



# LP-2900 FPGA/CPLD TRAINING SYSTEM

## The Best Training Tool To Learn PLD (Programmable Logic Devices)



### FEATURES:

- Portable and robust unit, mounted on a sturdy metal console case.
- Complete unit with built-in programmer and wide range of application modules on-board.
- On-board Altera FLEX EPF10K10TC144 PLD plug-in module.
- Bundled with powerful renowned Altera MAX+PlusII Baseline FPGA/CPLD EDA development software that includes PLD program editing, compiling, simulation, floorplan and device programming.
- Comprehensive documentation with experiment guides.
- Capable to use circuit graphic and digital hardware descriptive syntax (VHDL/AHDL) to develop circuit.
- LED indicator to monitoring logic status for all I/O pins of the PLD.
- All I/O device hard-wired to PLD, not wiring by user required
- Parallel port interface.
- Microcontroller, A/D & D/A expansion.
- Main base unit compatible with Xilinx PLDs module board\* (optional)
- Supports WIN9X/ME/NT/2000/XP operating system.

### EXPERIMENT CONTENT:

#### A. System Learning Approach and Familiarization

- Circuit design & editing
- Simulation
- Device selection
- Compiling the design
- Download file to the target system

#### B. Introduction

- Logic Gates
- Logic Circuit Example

#### C. Combination Logic

- Half Adder & Full Adder
- 4-Bit Adder with Carry
- 4-Bit Two's Complement Subtractor
- Look Ahead Adder
- 2-Bit Comparator
- Encoders & Decoders
- BCD-7 Segment Display Interface
- Multiplexer & Demultiplexer

#### D. Sequential Logic

- Synchronous Counters
- Synchronous Shift Registers
- Synchronous Shift Count Registers
- Asynchronous Counters

#### E. Application Examples:

- Frequency Counter
- Electronic Dice
- Timer
- Traffic Light Controller
- Dot Matrix Display
- Keypad & Display Scanning
- LCD Interface Circuit
- 8051 Microcontroller Interface (optional)

### INTRODUCTION:

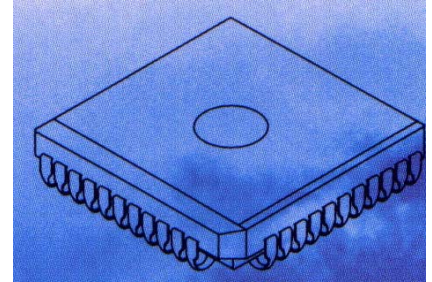
Finally, a complete teaching tool to teach & study the latest PLDs (Programmable Logic Devices) is here! For the past years, introducing and teaching students about PLDs has been filled with problems. The circuit has to be assembled in bits & pieces, and furthermore, the supporting documentation and software is hard to acquire.

With this training system, past problems have been solved. Bundled with its comprehensive hardware, development software and documentation, it provides all the solution to the instructor and student to excel in CPLDS and FPGAs introduction, programming and interfacing.

This unit is fitted with the ALTERA FLEX10K10TC144 PLD as standard, but the main base unit is flexible to accept others Altera or XILINX PLDs, to study other manufacturer design approach.

## TECHNICAL SPECIFICATION:

- PLD: ALTERA FLEX10K10TC144; Plug-in Modular Type
- Programmable Clock Generator; Frequency: 1/10/100/1K/10K/100K/1M/10MHz
- Eight Logic Input Switches; Depressed Type with Light Indicator
- Sixteen (8 x 2) Logic Input DIP Switches
- Two -ve pulse switches; with indicator
- Two +ve pulse switches; with indicator
- 3 x 4 Button Keypad
- LED Logic Status Monitor Indicator for PLD
- 8 x 8 Dual Color Dot Matrix Display
- 16 x 2 LCD Display
- Six 7-Segment LED Display
- Buzzer
- Twelve Color LEDs
- Fourteen Dice Pattern LEDs
- A/D Converter
- D/A Converter
- Socket for optional 8051 Microcontroller



## SYSTEM CONTENT:

- Main unit with PLD module on-board
- Operation Manual
- Experiment Manual
- Development Software CD-ROM
- Data Sheet (on CD-ROM)
- DB25-25 Interface Cable
- Power Cord

## Others Supported PLD Chip:

- Altera FLEX10K30ATC144 (TQFP-144)
- Xilinx XCS10TQ144 (TQFP-144)
- Xilinx XC2S30PQ208 (PQFP-208)
- Xilinx XC2S100PQ208 (PQFP-208)
- Xilinx XC2S300EPQ208 (PQFP-208)

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