theory, Design procedures, Report Suggestions and Book References.
- 21 Weight : 4.500 Kg. (Approx.)
- 22 Dimension : W 415 x H 165 x D 315.

**OTHER APPARATUS REQUIRED :**

- 24 Dual trace CRO 20MHz OMEGA TYPE CRO-20

**OMEGA ELECTRONICS**

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