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ALTERA AMD based

FPGA Digital Circuit Design Trainer

COMBO II DLD

HANBACK ELECTRONICS
Since 1984

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Homepage

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Considering the flexibility and scalability of FPGA device, we modularized to enable replacement use of ALTERA and AMD devices

Download cables for ALTERA and AMD are provided for USB, making it easier to use in any PC environment

With the Bread Board installed as standard, the user can configure TTL circuit and experiment

16 types of clocks between 1 Hz and 50 MHz using Clock Control Block and the clock generator installed by the user on the FPGA module can be selected and used for purpose

Provides educational themes that organizes the theory and practice of digital logic circuits by subject, making it easier to understand the logic circuits in general

Training Contents

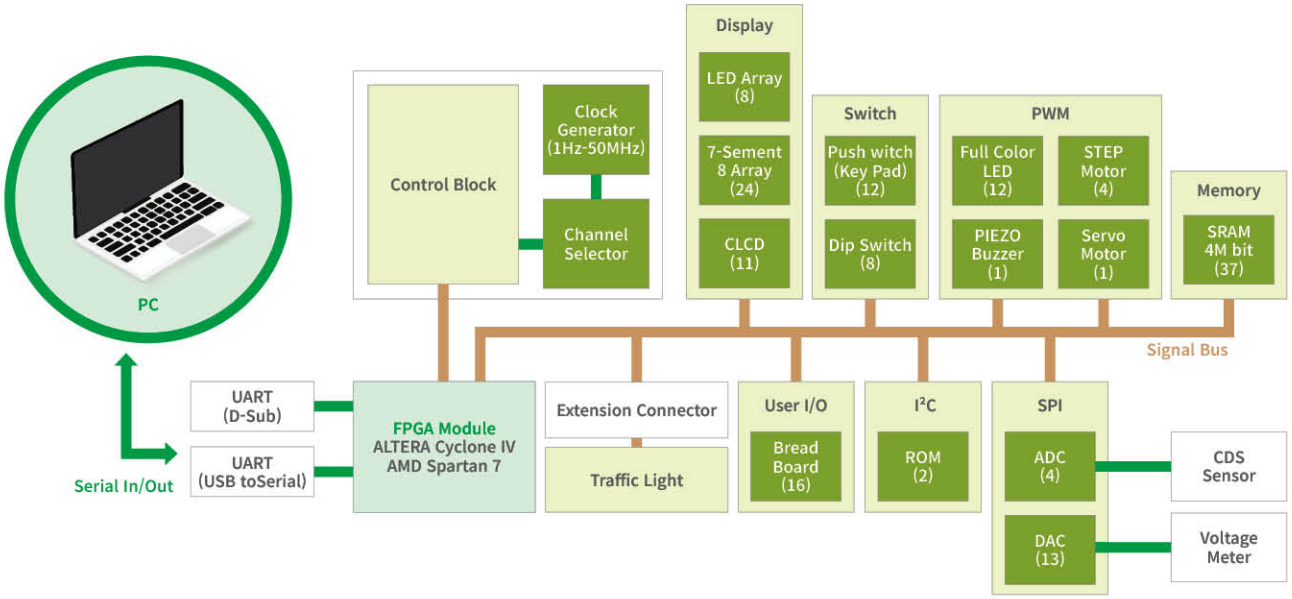
DIGITAL DESIGN BASICS AND PRACTICE PREPARATION

FPGA DIGITAL LOGIC DESIGN

1. TRAINING EQUIPMENT (COMBO II DLD)
2. DIGITAL LOGIC CIRCUIT DESIGN
   - 2.1. Logic Gate Implementation
   - 2.2. Basic Combinational Logic Circuit Design
   - 2.3. Advanced Combinational Logic Circuit Design
   - 2.4. Arithmetic Circuit Design
   - 2.5. Clock and Sequence Logic Circuit
   - 2.6. Application of Clock and Counter Circuit
   - 2.7. Implementation of PWM(Pulse Width Modulation) Circuit
   - 2.8. Register
   - 2.9. Implementation of State Machine

APPLIED DIGITAL LOGIC CIRCUIT DESIGN

- 3.1. Character LCD Control
- 3.2. Serial Communication using RS232
- 3.3. Control External Memory (SRAM)
- 3.4. DAC and ADC
- 3.5. Expansion Application-Traffic Signal



Design Environment

List	Specifications
ALTERA Module	Quartus Prime Lite Edition
AMD Module	Vivado

Hardware Specification

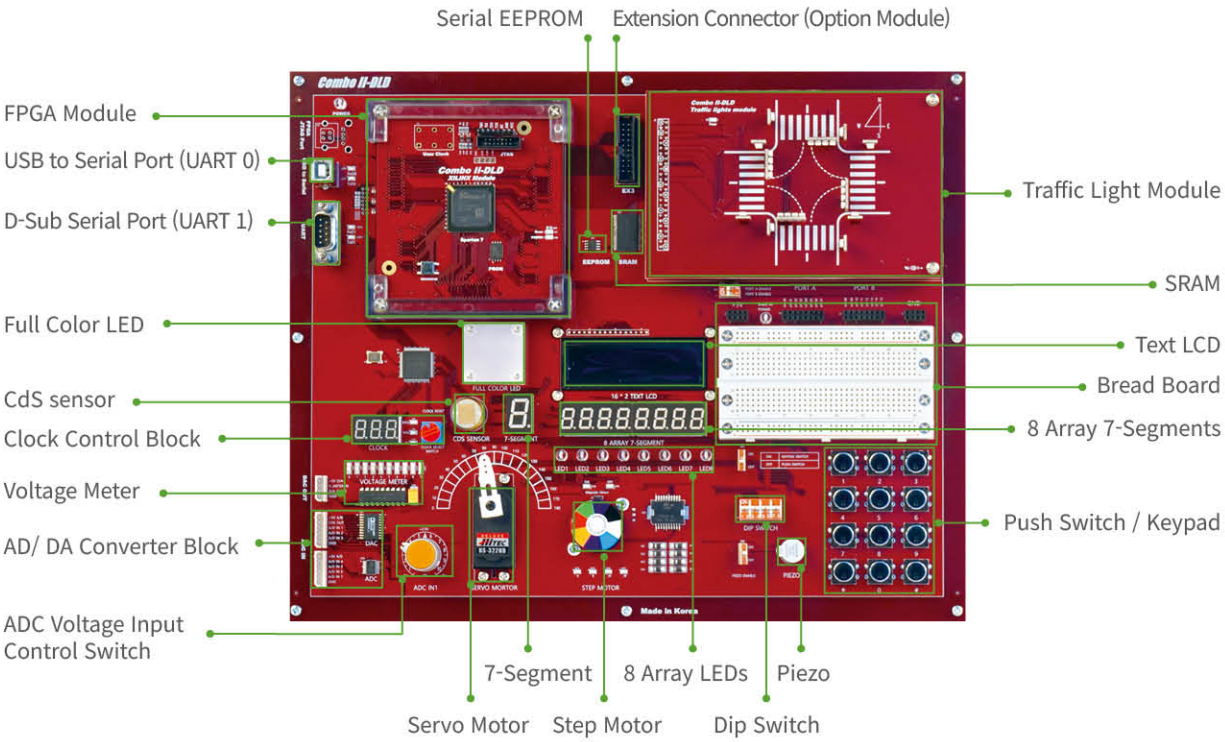
List	Specifications
FPGA Device	ALTERA Cyclone IV Series (EP4CE30F, EP4CE40F) AMD Spartan 7 Device(XC7S75)
Clock Control	1 Hz ~ 50MHz Changeable Clock
Memory	4Mbit SRAM, 16kB 2Wire Serial EEPROM
Display	Text LCD, 8 Array LED, 4 Cell Full Color LED, 7-Segment, 8 Array 7-Segment
Actuator	1EA Servo Motor, 1EA Step Motor
AD/DA	SPI ADC : 1 Channel 8Bit 1MHz Sampling, Parallel DAC : Dual Voltage Output 8-Bit DAC
Sensor	CdS, Voltage Meter (LED)
Etc	PIEZO, Bread Board, Dip Switch, Push Switch
UART	2 Channel UART (USB to Serial 1 Port , D-Sub 9 Pin 1 Port)
Extension Connector	2EA 50pin Connector (FPGA I/O 84Pin)
Project Module	Traffic Light Module
Option Module	Vending Machine Module

Layout

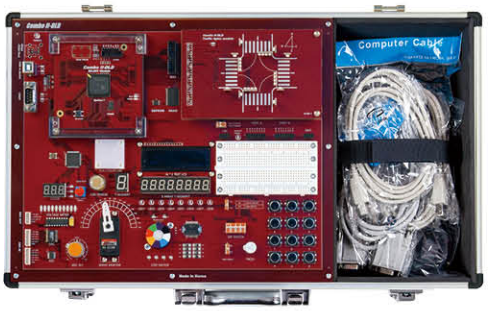
ALTERA

AMD

- ALTERA module and AMD module selectively avaliable
- Provides systematic training content of Digital Logic Design
- You can select 16-input frequencies with Clock Control Block
- ALTERA : Cyclone IV Series applied
  AMD : Spartan 7 Series applied
- Provides experimental practice themes through a variety of optional modules



Components



Combo Ⅱ DLD

AC Power Cable

USB Cable
(A to B Type)

Platform USB

Serial Cable

USB Programmer

User Guide book