

Operating Instructions for Pt-51

Compiled by

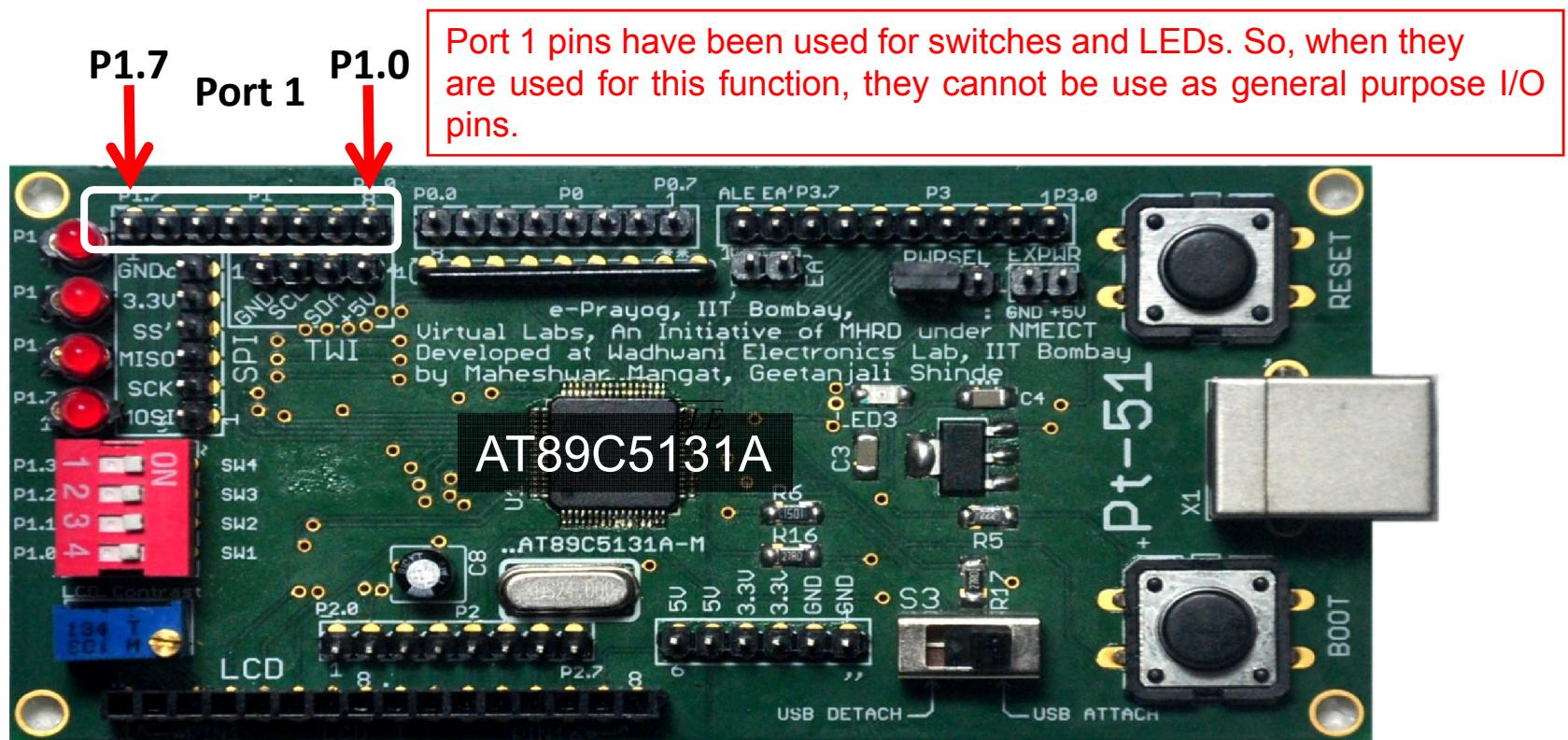
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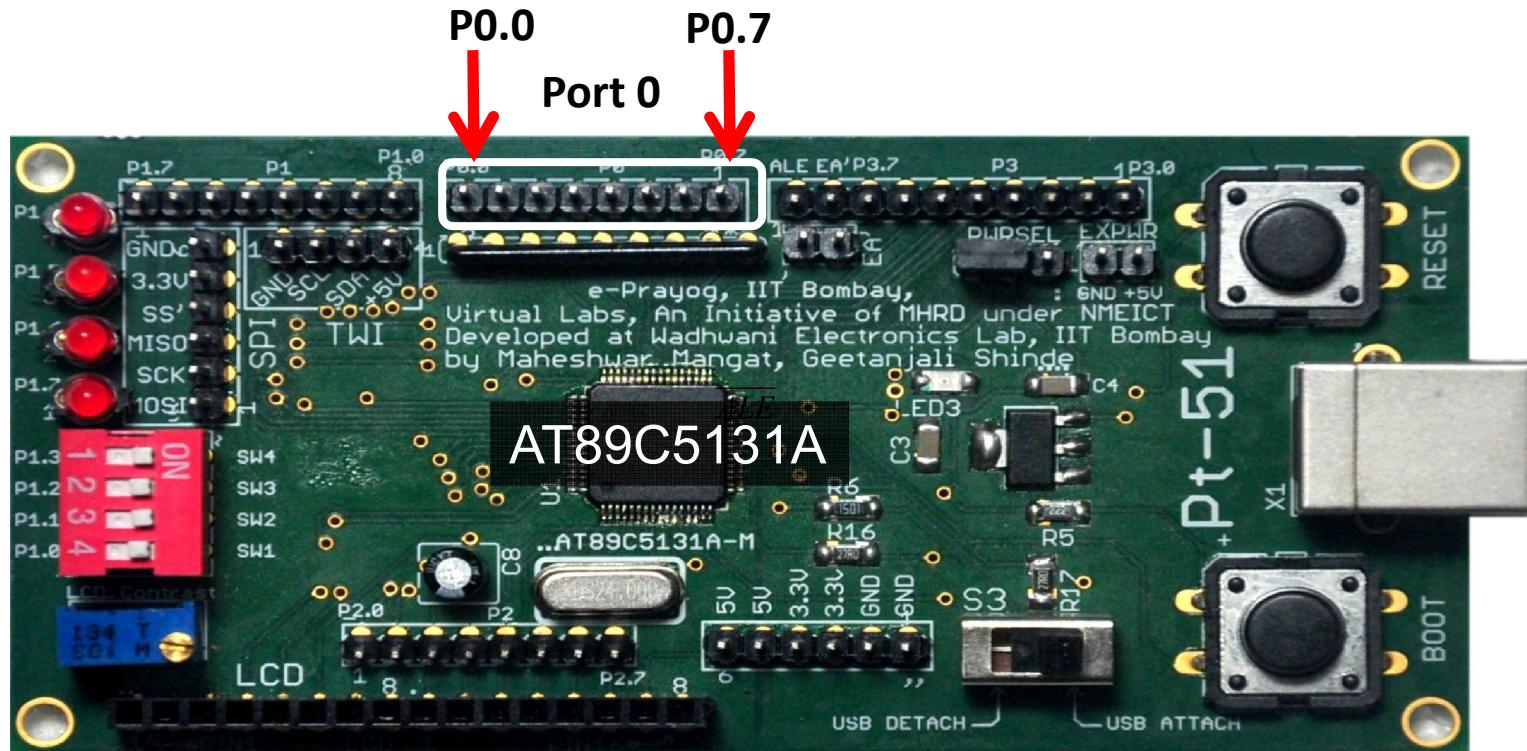
Board Specifications

- Microcontroller : Atmel AT89C5131A
- 24MHz Crystal clock generator
- 4 LEDs and 4 Switches for simple programs
- LCD (16x2) connection port
- Type B USB connector for power and Programming
- All ports accessible

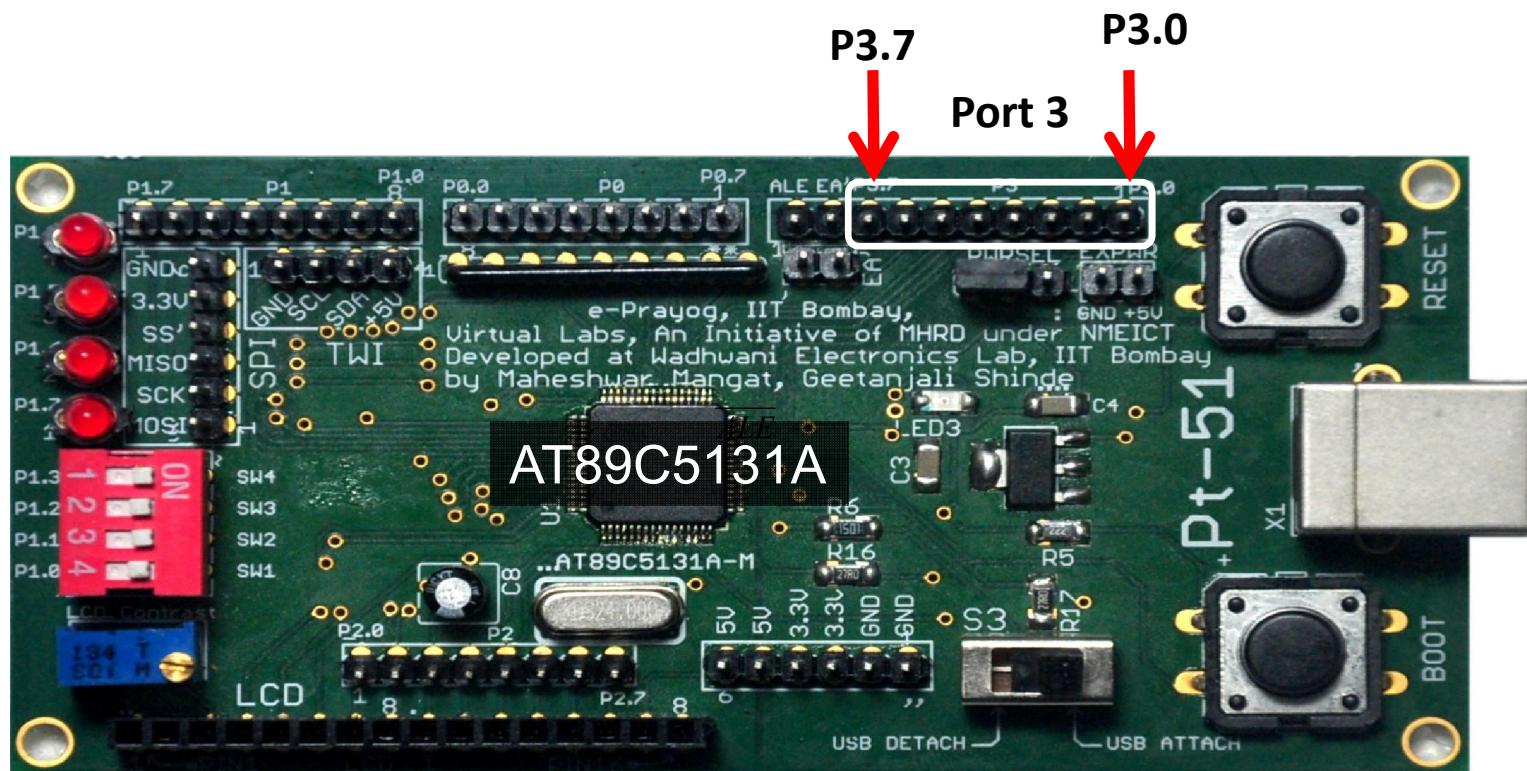
Board Layout : Ports



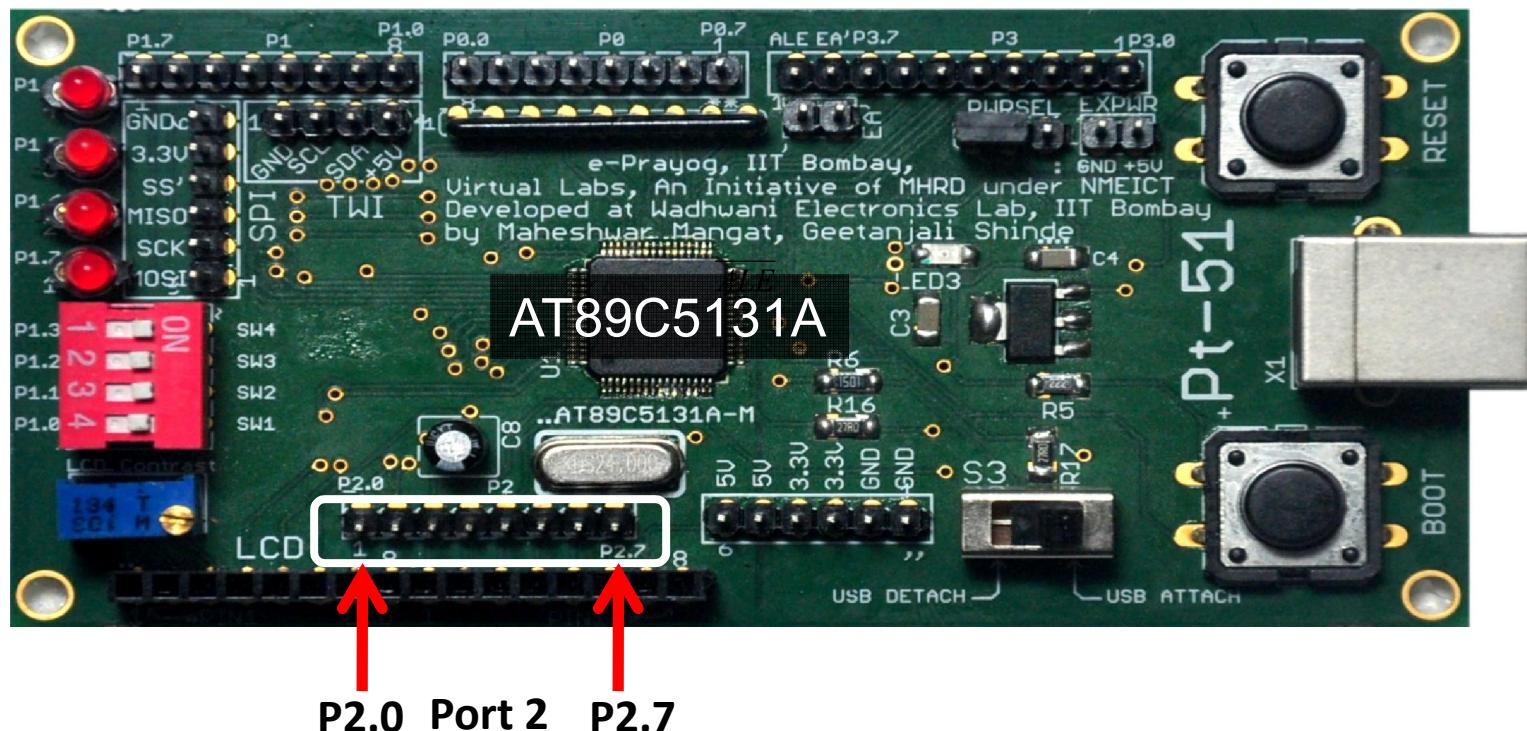
Board Layout : Ports



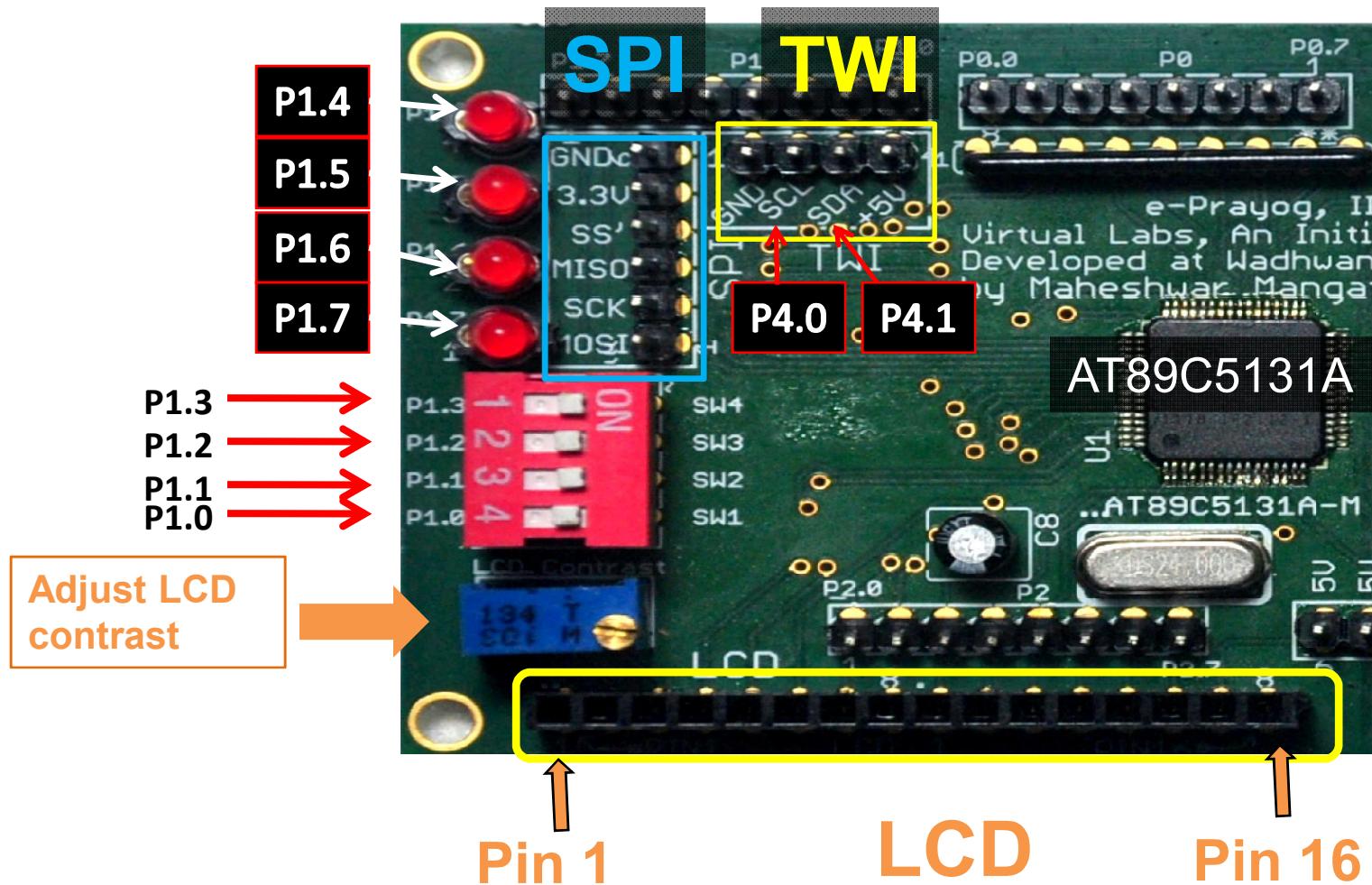
Board Layout : Ports



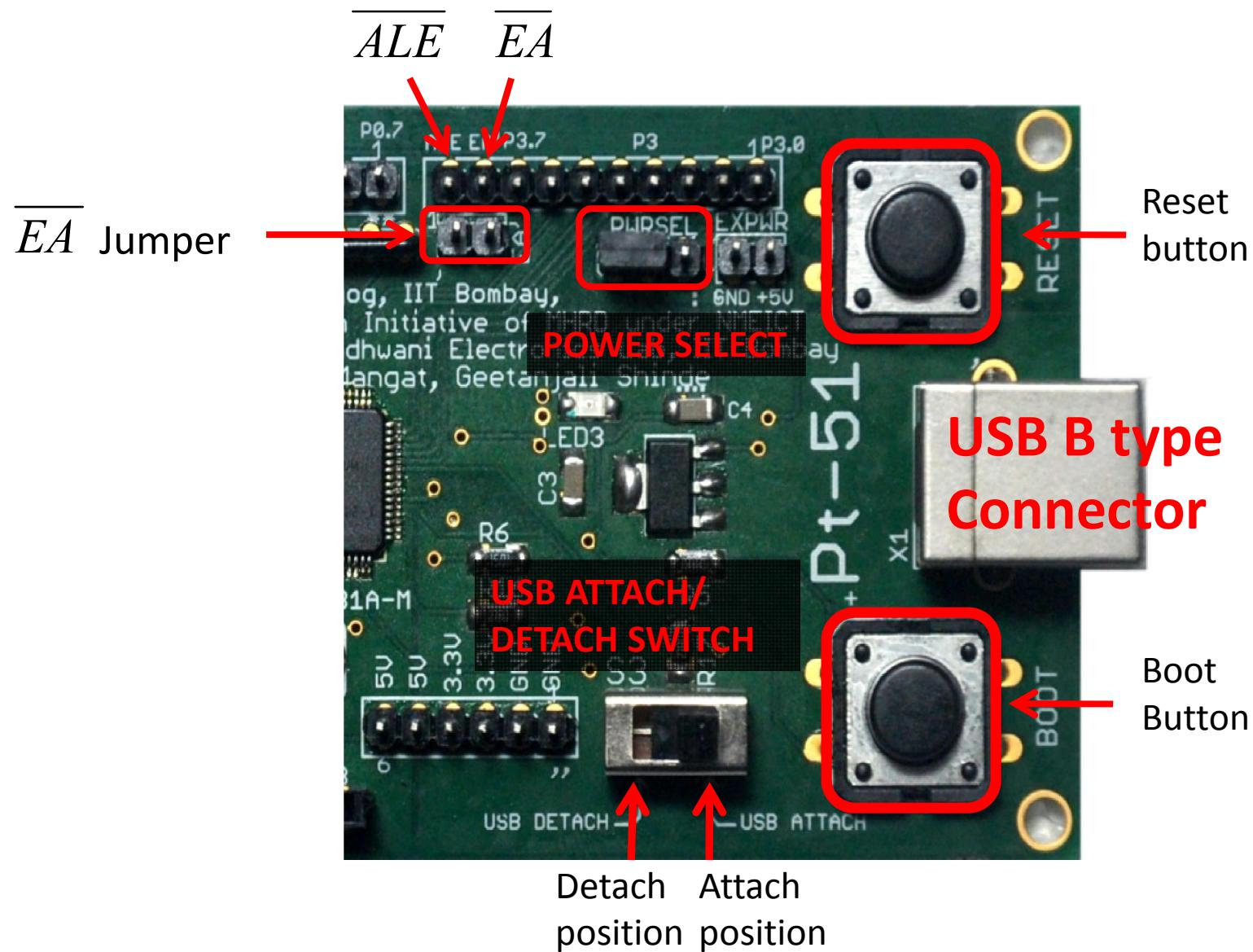
Board Layout : Ports



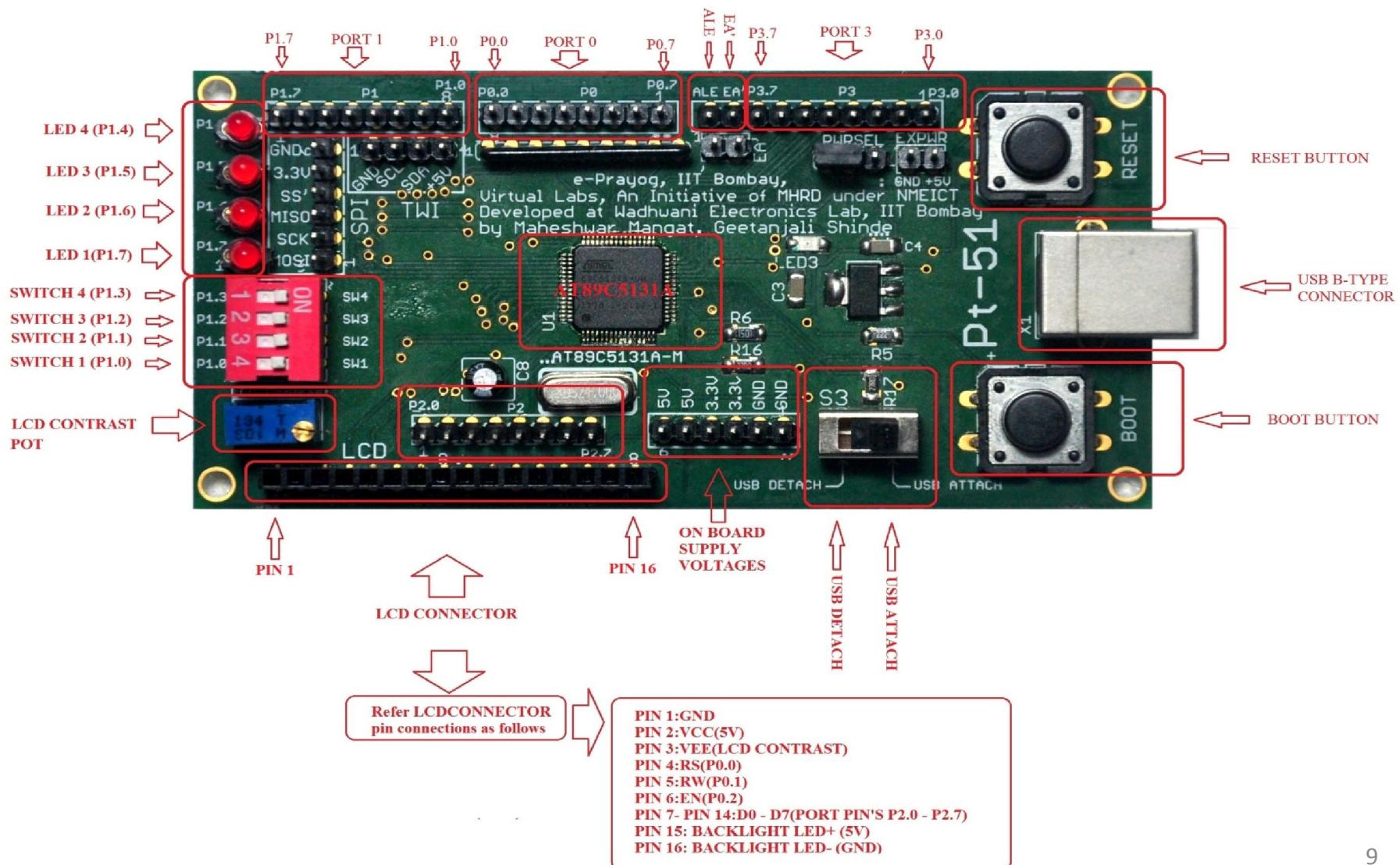
Board layout : Peripherals/Connectors



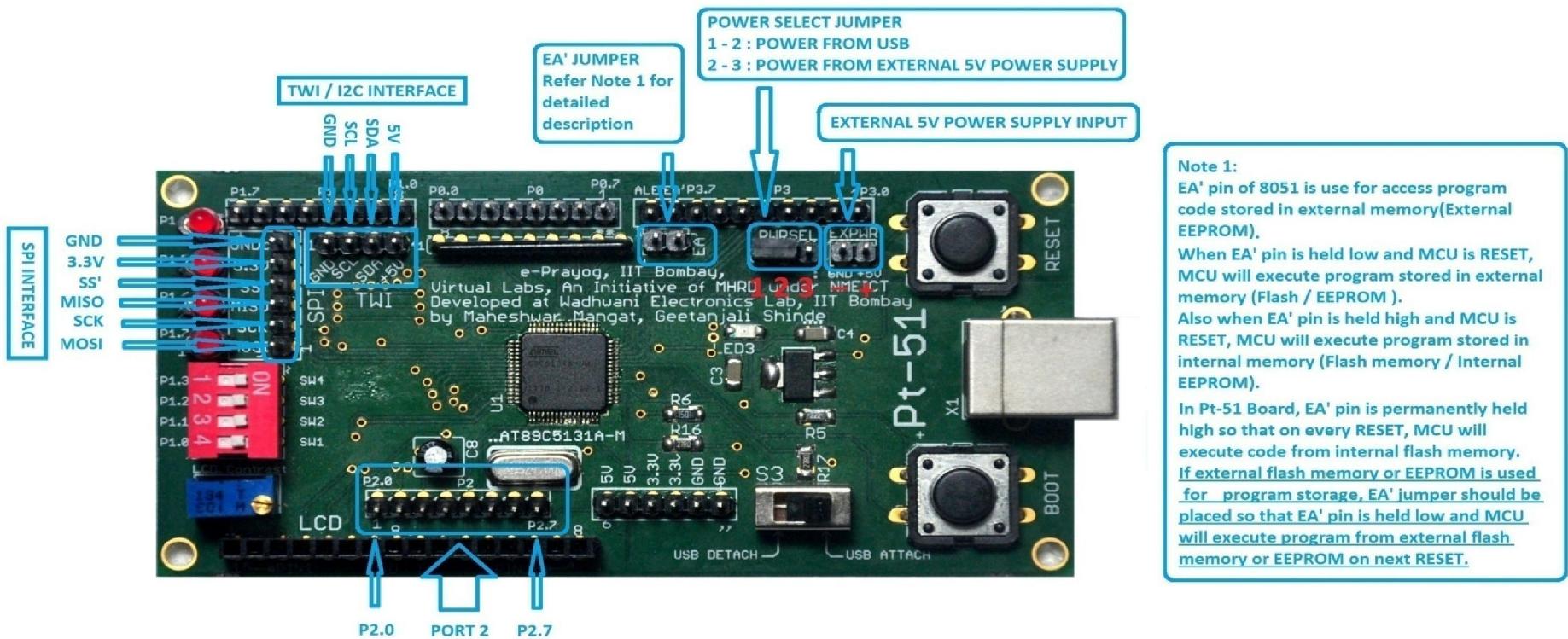
Board layout : Jumpers / Buttons



Detailed Board Layout



Detailed Board Layout continued....



CAUTION!!!!

Note that the certain port pins have been given multiple functionalities and they can used to perform only one function at a time.

Ports	Alternate Functions
PORt 1	1)General Purpose I/O 2)LED's (P1.4 - P1.7) and Switches (P1.0 – P1.3) 3)SPI interface
PORt 2	1)General Purpose I/O 2>Data lines for LCD(D0-D7)
PORt 0	1)General Purpose I/O 2)Control signal of LCD (RS: P0.0, R/W: P0.1, EN: P0.2)

Getting Started

Ensure that you have downloaded and installed

- Keil uvision 4 : To edit , compile and generate HEX file.
- Atmel Flip : To write the HEX file generated, into the board's flash memory.

You need:

Atmel Flip 2.4.6 for Windows XP

Atmel Flip 3.4.7 for Windows 7 or Windows

Operating modes

It operates in 2 modes –

- Boot loader mode : The hex file is written into the on chip flash memory. This communication takes place through USB port.
- Application mode : The board runs the application code which has been programmed into the flash memory of the microcontroller.

Boot loader Mode

To get into this mode, the following steps have to be done in the same sequence as given below:

- Keep USB ATTACH/DETACH switch in “**detach**” position
- Press and hold the “Boot” button.
- Press and hold the “Reset” button, for a moment and release it, still holding the Boot button pressed.
- Release the Boot button.
- Keep USB ATTACH/DETACH switch in “**attach**” position

Note: we have to follow above steps every time if we want execute boot loader

Boot loader Mode continued.....

If boot loader mode execution procedure is followed properly, PC will recognize new hardware and “Found New Hardware Wizard ” window will appear.

Note: “Found New Hardware Wizard ” window will only appear during first time Pt-51 board is connected to your PC or Driver is corrupted, So ignore steps given in slides no.16 to 19 if driver is already installed.

Found New Hardware Wizard



Welcome to the Found New Hardware Wizard

Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).

[Read our privacy policy](#)

Can Windows connect to Windows Update to search for software?

- Yes, this time only
- Yes, now and every time I connect a device
- No, not this time

Click Next to continue.

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Next >

Cancel

- Select “No, not this time” option and click on Next

Found New Hardware Wizard



This wizard helps you install software for:

AT89C5130/AT89C5131



If your hardware came with an installation CD or floppy disk, insert it now.

What do you want the wizard to do?

- Install the software automatically (Recommended)
 Install from a list or specific location (Advanced)

Click Next to continue.

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Next >

Cancel

- Select “Install from a list or specific location (Advanced)” option and click on **Next**

Found New Hardware Wizard

Please choose your search and installation options.



Search for the best driver in these locations.

Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

Search removable media (floppy, CD-ROM...)

Include this location in the search:

C:\Program Files\ATMEL\FLIP 2.4.6\usb



Browse

Don't search. I will choose the driver to install.

Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

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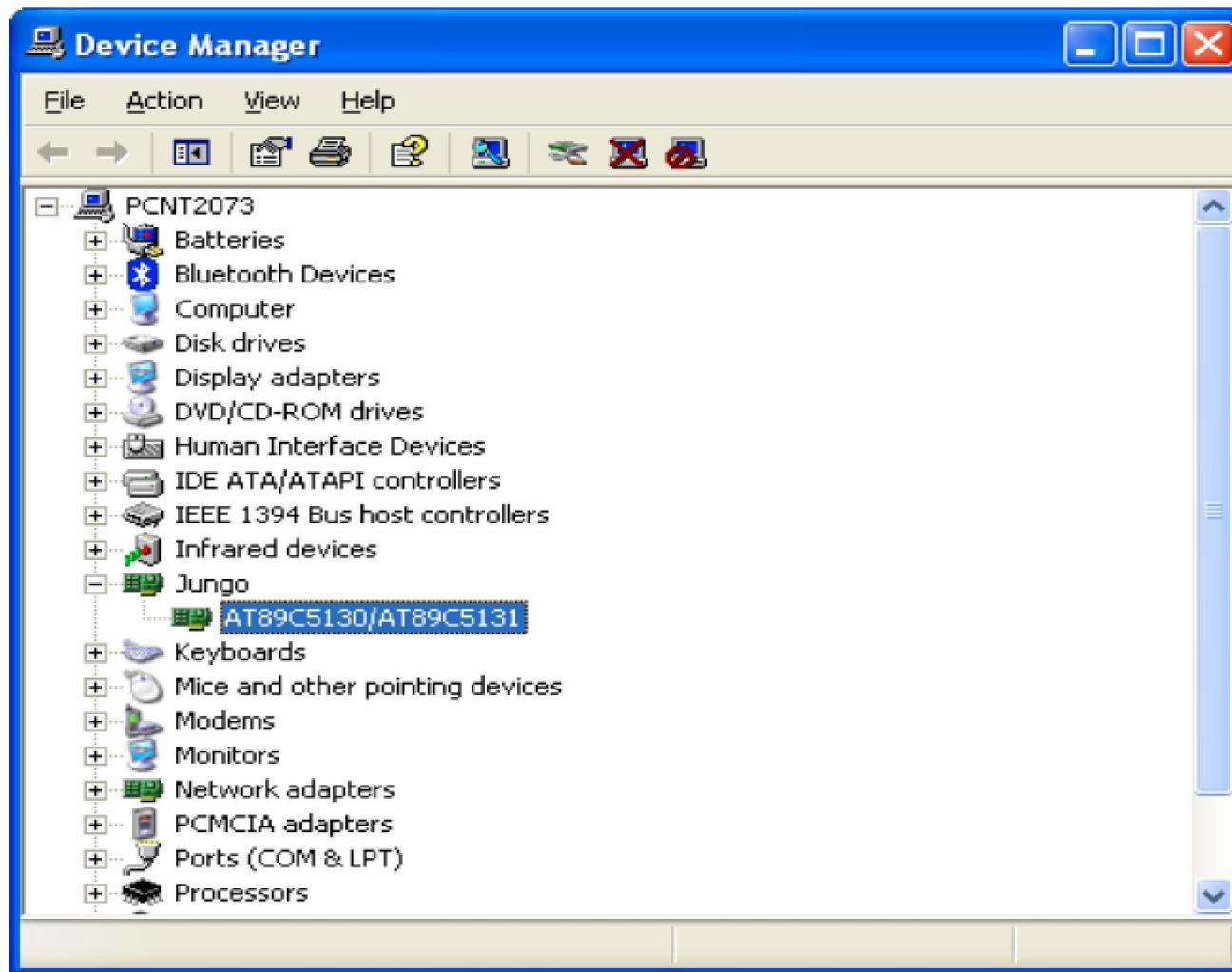
Next >

Cancel

For newer version of flip give following driver path:

C:\Program files\ATMEL\FLIP 3.4.7\USB

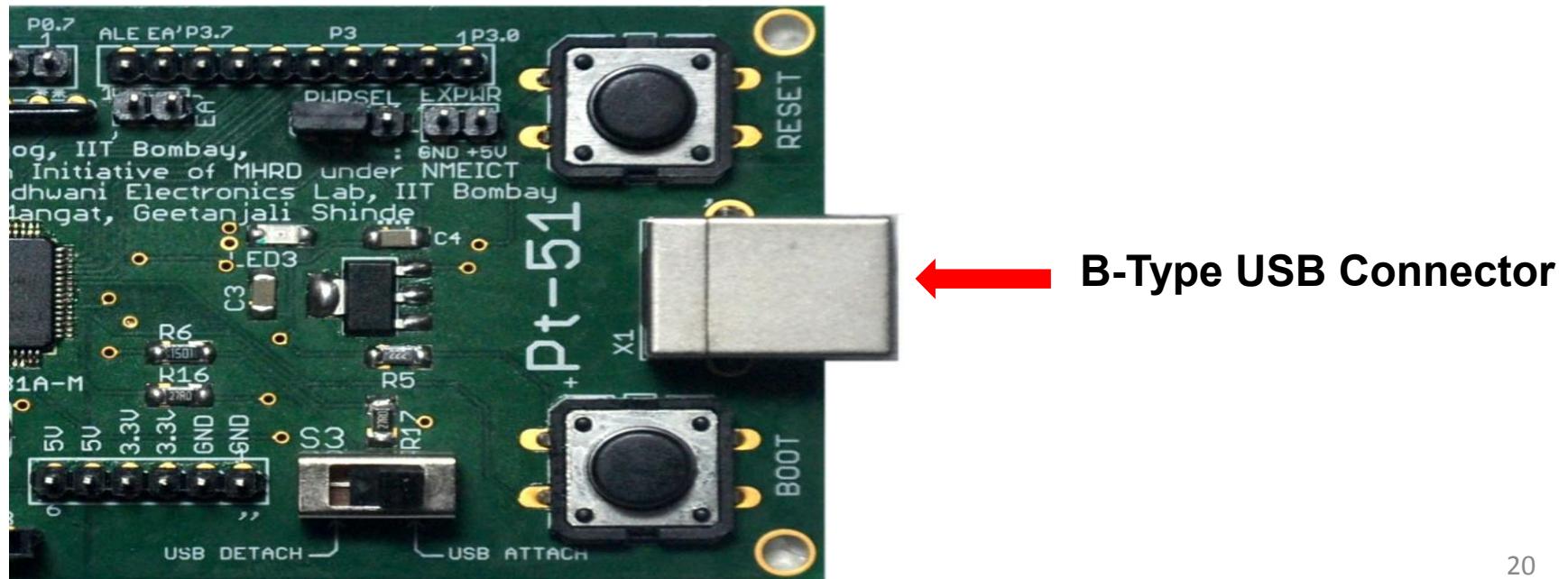
- Once the device driver is installed, open the device manager



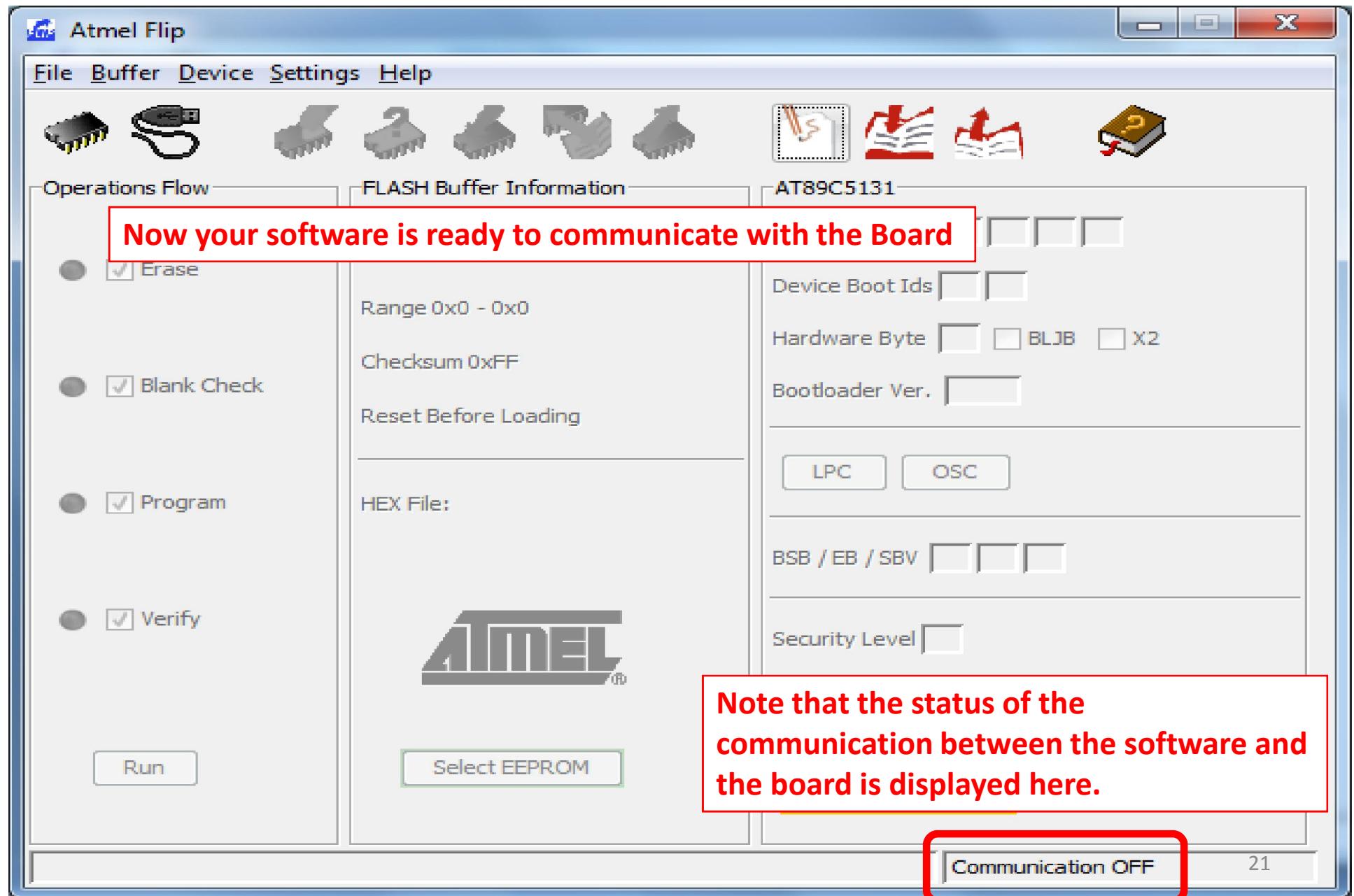
- Check if the USB jungs driver is correctly setup for your device as described on the picture above

Loading the program

- Connect Pt-51 board to your PC using B-type USB cable.
- Execute boot loader mode using procedure given in slide no.14 “Boot loader Mode”.

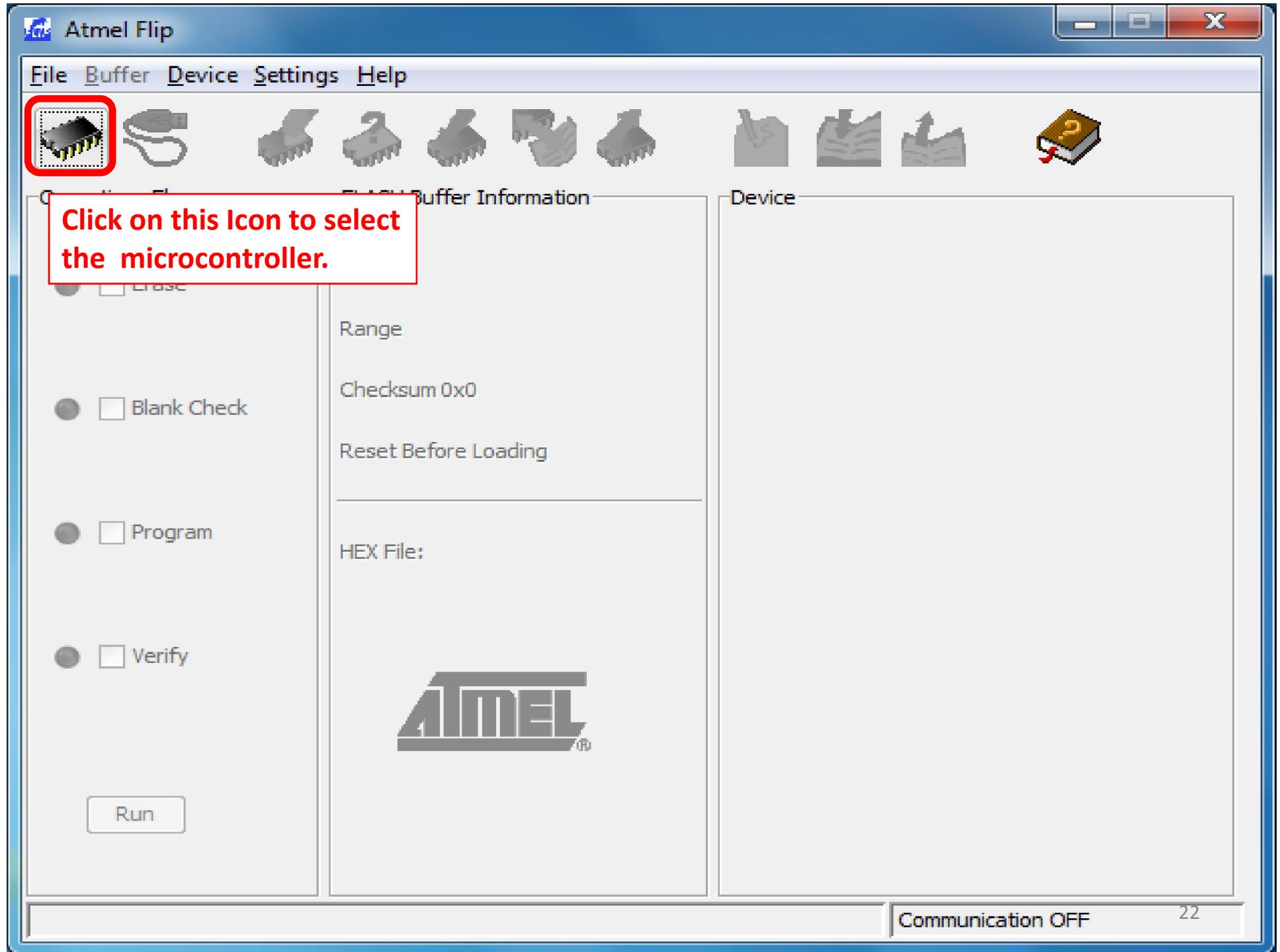


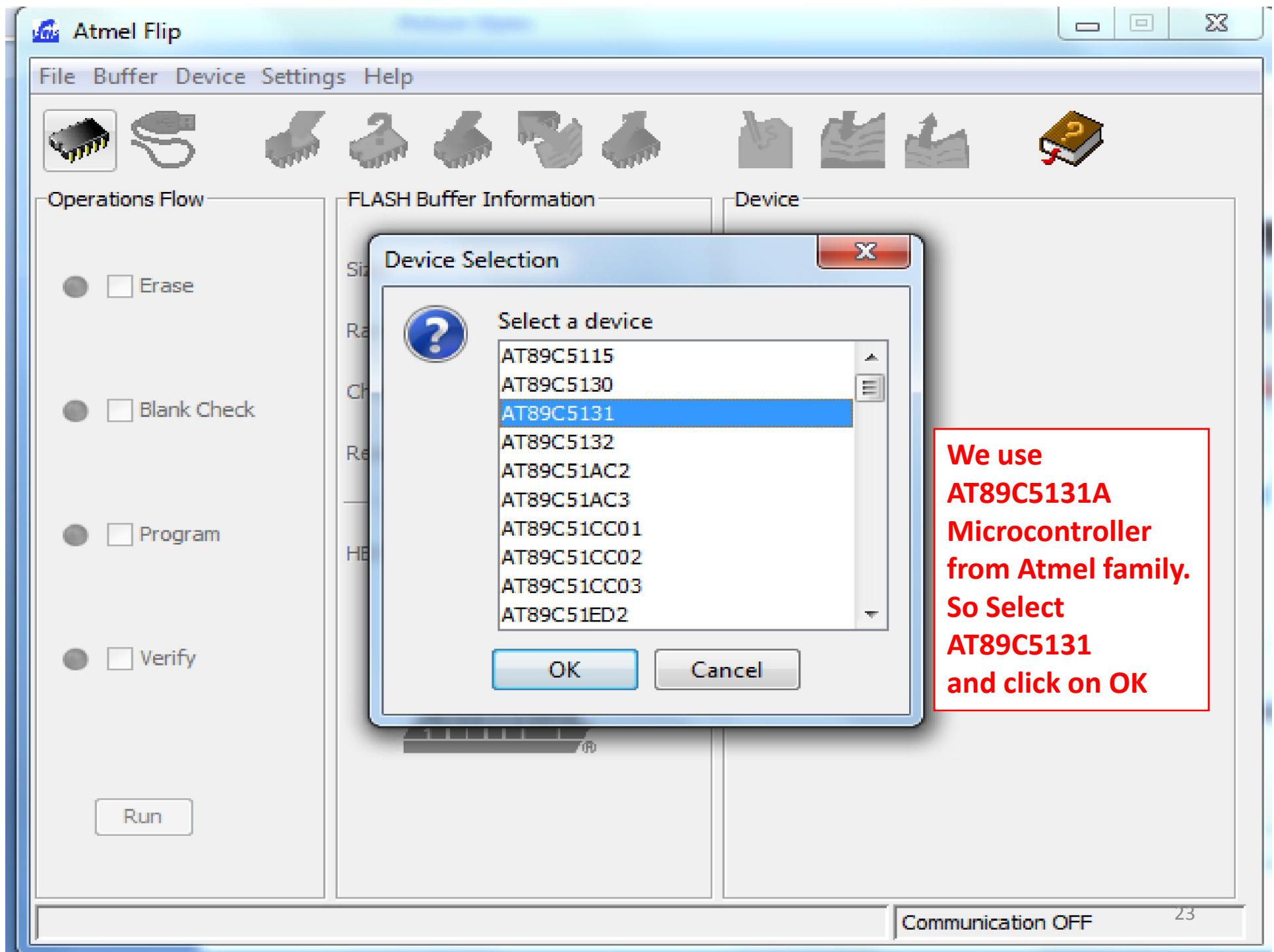
Run the software Atmel Flip. You will see a window as shown above.

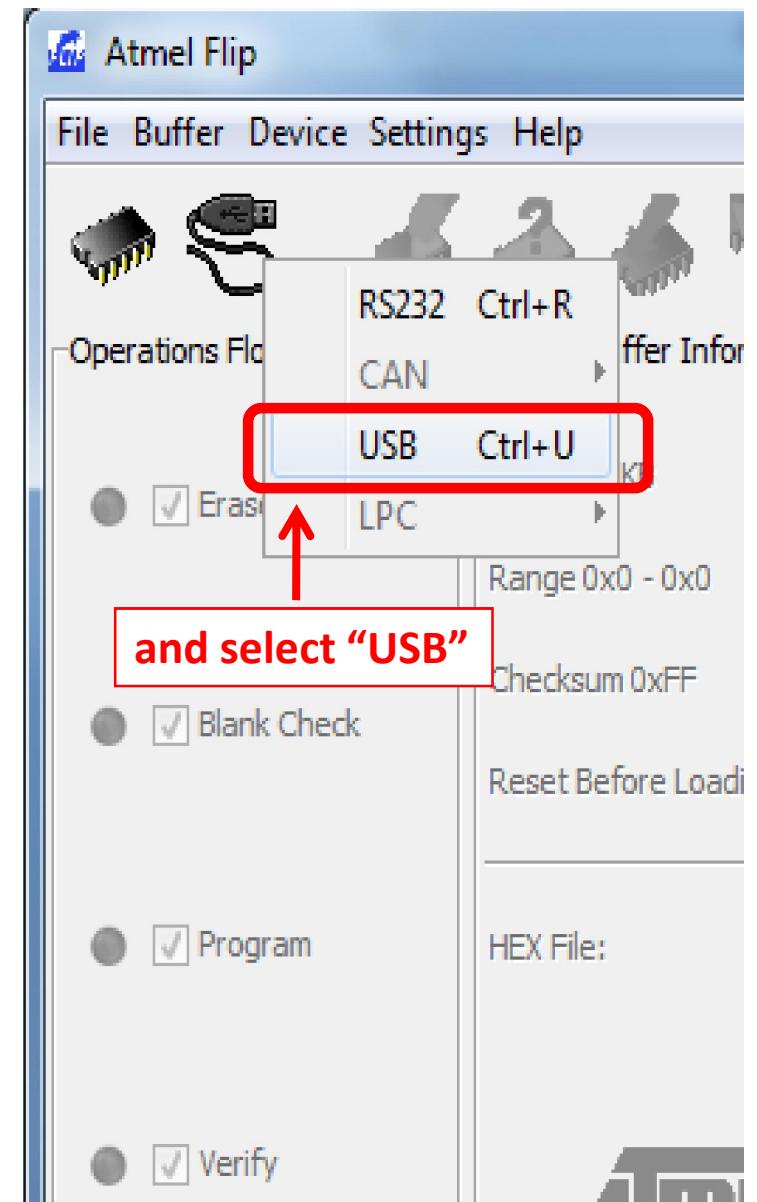
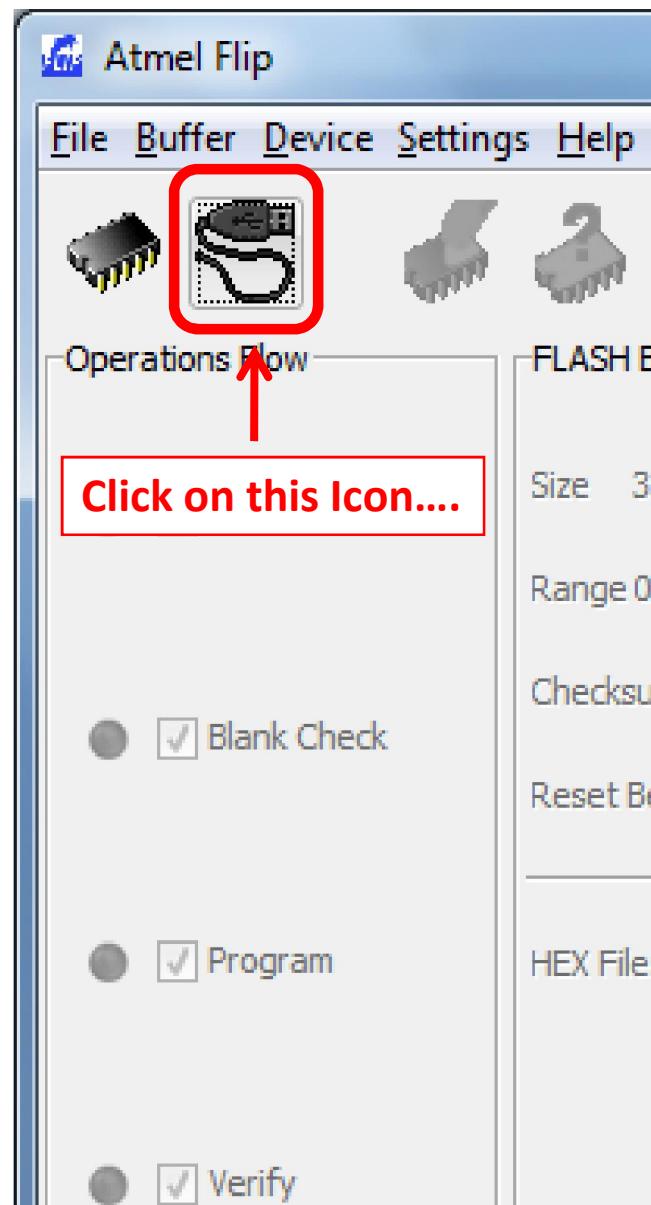


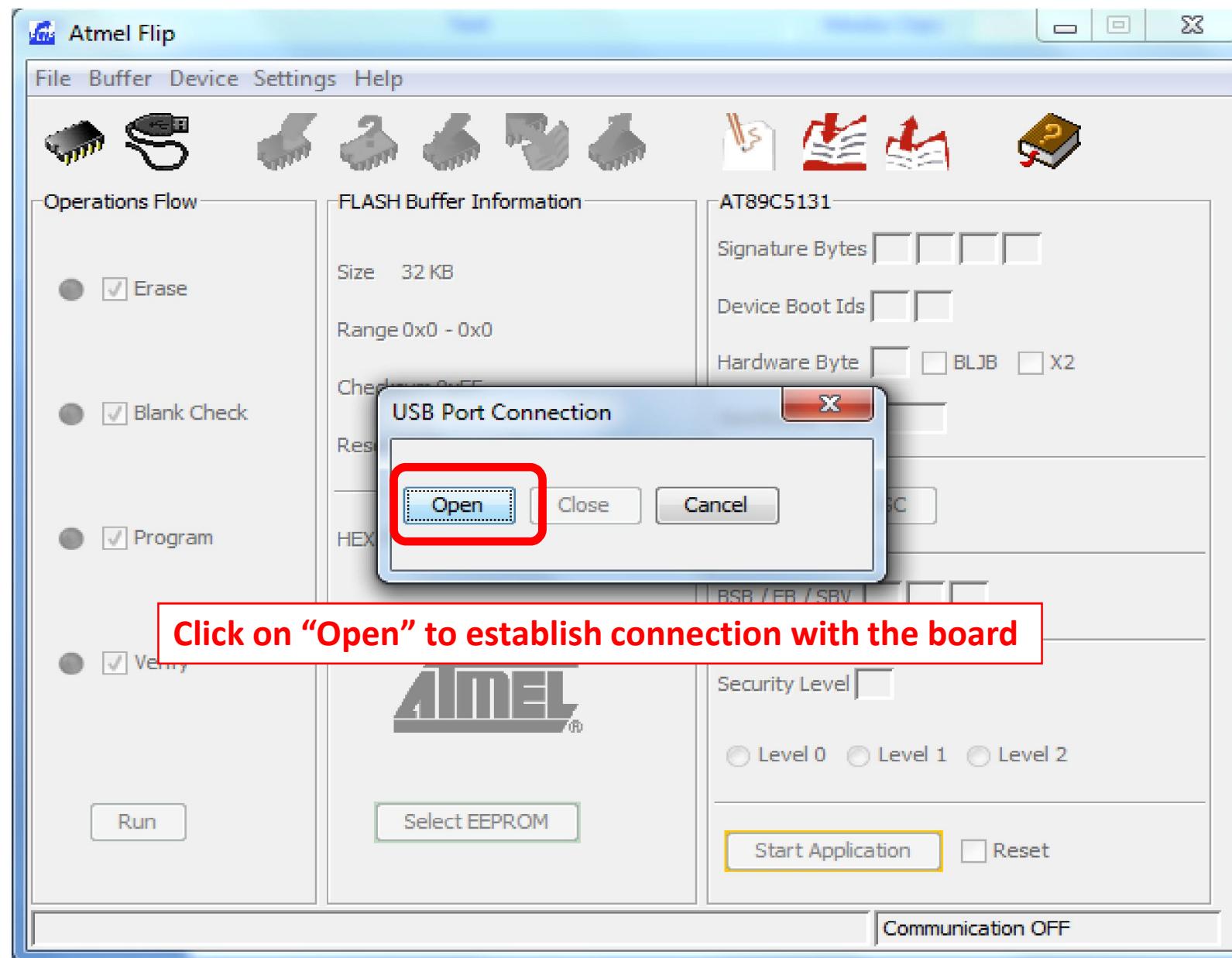
Communication OFF

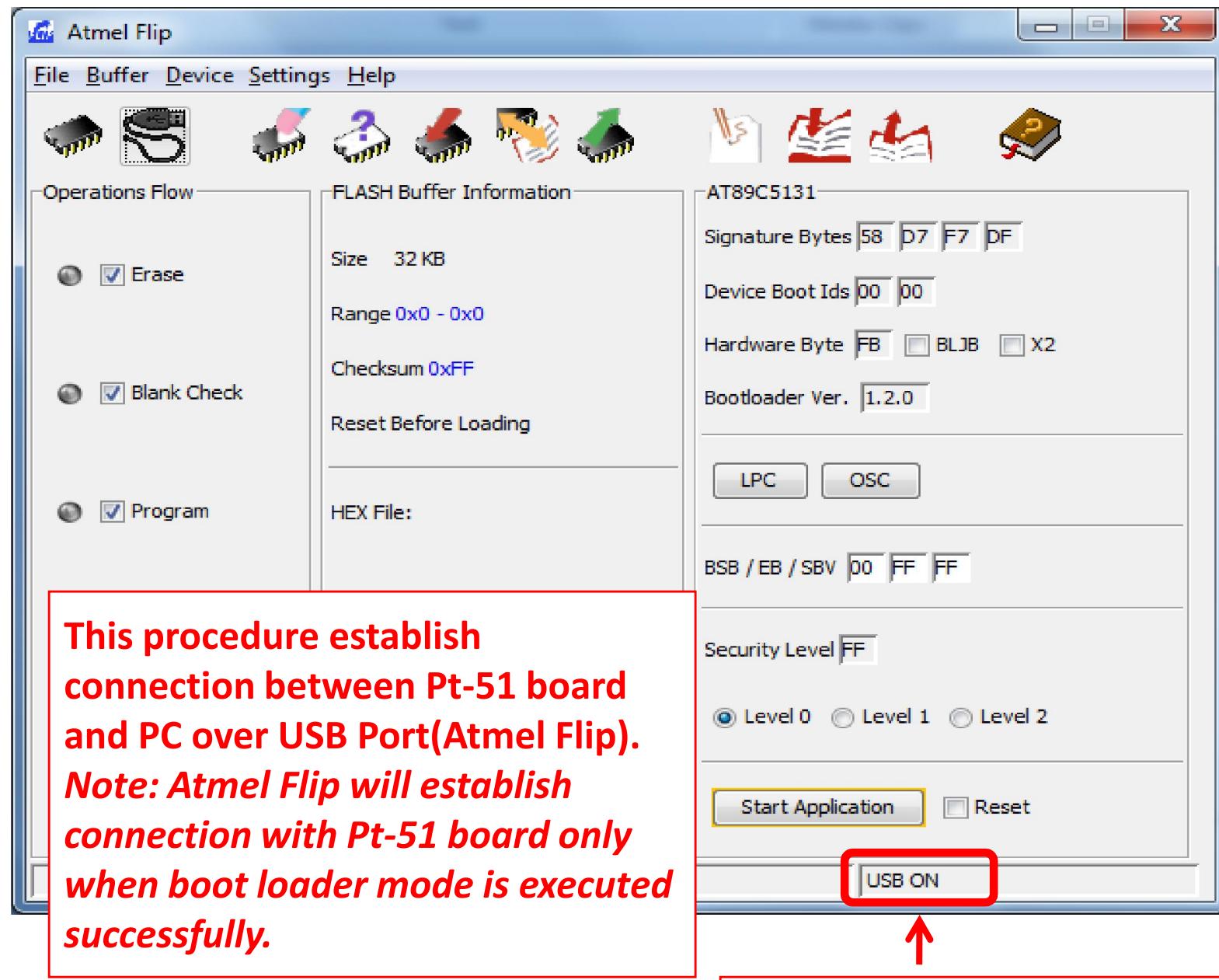
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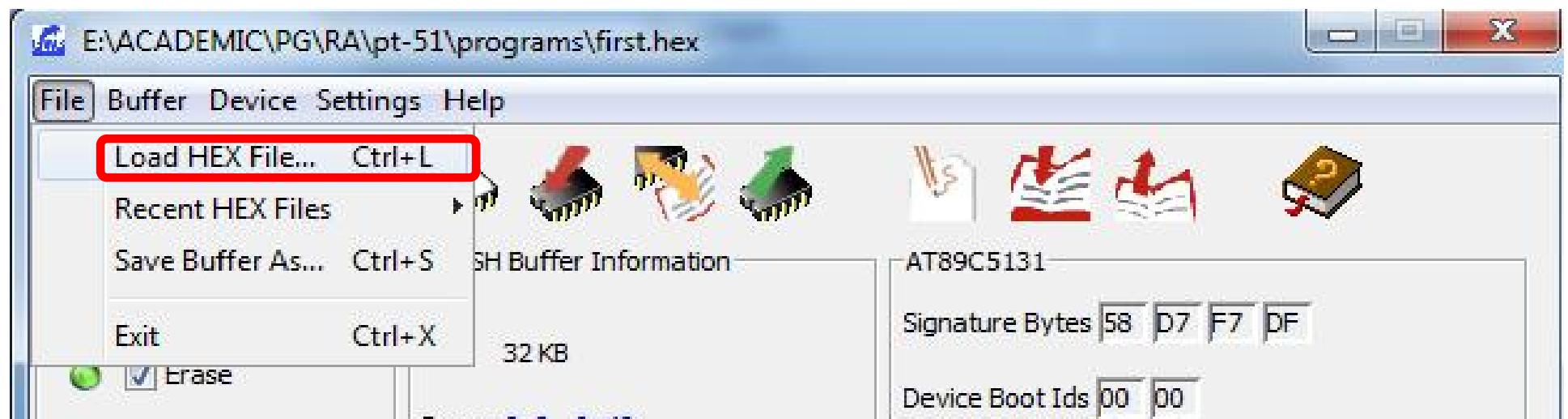




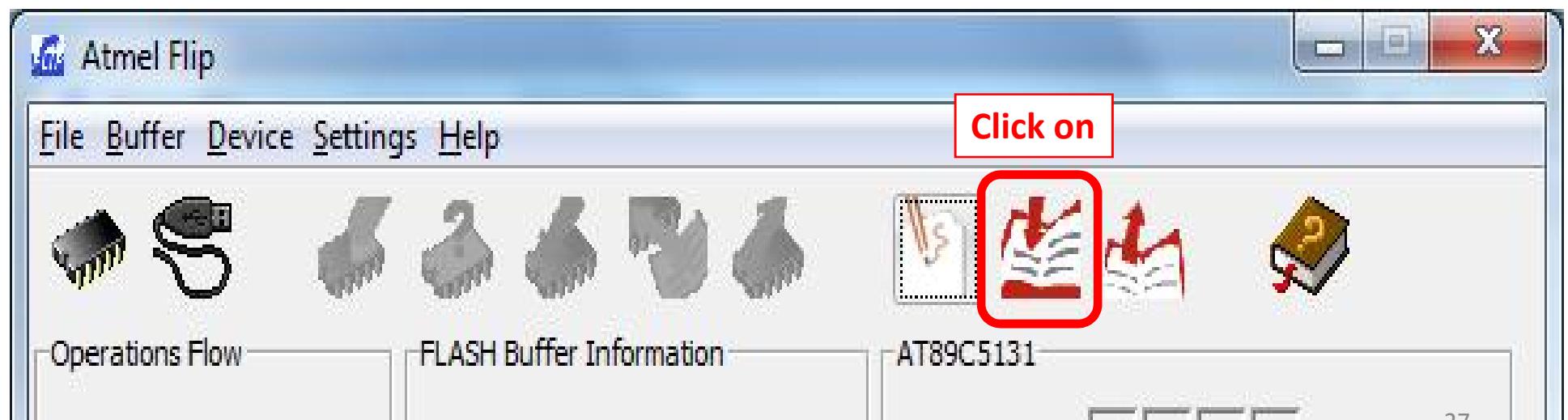


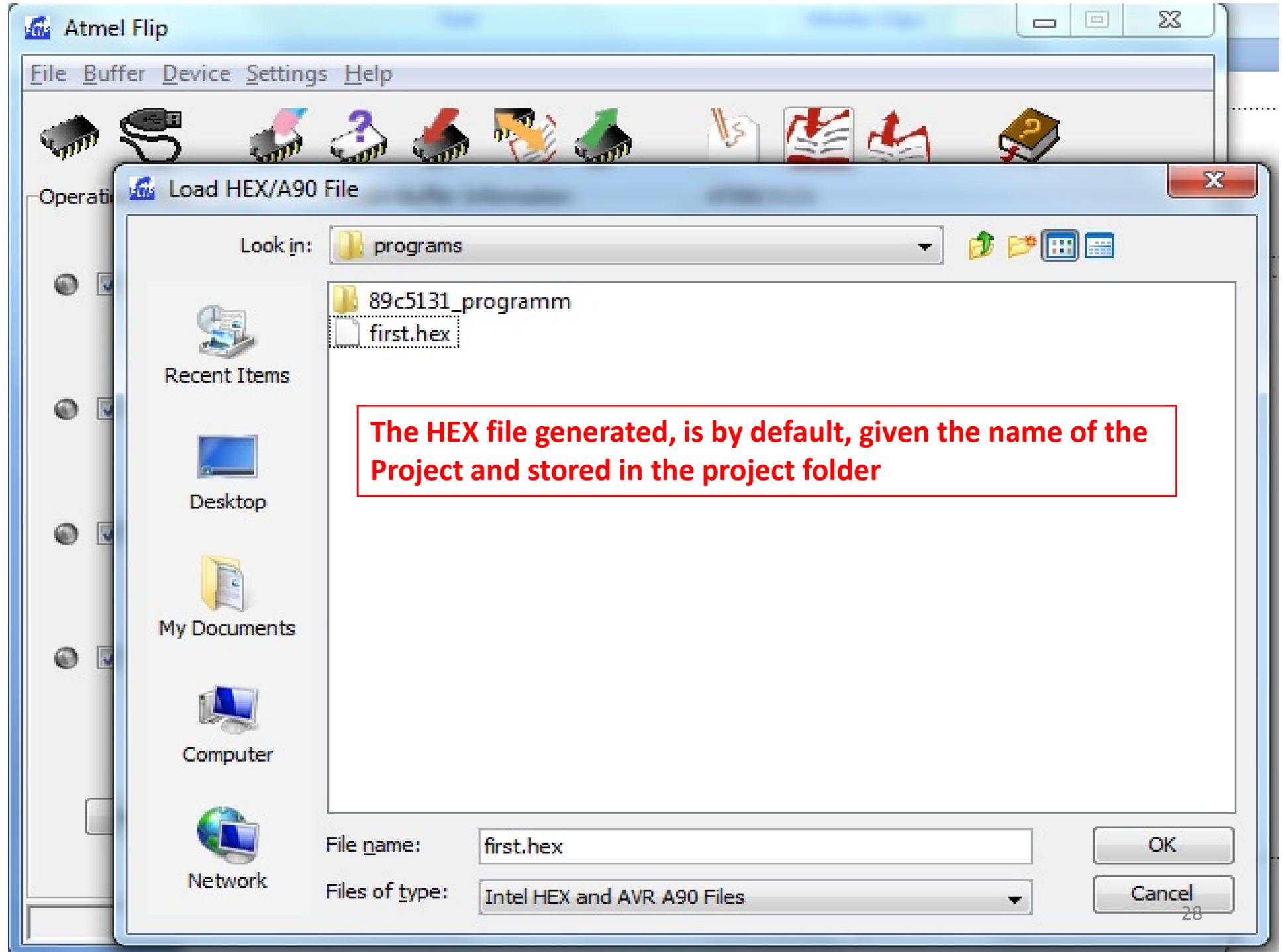
Indicates that connection has been established

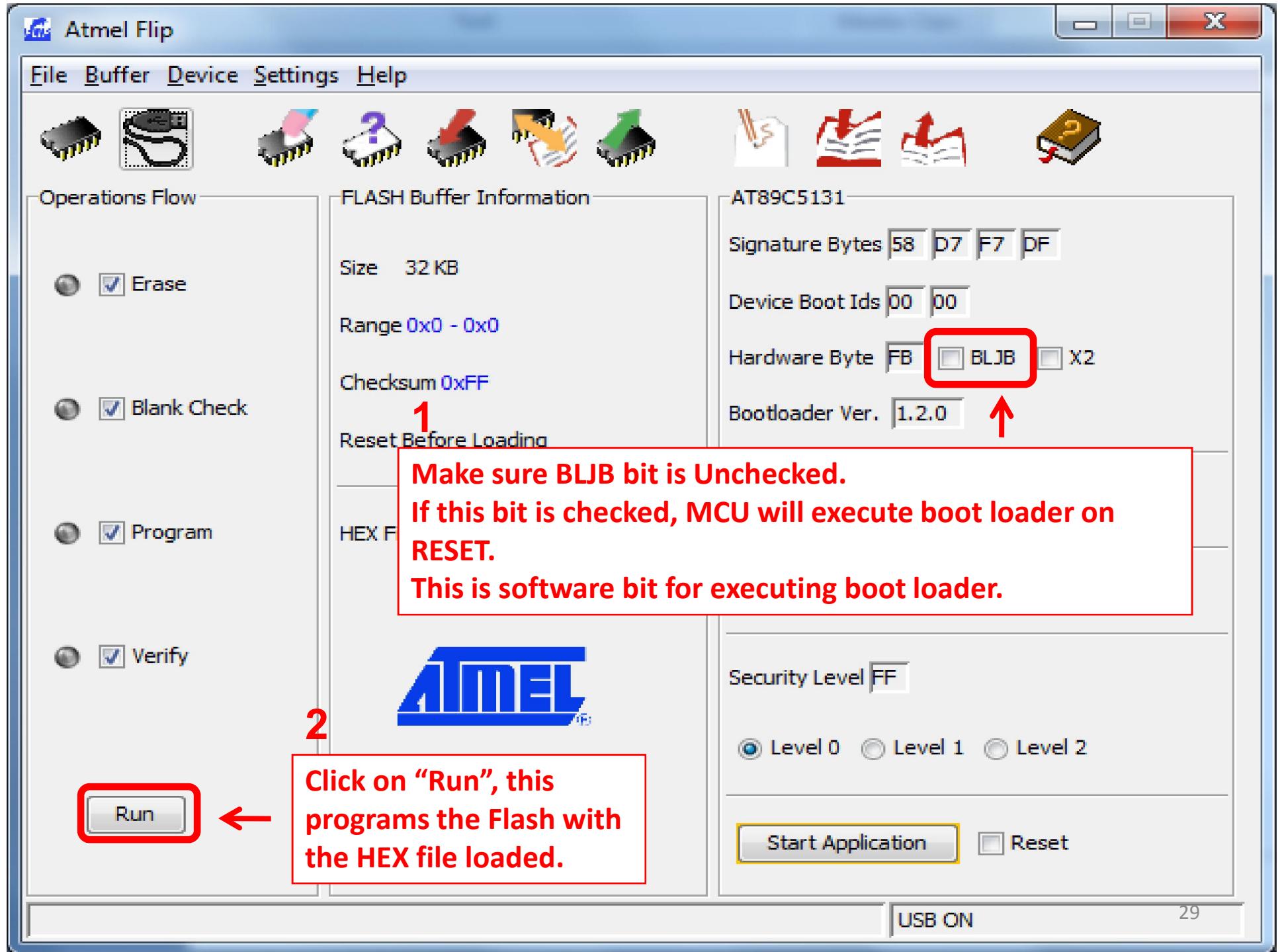
To load HEX file.

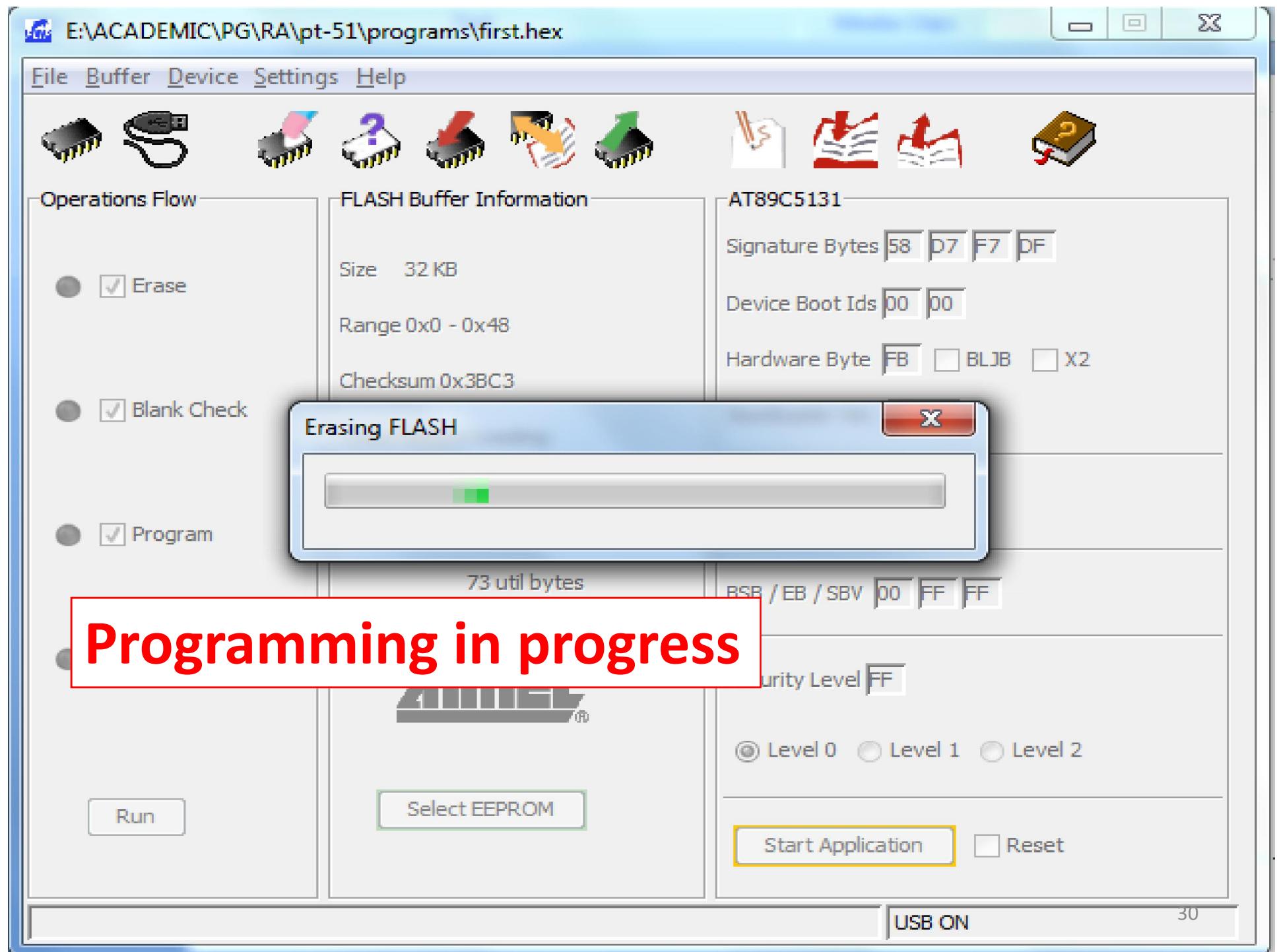


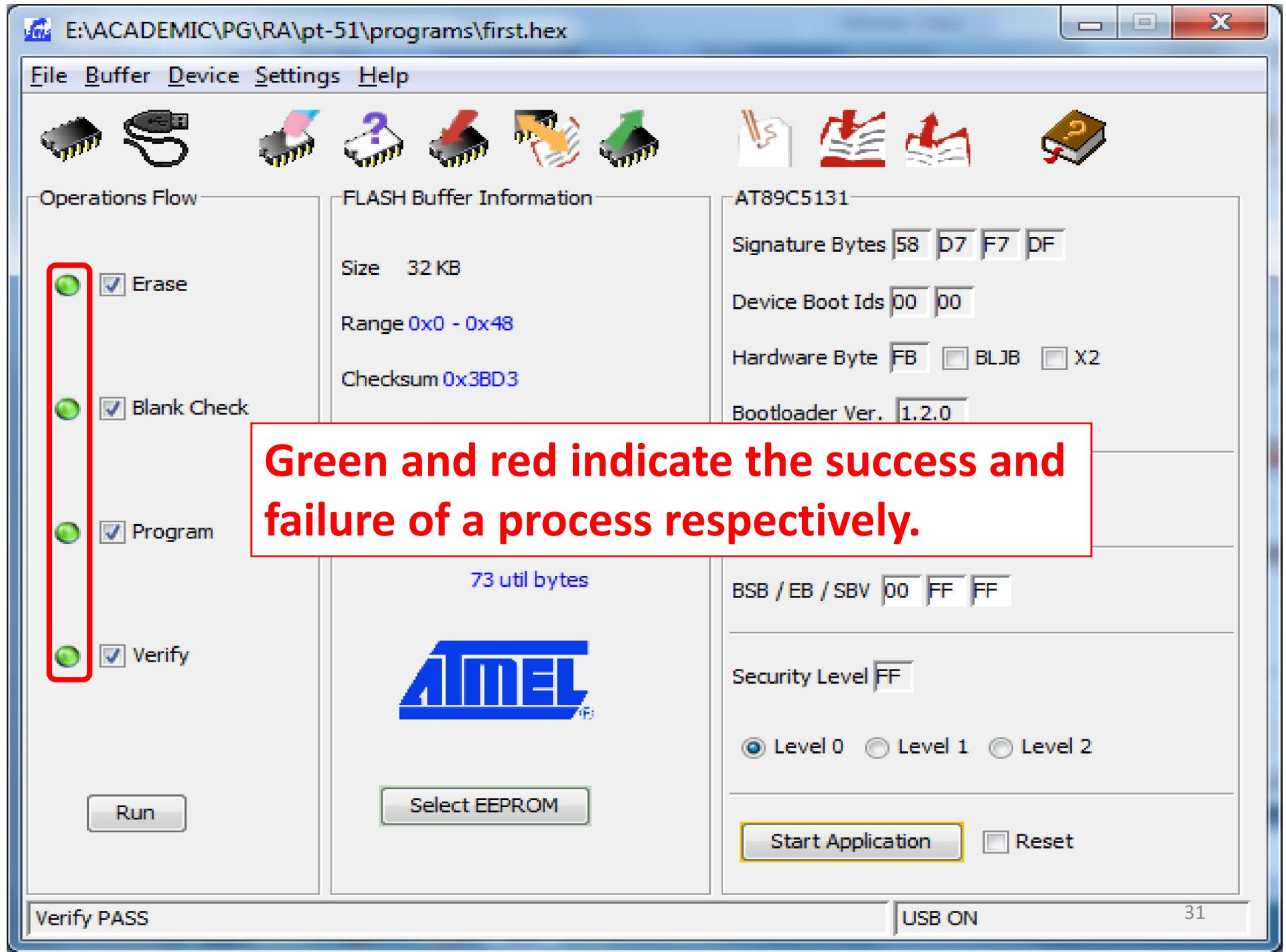
OR











To execute the code on Pt-51

- On successful programming of the Flash, to execute the code,
 - Press and release the “Reset” button.
- To program a different program on the board, repeat the steps by first entering into the boot loader mode.

Application mode

- When Pt-51 is powered up, if some code exists in the flash memory then it directly enters the application mode else it enters the boot loader mode.
- In this mode, the board will not communicate with the PC and cannot be programmed.