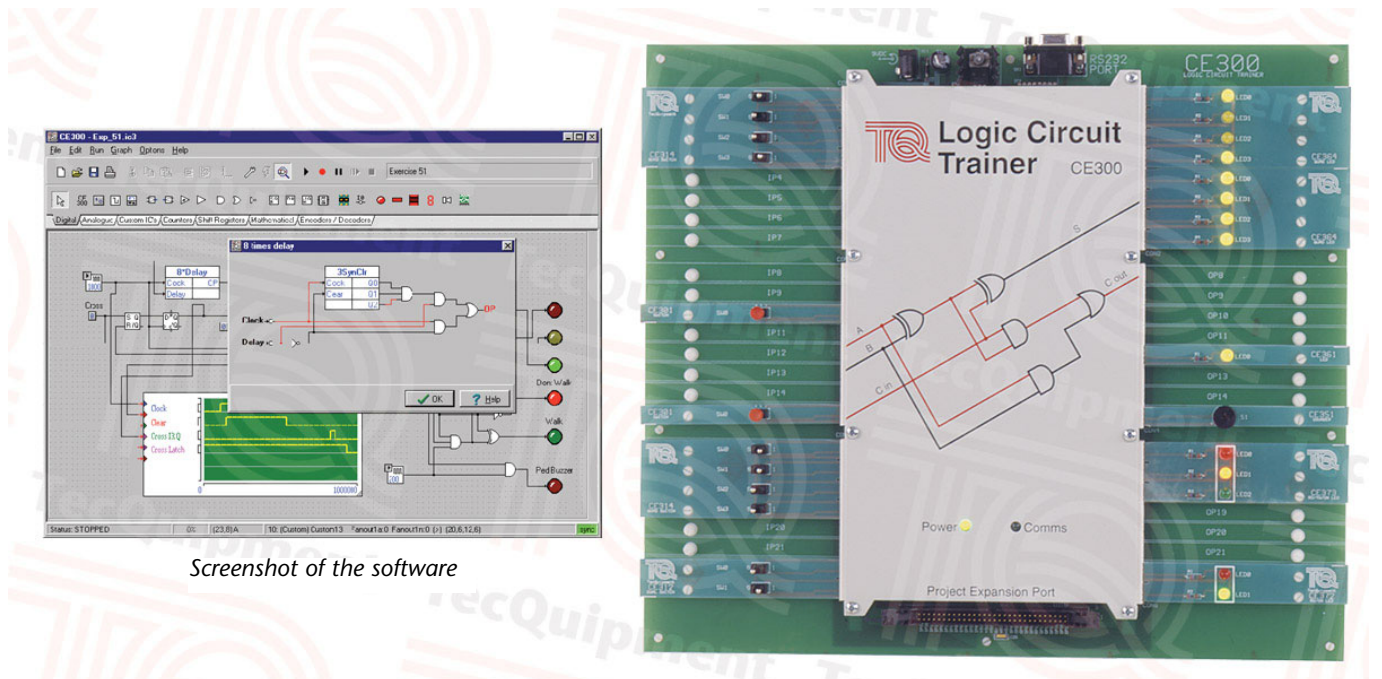


CE300

Logic Circuit Trainer

Shows students how logic circuits work and how to use them



Screenshot of the software

“The software capability of the CE300 and its integration with the Logic Circuit Trainer hardware, in my view, makes it unique among the available learning facilities supporting digital electronics.”

Bob Clarke, Vice Chairman of the National Forum for Engineering in Colleges (NFEC), formerly Head of Engineering at Farnborough College of Technology

- Interactive hardware and software teaching solution using virtual digital logic devices and real input and output devices – brings circuits to life!
- Applicable to all academic levels – from the basic principles of individual logic devices to advanced digital logic applications and project work
- Intuitive and easy-to-use software – no special computer skills or knowledge needed
- Comprehensive software support including tutorial and example circuit files
- Sophisticated fault simulation and logic trace features
- Software simulates logic gates with propagation delays and fan-outs
- Optional extra interchangeable input and output hardware modules for more experiments
- Connects to your computer by means of its serial port – no interface card needed
- Ideal for distance, open and student-centred learning

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- An ISO 9001 certified company

CE300

Logic Circuit Trainer

Description

TecEquipment's CE300 Logic Circuit Trainer equipment includes hardware and software. Students use the software to create logic circuits. The hardware works as real input and output devices for the logic circuits. This allows users to create and study an unlimited selection of digital devices and circuits. Students can study simple gates or advanced logic systems.

The software is easy to use and does not need specialist computer skills or knowledge. The drag and drop style allows the student to select virtual digital logic blocks from a palette. They then position them on the computer screen and then 'wire' them together as needed. The student can then run the circuit to study the properties of individual blocks or the overall circuit and how it works.

When the students use the hardware for inputs and outputs, they have the added benefit of studying the responses of real systems under digital control.

The software also allows the circuits to run in simulation mode (without the hardware inputs and outputs). The software includes 'virtual' input and output devices.

Supplied with the CE300 is a basic module kit of parts which connect to the main board ('motherboard') as simple input and output devices. Available as optional extra ancillaries are more input and output modules to give more experiments. These modules plug into the motherboard.

Experiments

The standard CE300 gives these experiments:

- Combinational logic:
 - Logic elements
 - Gate equivalents
 - De-Morgan's theorem
 - Two's complement
 - Number systems (binary, hexadecimal)
 - Encoding/decoding
 - Parity and magnitude comparison
- Sequential logic:
 - Flip-flops (SR/JK/D/T)
 - Shift registers
 - Counters (synchronous and asynchronous)
 - Random number generation
 - 4-bit calculator (addition, subtraction, multiplication)

The flexible nature of the CE300 Logic Circuit Trainer allows students to create and investigate an unlimited variety of digital circuits.

Standard Features

- Supplied with comprehensive user guide
- Two-year warranty
- Made in accordance with the latest European Union directives

Essential Ancillaries (not supplied by TecEquipment)

Suitable computer with a spare serial communications socket and at least 33 MHz processor speed. Windows® 95, 98, ME, 2000 or XP operating system. Needs at least 20 MB of RAM and at least 3 MB disc space.

Recommended Ancillaries

- Additional Modules Kit (CE300a)
 - This kit includes extra input and output modules to give more experiments than with the standard CE300 Logic Circuit Trainer. The additional experiments include:
 - A/D conversion
 - D/A conversion
 - Seven-segment displays and decoding
 - LED array character generation
 - Stepper motor drive
- Position and Speed Project Module (CE300b)
 - This module allows experiments in encoding and digital control of position, speed and direction of rotation of a d.c. motor. Experiments include:
 - Binary versus gray coding
 - Absolute and relative position encoding
 - Position and speed control
- Road Junction Project (CE300c)
 - This module allows students to apply and extend their knowledge of digital electronics. Students develop software-generated circuits to monitor and control the timing and sequencing of traffic lights at a model four-way road junction.

Essential Services

Electrical supply:

110 to 240 VAC, 50 W, 50/60 Hz, with earth

Bench space needed:

500 mm x 500 mm

Operating Conditions

Operating environment:

Laboratory environment

Storage temperature range:

–25°C to +55°C (when packed for transport)

Operating temperature range:

+5°C to +40°C

Operating relative humidity range:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

Sound Levels

Less than 70 dB(A)

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CE300

Logic Circuit Trainer

Specifications

Nett dimensions and weight:

400 mm x 400 mm x 100 mm and 3.5 kg

Packed dimensions and weight:

Approximately 0.05 m³ and 10 kg

Motherboard:

- Low-voltage d.c. supply input
- D-type serial communications connection for computer
- 24 inputs
- 24 outputs

Basic kit (included):

- Push-button switches
- Toggle switches
- Buzzer
- Indicators (light emitting diodes)

Software:

- Gates: AND, OR, NAND, NOR, XOR, XNOR
- Inverters and buffers
- Schmitt trigger with variable threshold and hysteresis
- SR, JK and D-type flip-flops (with edge triggering and clear and preset where appropriate)
- Counters
- Shift registers
- Mathematical functions
- Encoders and decoders
- Variable logic levels: operator-set between 3 V to 15 V
- Logic sources: Single-bit and multiplexed digital source, clock and pulse generator with variable frequency, mark space ratio and number of pulses.
- Logic sinks (LEDs): standard, resizable and arrays in a choice of colours
- Logic analyser with single-bit or multiplexed inputs
- Signal generator, potentiometer, switch, relay, voltage to frequency converter
- Bargraph, analogue meter, oscilloscope, chart recorder