

# Intel® Arria® 10 SoC Development Kit

A Complete Development Environment



## What's in the Box

- Intel® Arria® 10 SX SoC development board
- 2 x USB cable mini
- 1 x USB cable micro
- 1 x USB host micro adapter
- Ethernet cable
- MicroSD daughtercard
- Quad SPI daughtercard
- NAND daughtercard
- 2 x DDR4 HIL0 memory cards
- 1 x FMC loopback card
- Quick Start Guide

## Intel Arria 10 SX SoC Board Features

- Intel Arria 10 SX SoC FPGA (10AS066N3F40E25G)
- On-Board Intel FPGA Download Cable II capability for hard processor system (HPS) or FPGA programming/debugging
- PCI Express\* (PCIe\*) Gen3 x8
- Dual FPGA mezzanine card (FMC) expansion headers
- Two 10/100/1000 SGMII Ethernet ports, one 10/100/1000 RGMII Ethernet port and two 10GbE Small Form Factor Pluggable (SFP) cages
- USB On-The-Go (USB OTG) port
- Character LCD
- Display port and serial digital interface (SDI) port
- Two Serial Digital Interface (SDI) video ports, RX (IN) and TX (OUT)

## Available Resources

The following software and tools are available for download:

- Documentation
  - Schematics and design files
  - Intel Arria 10 SoC Development Kit User Guide
  - Intel SoC FPGA Embedded Design Suite (SoC EDS) User's Guide
  - Golden System Reference Design User Manual
- Design and development tools
  - Intel SoC FPGA EDS, including Arm\* Development Studio\* (DS\*) for Intel SoC FPGA Edition Toolkit
  - Intel Quartus® Prime design software
- Design example
  - Golden System Reference Design

## Verify Basic Operation

1. Attach the Ethernet cable from your network to the RJ45 HPS Ethernet jack (HPS\_P3/J5) on the top-right side of the board as shown.
2. Ensure the included SD boot card is mounted into socket J23, and that the jumpers on the SD boot card are set to J3:0(left), J4:0(up) and J5:1(up), then power-on the board using power switch SW5.
3. Install at least one of the DDR4/DDR3 HILO memory daughter cards. Installation of the HPS memory is required. The FPGA memory is optional.
4. Connect the power adapter from an A/C outlet to J36 on the board, then turn on the board using the power switch SW5.
5. The HPS begins booting the Golden System Reference Design Linux image. After the image is booted, the system's LCD display displays an IP address and "ALTERA.COM/SOCQS". If you do not have an available network port, or your network does not have a DHCP server, or if the system is unable to get an IP address, the LCD display displays "No IP obtained". Proceed to step 8.
6. To see the Board Update Portal web server, ensure that the host computer is on the same subnetwork as the target board, open a browser and type the IP address of the board into the URL field.
7. The Board Update Portal web server allows you to verify operation of the board and FPGA by:
  - Blinking LEDs on the board
  - Writing text messages to the LCD display
8. For a more detailed guide including information on FPGA design tools, software development tools, and documentation, browse to [www.intel.com/content/www/us/en/programmable/products/boards\\_and\\_kits/dev-kits/altera/arrria-10-soc-development-kit.html](http://www.intel.com/content/www/us/en/programmable/products/boards_and_kits/dev-kits/altera/arrria-10-soc-development-kit.html).
9. For additional Linux\* resources, browse to the [rocketboards.org](http://rocketboards.org) community portal and select the "Start" button.

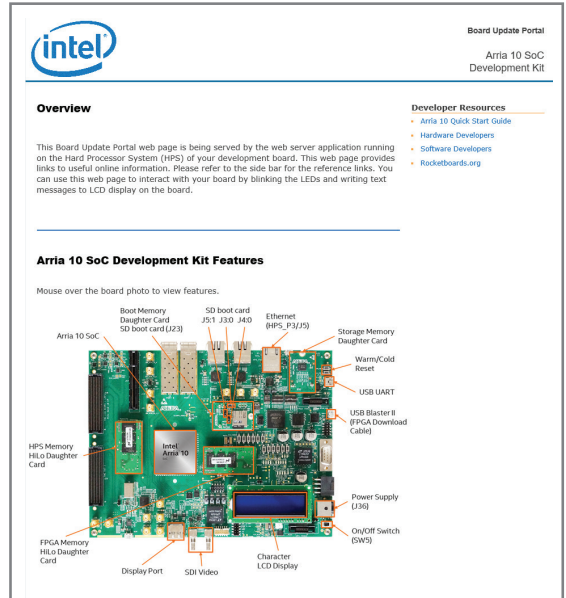


Figure 1. Board Update Portal

## Related Links

### Kit-specific Resources

- Intel Arria 10 SoC Development Kit  
[www.intel.com/content/www/us/en/programmable/products/boards\\_and\\_kits/dev-kits/altera/arria-10-soc-development-kit.html](http://www.intel.com/content/www/us/en/programmable/products/boards_and_kits/dev-kits/altera/arria-10-soc-development-kit.html)
- Intel Arria 10 SoC FPGAs  
[www.intel.com/content/www/us/en/products/programmable/soc/arria-10.html](http://www.intel.com/content/www/us/en/products/programmable/soc/arria-10.html)

### General Design Resources

- Board Design Resource Center  
[www.intel.com/content/www/us/en/programmable/support/support-resources/support-centers/board-design-guidelines.html](http://www.intel.com/content/www/us/en/programmable/support/support-resources/support-centers/board-design-guidelines.html)
- Licensing  
[www.intel.com/content/www/us/en/programmable/support/support-resources/support-centers/licensing.html](http://www.intel.com/content/www/us/en/programmable/support/support-resources/support-centers/licensing.html)
- Software Download Center  
[www.intel.com/content/www/us/en/programmable/downloads/download-center.html](http://www.intel.com/content/www/us/en/programmable/downloads/download-center.html)
- Technical Support Center  
[www.intel.com/content/www/us/en/programmable/support/support-resources.html](http://www.intel.com/content/www/us/en/programmable/support/support-resources.html)
- Development Kits  
[www.intel.com/content/www/us/en/programmable/products/development-kits/kit-index.html](http://www.intel.com/content/www/us/en/programmable/products/development-kits/kit-index.html)
- Intel FPGA Community  
[forums.intel.com](http://forums.intel.com)



Electromagnetic interference caused by any modification made to the kit contents is the sole responsibility of the user. This equipment is designated for use only in an industrial research environment. Without proper anti-static handling, the board can be damaged. Therefore, use anti-static handling precautions when touching the board.



FCC NOTICE: This kit is designed to allow:

- (1) Product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and
- (2) Software developers to write software applications for use with the end product. This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of this chapter, the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under FCC Part 5 of CFR Title 47.