



RayCore® Development Kit

Quick Start Guide

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1. Compatibility

1.1 Compatible Kit

- Altera - Arria V GX Starter Kit
(<http://www.altera.com/products/devkits/altera/kit-arria-v-starter.html>)
- Altera - Stratix V GX FPGA Development Kit
(<http://www.altera.com/products/devkits/altera/kit-sv-gx-host.html>)

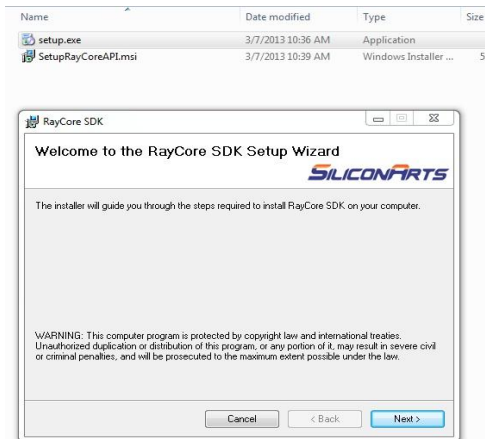
1.2 Operating System

- windows 8/7/Vista/Server 2008/XP/2000 32/64bit
- Linux(x86) 32/64bit

2. RayCore® SDK Installation

2.1 RayCore® SDK Installation

Run "setup.exe" file in the installation CD. The following box appears.
(In this step, 'DirectX End-User Runtime' will be automatically installed.)



2.2 Directories Installed

./app/Example/RC1 :

Sample projects, sources, header files and library files of application programs

./app/include : RayCore® API header files

./app/lib : RayCore® API library files to develop application programs

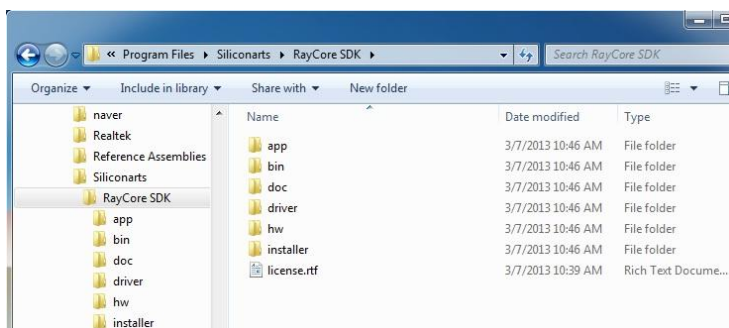
./bin : Data used by application programs and their executable files

./bin/SceneData : 3D data used by application programs

./doc : Instructions

./driver : Drivers for Windows

./hw : Flash files to install RayCore® IP on Altera FPGA Board



3. Hardware Installation

3.1 FPGA Hardware Setup

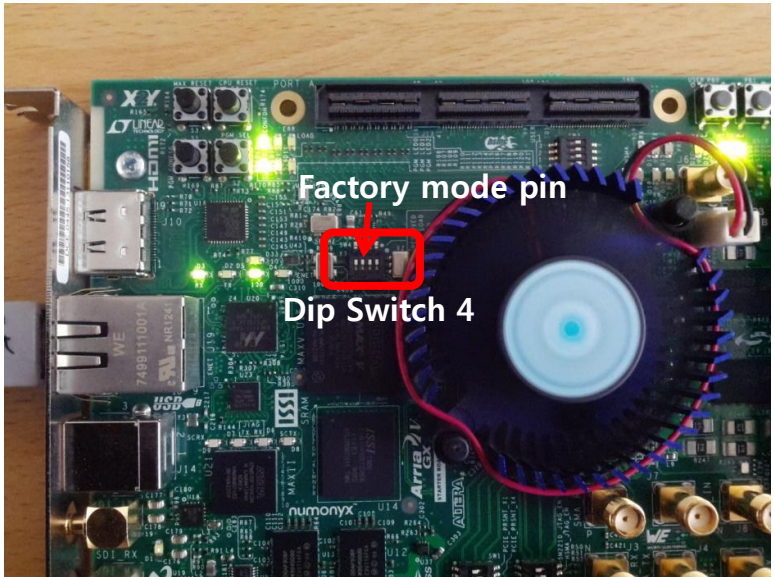
Altera Development Kit (Arria V, Stratix V) can be installed via Board Update Portal Web page. The installation process is similar to uploading flash files through LAN cable from the board to PCs or routers where DHCP server is pre-implemented. A sample installation guide is shown below. For further details, please refer to the following manuals provided by Altera.

- Arria V Starter Board : User Guide
(http://www.altera.com/literature/ug/ug_avgx_starter_dev_kit.pdf)
- Stratix V GX FPGA Development Kit : User Guide
(http://www.altera.com/literature/ug/ug_svgx_fpga_dev_kit.pdf)

3.2 Demonstration: Altera Arria V GX FPGA Development Kit

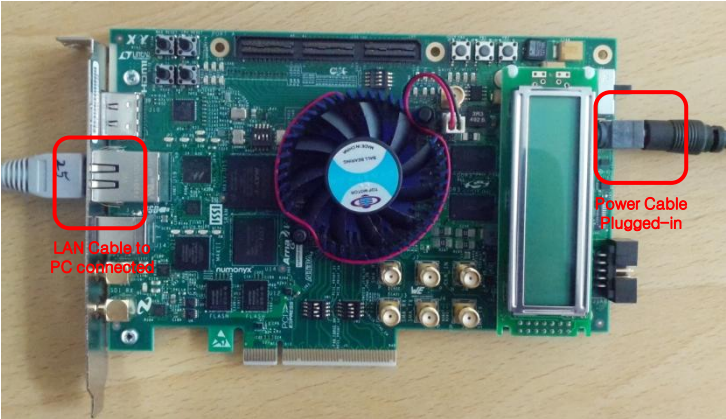
Step. 1

Locate the third switch of “DIP Switch 4(SW4)” box on the FPGA board. Turn the switch to “FACTORY” mode.



Step. 2

Plug the LAN cable from the PC with DHCP server installed into the matched connector of the board. Also, plug-in the power cable to the board.



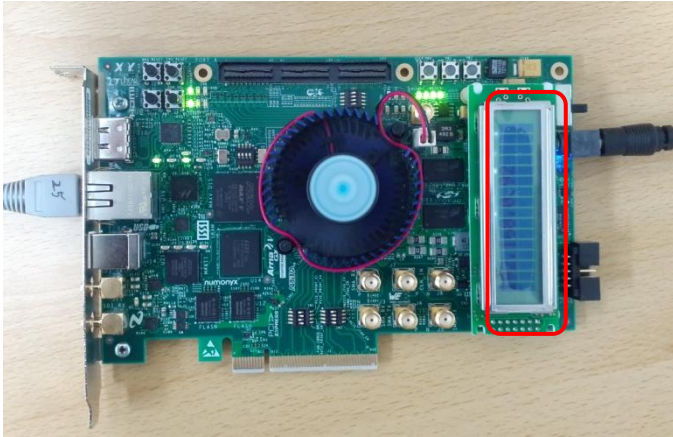
Step. 3

When you switch on the FPGA board, the green lights turn on, and "Board Update Prt1 Connecting..." will display on the LED screen.

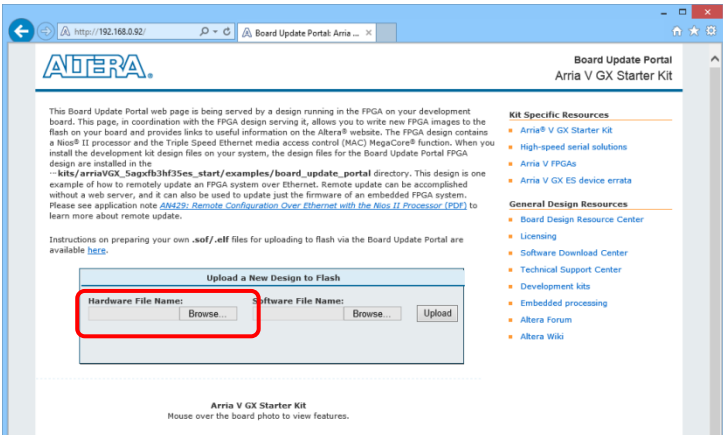


Step. 4

In a while, an IP address will display on the LED screen. (e.g.: 192.168.0.92)

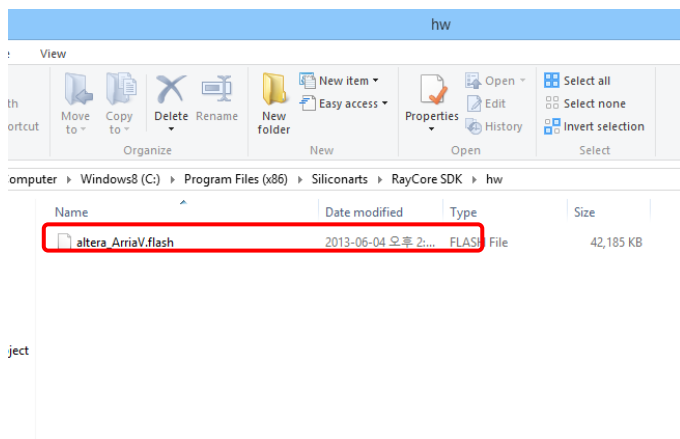
**Step. 5**

In the address bar of your web browser, type the same IP address you have identified in the previous step. In this stage, your computer should have an access to the Internet. When you get to the page shown below, click “Search” right next to “Hardware File Name.” Locate RayCore® driver from the directory, “C:\Program Files\Siliconarts\RayCoreSDK\hw,” which will be created automatically when the installation of RayCore® SDK is complete.

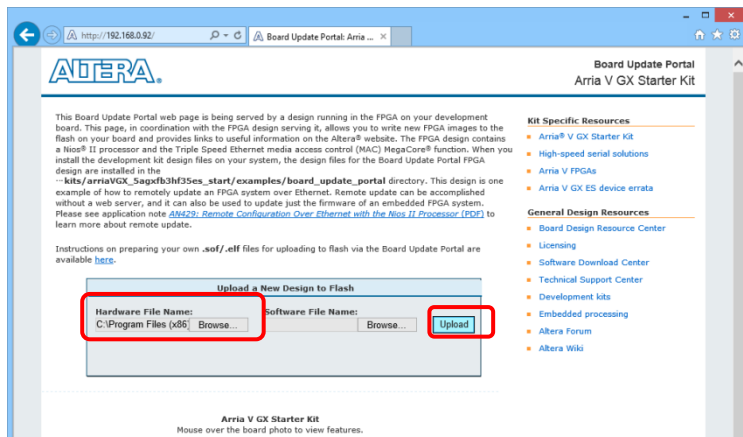


Step. 6

Select RayCore® file that supports your FPGA board you have purchased.
(C:\Program Files (x86)\Siliconarts\RayCore SDK\hw\altera_ArriaV.flash)

**Step. 7**

Click "Upload"



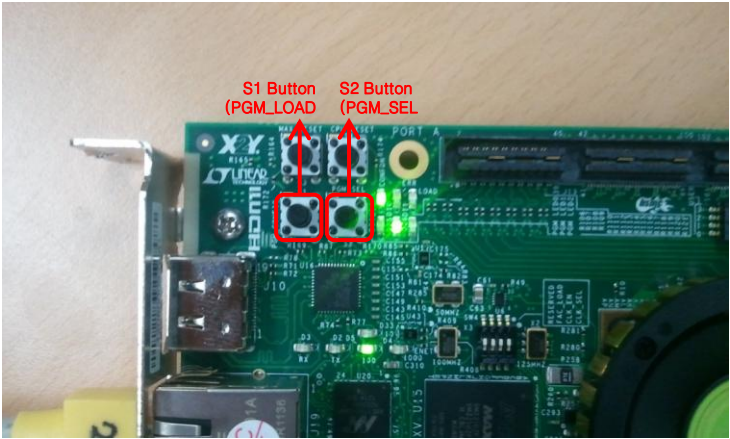
Step. 8

Uploading status is shown in your web browser as well as on the LED screen.



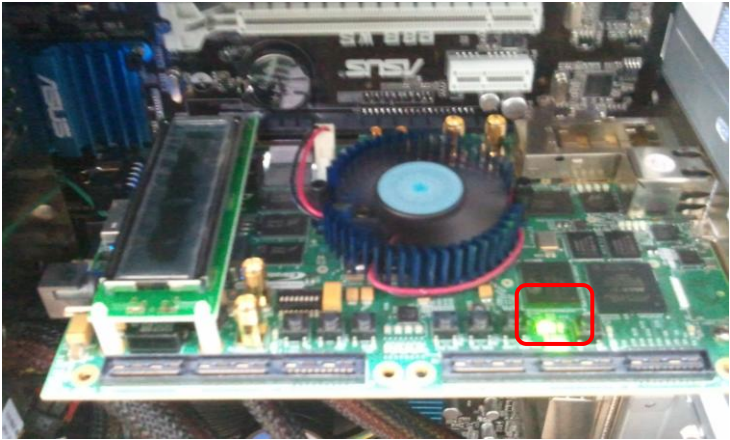
Step. 9

If uploading is complete, the message “Upload Complete!” will be shown on the LED screen. Click the PGM_SEL(S2) button and PGM_LOAD(S1) button in the order and install the Flash File. Remove the power cable and turn off the 3rd pin in DIP Switch(SW4).



Step. 10

After installing the FPGA board in the PC, confirm if the green light turns on. The green light tells if the FPGA board is installed properly.

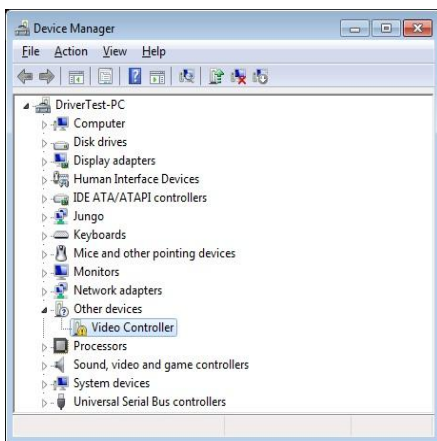


4. RayCore® Driver Installation

When the installation of the FPGA board is successful, to PCI Slot before installation of driver, install RayCore® Driver as follows:

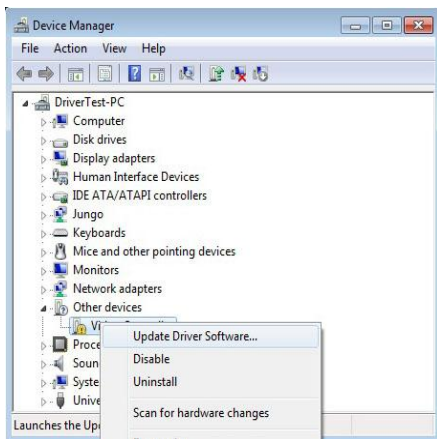
Step. 1

Go to "Control Panel" > select "Device Manager" > Click on "Other devices"



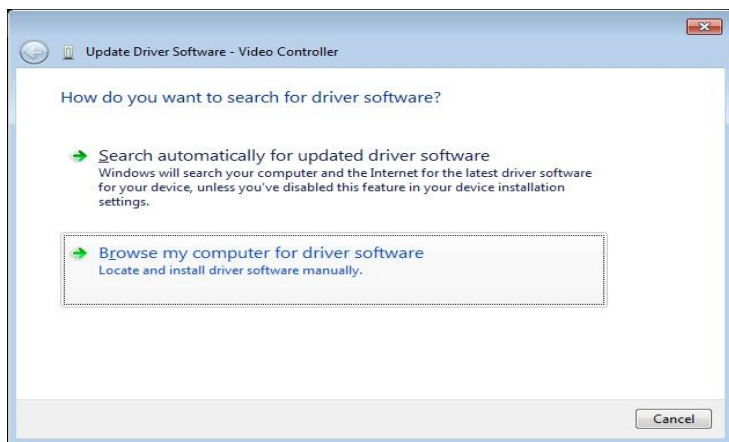
Step. 2

Right click on "Video Controller" > Click on "Update Driver Software..."



Step. 3

For the first time installation, select “Browse my computer for driver software”
Otherwise, select “Search automatically for updated driver software” for additional cards installation

**Step. 4**

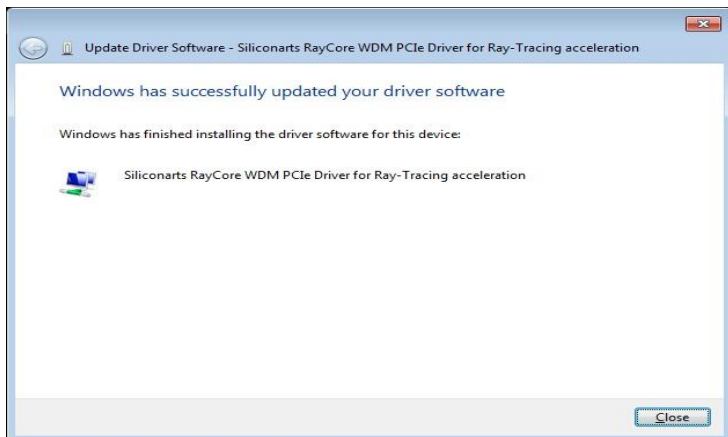
Select “Browse” > locate the folder: “C:\Program Files\Siliconarts\RayCore SDK\driver\windows” > click next



Step. 5
Select "Install"

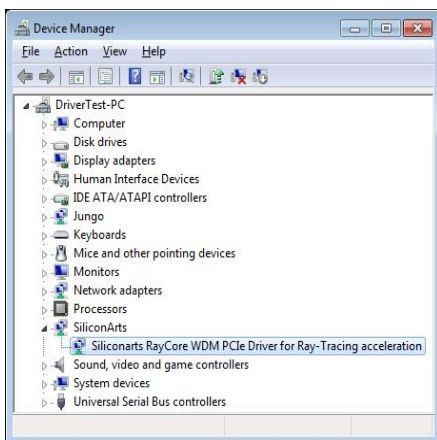


Step. 6
Installation is successfully completed



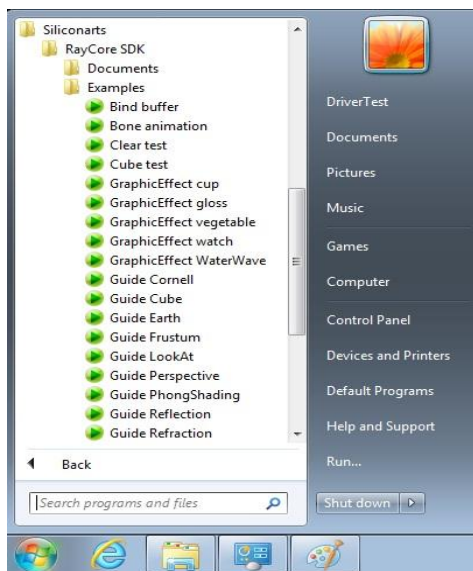
Step. 7

Go to control panel > confirm if the device driver is installed properly



5. Ray Tracing Sample Programs

- (1) Running from the directory where the demos are installed
When the installation of RayCore® SDK is successful, you will be able to find the executable files of sample programs in the following directory.
C:\Program Files\Siliconarts\RayCoreSDK\bin
- (2) Running from the "Start" menu
Start > All Programs > Silicon arts > RayCore SDK > Examples
- (3) Using SMAA extension with DirectX 11
Reference: <http://mrhaandi.blogspot.kr/p/injectsmaa.html> (Windows only)



6. Acquire License

- Step 1. Run "License Manager" and Fill the all your information field.
(If you run a example, it must be run under administrator mode.)
- Step 2. Select your valid ethernet device.
(License manager is based on ethernet MAC address.)
- Step 3. Choose request count and recipient company, then click "Send request" button.
- Step 4. Check your e-mail, and copy and paste activation key code.
Then click 'Activate' button and confirm the license status.

RayCore® SDK License Management

RayCore® SDK License Management..
Fill the below form and click 'Send request' button.

Request license

1
First name : HyungKi
Last name : Jeong

Your company : Siliconarts

Address : A address.
B address.

City : Seoul
State : AK

Zip code : 135-234
Country : South Korea

Phone : 010-123-1234

Email : hkjeong@siliconarts.co.kr

Register number : 12341234

Submitter ID : Who

2
Ethernet Adapter : Realtek RTL8139/810x Family Fast Ethernet NIC [00E04CF00BBD]

Request code :

3
Request count : 1 license activation
Recipient : Siliconarts, Inc.
Send request

Current activation license

4
Activate key code :

Status : Activated 4
Activate

Exit

7. Linux Platform

- (1) Turn on the computer and log into the system.
- (2) Copy zip file from the “Linux” folder in the installation CD to your pc.
For Arria V: RayCoreSDK_Altera_ArriaV.zip
For StratixV: RayCoreSDK_Altera_StratixV.zip

[root@ ~/] cp RayCoreSDK_Altera_ArriaV.zip /root
- (3) Go to the directory where “RayCoreSDK_Altera_ArriaV.zip” is copied and extract the zip file.

[root@~/] cd /root
[root@~/] unzip RayCoreSDK_Altera_ArriaV.zip
- (4) Move to “linux” folder under “drive” directory and run “install.sh script” file.

[root@~/] cd /root/RayCoreSDK_Altera_StratixV/driver/linux
[root@~/RayCoreSDK_Altera_StratixV/driver/linux] chmod a+x *.sh
[root@~/RayCoreSDK_Altera_StratixV/driver/linux] sh install.sh
- (5) When the script is successfully run, the following message will show up.
“RayCore library, Application were installed!”
- (6) Run ray tracing demo programs

[root@~/RayCoreSDK_Altera_StratixV/driver/linux] cd ../../bin
[root@~/RayCoreSDK_Altera_StratixV/bin] ./rc_waterwave
- (7) A sample picture below will be shown on the screen.

