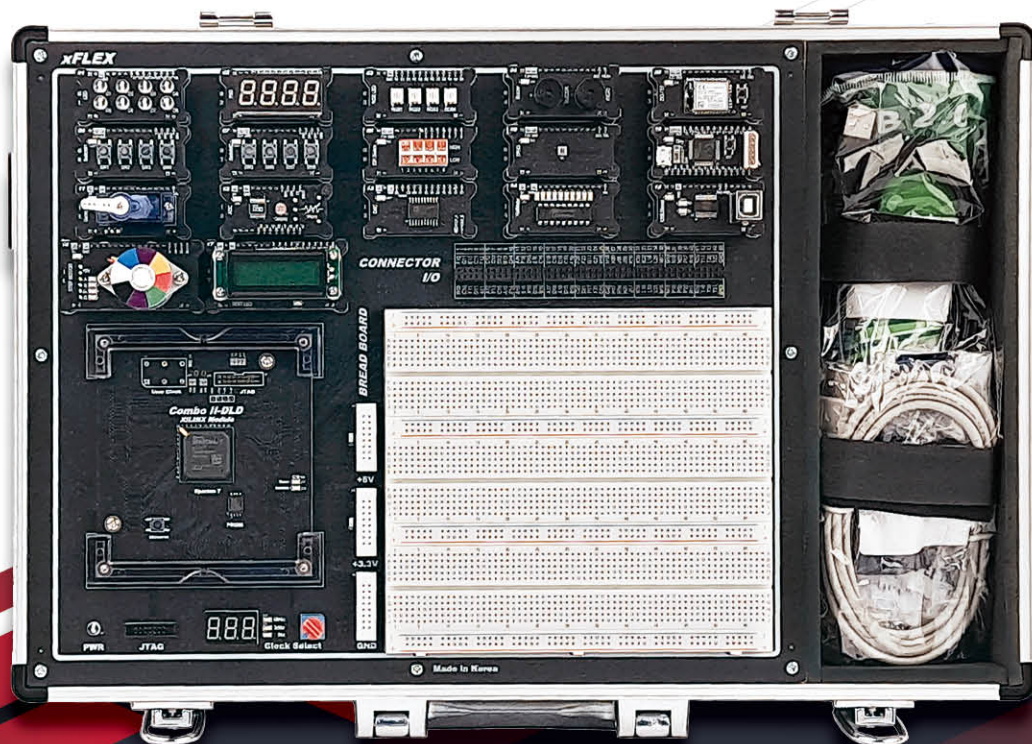


Digital Logic Circuit Experiment Equipment Using xFLEX Equipment

xFLEX



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Since 1984

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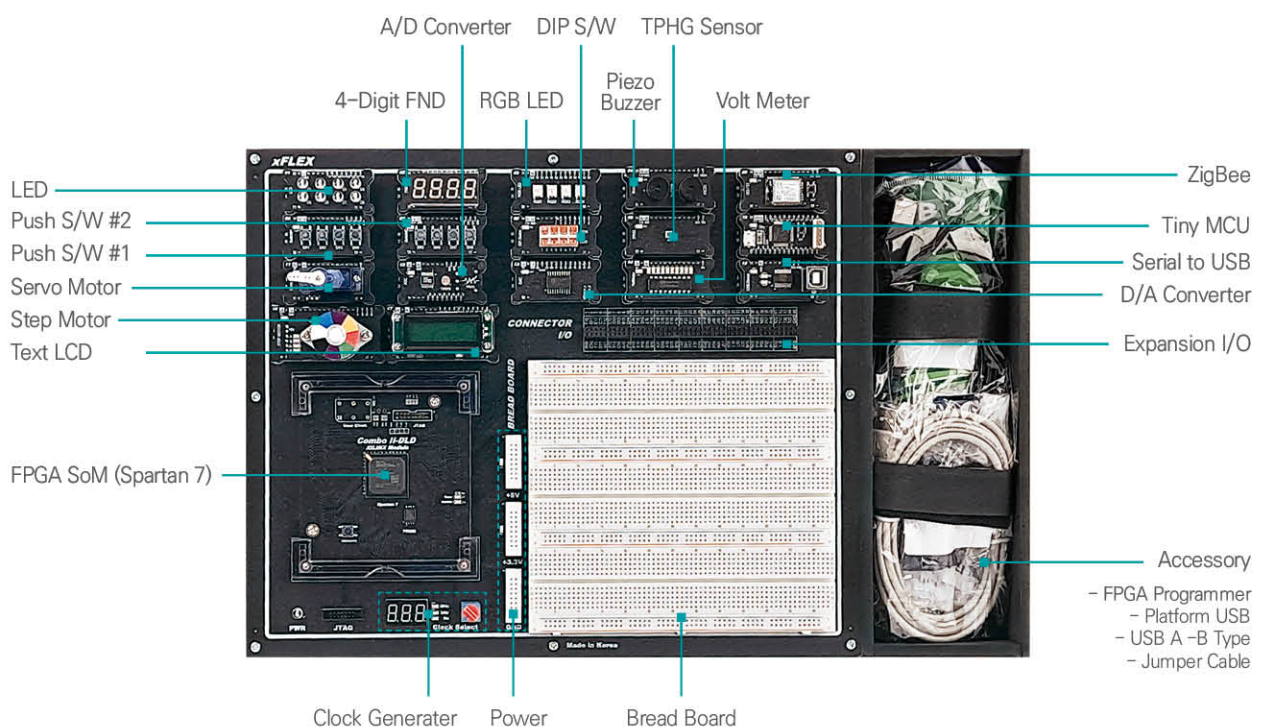


Homepage

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Product Features



- Wide range of practice is possible using high-performance FPGA, actuator, sensor, breadboard, and expansion connector for digital electronic circuit practice
- SoM (System on Module) type high-performance FPGA provides AMD Spartan 7 as standard, and Intel Cyclone 4 can be replaced as an option
- Various electronic circuit application practices with not only highly useful RGB LED, servo/step motor but also potentiometer, light sensor and peripheral device module are possible
- Standard 2.54mm connector-based power supply and breadboard included for users to configure and experiment with circuits
- Configured to connect optional real-life application electronic circuit modules (traffic light, vending machine, etc.)
- Analog-to-digital converter and digital-to-analog converter module configuration for analog signal input/output
- Built-in 16-step clock generator from 0Hz to 50MHz for various electronic circuit experiments
- With AMD's latest compilation tool Vivado, reliable timing closures, improved resources can be used

Design Environment

List	Specifications
VIVADO Design Software System and Software Requirements	OS: Windows Professional/Enterprise 11 64bit Memory: over 8GB

Hardware Specifications

List	Specifications
FPGA SoM	Spartan 7 Device XC7S75 76,800 Logic Cells, 3,240kbit Embedded Memory 140 DSP Slices 128MBIT Configuration ROM(FLASH MEMORY) Power Block IN(+5V, +3.3V) Generation (+1.2V, +2.5V) JTAG Port, Reconfiguration Switch Size: 97mm x 107mm
Base	Size 336mm x 273mm
	Power 220V
	Clock Generator 50MHz base board Oscillator 1ea, Ext User clock 16-phased clock with 0 Hz ~ 50 MHz is provided checking of set-Clock through 3 digit 7-segment and LED
	Bread Board Overcurrent blocking circuit Terminal Strip : 3ea / 1890 holes Distribution Strip : 4ea / 400 holes Size 167 x 146mm Power supply : +5V, +3.3V, GND
	Module Connector FPGA SOM Equipped Connector 1ea 48 x 22 mm Module Equipped Connector 15ea 61 x 30 mm Module Equipped Connector 2ea
Peripheral Device Module	Input Device Module DIP Switch 1ea Push Button Switch 4ea (#1~#4) Push Button Switch 4ea (#5~#8) AD Convertor - SPI ADC : 8 Channel 8Bit 1MHz Sampling - CdS 1ea - Volume Resistor (0 ~ 5V ADC In)
	Output Device Module 16x2 Text LCD LED 8ea(Diffused RED) RGB LED 4ea 4 digit 7-Segment 1ea Servo Motor 1ea Step Motor 1ea (include status LED 4ea) Piezo, Buzzer 1ea DA Convertor : Parallel DAC : Dual Voltage Output 8-Bit DAC Voltage Meter (include LED 10ea)
	Others Serial to USB Module Zigbee/Bluetooth Module TPHG Module : Temperature, Pressure, Humidity, Gas Sensor Tiny MCU Module : Cortex-M4 Module Extension Connector : FPGA GPIO 88 pin Connector, GND 2pin Project Module :Traffic Lights (LED 24ea)

Training Contents

Introduction

xFLEX Equipments
FPGA circuit design tool installation

Design of Digital Circuit

Analog system and Digital system
Digital circuit and logic circuit

Logic Gate Design

Logic Gate Implementation
Basic Gate Operation

Operation Circuit

Arithmetic Circuit
Design of full adder& full subtractor

Combinational Logic Circuit(I)

Decoder & Encoder Design

Combinational Logic Circuit(II)

MUX & DEMUX Design

Memory element

Data storage and Transmission
Shift Register

Counter(I)

Asynchronous Counter
Synchronous Counter

Counter(II)

MOD-N Counter
Piano Design with Piezo
Create a clock displaying minutes and seconds

PWM Control

Full Color LED Control
Servo Motor Control

State Machine

Moore Machine
Mealy Machine

Parallel Interface

Text LCD Control

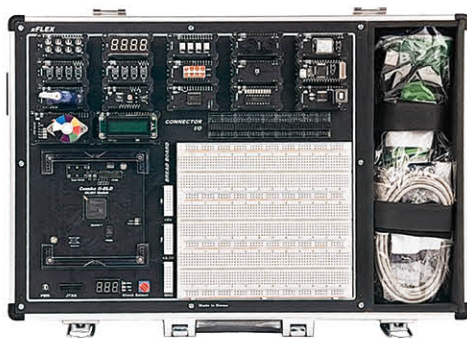
Serial Interface

UART Design

Application Module

Traffic Light Control

Components



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AC Power Cable
1EA



Jumper Cable
(M-M, 20cm)
60EA



FPGA-Programmer
(Xilinx Platform II Cable)
1EA



Platform USB
(include Example)
1EA



USB A-B Type Cable
2EA



User Guide book
1EA

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