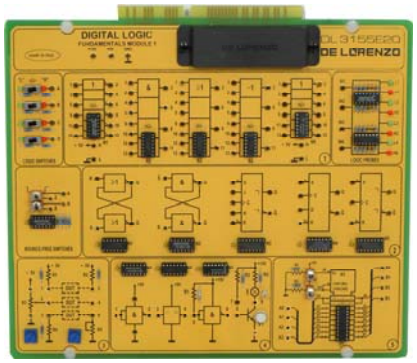
TIME ELECTRONIC BOARDS

DIGITAL ELECTRONICS

DIGITAL LOGIC FUNDAMENTALS 1



DL 3155E20

Theoretical topics:

- Ideas of logic: logic connectives and fundamental theorems of the Boolean algebra
- Binary system
- Logic functions
- Algebraic description of the logic networks and the truth tables
- Theorems of the Boolean algebra
- Minimization techniques of logic functions through theorem applications and Karnaugh maps
- Logic gates and truth tables
- Fundamental logic operators
- NOT, AND, OR logic operators
- Operation of the AND and OR operators as control devices in the transfer of logic signals
- OR-EXCLUSIVE logic operator
- Canonical forms of a function
- Graphic representation of functions
- AND - OR - NOT function
- NAND and NOR logic operators
- Operation of the NAND and NOR operators as control devices in the transfer of logic signals and carrying out of logic functions
- Generalities and definition of flip-flop
- S - R flip-flop, with NOR and NAND operators
- J - K flip-flop
- Master-slave J - K flip-flop
- T and D flip-flops
- Fundamental logic families
- TTL and CMOS families
- Characteristic parameters of the logic gates
- Interfacing of the logic families, outputs and types of TTL circuits
- Interfacing from CMOS to TTL
- Interfacing from TTL to CMOS
- TTL with totem-pole outputs
- The open-collector gates
- Wired-and function Page
- Types of TTL circuits
- Schotty and low power Schotty of advanced type (AS/ALS)
- Interfacing with the bus
- An example of transmitter / receiver for bi-directional bus
- Fault simulation

Circuit blocks:

- AND / NAND
- OR / NOR
- XOR / XNOR
- Open Collector
- SET / RESET Flip-Flop
- D-Type Flip-Flop
- JK Flip-Flop
- Tri-State Output
- TTL / CMOS Comparison
- Data Bus Control

In addition, the Circuit Board contains:

- +5 V regulated supply
- Built-in clock circuit
- Manual input signal control