



BIOS programming using H2OFFT

Revision History

Revision	Date	Author	Changes
1.0	22 nd September 2015	M.D.M.	First release
1.1	8 th October 2015	M.D.M.	Minor corrections
1.2	30 th November 2015	M.D.M.	Minor corrections
1.3	23 rd December 2015	M.D.M.	Minor corrections
1.4	05 th January 2016	M.C.	Minor corrections
1.5	8 th September 2016	G.G	Minor corrections
1.5_sk	25 th July 2017	M.D.M.	Sky lake and Kaby lake version
1.6	12 th January 2018	F.A.C.	New Skylake and Kaby Lake version

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1. Introduction

Some SECO boards and modules are supplied with an InsydeH2O UEFI BIOS. It is possible to access the Setup Utility by pressing the <ESC> key after System power Up, during the POST phase.

The "Insyde H2O Setup Utility" Menu will appear. The System BIOS version is shown on "Information" page, in "BIOS Version" item.

In case of new releases, the last one is always present on SECO websites.

The BIOS update package, besides the BIOS image file and the related modification tools, contains a folder FlashTools with a subfolder for each supported operating system:

- DOS DOS BIOS programming tools
- Win32 Windows 32-bit BIOS programming tools
- Win64 Windows 64-bit BIOS programming tools
- Linux32 Linux 32-bit BIOS programming tools
- Linuxx64 Linux 64-bit BIOS programming tools

The folders mentioned in the following sections are copies of the corresponding operating system subfolders.

NOTE: Please be aware that using Windows programmer, it must be run with Admin privileges.

Using Linux programmer, gcc compiler and Kernel-headers are needed and every operation must be done with root/administrator privileges

It is strongly suggested to turn the power off and then on after every update.

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2. System BIOS update using DOS

2.1 BIOS update

This procedure requires using a boot device able to make a DOS boot without the CONFIG.SYS and AUTOEXEC.BAT files. Any DOS version can be used for the boot, but it is very important that there aren't CONFIG.SYS and AUTOEXEC.BAT files (Clean boot). The procedure is the following:

- Make the clean DOS boot, without the CONFIG.SYS and AUTOEXEC.BAT files, like previously described.
- From the main tools directory, launch the command:
`update.bat BIOSfile [DUMPfile] [Options]`
- After the program advises the correctness of operation, you can turn off and then on the board, which will start using the new BIOS version.

BIOSfile is mandatory and is the name of the binary image of the factory BIOS; in alternative, it can be the file obtained as described on the following section, but only if created on a module with the same hardware configuration of the one under up-dating.

The right way to deploy custom settings between compatible modules with different CPUs and/or RAM configurations is:

- program the factory default BIOS (BIOSfile) on a sample module:
`update.bat BIOSfile`
- customize it modifying the required setup items;
- dump the BIOS as explained in the next section (DUMPfile);
- deploy the custom settings on other modules:
`update.bat BIOSfile DUMPfile`

2.2 BIOS dump

It is also possible to dump the contents of the entire BIOS Flash, by using the command:
`dump.bat DUMPfile`

This will create a new BIOS binary image named DUMPfile containing both the original BIOS and the custom settings, suited to deploy the customization on other modules as explained in the previous section.

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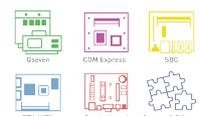
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3. System BIOS update using Windows

3.1 BIOS update

The procedure is the following:

- Run the "cmd" shell with Administrator privileges
- Change your current directory to the Win32 or Win64 folder (its depends to the OS 32bit or 64bit)
- From that directory, launch the command:
update.bat BIOSfile [DUMPfile] [Options]
- After the program advises the correctness of operation, you can shutdown the system, turn off and then on the board, which will start using the new BIOS version.

With respect to the options and deploying, refer to the DOS paragraph.

3.2 BIOS dump

It is also possible to dump the contents of the entire BIOS Flash, by using the command

dump.bat DUMPfile

This will create a new BIOS file named DUMPfile containing both the original BIOS and the custom settings, suited to deploy the customization on other modules as explained in the DOS paragraph.

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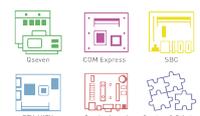
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4. System BIOS update using Linux

NOTE: The program "H2OFFT" has been tested and is working up to kernel version 4.4.0 . Every operation must be done with root/administrator privileges (run `sudo su` before executing the commands for updating or dumping the BIOS).

The same operations are valid for other distributions.

For using H2OFFT **gcc** compiler and **Kernel-headers** must be present in the system. Make sure they are installed in the system, otherwise install them.

4.1 BIOS update

The procedure is the following:

- Move to the folder where is located the BIOS updatet program (*Linux32* or *Linux64*)
- Run the following commands:

```
chmod +x update.sh  
./update.sh BIOSfile [DUMPfile] [Options]
```
- After the program advises the correctness of operation, you can shutdown the system, turn off and then on the board, which will start using the new BIOS version.

With respect to the options and deploying, refer to the DOS paragraph.

NOTE: During the update could be showed a message requesting root password for entering in sleep mode. Just ignore the message and close the form.

4.2 BIOS dump

It is also possible to dump the contents of the entire BIOS Flash; to do this, move to the main folder and use the command:

```
chmod +x dump.sh  
./dump.sh BIOSfile
```

This will create a new BIOS file named DUMPfile containing both the original BIOS and the custom settings, suited to deploy the customization on other modules as explained in the DOS paragraph.

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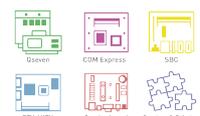
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5. BIOS with custom logo

To update the BIOS with a customized logo, please follow the guide "APN - BIOS Boot logo and strings customisations.pdf" that can be found in the "Tools" folder.

5.1 BIOS with logo programming

Once the customized BIOS file with logo has been created, it can be used as BIOSfile in the procedures described in the preceding sections (please refer to the one relative to the operating system of your interest).

6. Warnings

Update process duration requires very few minutes. Anyway, this procedure is very critical as if any interruption occurs during the process, the board could be damaged.

It is suggested to plan this process avoiding critical time-periods (i.e., when power interruptions are more probable), being careful about good cabling of the complete system and about any possible condition which can stop normal working of electronic devices.

Please do not reset, turn off, unplug the AC power cord, touch or remove any drive used to updating the BIOS.

After updating BIOS to a new release, it is strongly recommended that you enter the BIOS and check carefully every option. Particularly, it is recommended to check video BIOS settings, in special mode if you are using internal LVDS interface.

In case you should experience any problem with H2OFFT tools, please contact SECO using the dedicated form available on www.seco.com website, writing a detailed description of problems encountered.

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