

EFILive Black Box Logging Release

May 08, 2009

ATTENTION

Once the Black Box Logging (BBL) firmware has been programmed into your FlashScan device, you cannot revert back to a previous firmware version. During the update process you will be required to install a new boot-block into your FlashScan device. It is not possible to uninstall the new boot-block once it has been installed.

Installing the software on your PC or laptop:

Performing these steps will prevent multiple copies/version of the same files existing in the EFILive program folders.

IMPORTANT

Before performing the steps below you MUST back-up any files that you have modified and that you wish to re-use in the next update. That includes all your *.tun files and *.efi log files, your *.pid files, dashboards, maps and exported files. The steps below may include instructions to delete and/or overwrite EFILive folders, even ones that may contain log files and tune files. So please DO NOT skip backing up your files.

1. Uninstall V7.5
2. Run the EFILiveV7.5_Setup.exe installation.
- 2a. Start->All Programs->EFILive->V7.5->Tools->Check For New Update and wait for the update to finish.
3. Run the EFILiveV8_Setup.exe installation.
- 3a. Start->All Programs->EFILive->V8->Tools->Check For New Update and wait for the update to finish.

You may choose to install the EFILive software at a location other than the default location of: \Program Files\EFILive. However, if you do choose a different location, please install both V7.5 and V8 into the same destination folder. For example, you may choose to install EFILive at D:\EFILive instead of C:\Program Files\EFILive.

After the installation is finished, you may copy your *.tun files and *.efi files and any other files that you saved earlier, back into their original locations.

Boot block and firmware architecture:

FlashScan and AutoCal are designed to be field upgradeable and have been configured with two distinct software modules:

1. The boot block.
2. The firmware.

The boot block is a small, simple program that only has enough power to communicate with the host PC, to perform various “power on self tests” (POSTs) and to erase and reprogram the firmware. ***The boot block cannot erase or reprogram itself.***

The firmware is the main program that controls the keypad, the screen and performs various data logging and diagnostic scan tool duties. ***The firmware cannot erase or reprogram itself.***

How to tell which mode is executing:

When FlashScan is in dead poll mode, i.e. under boot block control, the two orange LEDs will flash alternately.

When AutoCal is in dead poll mode, i.e. under boot block control, the LCD backlight will flash.

When FlashScan or AutoCal are operating normally, i.e. under firmware control, the LCD screen will display the normal menu options.

To be able to program new firmware into FlashScan or AutoCal, it MUST be in **dead poll mode**. When you click the [Program] button in EFILive_Explorer, **dead poll mode** will be automatically requested prior to beginning the firmware update.

You may select dead poll mode manually by holding down the *Ctrl* key on FlashScan's keypad or the *Ok* key on AutoCal's keypad while connecting the USB cable from the PC to the FlashScan or AutoCal device.

To be able to program a new boot block into FlashScan or AutoCal, it MUST be operating normally under firmware control. When you click the [Program] button in EFILive_Explorer, the boot block will be updated, and then the first sector of the firmware will be deliberately erased. The deliberate erasure forces FlashScan or AutoCal into **dead poll mode** until new firmware is programmed. So after a successful boot block upgrade, FlashScan or AutoCal will enter and stay in **dead poll mode** until new firmware is programmed into it.

WARNING:

If you attempt to program the boot block when FlashScan or AutoCal is in dead poll mode it WILL NOT WORK, even though FlashScan or AutoCal indicates that the boot block has been successfully updated.

Boot block and firmware file naming convention:

FlashScan and AutoCal firmware files are named like this:

FSBootV2_xx_yy.efw: FlashScan boot block Version 2.xx.yy.

FSProgV2_xx_yy.efw: FlashScan firmware Version 2.xx.yy.

ACBootV2_xx_yy.efw: AutoCal boot block Version 2.xx.yy.

ACProgV2_xx_yy.efw: AutoCal firmware Version 2.xx.yy.

The *.efw extension stands for EFILive Firmware.

Upgrading the boot block and firmware of your FlashScan device:

The following steps, described in detail in the next few pages are required. If you have already performed any of these steps during previous beta updates you do not need to perform them again. Simply start from the first step that you have not performed yet.

- A** If FlashScan has boot block **V2.04.xx** or earlier, please perform these steps:
1. Program firmware V2.04.72.
 2. Use FlashScan's menu option to upgrade the boot block to V2.05.08.
 3. Program firmware V2.05.20
 4. Go to step D.
- B** If FlashScan has boot block **V2.05.04** please perform these steps:
1. Program firmware V2.05.14 (unless V2.05.14 is already installed in your FlashScan).
 2. Program boot block V2.06.02.
 3. Program the highest version number firmware file from the folder:
\\Program Files\\EFILive\\V8\\Firmware
- C** If FlashScan has boot block **V2.05.06** please see this link on EFILive's support forum
<http://forum.efilive.com/showthread.php?t=7813>.
- D** If FlashScan has boot block **V2.05.08** please perform these steps:
1. Program boot block V2.06.02.
 2. Program the highest version number firmware file from the folder:
\\Program Files\\EFILive\\V8\\Firmware

How to program the V2.04.72 firmware:

IMPORTANT:

You only need to perform this firmware upgrade if you have not already upgraded to V2.04.72 firmware. You must install firmware V2.04.72 before you can upgrade FlashScan's boot block to V2.05.08.

1. Connect FlashScan to your PC while holding down the Ctrl button on FlashScan's keypad. That will put FlashScan into **dead-poll mode** ready for reprogramming. (To exit dead-poll mode without reprogramming, disconnect and reconnect FlashScan without holding down the Ctrl button.)
If you have left FlashScan powered up in dead poll mode for a long period of time, for example overnight, you should power cycle FlashScan and restart dead poll mode to successfully complete the firmware upgrade.
2. Run the FlashScan Firmware Programmer from Windows:
Start menu->All Programs->EFILive V7.5->Update FlashScan V2 Firmware.
3. Load the FlashScan Firmware File:
\\Program Files\\EFILive\\V7.5\\FSProg_V2_4_72.ffw
4. Click the [Program] button and wait for FlashScan to restart.
While the firmware is being programmed a "percentage complete" counter will be displayed from 0% to 100%. Sometimes that counter may "freeze", however the

reprogramming process will continue. It should be complete in less than 20 seconds. A dialog box indicating success will be displayed when the programming is complete.

How to perform the initial update to boot block to V2.05.08:

IMPORTANT:

You only need to perform this boot block upgrade if your FlashScan device has bootblock V2.04.xx.

You must install firmware V2.04.72 before you can upgrade FlashScan's boot block to V2.05.08

Select the FlashScan **Upgrade Boot-block** menu option using the FlashScan keypad sequence: F4->F1->F4. You will be asked to confirm the upgrade process a number of times as per the following screen captures.

Before the upgrade process can be completed, FlashScan will test the flash memory chip to ensure it is operating correctly. If the flash memory test fails you will not be able to upgrade your FlashScan unit. In that case, please return it to the place of purchase for repair.

```
BOOTBLOCK UPGRADE
Upgrade Bootblock
to V2.5.08?
Press [Yes]
```

```
BOOTBLOCK UPGRADE
The flash memory will
now be tested.
The test will take
5 min, continue?"
Press [Yes]
```

```
BOOTBLOCK UPGRADE
Flash memory test
SUCCESSFUL
Continue?
Press [Yes]
```

```
BOOTBLOCK UPGRADE
WARNING
Do not remove
power during the
upgrade process.
Press [Ok]
```

```
BOOTBLOCK UPGRADE
A successful upgrade
will be indicated by
alternate flashing
orange LEDs.
Press [Ok]
```

```
BOOTBLOCK UPGRADE
The upgrade process
CANNOT be undone.
Continue?
Press [Yes]
```

```
BOOTBLOCK UPGRADE
ARE YOU SURE?
Press [Yes]
```

```
BOOTBLOCK UPGRADE
IN PROGRESS
DO NOT
INTERRUPT
```

The upgrade process will take about 5 seconds to complete, then the screen backlight will be turned off. The final message: `BOOTBLOCK UPGRADE IN PROGRESS DO NOT INTERRUPT` will still be visible. Once the backlight has been turned off that message no longer applies.

The two orange LEDs will flash alternately to indicate that the boot block upgrade process is complete and FlashScan has automatically entered dead-poll mode.

Dead-poll mode means that FlashScan is waiting to be programmed with new firmware.
See: “How to program new firmware into FlashScan” two sections below.

How to program a new boot block into FlashScan:

IMPORTANT:

This page explains how to upgrade the boot block if you are already using boot block V2.05.xx or later.

1. With FlashScan already connected, run the **EFILive Explorer** program by double clicking on it. You can find it on the Windows Start menu:
Start->All Programs->EFILive->V8->EFILive Explorer

FlashScan **MUST NOT** be in dead poll mode when programming a new boot block.

2. Select the [Firmware] tab page; click [Refresh] to read the firmware details. Check that the boot block Version and Date are what you expect them to be.
Note: The firmware Version and Date will be N/A if a new boot block has just been programmed.
3. Click on the [...] button and select the desired boot block file.
The boot block files can be found in the folder: \Program Files\EFILive\V8.1\Boot Block.
4. Check the **Boot block** check box.
5. Click on the [Program] button.
6. Click [Ok] and wait for FlashScan to enter dead poll mode.

Remember, after a successful boot block upgrade, FlashScan will enter and stay in dead poll mode until new firmware is programmed.

How to program new firmware into FlashScan:

1. With FlashScan already connected, run the **EFILive Explorer** program by double clicking on it. You can find it on the Windows Start menu:
Start->All Programs->EFILive->V8->EFILive Explorer
If FlashScan is already in dead poll mode when EFILive_Explorer connects, an error will be displayed, usually \$0109. That is just the boot block rejecting a command from EFILive_Explorer that was directed at the inactive firmware. Future versions of EFILive_Explorer will deal with dead poll mode more elegantly.
2. Select the [Firmware] tab page; click [Refresh] to read the firmware details. Check that the boot block Version and Date are what you expect them to be (i.e. V2.05.08, and April 25, 2008).
Note: The firmware Version and Date will be N/A if a new boot block has just been programmed.
3. Click on the [...] button and select the desired firmware file.
The firmware files can be found in the folder: \Program Files\EFILive\V8.1\Firmware.
4. **Uncheck the *Boot block* check box.**
5. Click on the [Program] button.
While FlashScan's firmware is being programmed a "percentage complete" counter will be displayed from 0% to 100%. Sometimes that counter may "freeze", however the reprogramming process will continue. It should be complete in less than 20 seconds. A dialog box indicating success will be displayed when the programming is complete.
6. Click [OK] and wait for FlashScan to reboot.

After programming the V2.05.xx boot block and matching firmware (for the first time), a license update screen will appear:

IMPORTANT:

The License upgrade will occur automatically (and only) the first time FlashScan is booted after the new 2.05.xx boot block and matching firmware have been programmed.

The license structures stored inside FlashScan need to be upgraded. FlashScan will check the license structures each time it re-boots. If it detects the old style license structures it will upgrade the license structures. In that case, you will be prompted with the following messages:

```
ATTENTION
Boot block has
been upgraded.
License will
be upgraded now.
Press [Ok]
```

```
LICENSE UPGRADE
WARNING
Do not remove
power during the
upgrade process.
Press [Ok]
```

If the license upgrade is successful you will see the following message:

```
LICENSE UPGRADE
Upgrade
Completed
Successfully
Press [Ok]
```

If you do not see the message above, the license upgrade was not successful. In that case you must return FlashScan to EFILive for repair.

Trouble Shooting boot block and firmware upgrades:

Since the initial release of FlashScan, EFILive has released multiple boot block and firmware versions. The table below shows which boot block and which firmware versions are compatible. You should only ever program firmware into FlashScan that is compatible with the currently installed boot block.

Onboard Upgraded From Version	Boot Block Version	Compatible Firmware Versions
	2.04.10	2.04.01 to 2.04.xx
2.04.70	2.05.04	2.05.14
2.04.71	2.05.06	N/A
2.04.72	2.05.08	2.05.17 to 2.05.xx
	2.06.01	2.06.01
	2.06.02	2.06.02 to 2.06.xx

A common problem:

If your FlashScan unit has firmware 2.04.70 and you select the onboard boot block upgrade option, your FlashScan V2 will be upgraded to boot block V2.05.04. In that case you **MUST** program firmware V2.05.14 and then program the V2.05.08 or later boot block.

If you attempt to program firmware other than V2.05.14 when the boot block is V2.05.04, then your FlashScan device will fail to operate. In that case you **MUST** manually place FlashScan in dead-poll mode and program firmware V2.05.14 into FlashScan to recover FlashScan.

Warning:

DO NOT use the onboard, boot block upgrade option when your FlashScan firmware version is V2.04.71. If you do, your FlashScan's boot block will be upgraded to V2.05.06. Boot block version 2.05.06 has an unstable USB configuration and will most likely lead to a non-functional FlashScan device.

If you inadvertently install boot block V2.05.06 and your FlashScan is non-response, please see these links on EFILive's support forum:

<http://forum.efilive.com/showthread.php?t=8834>

<http://forum.efilive.com/showthread.php?t=7804>

<http://forum.efilive.com/showthread.php?t=7813>

Configure FlashScan and/or AutoCal for BB logging:

1. Using the EFILive_Explorer program, select the [Config Files] tab page. The explorer view in the top half of the window will automatically display the folder containing the *.pmm and Options.tst files.
2. If you have both FlashScan and AutoCal connected to your PC, select the device you want to configure, by checking one of the FlashScan or AutoCal icons in the lower right corner.
3. Click the [Format] button to format the **Config File system** in FlashScan or AutoCal's flash memory.
[When loading beta test updates, you SHOULD reformat the Config file system to ensure no incompatible files remain.](#)
4. The EFILive_ScanAndTune program includes an easy to use Black Box Logging configuration utility to help you configure FlashScan or AutoCal for Black Box Logging.

Using BB Logging:

Before you can log any data you must format the **Data File system**. The Data File system and the Config File system (that you formatted earlier) are kept in different areas of the flash memory. You can safely format one without affecting the other. You can only format the Config File system using a PC and the **EFILive Explorer** program. That prevents you from accidentally erasing the configuration files while "out on the road".

FlashScan supports two Data File systems: An internal flash memory chip which can hold about 2.7Mb of data and an external SD Card that can hold between 64Mb and 2Gb.

To format the internal Data File system, press **Ctrl+Backspace**, then use the left/right arrow keys to change the **File sys:** setting to **Internal** and press **OK**, then to format the Internal file system, select: **F4 Options -> F2 File System -> F3 Format File Sys**.

To format the SD Card File system, press **Ctrl+Backspace**, then use the left/right arrow keys to change the **File sys:** setting to **SD Card** and press **OK**, then to format the Internal file system, select: **F4 Options -> F2 File System -> F3 Format File Sys**.

You can also format the SD card using a PC card reader. Select the FAT32 (or just FAT) file system when formatting the SD Card via a PC. If you do that, you must create two folders on the SD Card:

\EFILiveV7\Scan (which will contain the BB logging files)

\EFILiveV7\Tune (which will contain the tuning files)

WARNING:

NEVER insert or remove the SD Card while Black Box Logging is in progress (or any other operation that writes data to the SD card), you will lose some or all of the data stored in the internal flash memory and/or data stored on the SD Card. The blue LED on FlashScan's keypad will illuminate whenever FlashScan is writing data to internal or external flash memory. Note: the blue LED will only illuminate when the LED Mode is set to "S" (Status).

1. Using FlashScan's keypad select **F1 Select PIDs**, then select the desired PID list by using the up and down arrow keys, then press Ok.
You can also set up hotkeys to quickly select one of four preset PID lists.
2. Once you have selected a PID list, FlashScan will return to the main menu.
Select: **F2 Scan Tool -> F1 Data Logging**.
Select **F1 Record Data** to begin recording, or **F2 Display Data** to display live data without recording.
You can also just press the 0 key to start logging.
3. Pressing Ok during data logging will toggle pause on/off, the same as using Ctrl+Spacebar in the PC based Scan Tool Software.
4. Use the up and down arrow keys to reveal more PIDs.
Use the Left and Right arrow keys to scroll up and down a page at a time.
(Hint: When held down for more than about a 1/2 second, the keys will "auto-repeat" just like a PC keyboard.)
5. Pressing F1..F4 and Ctrl+F1..Ctrl+F4 will insert the notes 1 thru 8 into the recorded data.
6. Pressing Enter will toggle between Metric and Custom units.
7. Pressing Ctrl+Enter will toggle between small and large text display.

8. Pressing Ctrl+DownArrow, will toggle “inverse screen” on/off. Inverting the screen can help visibility in direct sunlight.

Please check EFILive's **FlashScan BB Logging Beta Forum** for updates, hints, tips and tricks that are not described in this Readme_First.rtf file.

<http://forum.efilive.com/forumdisplay.php?f=69>

EFILive V7 software and EFILive Explorer can't be used simultaneously

When the **EFILive Explorer** program is running, a second program called **EFILive Hapi** is loaded onto the System Tray. The System Tray is located at the opposite end of the Windows Task Bar to the Start button. You can open the **EFILive Hapi** program by right clicking on its System Tray icon and selecting Show.

The **EFILive Hapi** application handles all the communications between **EFILive Hapi** and FlashScan (and AutoCal). It starts and stops automatically when **EFILive Explorer** is started or stopped. Whenever **EFILive Hapi** is running it requires exclusive access to the FlashScan (and AutoCal) devices.

That means you **CANNOT** run the EFILive V7 Scan or Tune software when the **EFILive Explorer** and **EFILive Hapi** applications are running and vice versa. If you do, then whichever application does not have access to FlashScan or AutoCal will report that the FlashScan or AutoCal device is not connected.

Happy Black Box Logging!
The EFILive Development Team