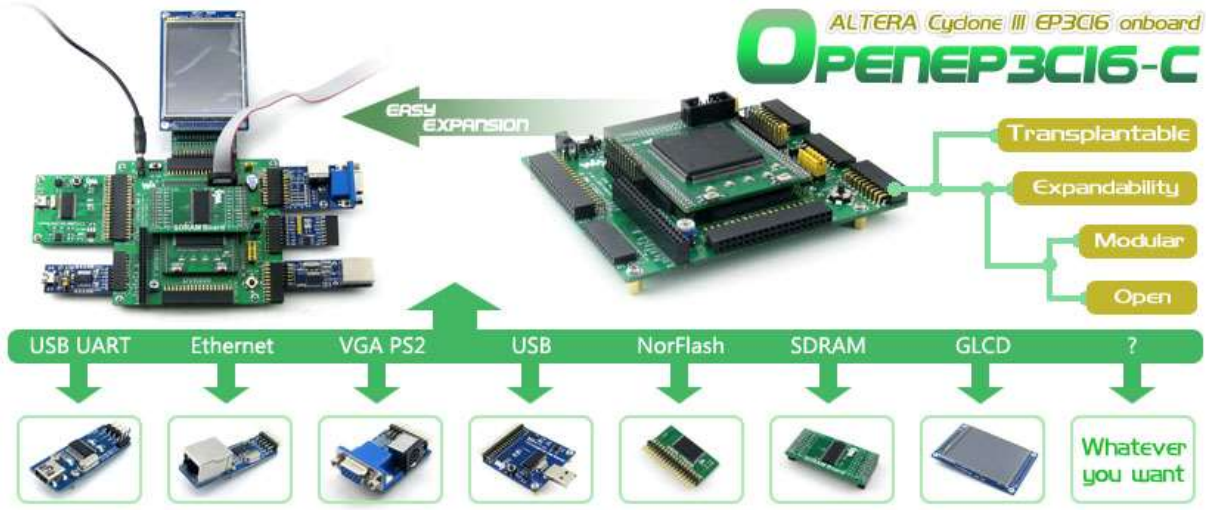
ENTEGRECİ®

WaveShare Open EP3C16

FPGA development board designed for ALTERA Cyclone III series, features the EP3C16 onboard, and integrates various standard interfaces, pretty easy for peripheral expansions.



OpenEP3C16 is an FPGA development board that features the EP3C16 device onboard. It supports further expansion with various optional accessory boards for specific application. The modular and open design makes it the ideal for starting application development with ALTERA Cyclone III series FPGA devices. OpenEP3C16 enables you to start your design with the Nios II processor easily and quickly.

What's on the mother board

1. **FPGA CPLD core board connector:** for easily connecting core boards which integrate an FPGA CPLD chip onboard
2. **8I/Os_1 interface,** for connecting accessory boards/modules
3. **8I/Os_2 interface,** for connecting accessory boards/modules
4. **16I/Os_1 interface,** for connecting accessory boards/modules
5. **16I/Os_2 interface,** for connecting accessory boards/modules
6. **32I/Os_1 interface,** for connecting accessory boards/modules
7. **32I/Os_2 interface,** for connecting accessory boards/modules
8. **32I/Os_3 interface,** for connecting accessory boards/modules

All the I/O interfaces above:

capable of being simulated as USART, I2C, SPI, PS/2, etc.

capable of driving devices such as FRAM, FLASH, USB, Ethernet, etc.

9. **SDRAM interface**
- for connecting SDRAM accessory board
- also works as FPGA CPLD pins expansion connectors

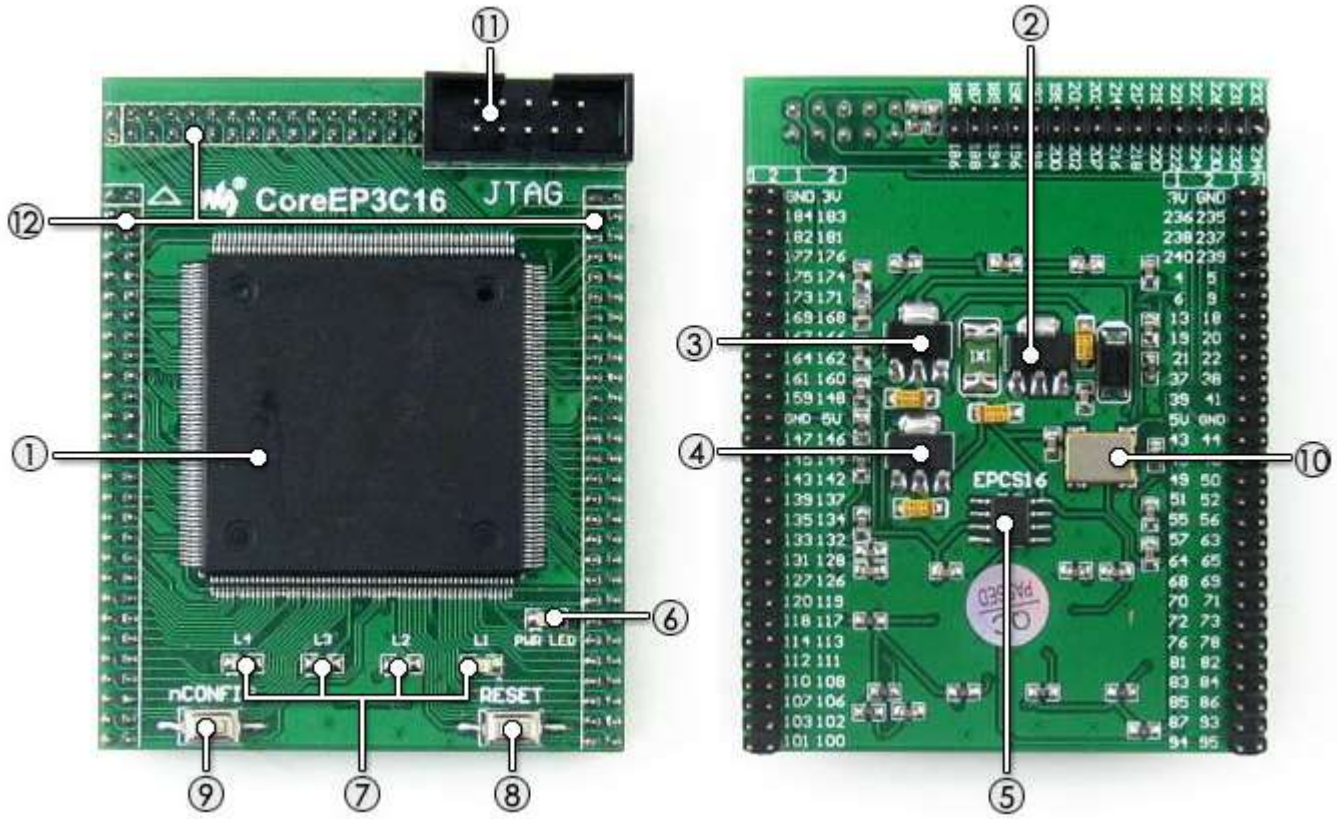
10. **LCD interface,** for connecting LCD22, LCD12864, LCD1602
11. **ONE-WIRE interface:** easily connects to ONE-WIRE devices (TO-92 package), such as temperature sensor (DS18B20), electronic registration number (DS2401), etc.
12. **5V DC jack**
13. **Joystick:** five positions
14. **Buzzer**
15. **Potentiometer:** for LCD22 backlight adjustment, or LCD12864, LCD1602 contrast adjustment
16. **Power switch**
17. **Buzzer jumper**
18. **ONE-WIRE jumper**
19. **Joystick jumper**

For jumpers 17-19:

- short the jumper to connect to I/Os used in example code
- open the jumper to connect to other custom pins via jumper wires

The DVK600 supports a wide range of different core boards, therefore, some of the interfaces may be Not-Connected and useless while connecting to certain core board. For instance, while connecting to Core3S500E/CoreEP2C8, the '⑧ 32I/Os_3' is Not-Connected.

What's on the CoreEP3C16



1. **EP3C16Q240C8N:**the ALTERA Cyclone III FPGA device which features:
    - **Operating Frequency:** 50MHz
    - **Operating Voltage:** 1.15V～3.465V
    - **Package:** QFP240
    - **I/Os:** 136
    - **LEs:** 15408
    - **RAM:** 504kb
    - **PLLs:** 4
    - **Debugging/Programming:** supports JTAG
2. **AMS1117-3.3,** 3.3V voltage regulator
3. **AMS1117-2.5,** 2.5V voltage regulator
4. **AMS1117-1.2,** 1.2V voltage regulator
5. **EPCS16,** onboard serial FLASH memory, for storing code
6. **Power indicator**
7. **LEDs**
8. **Reset button**
9. **nCONFIG button:** for re-configuring the FPGA chip, the equivalent of power reseting
10. **50M active crystal oscillator**
11. **JTAG interface:** for debugging/programming
12. **FPGA pins expander,** VCC, GND and all the I/O ports are accessible on expansion connectors for further expansion

Package Contains

The **"Standard Package"** and **"Accessory Boards Package"** below are included.

Standard Package

1. OpenEP3C16-C development board x 1
2. 4-pin wire x 2
3. 2-pin wire x 2
4. USB power cable x 1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Accessory Boards Package

1. 3.2inch 320x240 Touch LCD x 1
2. VGA PS2 Board x 1
3. PL2303 USB UART Board (mini) x 1
4. SDRAM Board (B) x 1
5. Micro SD Storage Board x 1
6. FM24CLXX FRAM Board x 1
7. CY7C68013A USB Board (mini) x 1
8. ENC28J60 Ethernet Board x 1
9. PCF8563 RTC Board x 1
10. DS18B20 x 1
11. LCD12864 (3.3V Blue Backlight) x 1
12. LCD1602 (3.3V Blue Backlight) x 1
13. FT245 USB FIFO Board (mini) x 1
14. 8 SEG LED Board x 1
15. 8 Push Buttons x 1
16. 4x4 Keypad x 1
17. USB type A plug to mini-B plug cable x 1


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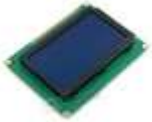
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For more information visit the Wiki page:

https://www.waveshare.com/wiki/OpenEP3C16-C