



KAYA factory update User Guide

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20 aMesila St., Nesher 3688520, Israel
POB 25004, Haifa 3125001, Israel
Tel:(+972)-72-2723500 Fax:(+972)-72-2723511
www.kayainstruments.com

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2.1 Safety Precautions

Please take a minute to read carefully the precautions listed below in order to prevent unnecessary injuries to you or other personnel or cause damage to property.

- **Before using the product, read these safety precautions carefully to assure correct use.**
- **These precautions contain serious safety instructions that must be observed.**
- **After reading through this manual, be sure to act upon it to prevent misuse of product.**



Caution

<p>In the event of a failure, disconnect the power supply. If the product is used as is, a fire or electric shock may occur. Disconnect the power supply immediately and contact our sales personnel for repair.</p>
<p>If an unpleasant smell or smoking occurs, disconnect the power supply. If the product is used as is, a fire or electric shock may occur. Disconnect the power supply immediately. After verifying that no smoking is observed, contact our sales personnel for repair.</p>
<p>Do not disassemble, repair or modify the product. Otherwise, a fire or electric shock may occur due to a short circuit or heat generation. For inspection, modification or repair, contact our sales personnel.</p>
<p>Do not touch a cooling fan. As a cooling fan rotates in high speed, do not put your hand close to it. Otherwise, it may cause injury to persons. Never touch a rotating cooling fan.</p>
<p>Do not place the product on unstable locations. Otherwise, it may drop or fall, resulting in injury to persons or failure.</p>
<p>If the product is dropped or damaged, do not use it as is. Otherwise, a fire or electric shock may occur.</p>
<p>Do not touch the product with a metallic object. Otherwise, a fire or electric shock may occur.</p>
<p>Do not place the product in dusty or humid locations or where water may splash. Otherwise, a fire or electric shock may occur.</p>
<p>Do not get the product wet or touch it with a wet hand. Otherwise, the product may break down or it may cause a fire, smoking or electric shock.</p>
<p>Do not touch a connector on the product (gold-plated portion). Otherwise, the surface of a connector may be contaminated with sweat or skin oil, resulting in contact failure of a connector or it may cause a malfunction, fire or electric shock due to static electricity.</p>
<p>Do not use or place the product in the following locations.</p> <ul style="list-style-type: none"> • Humid and dusty locations • Airless locations such as closet or bookshelf • Locations which receive oily smoke or steam • Locations close to heating equipment • Closed inside of a car where the temperature becomes high • Static electricity replete locations

• Locations close to water or chemicals
Otherwise, a fire, electric shock, accident or deformation may occur due to a short circuit or heat generation.

Do not place heavy things on the product.
Otherwise, the product may be damaged.

Be sure to drain static electricity from body before you touch any electronics component
The electronic circuits in your computer and the circuits on the Frame Grabber board are sensitive to static electricity and surges. Improper handling can seriously damage the circuits. In addition, do not let your clothing come in contact with the circuit boards or components.
Otherwise, the product may be damaged.

2.2 Disclaimer

The purpose of this document is to guide the user, through FPGA programming and image update, for KAYA Instruments products. KAYA Instruments assumes no responsibility for any damages resulting from the use of this product for purposes other than those stated.

Even if the product is used properly, KAYA Instruments assumes no responsibility for any damages caused by the following:

- Earthquake, thunder, natural disaster or fire resulting from the use beyond our responsibility, acts caused by a third party or other accidents, the customer's willful or accidental misuse or use under other abnormal conditions.
- Secondary impact arising from use of this product or its unusable state (business interruption or others).
- Use of this product against the instructions given in this manual or malfunctions due to connection to other devices.

KAYA Instruments assumes no responsibility or liability for:

- Erasure or corruption of data arising from use of this product.
- Any consequences or other abnormalities arising from use of this product, or damage of this product not due to our responsibility or failure due to modification.

Repair of this product is carried out by replacing it on a chargeable basis, not repairing the faulty devices. However, non-chargeable replacement is offered for initial failure if such notification is received within two weeks after delivery of the product.

This section provides detailed requirements and instructions for downloading and installing Quartus FPGA software.

3.1 System Requirements

To install and run Quartus Programmer software your system must meet the following requirements:

3.1.1 Minimum Hardware Requirements

- Windows or Linux workstation. For more information refer to the operating system support page at <https://www.altera.com/support/support-resources/download/os-support.html>.
- A monitor capable of at least 1024 x 768 display resolution.
- Adequate disk space, free 1800-2000 MB, depending on your operating system.

3.1.2 Cable and Port Requirements

- USB-Blaster™ or USB-Blaster II download cable
- USB B cable
- USB port for connecting a USB-Blaster™ or USB-Blaster II download cable

3.1.3 2.1.3 Software Requirements

- Quartus Programmer

The Quartus Programmer Software can be found in:

<ftp://product-ftp.kayainstruments.com/Quartus%20Download/>

Chose and download the relevant software for your PC. Run the application and follow the installation instructions. Enable installation of the JTAG driver for Configuration and Programming.

This section provides detailed instructions for KAYA Instruments' FPGA board programming.

4.1 Pre Programming Connections

Perform the following connections and the steps listed, prior the factory image programming:

1. Power down the PC.
2. Connect the JTAG connector to the KAYA Instruments' FPGA board according to the Figure 1. Use the **right** JTAG connector. Pin 1 on the USB-Blaster™ cable must face the 1st pin of the JTAG connector, marked with ▲.

In case of any hesitation in detecting the JTAG connector on the FPGA board, please contact KAYA Instruments' representative.



Figure 1 : Komodo Frame Grabber board with USB-Blaster™ attached

3. Connect the USB B cable to the USB port on your computer and to the USB Blaster download cable port. The USB-Blaster™ and the USB B cable shown in Figure 2.

NOTE: The USB B port must be located on **the same PC** as the FPGA board.


4. Power up the PC.



Figure 2 : USB-Blaster™ and USB B Cable example

4.2 Programming

To initiate factory image programming of the FPGA board follow the listed steps:

1. Open  Quartus Programmer.
2. Choose “Active Serial Programming” from the Programming “Mode” Selecting bar, as shown in Figure 3.

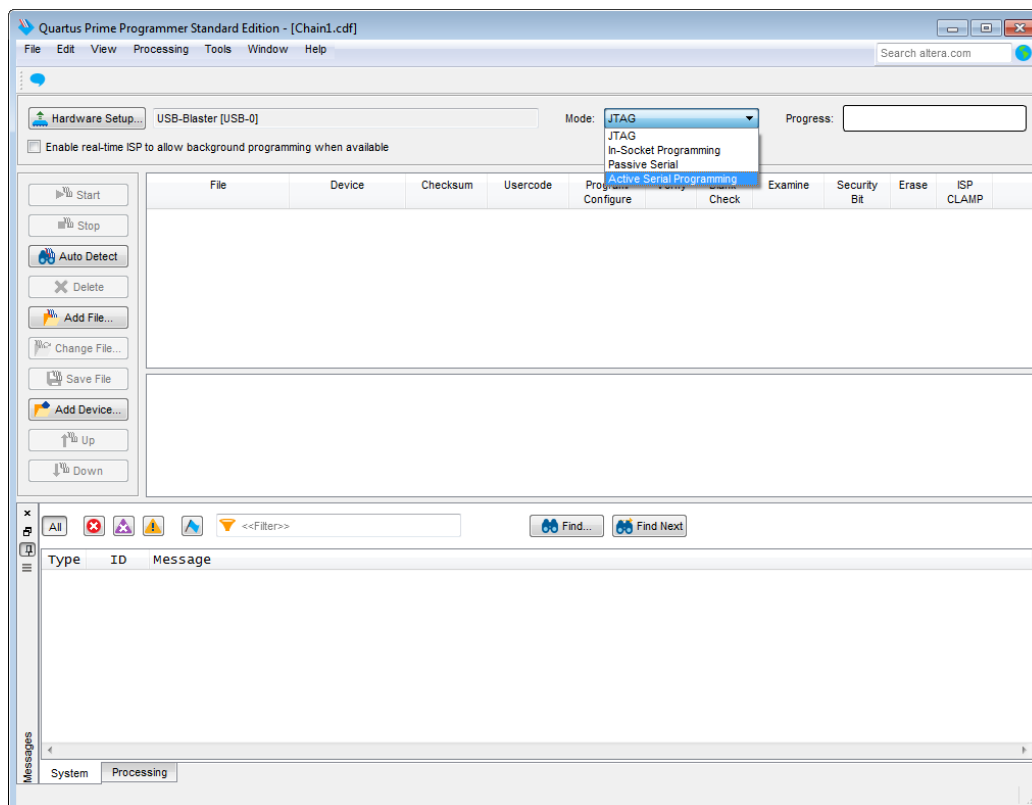


Figure 3 : Quartus – Choosing Programming mode

3. In case no hardware is detected, clicking on “Hardware Setup”, located in the left-top corner, will open a new window, where a USB-Blaster hardware can be chosen. This operation described in Figure 4.

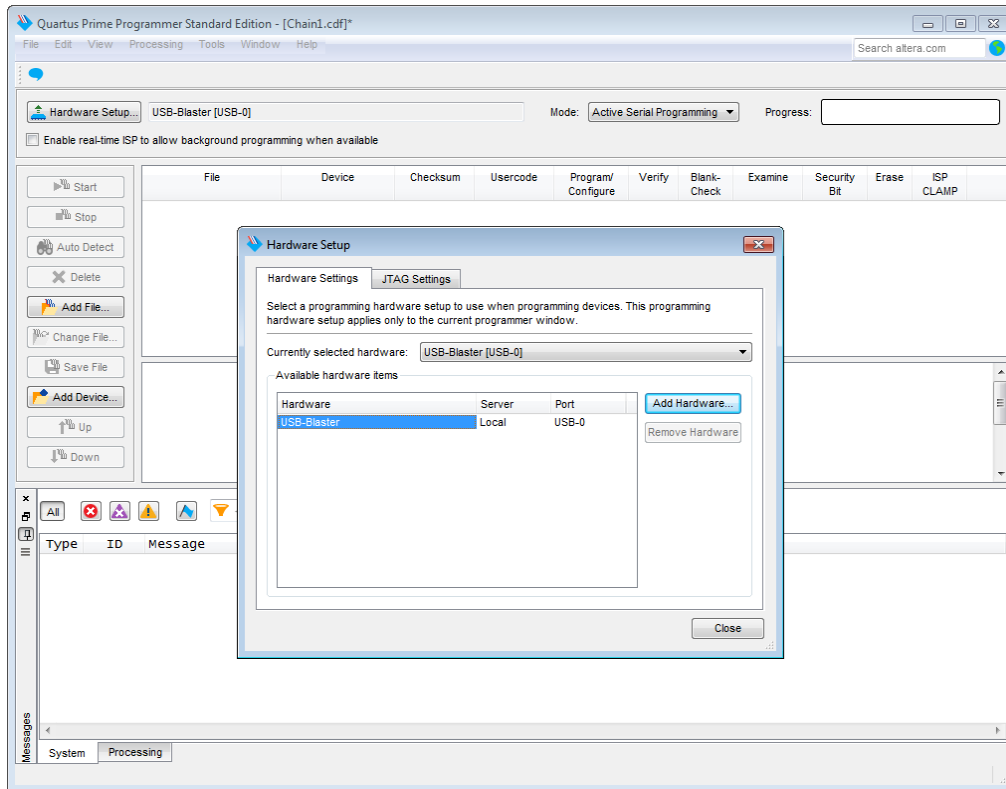


Figure 4 : Quartus – Detecting Hardware

4. Click “Add File” button, and select the desired firmware version, in accordance with the board chosen (.pof file extension). Please, pay attention to the type of the programmed device and its related firmware. Contact KAYA Instruments’ representative for any question.

5. Check “Program/Configure” and “Verify” options, in the check box as shown in Figure 5.

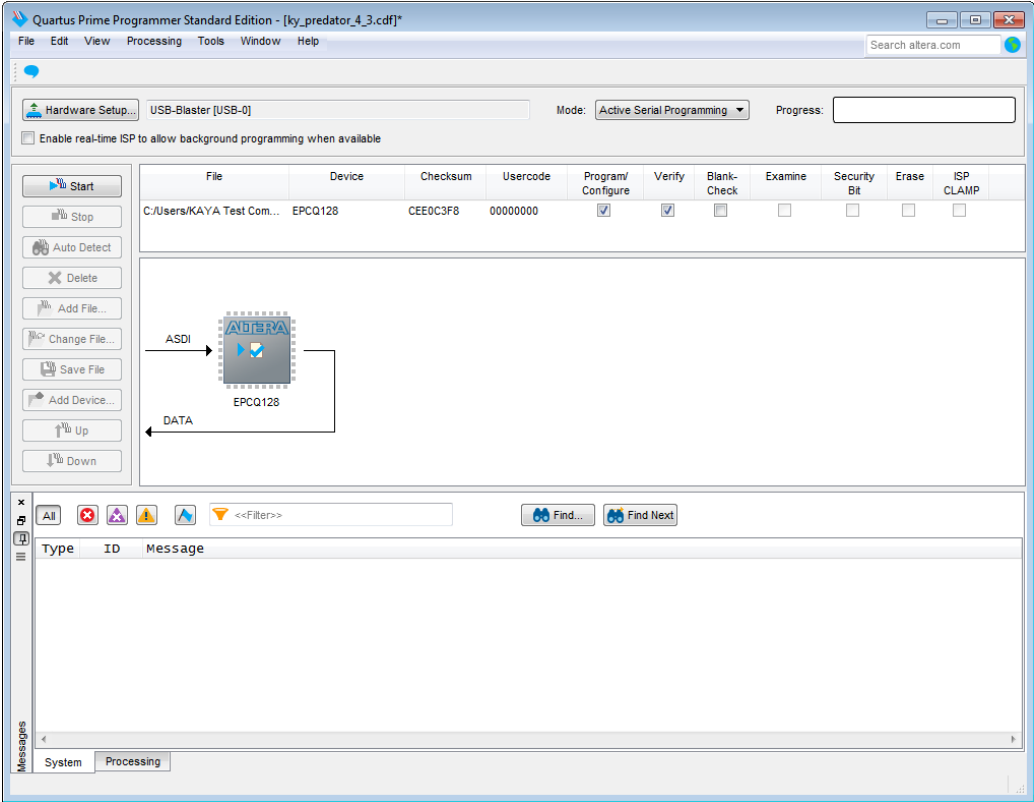


Figure 5 : Quartus – Programming Configuration

- Click “Start” to initiate the image programming. This operation may take up to 15 minutes and shown in Figure 6.

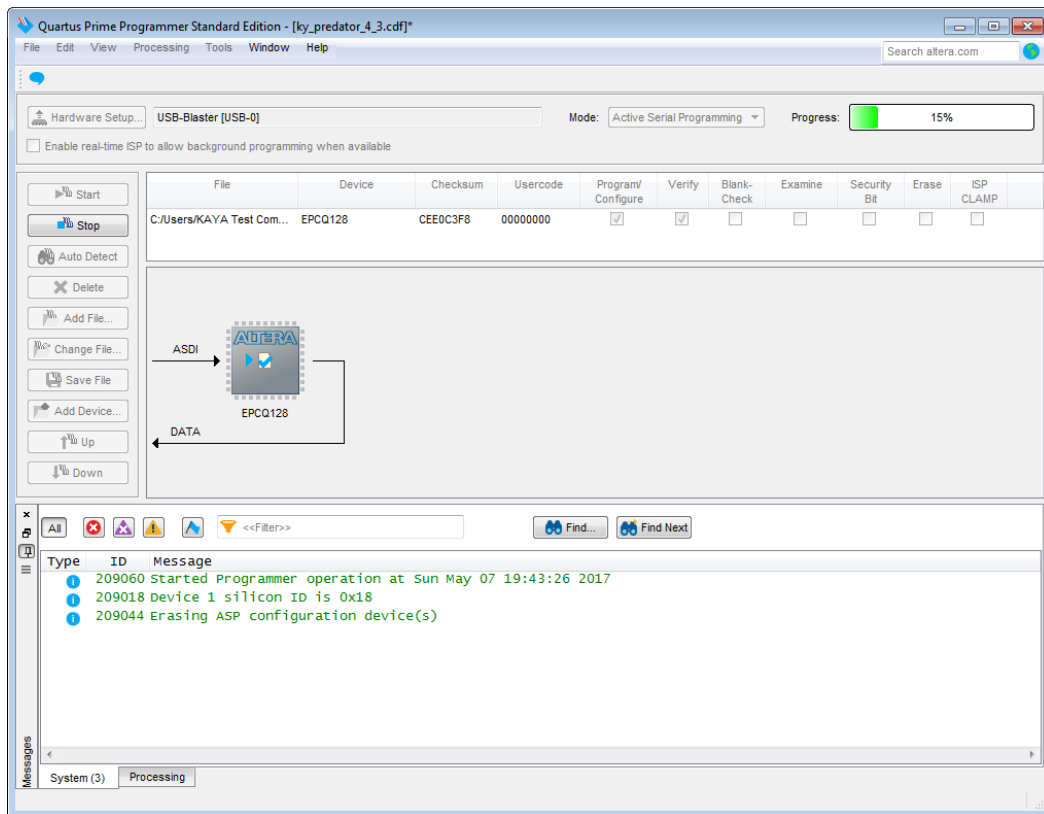


Figure 6 : Quartus – Programming Process

7. Do not interrupt the process!

In case of an error, the firmware update will fail and return to previous operation mode.

- A successful update will result in reaching 100% on both progress bars.
- A full PC shut down is required to initiate the new firmware.
- Remove USB Blaster from the board.
- Turn on the PC and run Vision Point application.
- Perform firmware update after factory FPGA Programming, as described in the next section.

It is recommended to preform firmware update after factory FPGA Programming. The KAYA Instruments boards support firmware update via Vision Point GUI. To initiate firmware update the following steps should be taken:

5.1 Selecting a Grabber or Simulator board

A Vision Point App requires selecting a KAYA Frame Grabber or Camera Simulator target board before starting a firmware update. Different boards may include different firmware revisions. The target board is selected from the combo box and is only available when there is no active project mounted. If a different target board to be selected, the active project should be closed first.

To select a target board:

- Open Vision Point application
- Click the ▼ button of the selection combo box located on the Start Menu or Toolbar Menu
- Chose and select the required board from the list, as shown in Figure 7
- Click “Create new project” to create new project from scratch or open an existing one

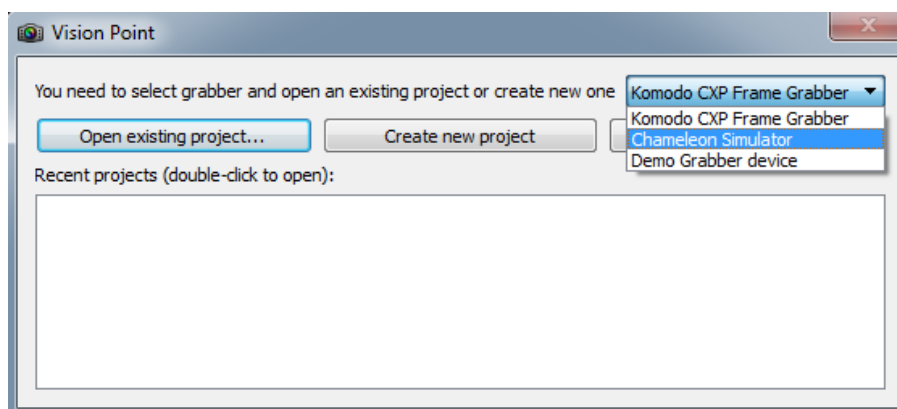


Figure 7 : Vision Point App Start Menu window

5.2 Updating the Device Firmware

6. In the Toolbar Menu, under Device Control tab, chose the “Firmware update” option. A new window will open displaying the current device firmware version.
7. Click “Browse...” button, as shown in Figure 8, and select the desired firmware version, in accordance with the device chosen (.bin file extension), and Click “Next >” button. Please, Contact KAYA Instruments’ representative for any question.

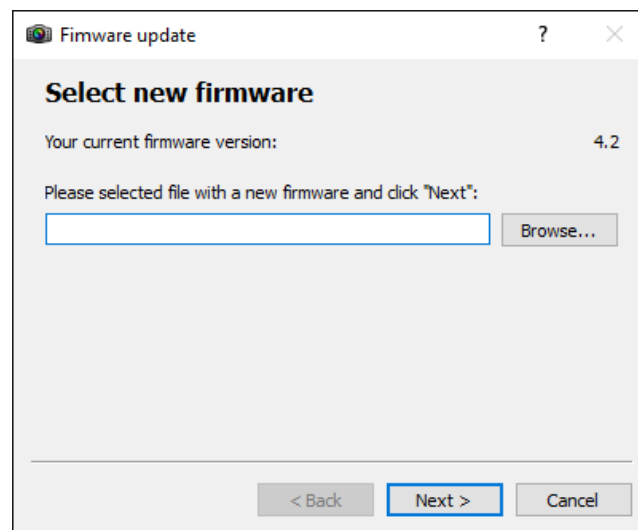


Figure 8 : Firmware Update selection window

8. The next window will display both, current and new firmware, as shown in the Figure 9. By clicking the “Next >” button, the conformation is made and the firmware update will start immediately.

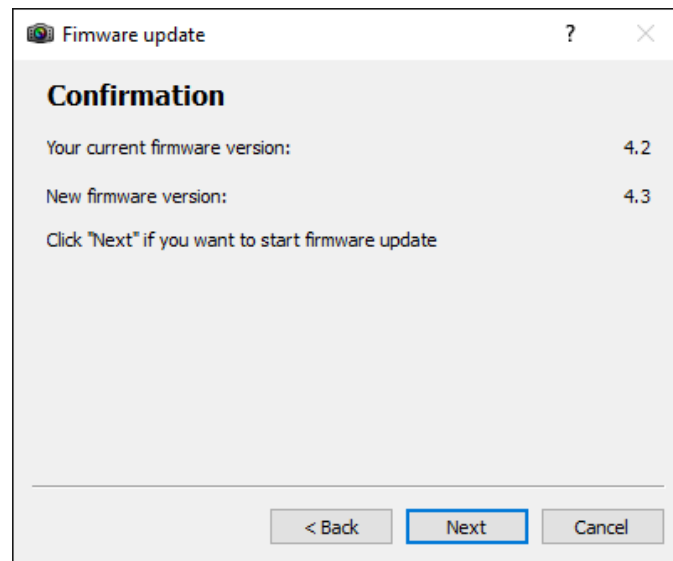


Figure 9 : Firmare Update Confirmation window

9. The next window displays the initiated firmware update. The firmware update process displayed in the first progress bar and the firmware validation displayed in the second, as shown in Figure 10.
10. **Do not interrupt the process!**

In case of an error, the firmware update will fail and return to previous operation mode.
11. A successful update will result in reaching 100% on both progress bars.
12. A full PC shut down is required to initiate the new firmware.
13. Turn on the PC and check the firmware version by opening the Vision Point application, Frame Grabber tab. The firmware version located under Hardware information. Make sure that the firmware version matches the version supplied. That would insure the success of the firmware update operation.

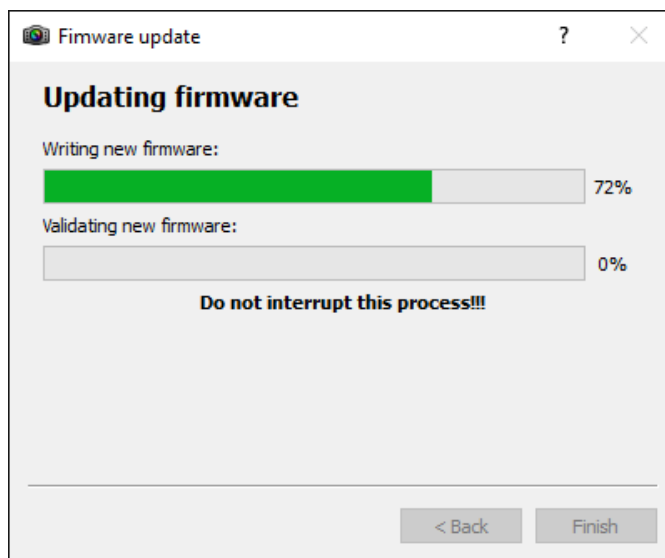


Figure 10 : Firmare Update process window