



Sciencetech TechBooks are compact and user friendly learning platforms to provide a modern, portable, comprehensive and practical way to learn Technology. Each TechBook is provided with detailed Multimedia learning material which covers basic theory, step by step procedure to conduct the experiment and other useful information.

**Sciencetech 110 “Universal Development platform”** has been designed to provide a quick and easy way of learning VLSI front and & embedded design. It is based on mother board -daughter card concept for VLSI designs targeting the FPGAs, CPLDs, Cool runner CPLDs from Xilinx & can also be used in embedded labs by using ARM7 daughter card. The Development platform contain on board input-output, ADC, DAC Memory, Displays, keyboard & peripheral, which can be used to learn & implement basic as well as advanced VLSI designs .

### Features

- Xilinx Spartan 3 FPGA Daughter Card
- Xilinx CPLD Daughter Card
- Xilinx Cool Runner CPLD Daughter Card (optional)
- Xilinx Spartan 3E FPGA (Optional)
- Xilinx Spartan 3A FPGA (Optional)
- Xilinx Spartan 6 FPGA Daughter Card (Optional)
- Altera cyclone II FPGA (Optional)
- ARM7 Daughter Card (optional)
- 16 bit logic input
- 16 bit logic output
- ADC interface
- DAC interface
- SRAM interface
- Digit seven segment display
- Keypad interface
- 6X2 LCD interface
- Push Buttons
- USB interface
- Serial communication interface
- VGA interface
- PS2 interface
- External I/Os for user interface applications

### Technical Specifications

#### Mother Board Specifications :

- On board : +5V, 3.3V, 2.5V, 1.8V supply
- LCD display : 16 X 2 Character LCD
- 7 Segment : 4 digits
- 8 Channel ADC : 8-bit Resolution
- Push button : 4
- Output LEDs : 16
- DIP switches : 16
- HEX keypad : 1
- DAC : 8-bit Resolution
- Memory : SRAM 32KB
- Peripheral Interface : Serial, PS2, VGA, USB etc. Free I/O's for Arm 7 daughter card

#### FPGA Daughter Card

- Xilinx Family : Spartan 3, XC3S400PQ208
- Device density : 400k gates
- On board : 8 MHZ crystal
- Master reset Key : For hardware reset
- On board : EPROM for FPGA boot.
- Configuration Method : JTAG / Boundary scan interface  
: PROM interface

#### CPLD Daughter Card

- Xilinx Family : CPLD, XC95108TQ100
- Device density : 2400 gates, 108 macro cells
- On board : 8 MHZ crystal
- Configuration Method : JTAG interface (boundary scan)

#### Cool Runner CPLD Daughter Card: (Optional)

##### Xilinx Family :

- Cool Runner : XCR3128
- Package : VQ100

##### Device Density :

- 28 macrocells

##### Configuration Methods :

- IEEE 1149 JTAG Interface (Boundary Scan)

#### Spartan3E FPGA Daughter Card: (Optional)

- Xilinx Family : Spartan 3E, XC3S500EPQ208
- Device density : 500k gates
- On board : 8 MHZ crystal
- Master reset Key : For hardware reset
- On board : EPROM for FPGA boot.
- Configuration Method : JTAG /Boundary scan interface,  
: PROM interface

#### Spartan3A FPGA Daughter Card: (Optional)

- Xilinx Family : Spartan 3A, XC3S50-ATQFP144
- Device density : 50k gates/1584 logic cells
- On board : EPROM for FPGA boot.
- Configuration Method : JTAG /Boundary scan interface,  
: PROM interface

#### Spartan6 FPGA Daughter Card: (Optional)

- Xilinx Family : Spartan 6, XC6SLX9 TQ144
- Device density : 9152 logic cells
- On board : EPROM for FPGA boot.
- Configuration Method : JTAG /Boundary scan interface,  
: PROM interface

#### ARM7 Daughter Card: (Optional)

##### Device Family :

- Philips Semiconductor : LPC2292/94
- Package : LQFP144

##### Device Density :

- 16/32-bit ARM microcontroller
- 256 KB flash memory

##### Configuration Methods :

- JTAG Interface
- RS232 Interface

#### Altera Cyclone II FPGA Daughter Card (Optional)

- Device - EP2C8Q208C8
- Family - Cyclone II
- Number of logic elements/cells -8250
- Number of free dedicated input -5
- Number of clocks-2
- USB Blaster configuration Cable quartus -II web edition

#### Peripheral Card :

- RS232(serial port)
- VGA port
- PS2 port
- USB port (Serial to USB)

### Scope of Learning

Digital Boolean Logics, Multiplexers, De-multiplexers Encoders, Decoder, Priority encoder, Code converter, Parity generator, Latches & Flip-flop, Shift Registers, BCD Counter, Address Decoders, ALU, MAC, Interface of 16X2 LCD display, Interface of HEX keypad, IP Core design of Serial Port, PS2, VGA, ADC, DAC, SRAM etc.

#### Included Accessories

- FPGA /CPLD JTAG Cable : 1 No.
- Xilinx USB JTAG Cable (Optional) : 1No.
- Male to Female serial cable : 1 No.
- USB Cable : 1 No.
- Power Supply +12 V : 1 No.
- Xilinx ise Webpack