



### Key Features

Advanced FPGA Development training Board designed based on the latest digital technology in conjunction with EDA experimental teaching material. This training system consists of FPGA chip with higher logic elements and large number of pins. Therefore, students are able to develop, implement and verify design of basic or advanced digital circuit, digital signal processor and CPU/MCU. This system is equipped with ADC/DAC analog module, keyboard, LCD Display, PS2, VGA, UART, SCI interface, LEDs, 8-digit 7-segment displays, DC motor and stepper motor which allow students to handle complex mixed signal design and digital control design.

Advanced FPGA Development System is well equipped for complex digital circuit design. It provides AD/DA converter keypad, LCD display, PS/2, VGA, UART, SCI interface, LEDs, 8-digit 7-segment LED display, stepper motor and DC motor driver circuits. Suitable for the curriculum training in electronics, electrical engineering, information, communication and automation field. Ideal for professional IC designers, R&D engineers, undergraduate and graduate students to learn IC design and software development. Develop and verify basic and advanced Digital circuit, digital signal processing and CPU / MCU with large-element and multi-pin FPGA chip.

### Specification :

#### Download Board

- Chip model : Altera Cyclone EP1C12Q240C8
- Clock : 40MHz
- Configuration interface : USB blaster
- Configuration memory : 2MB flash EEPROM

#### Peripheral I/Os

- 1.) Power unit –
  - 3V/3A,
  - 5V/3A
- 2.) Input and clocking unit :
  - 4 sets of 8-bit DIP Switch
  - 4x4 matrix keypad

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777  
 India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,  
 Sitapura Extension, Jaipur-302022, India.



info@tesca.in  
 www.tescaglobal.com

- Rotary encoder switch (A/B phase)
- Infrared coupled receiver
- 10 sets of fixed selectable clock : 0.1Hz, 1Hz, 10Hz, 100Hz, 1KHz, 10KHz., 100KHz, 1MHz, 10MHz, 40MHz
- 1 toggle Switch
- 4 configurable push-button . Positive/negative pulse output and debounced / non-debounced pulse output.

### 3.) Output unit

- 8 sets of 8-bit buffered LED (red / orange / yellow / green)
- 4 independent LED (red)
- 2 groups of 4-digit 7-segment scanning display
- 128x64 graphic / character LCD display
- 8x8 dot matrix LED display (dual color)
- 16-segment display
- Speaker (8 ohm/0.5W)
- Infrared coupled transmitter

### 4.)Interface unit :

- PS2 interface
- VGA interface (8 x 8 x 8 bit color)
- RS-232 interface

### 5.) Motor unit :

- Stepper motor : 12V/250mA, 7.5 degree/ step
- 4 poles step motor driving circuit : Each pole drives 60V/500mA
- 4 stage PWM-bridged control circuit : Each stage drives 50V/3A with forward / reverse and

### 6.) Chip Communication and expansion unit

- 8-bit D/A converter (memory mapping interface)
- 6-bit A/D converter (memory mapping interface)
- 23K bits SEEPR0M (IIC interface)
- 12-bit dual channel serial D/A converter (SPI interface)
- Microcontroller 89C51 (memory mapping interface)
- 40-pin external connector x 1
- 20-pin external connector x 2

## Experiments

### Basic logic circuit design and application

- QUARTUS II software installation and operation
- Basic combinational logic circuit
- Basic sequential logic circuit
- Basic arithmetic logic Circuit
- Using mega function
- Numerical code conversion circuit

### Advanced logic circuit design and application

- 48-bit up/down counter with load, clear and enable
- Infrared coupled transreciever controls 8-digit decimal scanning counter
- Rotary encoder switch detector
- 16-segment LEDs digital display decoder
- 8 x 8 x 2 color dots matrix graphic display control

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777  
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,  
Sitapura Extension, Jaipur-302022, India.



info@tesca.in  
www.tescaglobal.com

- 4 x 4 scanning matrix keypad control
- 128 x 64 LCD module display control
- ADC conversion with hexadecimal and decimal display
- DAC conversion for precise frequency generator
- Precise function generator controlled by keypad
- 8 x 8 x 8 color pixels of VGA display control
- Interfacing with synchronous serial PS/2 keyboard
- Step motor position controlled by keypad
- Step motor speed controlled by keypad
- Using QUARTUS built in real time logic analyzer
- High speed frequency and period counter
- Digital clock
- Music box
- Electronic piano
- Digital cipher locker
- Digital cipher locker with hopping code
- Bingo machine
- Electronic dice
- Traffic light control
- Serial DAC Transmission
- I<sup>2</sup>C transmission
- UART transmission
- Interfacing with MCU
- Building NIOS CPU from SOPC development system

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777  
 India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,  
 Sitapura Extension, Jaipur-302022, India.



info@tesca.in  
 www.tescaglobal.com