

# Cobra ODE

User Manual v2.4.1



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## MANUAL VERSION INFORMATION

<b>Language</b>	English
<b>Applicable hardware version</b>	All
<b>Applicable software version(MCU)</b>	2.2 (also lower*)

\*Lower versions of MCUs do not support features described in higher versions. MCU 2.0 (recommended 2.2) is the minimum MCU needed to bypass security features of the 4.55 PS3 firmware. MCU 2.2 is the minimum MCU needed to bypass security features of the 4.60 PS3 firmware (also applies to users who use 4.55)

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## **USED ABBREVIATIONS**

ODE	–	Optical Drive Emulator
PS3	–	PlayStation 3
SEN	–	Sony Entertainment Network
PSN	–	Play Station Network
PT	–	Pass-through Mode
EMU	–	Emulation Mode
PATA	–	Parallel Advanced Technology Attachment
SATA	–	Serial Advanced Technology Attachment
XMB	–	Xross Media Bar
OFW	–	Official Firmware
CFW	–	Custom Firmware
PCB	–	Printed Circuit Board
BD	–	Blu-Ray Disk
MCU	–	MicroController Unit
FPGA	–	Field-Programmable Gate Array
LED	–	Light Emitting Diode



# 1 INTRODUCTION

The Cobra ODE is the world's most advanced and feature rich ODE for PS3 which is also simple and easy to use!

## 1.1 Supported consoles

### 1.1.1 FAT – 1. Generation PlayStation 3

- CECHA (PATA)
- CECHB (PATA)
- CECHC (PATA)
- CECHE (PATA)
- CECHG (PATA)
- CECHH (PATA)
- CECHK (PATA)
- CECHL (SATA) (most consoles)\*<sup>1</sup>



Figure 1.1: PlayStation 3 FAT.

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<sup>1</sup> FAT consoles (SATA) CECHL, CECHM, CECHP and CECHQ with drive controller BMD-21 are currently not supported, it will be supported in a future HW revision. Please visit our web site for more news concerning upcoming product available.

### 1.1.2 SLIM – 2. Generation PlayStation 3

- CECH2XXX (SATA)
- CECH21XX (SATA)
- CECH25XX (SATA)
- CECH3XXX (SATA)



Figure 1.2: PlayStation 3 SLIM.

### 1.1.3 SUPER SLIM – 3. Generation PlayStation 3

- CECH4XXX (SATA)



Figure 1.3: PlayStation 3 SUPER SLIM.

## 1.2 Features of Cobra ODE

- Supports virtually all PS3's including previously "unbreakable" 2k5,3k and 4k systems!
- Homebrew now possible on previously "unbreakable" 2k5,3k and 4k systems!
- Play games on SEN in pass-through or emulation modes\*<sup>1</sup>!
- On screen selection of games through Cobra ODE manager or Cobra ODE Browser in XMB
- Emulation or pass-through modes
- PS1 game support
- PS2 ISO support on backward compatible consoles
- DVD and BD movies support
- Advanced Smart Fusion AES encryption and decryption engine on board
- Fully updatable high speed FPGA's and high speed secure MCU on board
- Updatable via USB storage
- Expansion ports for future proofing
- Simple and easy to use
- High quality components used throughout
- Built at a high tech facility
- Solder-less installation on all FAT\* and SLIM (2xxx and 21xx) series
- Easy installation on 25xx,3xxx and 4xxx series Slim and Super Slim series consoles with QSB (quick solder board)
- Easy setup for PATA or SATA consoles
- Advanced software onboard and frequent free updates
- PS3 BD game disc dumping on all PS3 consoles is supported and can be enabled through third party managers.

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<sup>1</sup> We cannot guarantee the longevity of this feature for people using homebrew apps.

## 2 HARDWARE OPERATION

This chapter contains information about various hardware parts of Cobra ODE that are important for normal every-day use such as switching between Emulation and Pass-through mode. This chapter also contains information about the format, usage and preparation of USB storage that is used to store game and video ISOs.

### 2.1 Selection of Emulation or Pass-through mode:

Pass-through is enabled when the switch (SW1) is to the left as shown (Figure 2.1). Emulation mode can be selected by simply sliding the switch on the clip on PCB to the right as shown in the picture below. This enables the emulation functionality of the device and allows you to run games from external mass storage on your PS3. Pass-through mode silently disables the ODE and allows your PS3 to act as a stock OFW or CFW console, when you want to play games directly from the BD drive, watch movies or go online for SEN etc...

**Please do not switch between Pass-through and Emulation modes whilst the console is running. Only switch modes when the console is in standby or powered off.**

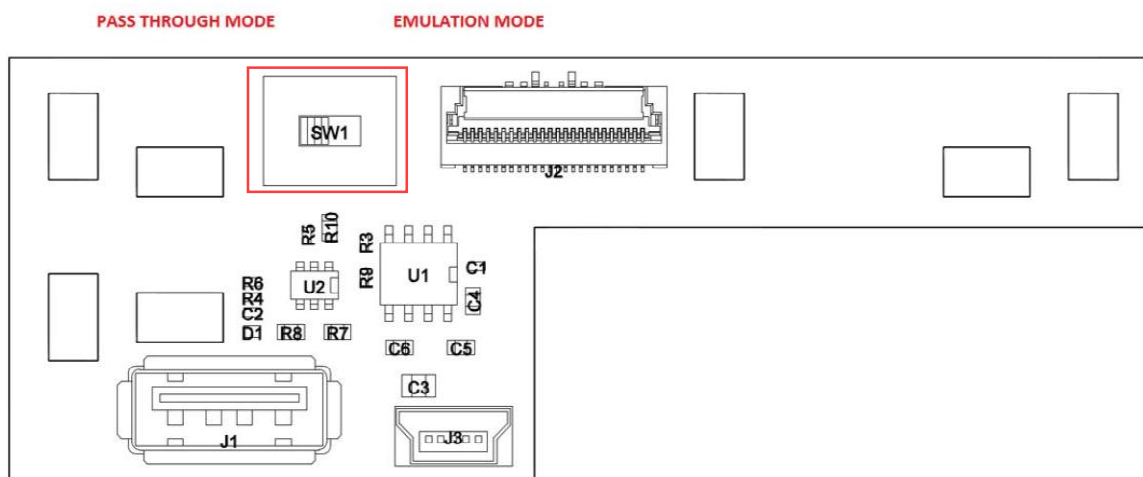


Figure 2.1: Clip-on PCB of Cobra ODE (with switch encircled).

## 2.2 Connecting USB storage:

There are two USB connectors on the clip on PCB, a full size USB A connector (**J1**) for connection of mass storage devices and a Mini USB B (**J3**) connector for optional extra power input. As shown in the photo below. Please connect your USB mass storage device to the USB A connector.

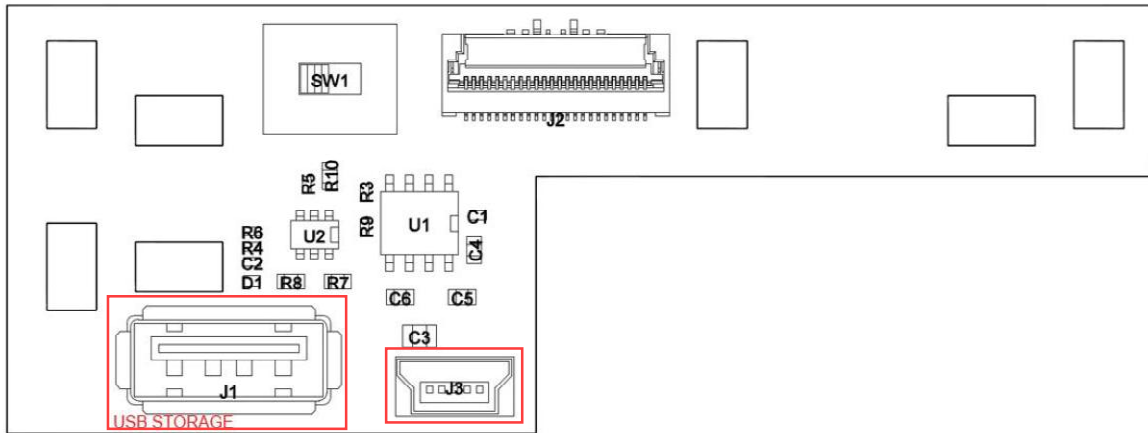


Figure 2.2: Clip-on PCB of Cobra ODE (with USBs encircled).

### 2.2.1 Types of USB cables included in the Cobra ODE kit

- USB 2.0 Mini USB Y cable
- USB 3.0 Y cable
- USB extension cable

The USB 2.0 or USB 3.0 Y cable may be coupled with the USB extension cable and connected to a port on the front of the PS3 and then to the CLIP on USBA A connector and your hard drive, in cases where a standard USB cable cannot supply enough power. Alternatively and preferably use a **1A 5V** wall USB charger (Samsung, HTC...).

The QSV version of Cobra ODE does not include the USB cables.

## 2.3 USB mass storage preparation

The Cobra ODE supports reading files from the vast majority of USB HDD's and USB pen drives available in the market.

Kindly follow the instructions and notes below for setting up USB storage devices for use with the Cobra ODE.

### 2.3.1 Instructions and notes

- Your USB pen drive or USB HDD must be formatted with either NTFS 4k (4096 allocation unit size) or FAT32 file system: If formatting the NTFS partition, make sure the cluster size (named "Allocation unit size" in Windows's format tool) is a multiple of 2048 bytes. This means that 512 byte and 1024 byte cluster sizes will not work, but 2048 byte and 4096 byte will work. We recommend you use 4096 bytes which should be the default and recommended setting that Windows will use for drives with a capacity lower than 16 TB.
- Should you decide to use FAT32, then this must be the first partition on the drive and the subsequent partition may be NTFS.
- The first NTFS partition found will be the partition recognized by the ODE.
- When an HDD has both FAT32 and NTFS partitions, then the FAT32 partition will be ignored by the ODE.
- The partition should contain a COBRA directory containing the "cobra.db" file (the .db database file can be downloaded from the cobra-ode.com "Downloads" section) and a game manager iso with the filename "manager.iso" and for the **Cobra Browser** feature, a iso with the filename 'browser.iso.
- The COBRA manager iso can also be substituted by any other manager which incorporates support for our board (instructions for enabling Cobra ODE in other managers is provided at the end of this document)
- PS3 games must be placed in a directory named "**PS3\_GAMES**" in the root of the partition.
- PS2 games must be placed in a directory named "**PS2\_GAMES**" in the root of the partition.

- PS1 games must be placed in a directory named "**PS1\_GAMES**" in the root of the partition.
- DVD movies must be placed in a directory named "**DVD\_MOVIES**" in the root of the partition.
- BD movies must be placed in a directory named "**BD\_MOVIES**" in the root of the partition.
- File names can be complex or simple, so long as Unicode and special characters are avoided.
- User may split an iso into multiple files (convenient if you have a FAT32 partition, subsequent files must however be named with extension .1, .2, .3 and so on
  - Examples:
    - uncharted.iso.0, uncharted.iso.1, uncharted.iso.2,
    - uncharted.foobar, uncharted.foobar.1, uncharted.foobar.2
- We would recommend partitioning your hard drive with a 10MB FAT32 partition as the first partition on the drive, and the second partition as NTFS taking the rest of the HDD space. The FAT32 partition can then be used for updates to the ODE.
- PS1 games cannot be split into multiple files
- The final file structure can be seen on Figure 2.3.

### 2.3.2 Final file structure

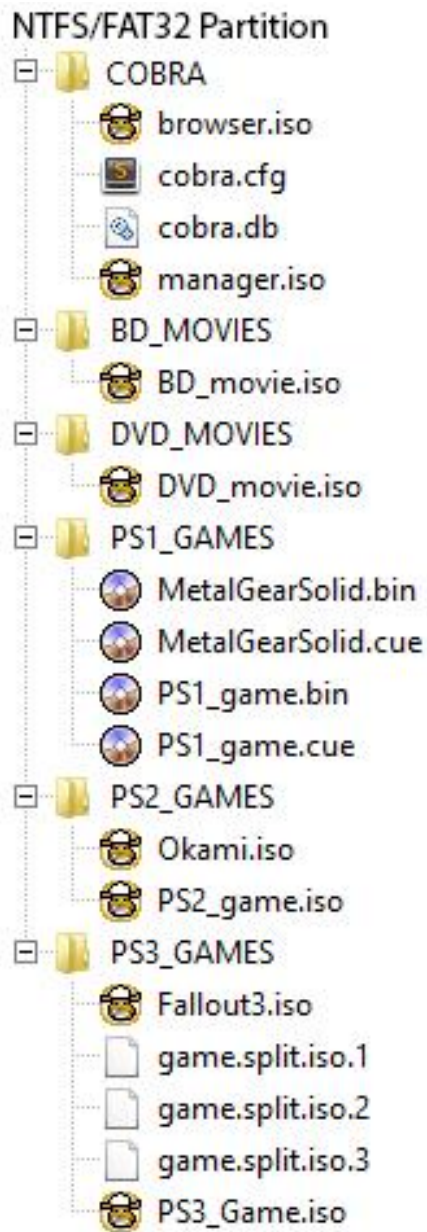


Figure 2.3: Final file structure of USB Key/HDD.



### 2.3.3 Tools for generating ISOs

- The **GenPS3iso** tool may be used to generate .iso images from a directory structure of a game dumped using CFW. Split type files generated by the tool are also supported (available from our “Downloads” section on the cobra-ode.com website).
- As a user convenience we also support iso files generated by the 3k3y ripper tool. However, 3k3y iso files must be decrypted before use on Cobra ODE. You should first decrypt the 3k3y generated iso file using the "**ISOCrypto**" button in the 3k3y ripper PC application.

Please note that in order to benefit from the superior performance of the Cobra ODE device, the decrypted images files should be extracted and then re-processed with the **GenPS3iso** tool we provide for better performance.

### 2.3.4 ISO Generation Instructions

In order to generate a valid ISO, run genps3iso and specify the correct directory (The parent directory which contains the PS3\_GAME directory) and the output .iso file, as well as whether or not to split the iso into 4GB files. The resulting iso file (or files) can be put into the PS3\_GAMES directory of the USB drive and will work with the COBRA manager.

Splitting the iso into 4GB files is only useful if you want to use a FAT32 drive.

Starting from version 2.2, genps3iso will ask for an IRD file which will generate a 1:1 copy of an original disc. IRD files are optional, and the IRD file selection dialog can be cancelled in which case genps3iso will work as it did before.

### 2.3.5 ISO Generation Instructions for Super Slim (4xxx model) users on 4.55 PS3 firmware

In order to bypass the new Anti-ODE security measures added by Sony in the 4.55 PS3 firmware. Super Slim (4xxx model) users who have updated to 4.55 must generate their ISO files differently. Please refer to the “**Anti-ODE Security Bypass Manual**” **Erreur !**

**Source du renvoi introuvable.** for detailed instructions on how to bypass the security of firmwares 4.55 and up.

## 3 COBRA ODE USAGE

### 3.1 Booting requirements

Cobra ODE requires an original disc to be inserted in the drive at all times to boot the Cobra ODE manager and run games from HDD. The game disc used must be supported by the Cobra ODE database. A current list of supported titles is available in the “Downloads” section of our website. We will provide updates to expand the list of supported titles.

### 3.2 Error conditions

On booting the PS3, the XMB will display the COBRA ODE manager icon, if the icon is not shown, then you have not inserted a disc into the PS3. Should the XMB fail to display the COBRA ODE manager, an error message may be displayed in the XMB which will inform you of the current error condition.

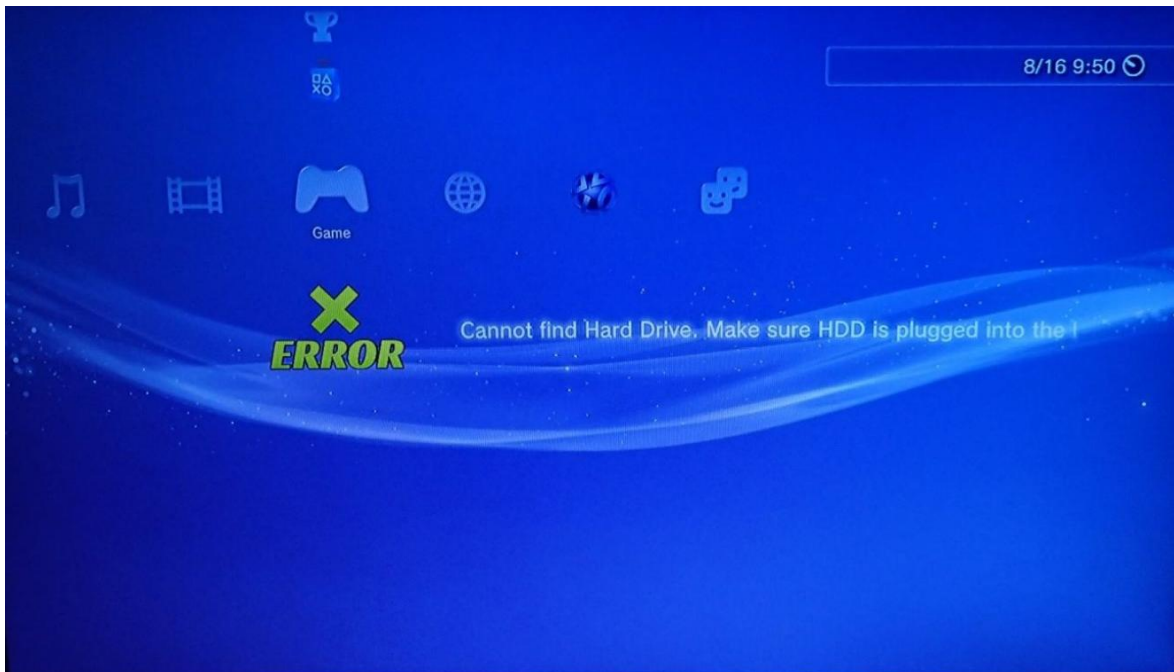


Figure 3.1: No Hard Drive error message.

Currently supported error messages are as follows:

- "Cannot find Hard Drive. Make sure HDD is plugged into the USB port"
- "Hard drive does not contain a valid NTFS or FAT32 partition"
- "Cannot find COBRA/cobra.db file. Please refer to user manual."
- "Error loading COBRA/manager.iso file."
- "COBRA/manager.iso file is too fragmented. You should defragment your hard drive. Please refer to user manual."
- "ISO file is too fragmented. You should defragment your hard drive. Please refer to user manual."
- "Error loading selected ISO file."
- "Inserted disc is not supported by the COBRA database."
- "Error loading custom manager configuration file."
- "Error parsing CUE file."
- "Error loading selected BIN/CUE file."
- "BIN file is too fragmented. You should defragment your hard drive. Please refer to user manual."
- "PS2 mode requires a PS2 disc in the tray. Please refer to user manual."

The error message displayed should provide enough information to rectify the problem by either taking the necessary action directly or by additionally referring to the user manual for guidance.

### 3.2.1 Defragmenting your HDD

Defragmenting your hard drive may be required by the Cobra ODE in some circumstances. Defragmenting increases performance and reduces the chances of errors. Windows can be used to defragment your HDD. We recommend that you do this occasionally to enjoy best performance.

### 3.3 Playing multimedia content

#### 3.3.1 Playing PS1 games

PS1 games must be in the format of .bin and .cue files. The .bin/cue files must have the same base filename and must be placed in the PS1\_GAMES directory of the hard drive. The .cue file has a limit of 100 tracks and 10240 bytes. The Cobra ODE does not support split files for the playback of PS1 games so the .bin file cannot be split. The ODE also only supports a single .bin file per cue, you cannot have multiple FILE keywords per cue file.

When a PS1 game is loaded, the LED of the clip-on PCB will become aqua/cyan.

#### 3.3.2 Playing PS2 games

PS2 games must be in .iso format, must have the .iso file extension and must be placed in the PS2\_GAMES directory of the hard drive. In order to play a PS2 game, your console must be backward compatible. PS2 game support will not work on PS3 consoles which have only 2 USB ports. In order to play a PS2 game, a PS2 disc must be inserted in the tray when the game is loaded. There are three ways to achieve this. If using the Cobra Manager, once you have selected the PS2 game, you should manually eject the PS3 disc then insert a PS2 disc in its place. If using the Cobra Browser, you can remove the `eject.on_selection=0` option from the cobra.cfg file to allow you to eject the PS3 disc and insert a PS2 disc after making your selection. Or you can add the `disc.unsupported=ignore` configuration option to the cobra.cfg file, and insert a PS2 disc in the tray then chose the game from the Cobra Browser. The `disc.unsupported=ignore` option will allow you to insert a PS2 disc for the browser and disables the *"Inserted disc is not supported by the COBRA database."* error message. Since the Cobra Browser does not run any homebrew application, it will work even if a PS2 disc is inserted in the tray.

When a PS2 game is loaded, the LED of the clipon PCB will become aqua/cyan.

### 3.3.3 Playing PS3 games

PS3 games must be in .iso format and can have any file extension. They must be placed in the PS3\_GAMES directory of the hard drive. The iso file must not be encrypted.

When a PS3 game is loaded, the LED of the clip-on PCB will become blue.

### 3.3.4 Playing DVD movies

DVD movies must be in .iso format, must have the .iso file extension and must be placed in the DVD\_MOVIES directory of the hard drive.

When a DVD movie is loaded, the LED of the clip-on PCB will become white.

### 3.3.5 Playing BD movies

BD movies must be in .iso format, must have the .iso file extension and must be placed in the BD\_MOVIES directory of the hard drive. The ODE will emulate a BD-R disc, which means that any content protected by Cinavia will not be playable on the PS3. If you wish to experiment, you could encrypt the BD movie with AACS using a known disc's key and add the `game.disctype=bd` configuration option to the cobra.cfg file to make the BD movie appear as an original BD disc instead of a BD-R. If the AACS encryption is done properly, the Cinavia protection will be disabled.

When a BD movie is loaded, the LED of the clip-on PCB will become white.

### 3.4 Using Cobra ODE manager

Once executed the COBRA ODE Manager will display a list of current valid iso images on your HDD's partition, game selection is achieved by simply scrolling (using the d-pad of your PS3 controller) to the image you wish to play and then pressing the X button on your pad.

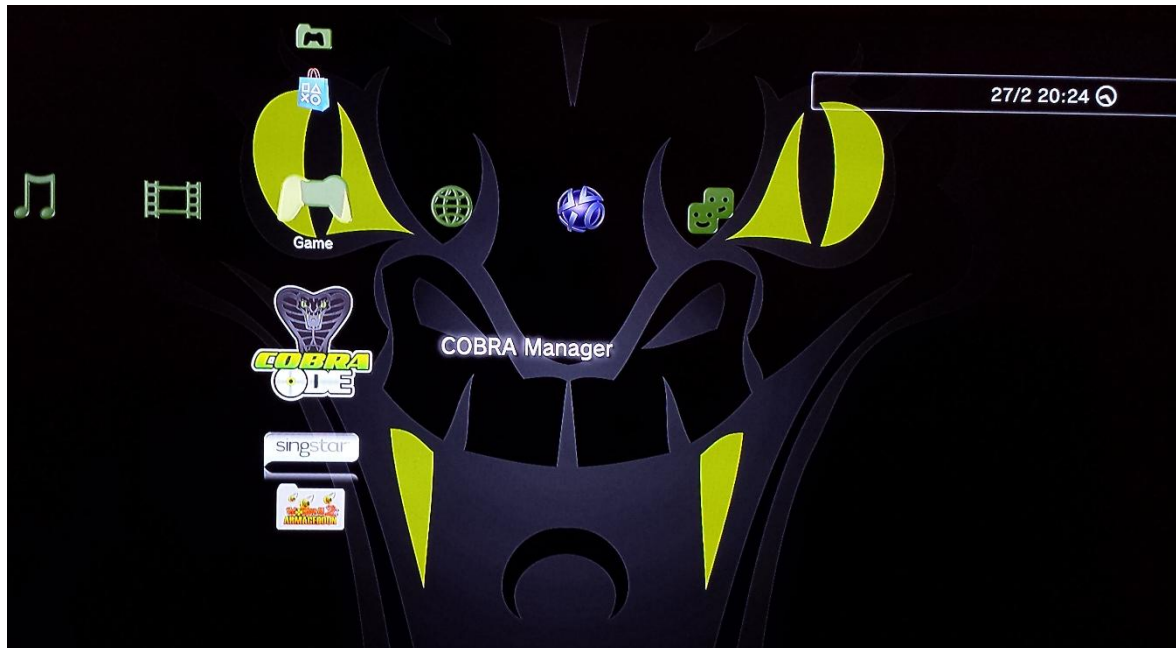


Figure 3.2: Selection of Cobra ODE manager.

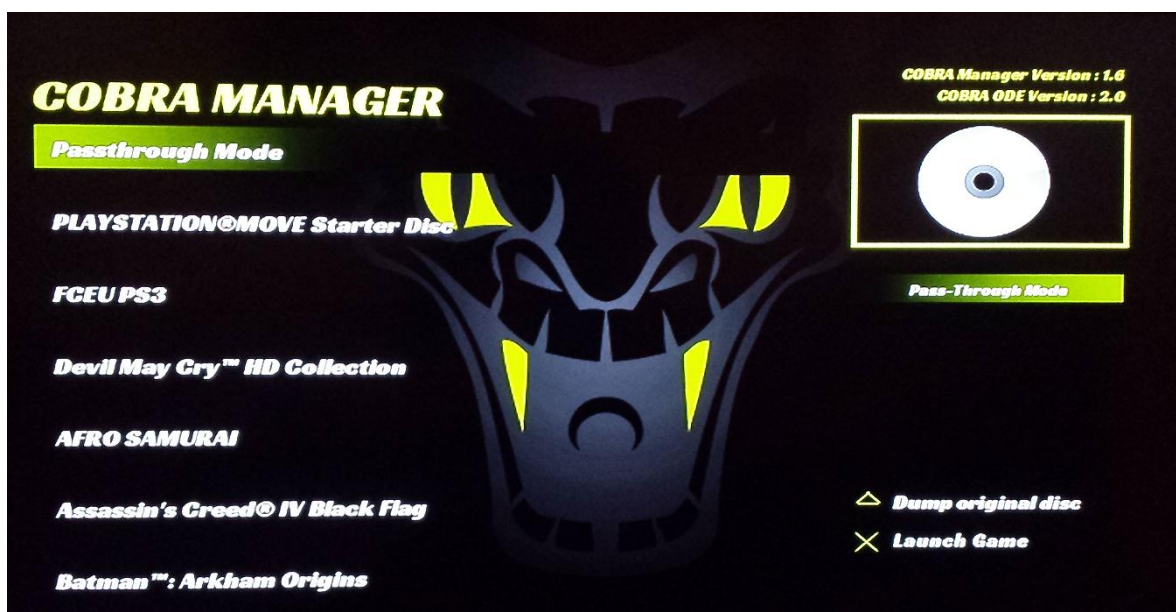


Figure 3.3: Inside the Cobra ODE manager.

The Cobra ODE 1.6 update no longer requires you to restart the console to select the game. Simply quit the manager and the game will appear in the XMB.

Restarting the PS3 during game play will retain your current game selection, for the sake of convenience.

Should you wish to return to the Cobra ODE manager in order to choose another game or homebrew application, then simply eject the disc via the XMB and reinsert it, or in the case of the 4k series PS3, slide the door cover open and then closed again.

Starting from Cobra ODE 1.4 update, you can however disable this and have the PS3 return to the manager after each reboot by enabling the `manager.on_reboot=1` option in the `cobra.cfg` configuration file.

Starting from Cobra ODE 1.6 update, you can also return to the Cobra ODE manager by selecting the "Remove disc" option from the XMB. The option is available for fat and slim models by pressing the Triangle button in the disc icon in the XMB.

#### 3.4.1 New features in Cobra manager since Cobra ODE 2.0 update

The manager will now show a 'Pass-Through-Mode' option which, if selected, will give you access to the disc that is in the drive. It is a convenient way to enable Pass-Through mode without touching the switch on the clip-on PCB.

You can now also return to the Cobra ODE manager by selecting the "Return to Manager" option in the XMB after enabling the `eject.add_menu=1` option in the `cobra.cfg` configuration file. This is especially useful for Super Slim (4xxx model) users who do not have a 'Remove disc' option in the XMB.

You can now also disable the behavior of returning to manager mode when ejecting the disc by adding the `manager.on_eject=0` option to the `cobra.cfg` configuration file. This option will only be in effect when a PS3 game is loaded and Pass-Through mode is not enabled. If enabled, you can only return to the manager using the "Return to Manager" option if you added `eject.add_menu=1` to the `cobra.cfg` or by using the 'Remove Disc' option in XMB or by removing and re-inserting the HDD in the clip-on PCB.

**Cobra ODE has been designed with simplicity and ease of use in mind! Enjoy...**



### 3.5 Using Cobra ODE Browser

An alternative to the COBRA Manager Homebrew application is to use the COBRA ODE Browser which does not require the use of homebrew and may appear more stealth to the PS3.

The Cobra ODE Browser can only be used from MCU firmware version 1.5 and up. Starting from Cobra ODE 2.0 update, the Cobra Browser can be enabled by adding the `manager.type=browser` option to the `cobra.cfg` configuration file and adding the `browser.iso` file to the COBRA directory of the HDD. Prior to the Cobra ODE 2.0 update, the Cobra Browser requires the use of the `genps3extra` PC application which needed to be run every time the list of ISO files changed on the HDD. Refer to **Section 0** for instruction on how to use `genps3extra` if you did not update to Cobra ODE 2.0

There will be two menus for the Cobra ODE Browser, the first one in the Game category of the XMB, it will show the game icon and title:

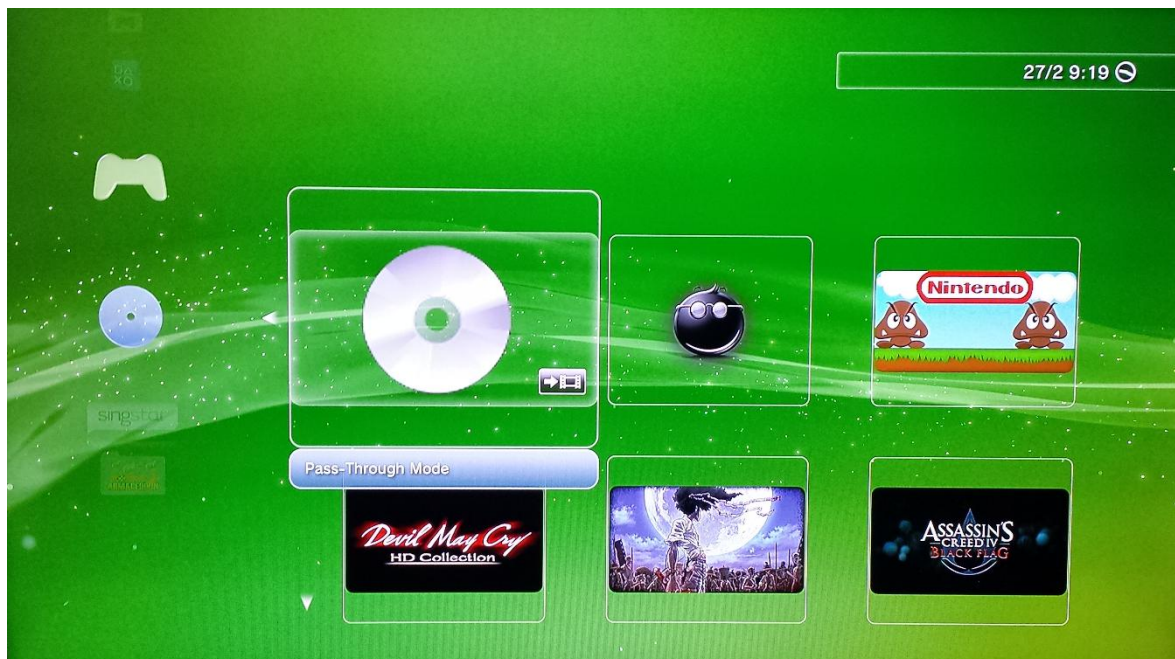


Figure 3.4: Cobra ODE Browser in the “Game category” of the XMB.

You will notice that the auto-generated **Game category** browser will open a bit slower than the browser in previous versions. That is because the browser is built on the fly and effectively eliminates the need for the `genps3extra` program since ISOs are scanned every time the HDD is connected to Cobra ODE. Also from update 2.0 onwards you will notice a

Pass-Through trigger shown as a disc on figure 3.4. Once you press X while on that trigger a software **Pass-Through** mode will be started and the Blu-Ray within the drive bay will be shown. This Pass-Through mode is activated automatically if you do not attach a HDD to your Cobra ODE. With this you do not have to use the PT/EMU switch on the back of the Cobra ODE clip-on PCB.

And the second Cobra ODE Browser is in the Video category of the XMB, which has a vertical list of the games on your HDD. As with the Game category browser this browser also has the software Pass-Through trigger, which can be launched the same way as the Game category trigger (pressing the X button).

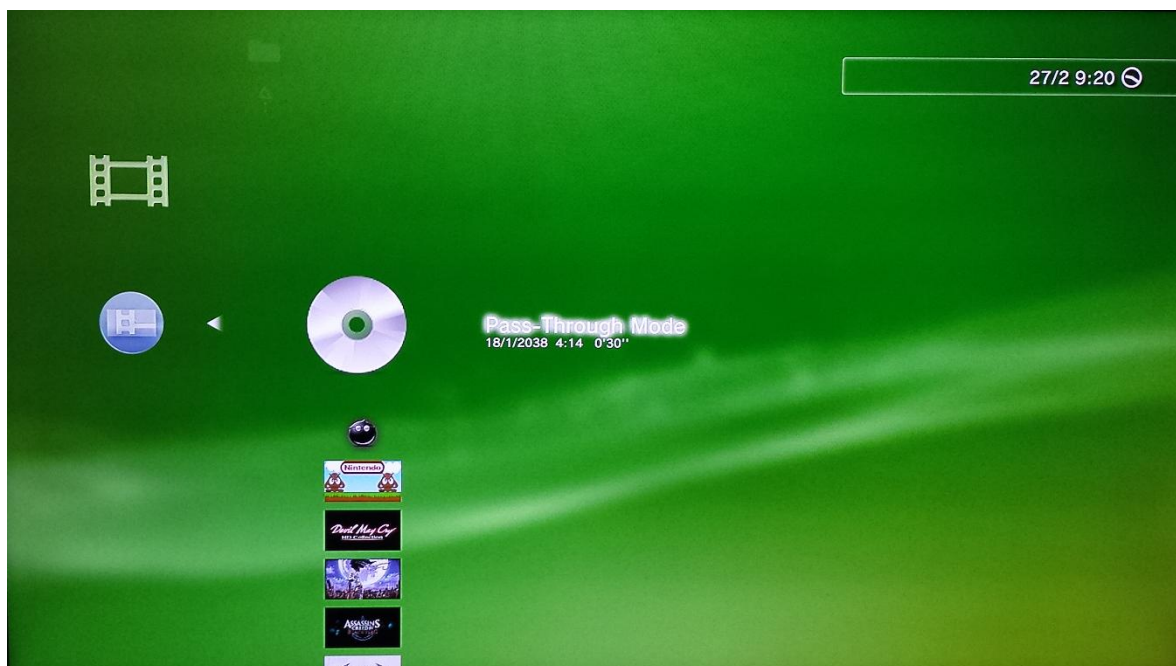


Figure 3.5: Cobra ODE Browser in the “Video category” of the XMB.

Starting from Cobra ODE update 2.0, using the Cobra Browser is as simple as adding the `manager.type=browser` option into the `cobra.cfg` configuration file. When the browser is auto-generated (using the `browser.iso` file) there will be NO animations, music or backgrounds in this category (Video category).

It is highly recommended to enable the option `eject.on_selection=1` in the `cobra.cfg` configuration file when using the Cobra Browser in order to increase ease of use.

If you wish to increase stealth and only use the browser from the video category, you can also add the `manager.disctype=bd` option to the `cobra.cfg` configuration file.

Enabling that option will make the manager appear as a Blu-Ray disc to the PS3, increasing even more the stealth for the more paranoid users. Note however that doing so will only give you access to the ODE Browser through the Video category of the XMB and will disable access to the Browser from the Game section of the XMB.

Note that the PS3 has a limit of **100 items in the browser for the Game category** and **200 items in the browser for the Video category**. If you have more than 100 \*.iso files, it is suggested to use the ODE Browser from the Video category of the XMB, and if you have more than 200 \*.iso files, it is suggested to use the Cobra Manager instead.

Should you wish to return to the Cobra ODE browser in order to choose another game or homebrew application, then simply eject the disc via the XMB and reinsert it, or in the case of the 4k series PS3, slide the door cover open and then closed again. You can however disable this and have the PS3 return to the manager after each reboot by enabling the `manager.on_reboot=1` option in the `cobra.cfg` configuration file.

Starting from Cobra ODE 1.6 update, you can also return to the Cobra ODE manager by selecting the

“Remove disc” option from the XMB. The option is available for fat and slim models by pressing the Triangle button in the disc icon in the XMB.

As with the **Game category** browser the auto-generated **Video category** browser is a bit slower than the browser in previous versions. That is because the browser is built on the fly and effectively eliminates the need for the `genps3extra` program since ISOs are scanned every time the HDD is connected to Cobra ODE.

### 3.5.1 Mounted game

Once you press on your selected game/movie it will be mounted as shown on Figure 3.6.

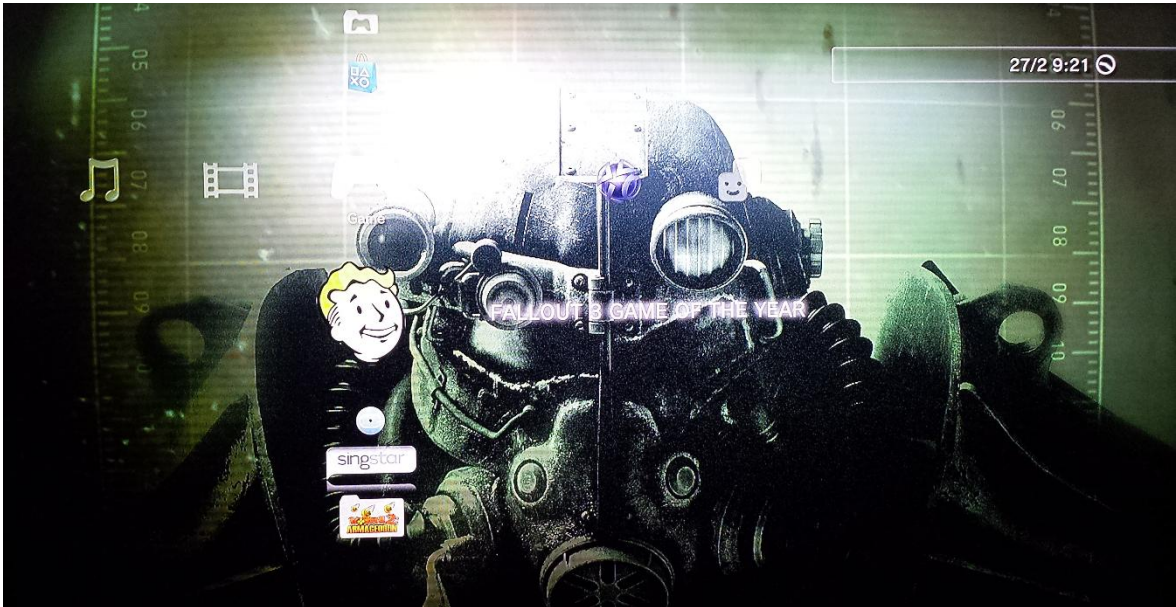


Figure 3.6: Mounted game in XMB.

From Cobra ODE 2.0 onwards, if the `eject.add_menu=1` is added to the `cobra.cfg`, when a game is mounted, a “**Return to Cobra Manager**” trigger is added in the form of a mounted Blu-Ray Disc below the mounted Game (Figure 3.7).

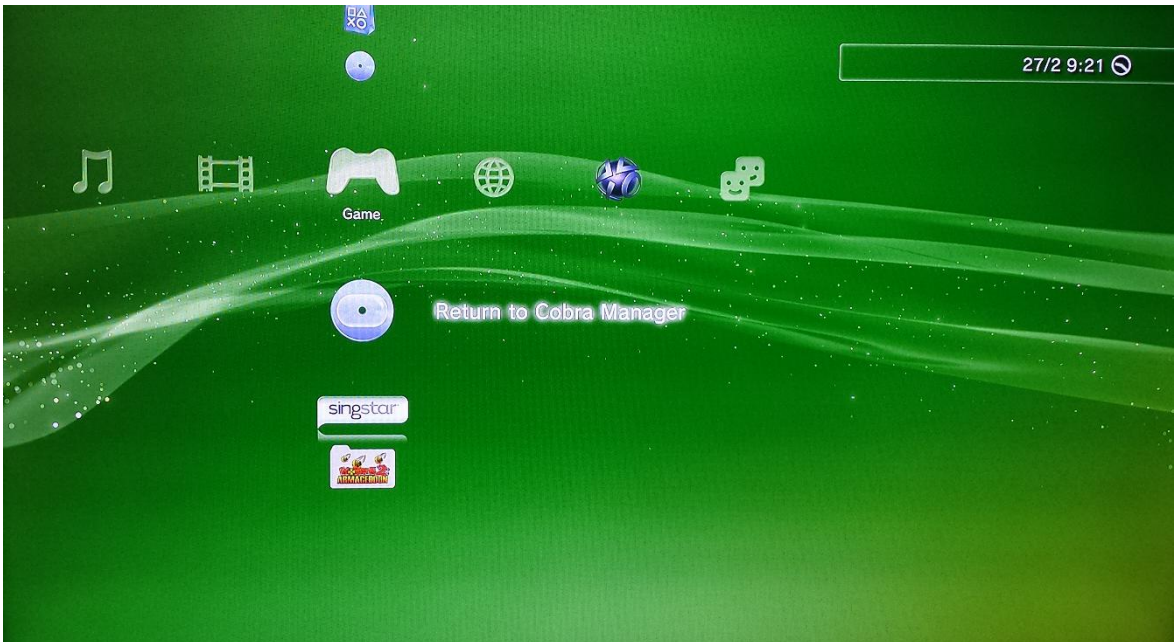


Figure 3.7: The “Return to Cobra Manager” trigger.

Notable exceptions to the trigger being below the mounted game are games like The Worms Revolution Collection. The trigger “Return to Cobra Manager” will appear in the sub-menu of the game as shown in Figure 3.8.

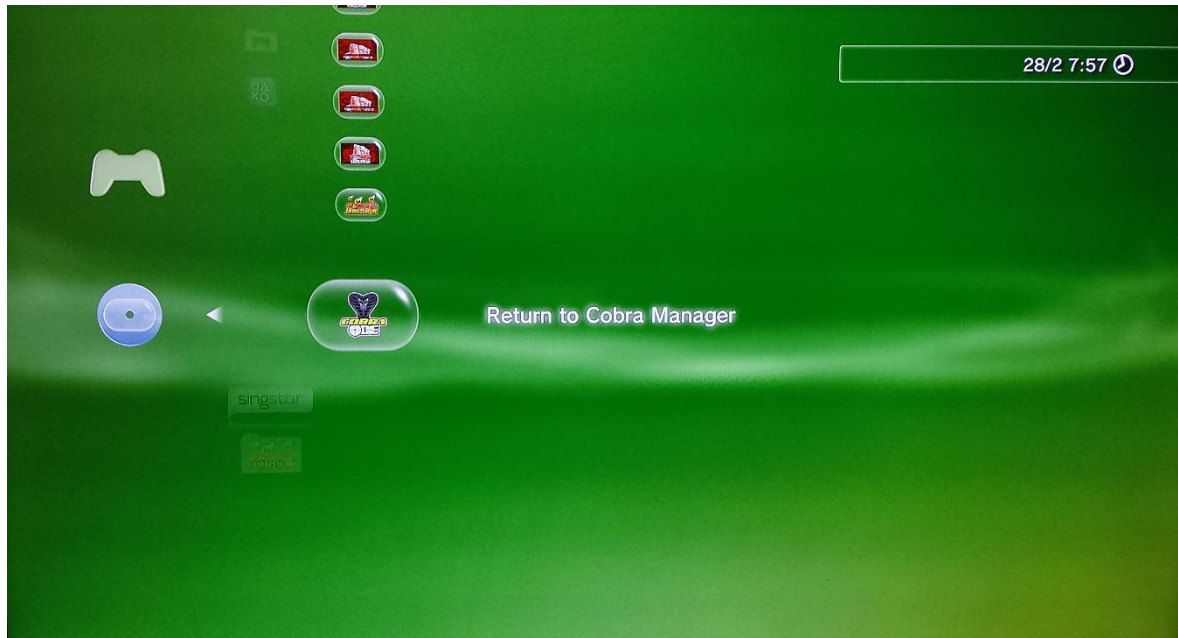


Figure 3.8: The “Return to Cobra Manager” trigger in the sub-menu.

When you select the trigger an error will be displayed, but that is a normal part of the procedure. When the error screen is shown just press the circle O and the “COBRA Manager” should be mounted and shown in the XMB.

### 3.5.2 Instructions for using genps3extra PC application

***\*DISCLAIMER\*: genps3extra is not required anymore since Cobra ODE 2.0. This section is kept for users who do not update their Cobra ODE to version 2.0.***

This section is intended for users who have not updated to Cobra ODE 2.0, or who prefer the previously released genps3extra feature of showing animated icons, backgrounds and music in the video category of the browser.

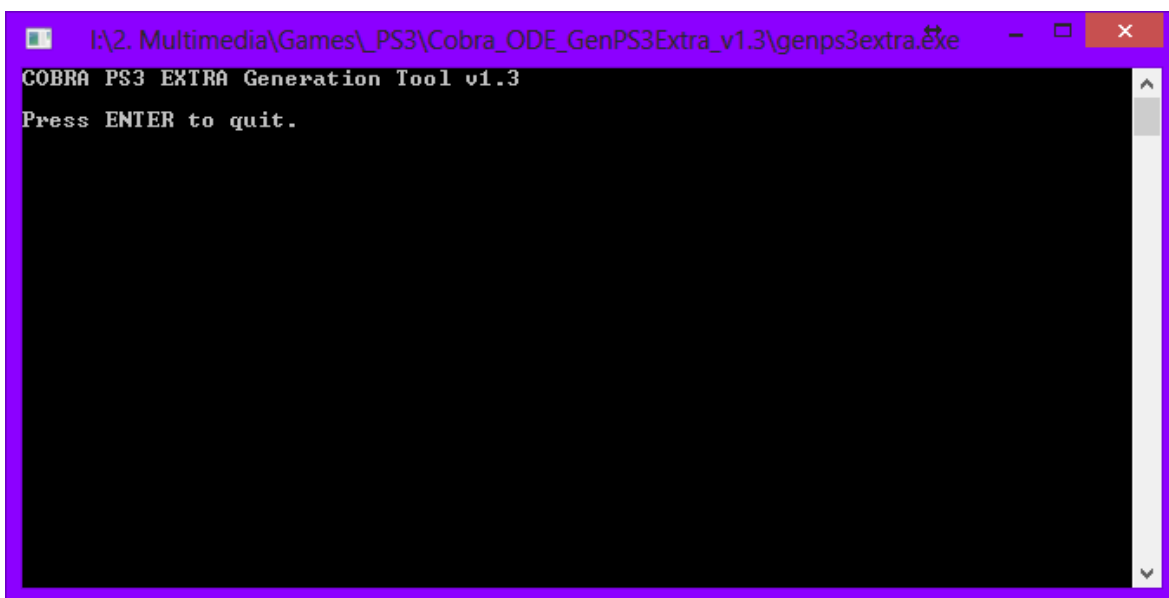


Figure 3.9: genps3extra program (now discontinued).

To generate the Cobra ODE Browser, simply run the genps3extra application and select the COBRA\_ODE\_BROWSER directory when asked for the EXTRA directory, then select the COBRA directory from your HDD. It will then scan the games on the HDD and generate a new manager.iso and cobra.cfg configuration file tailored to your HDD games which will provide you with the browser for game selection.

The genps3extra application will also ask you if you wish for the manager to appear as a BD disc.

Do not forget to re-run the application every time your list of \*.iso files changes on the HDD.

Once you have made your game selection from the browser, you must reboot the console or eject the disc in the drive and reinsert it (or slide door cover open and then closed in the case of 4xxx series) in order to switch to the selected game.

Starting from Cobra ODE 1.6 update, the Cobra ODE Browser will automatically trigger the auto-eject feature and the game will be loaded as soon as you select your game.

The genps3extra application allows you to customize the behavior of the browser depending on the files available in the EXTRA directory:

If the EXTRA directory has a PS3\_EXTRA/PARAM.SFO file, then it will generate browser items for the PS3\_EXTRA section which will appear in the Game category of the XMB. If a PS3\_EXTRA/D000/DATA000.MP4 file exists, then it will be used for every item in the Game browser and that video will be used every time you select a game. If a PS3\_EXTRA/D000/DATA000.PKG file exists, then it will be used for every item in the Game browser and that package will be installed every time you select a game. If a PS3\_EXTRA/D000/DATA000.P3T file exists, then it will be used for every item in the Game browser and that PS3 theme will be installed every time you select a game. If there is no MP4/PKG/P3T file, then a fake PKG file will be generated which will show an error on XMB when trying to run it, however, the game will still be correctly selected, despite the error on XMB.

If the EXTRA directory has a PS3\_CONTENT/VIDEODIR/D000/DATA000.MP4 file, then it will generate browser items for the VIDEODIR section which will appear in the Video category of the XMB. The MP4 will be used for every item in the Video browser and that video will be used every time you select a game. Make sure the video has a file size greater than 128KB in order to avoid fake selections.

## **4 ONBOARD CHIP MANIPULATION**

This chapter contains information and instructions on how to upgrade (downgrade) the MCU, BOOTLOADER and FPGA of the Cobra ODE. For the update process of the **V5.xx** boards please read the manual part **4.3.2**.

### **4.1 MCU firmware update for Cobra ODE v3.XX to v4.XX**

From time to time MCU updates will be made available for the Cobra ODE. You can check for the latest version from the “Downloads” section of our website on <http://www.cobra-ode.com>.

Once downloaded, extract the file "mcu.rom" to your PC and then copy it to a FAT32 formatted USB stick or USB HDD, in the root directory. Power off the console and remove the power cable entirely or use the switch on the back for PS3 fat models. Wait 5 seconds, then connect the USB stick or USB drive to the Cobra ODE clip on board then plug back the power on the console.

The update should takes a couple of seconds to finish. The LED should flash very briefly, and appear purple for a second, indicating that the update is in progress, then it becomes solid red to indicate there is no manager or database on the USB stick, or green if the fat32 drive you're using also contains the manager and cobra.db file. Once it is done, then you can turn on the console and enjoy the new features provided by the firmware upgrade.

### **4.2 BOOTLOADER firmware update for Cobra ODE v3.XX to v4.XX**

Occasionally, an update to the BOOTLOADER will be made available. You can download the latest BOOTLOADER version from the »Downloads« section of our website on <http://www.cobra-ode.com>. Once downloaded, extract the file "ldr.rom" to your PC and then copy it to a FAT32 formatted USB stick or USB HDD, in the root directory. Power off the console and remove the power cable entirely or use the switch on the back for PS3 fat models. Wait 5 seconds, then connect the USB stick or USB drive to the Cobra ODE clip on board then plug back the power on the console.



The update should takes a couple of seconds to finish. The LED should flash very briefly, and appear purple for a second, indicating that the update is in progress, then it becomes solid red to indicate there is no manager or database on the USB stick, or green if the fat32 drive you're using also contains the manager and cobra.db file. Once it is done, then you can turn on the console and enjoy the new features provided by the firmware upgrade.

**\*IMPORTANT\*** Please note that your device may be damaged if there is a loss of power during the update of the BOOTLOADER. Make sure you connect your power cable correctly and do not disconnect it while the update is in progress. There are no risks however during a normal update of the MCU firmware, and BOOTLOADER updates will be very rare.

### 4.3 FPGA firmware update for Cobra ODE v3.XX to v4.XX

Occasionally, an update to the ODE's FPGA images will be made available. You can download the latest FPGA images from the »Downloads« section of our website on <http://www.cobra-ode.com>. On v3.00, v4.20 and v4.30 boards, there are three FPGA chips each requiring their own image. In order to update the FPGA images you must have updated to at least the BOOTLOADER 1.3 before attempting the update.

Once an update has been released, download the FPGA images for your board.

**It is very important to use the correct FPGA images for your Cobra ODE Board. The board version will be printed on the PCB of the Cobra ODE.**

#### 4.3.1 Correct update sequence

For the update to be successful. Please follow this sequence when updating. Firstly you have to update your BOOTLOADER (ldr.rom) to the latest version (**if that is necessary**)! After that you have to update you MCU (mcu.rom) to the latest version (**if a newer version is available and needed for this update**). When both the BOOTLOADE and MCU are updated then you update FPGA1 (fpga1.dat) and then FPGA3 (fpga3.dat or fpga2.dat if that is necessary).

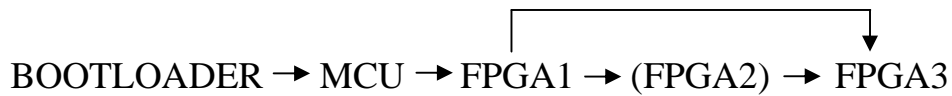


Figure 4.1: Correct update sequence diagram.

**Detailed instructions:**

1. Once downloaded, extract the files "fpga1.dat", "fpga2.dat" and/or "fpga3.dat" for your board to your PC and then copy them to a FAT32 formatted USB stick or USB HDD, in the root directory.
2. Power off the console and remove the power cable entirely or use the switch on the back for PS3 fat models.
3. Wait 5 seconds, then connect the USB stick or USB drive to the Cobra ODE clip on board then plug back the power on the console.
4. The update should takes around 2 minutes to finish. The LED should flash between red and purple colors during the entire time of the update indicating that the update is in progress.
  - a. If the update fails, you either have NOT updated to the BOOTLOADER 1.3, or you used the wrong FPGA image for your board version.
5. When the update has finished, if the FPGA being updated was **fpga1.dat**, then the LED will turn off completely.
6. You must then remove the FAT32 HDD, and delete the fpga1.dat file, then remove power to the ODE before restoring power to it again.
7. If the FPGA being updated was **fpga2.dat** or **fpga3.dat**, then the ODE will boot automatically and the LED will become solid red to indicate there is no manager or database on the USB stick, or green if the fat32 drive you're using also contains the manager and cobra.db file.
8. Once it is done, then you can turn on the console and enjoy the new features provided by the firmware upgrade.

**Note: It is important to delete the fpga1.dat file from your HDD/USB key after the update has completed (LED completely off) otherwise, it will continuously update the FPGA again. The fpga2.dat and fpga3.dat files can be kept on the HDD and will not be updated again if they are already at the same version.**

### 4.3.2 V5.xx board only

Users kindly ensure that update files should be named as follow for:

#### **v5.10B hardware:**

For Chipset **M2S010** file name should be **v5p10B10.spi**

For Chipset **M2S025** file name should be **v5p10B25.spi**

#### **v5.30A hardware:**

For Chipset **M2S010** file name should be **v5p30A10.spi**

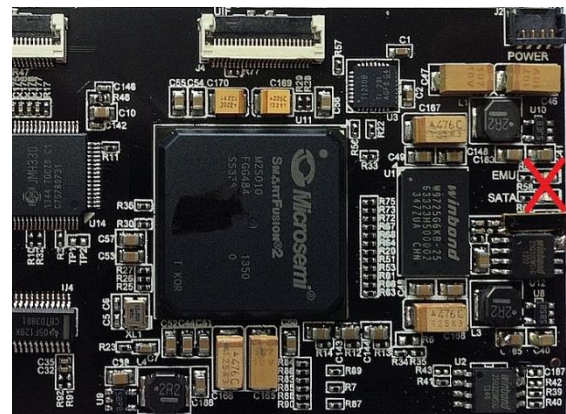
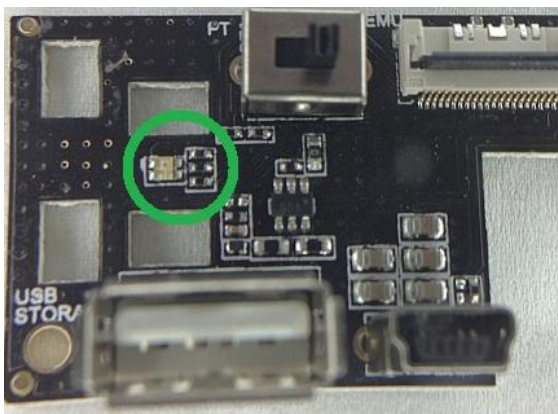
For Chipset **M2S025** file name should be **v5p30A25.spi**

Place the update file on USB device and ensure the file is alone with nothing else on your freshly formatted USB key.

Note: Make sure to only use the proper update file according to your chipset.

### 4.3.3 V5.xx board update

Understanding LED activities from the stages process.



LED activities come from “CLIP ON PCB”. (LED on PCB v5 are not concerns.)

BLUE → Erasing SPI

LIGHT BLUE → Programming SPI with new image

YELLOW → Authenticating image

PURPLE → Programming

GREEN → Done, please power cycle

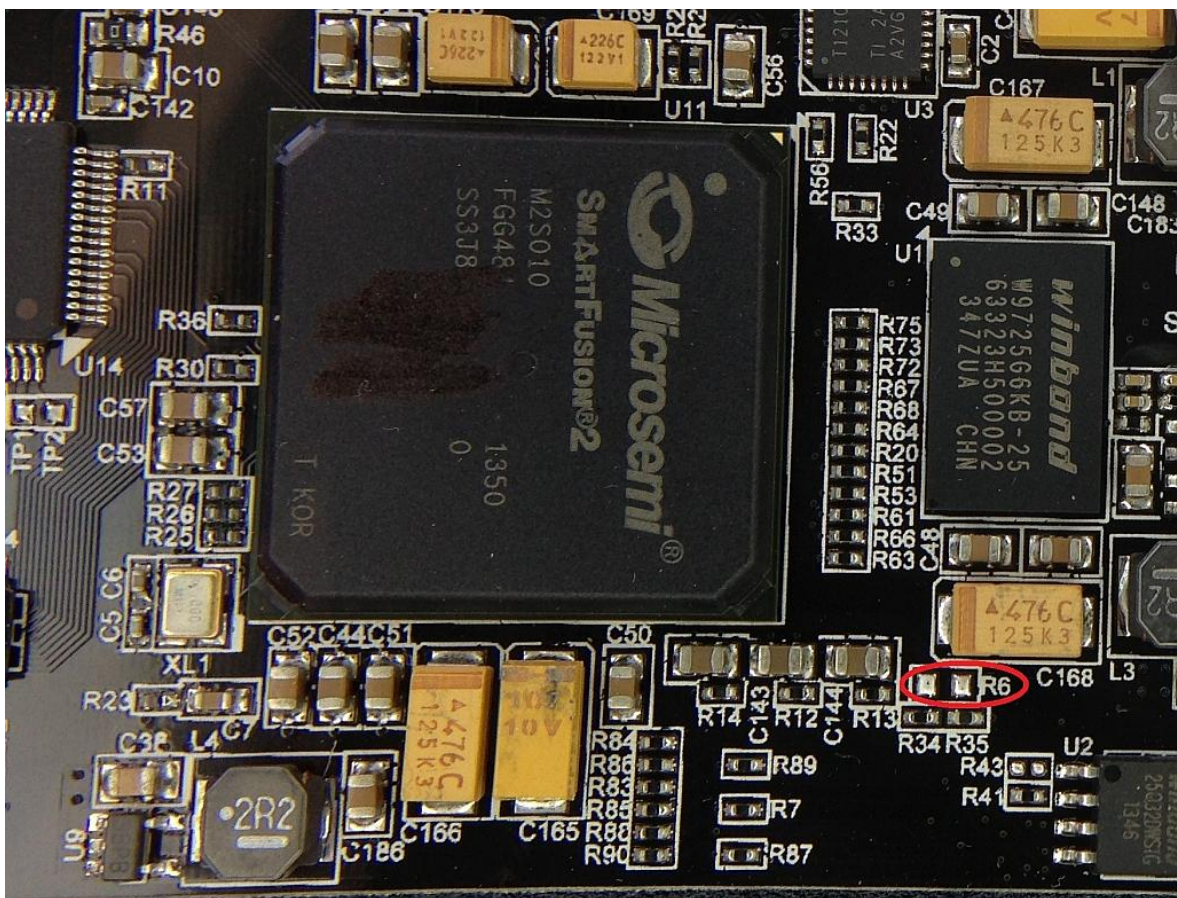
Now unplug your PS3 power cable, insert your “USB KEY” with proper update file into USB port from “CLIP ON PCB” then plug back the power cable and wait for the end of process.

Power cycle WARNING: Ensure the process is completely done with solid “GREEN LED”.

#### 4.3.4 V5.xx recovery

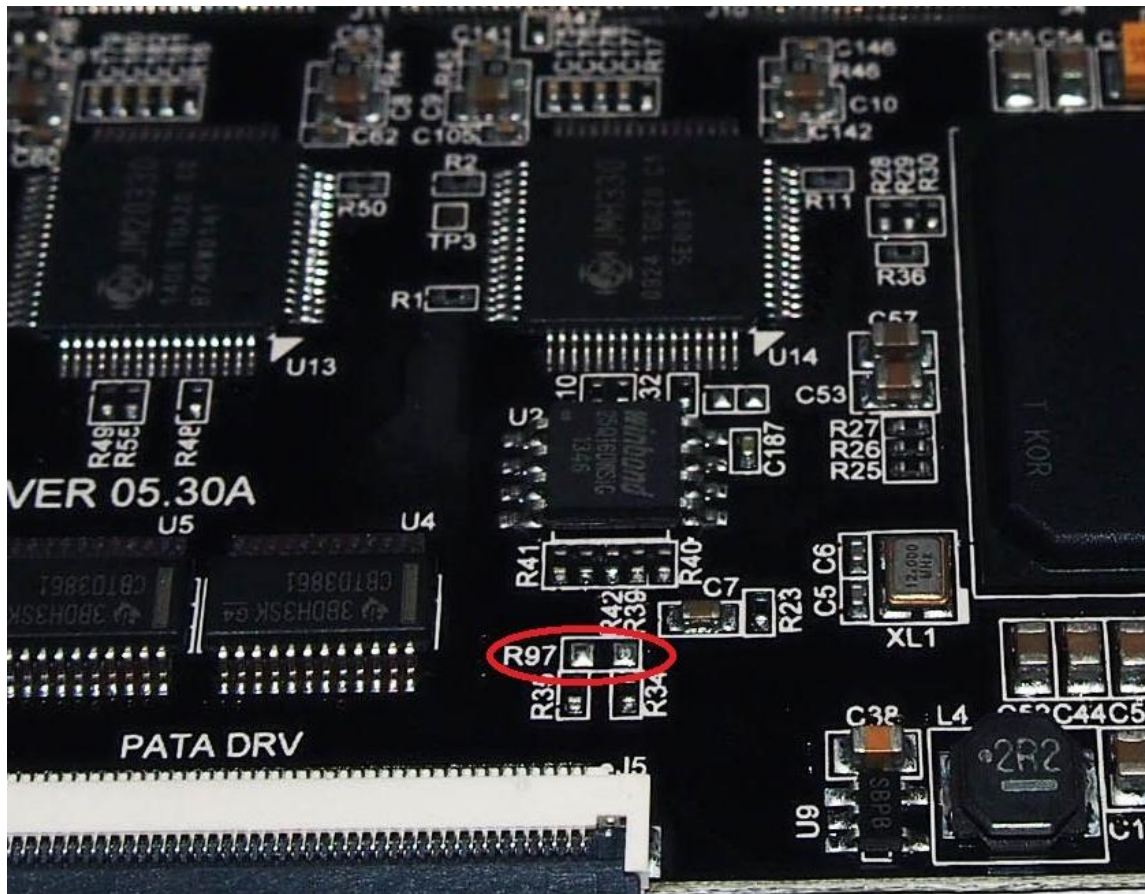
In case of bad flash aka “BRICK” there is an alternative solution. You need to short jumper as identified (see pictures of hardware revisions below) and power cycle. You can remove short when it powers. That will reconfigure the FPGA.

V5.10B Hardware:



Recovery jumper R6 for 5.10B HW.

V5.30A Hardware:



Recovery jumper R97 for v5.30A HW.

#### 4.3.5 Additional information concerning OFW update issue

Note: If for any reason, your console did not finish the update of OFW whilst running ODE FW 2.4, downgrade your ODE to FW 2.2 by placing the respective files on FAT32 formatted USB stick, then run the OFW updater on your consoles again with the switch on your USB clip on board set to “PT”. After the OFW console update has finished successfully, you may update your ODE FW to 2.4 or later.



## 5 VARIOUS CONFIGURATIONS AND INSTRUCTIONS

This chapter contains information on how to manipulate the configuration file that governs how the Cobra ODE will behave and also how the manager will behave. This chapter also contains various information on how to make valid homebrew ISO files and valid normal ISO files if the user chooses to programmatically make ISO files or to implement a manager or program that has similar functions as the Cobra ODE manager homebrew.

### 5.1 Cobra ODE Configuration file

Since Firmware version 1.4, a configuration file can be placed in the COBRA directory with the filename cobra.cfg.

The configuration file takes the form of:

**key=value**

MCU v1.0 to 1.3: Configuration file not supported

#### 5.1.1 MCU v1.4 supported options

**manager.type=disabled**

**manager.on\_reboot=1**

**game.path=.**

#### 5.1.2 MCU v1.5 added options

**manager.type=custom**

**manager.type=custom+homebrew** and **manager.type=custom+homebrew**

**manager.disctype=cd/dvd/bd/ps1/ps2/ps3**

**game.disctype=cd/dvd/bd/ps1/ps2/ps3**

**iso.INT.sector=HEX**

**iso.INT.path=**



### 5.1.3 MCU v1.6 added options

**eject.on\_selection=1**

**eject.sector=HEX**

**hdd.poll=INT**

### 5.1.4 MCU v1.9 added options

**game.type=ps1|ps2|ps3|dvd|bd**

**iso.INT.type=ps1|ps2|ps3|dvd|bd**

**disc.unsupported=ignore**

### 5.1.5 MCU v2.0 added options

**manager.type=browser**

**eject.add\_menu=1**

**manager.on\_eject=0**

**bypass.4.55=1**

**game.pt=1**

**eject.delay=INT**

**leds.disable=1|2|3|4|5|6|7**

**mcu.underclock=1**

### 5.1.6 MCU v2.1 added options

**bypass.delay=INT**

**folders.ps3\_games=**

**folders.ps2\_games=**

**folders.ps1\_games=**

**folders.bd\_movies=**

**folders.dvd\_movie=**

### 5.1.7 MCU v2.2 added options

**games.encrypted=1**

**psx.region=usa|jap|pal**

### 5.1.8 Configuration options for the latest MCU

**manager.type=homebrew/disabled/custom/custom+homebrew/homebrew+custom/  
browser**

Allows setting the type of manager the ODE should handle when it is in manager mode.

<b>homebrew</b>	The default homebrew manager mode where the /dev_bdvd/COBRA directory is populated with ode and iso information files.
<b>disabled</b>	If set, the manager is disabled and the ODE will directly boot into ISO mode. The *.iso file that will be loaded is /PS3_GAMES/game.iso by default, and can be changed with the <b>game.path</b> configuration option.
<b>custom</b>	A custom manager mode where the /dev_bdvd/COBRA directory is <b>not</b> created, and the game triggers are defined with the <b>iso.INT.sector</b> and <b>iso.INT.path</b> configuration options.
<b>custom+homebrew</b> <b>homebrew+custom</b>	A custom manager mode where the /dev_bdvd/COBRA directory is populated with ode and *.iso information file, and where <b>iso.INT.sector</b> and <b>iso.INT.path</b> configuration options can be used to create custom sector triggers.
<b>browser</b>	If set, the Cobra Browser will be automatically generated from the browser.iso file.  <b>By default in 2.1.</b>

Table 5.1: Manager Type configuration options.

### **manager.on\_reboot=1**

If set, the manager will be reloaded every time the PS3 reboots. The ISO mode will not stay persistent between reboots. This can be useful for users with PS3 consoles in hard to reach places.

Any value other than '1' will default back to the behavior of switching to manager mode on disc eject only. This option will not work when the ODE is in PS2 BD movie mode.

### **game.path=/PS3\_GAME/game.iso**

If `manager.type=disabled` is set, then this option will specify the path of the ISO to load when the HDD is inserted. The path is not case-sensitive, and path separator is the '/' character. The path has a limit of 128 characters. If this option is not set, then it will default to `/PS3_GAMES/game.iso`

### **manager.disctype=cd/dvd/bd/ps1/ps2/ps3**

If set, the disc type of the manager can be overridden and the ODE will emulate a different type of disc inserted in the tray. This is useful in order to experiment with different disc types, other than PS3 discs, and could help the manager appear more stealth.

<b>cd</b>	The manager iso will appear as being burned on a CD-ROM disc
<b>dvd</b>	The manager iso will appear as being burned on a DVD-R disc
<b>bd</b>	The manager iso will appear as being burned on a BD-R disc
<b>ps1</b>	The manager iso will appear as being an original PS1 disc
<b>ps2</b>	The manager iso will appear as being an original PS2 disc
<b>ps3</b>	The manager iso will appear as being an original PS3 disc

Table 5.2: Manager Disc type options.

Note that the ODE will still process the manager as a PS3 game, this option will only change how the PS3 perceives the disc. It is only for experimenting with different types of discs.

Any value other than the ones listed here will default to appearing as the type of disc inserted in the tray.

### **game.disctype=cd/dvd/bd/ps1/ps2/ps3**

If set, the disc type of a game ISO can be overridden and the ODE will emulate a different type of disc inserted in the tray. This is useful in order to experiment with different disc types, other than PS3 discs.

<b>cd</b>	The game iso will appear as being burned on a CD-ROM disc
<b>dvd</b>	The game iso will appear as being burned on a DVD-R disc
<b>bd</b>	The game iso will appear as being burned on a BD-R disc
<b>ps1</b>	The game iso will appear as being an original PS1 disc
<b>ps2</b>	The game iso will appear as being an original PS2 disc
<b>ps3</b>	The game iso will appear as being an original PS3 disc

Table 5.3: Game disc type options.

Note that the ODE will still process the game as a PS3 game or as the type of game set in the **game.type** option. Appearing as a PS1 or PS2 disc does not guarantee that the PS3 will recognize the iso as valid PS1/PS2 discs. It will only appear as being a PS1/PS2 disc type. It is only for experimenting with different types of discs.

Any value other than the ones listed here will default to appearing as the type of disc inserted in the tray.

### **iso.INT.sector=HEX**

If the manager is in custom or custom+homebrew mode with the `manager.type=custom` configuration option, then this option can be used to define the sector of the game trigger for a specific game. The *INT* value must be a base 10 integer lower than 500 and determines the iso index. The *HEX* value must be a hexadecimal value representing the sector number to act as a trigger. If the game is triggered, by reading of that sector, then the iso file in the matching `iso.INT.path` option will be used.

**iso.INT.path=**

If the manager is in custom or custom+homebrew mode with the `manager.type=customonfiguration` option, then this option can be used to define the path to the iso when the associated `iso.INT.sector` configuration option is triggered. The *INT* value must be a base 10 integer lower than 500 and determines the iso index. The path is not case-sensitive, and path separator is the '/' character. The path has a limit of 128 characters. If this option is not set, then it will default to `/PS3_GAMES/game.iso`.

**eject.sector=HEX**

If the manager is in custom or custom+homebrew mode with the `manager.type=custom` configuration option, then this option can be used to define the sector that triggers the disc's auto-eject feature. The *HEX* value must be a hexadecimal value representing the sector number to act as a trigger. If the eject is triggered, by reading of that sector, then the ODE will emulate a disc ejection and reinsertion automatically.

**eject.on\_selection=0**

If set, the ODE will automatically trigger the auto-eject feature as soon as a game selection has been triggered.

Any value other than '0' will default back to the behavior or switching to manager mode on disc eject only. By default the option is enabled.

**hdd.poll=INT**

If set, the ODE will poll the hard drive every *INT* minutes to prevent the HDD from going idle and entering sleep mode. The *INT* value must be a base 10 integer. If the value is set to 0, then HDD polling is disabled. If a value is not set, then HDD polling value defaults to '1'.

### **game.type=ps1/ps2/ps3/dvd/bd**

If `manager.type=disabled` is set, then this option will specify the type of the ISO to load. By default, a game will be recognized as a PS3 game.

<b>dvd</b>	The game iso will be processed as a dvd movie
<b>bd</b>	The game iso will be processed as a bluray movie on a BD-R disc
<b>ps1</b>	The game iso will processed as a PS1 game
<b>ps2</b>	The game iso will processed as a PS1 game
<b>ps3</b>	The game iso will processed as a PS1 game

Table 5.4: Game type options.

### **Iso.INT.type=ps1/ps2/ps3/dvd/bd**

If the manager is in custom or custom+homebrew mode with the `manager.type=custom` configuration option, then this option can be used to define the type of game of the iso when the associated `iso.INT.sector` configuration option is triggered. The `INT` value must be a base 10 integer lower than 500 and determines the iso index. By default, a game will be recognized as a PS3 game.

<b>dvd</b>	The game iso will be processed as a dvd movie
<b>bd</b>	The game iso will be processed as a bluray movie on a BD-R disc
<b>ps1</b>	The game iso will processed as a PS1 game
<b>ps2</b>	The game iso will processed as a PS1 game
<b>ps3</b>	The game iso will processed as a PS1 game

Table 5.5: ISO int type options.

### **eject.add\_menu=0**

If set, the PS3 iso games will be dynamically modified to add a new XMB option for returning to the manager. If the game already has a second disc option, then the return to manager option will be in the second disc's submenu. This option is only valid for PS3 games.

In some rare cases, the ODE will not be able to add the menu. In that case, you can add a `PKGDIR` in the `PS3_GAME` directory and a `PKG99` sub directory, so you would have

PS3\_GAME/PKGDIRECTORY/PKG99 directory in your iso. Then rebuild your iso and the menu will appear.

Note that this option will only work for PS3 game iso mode. It will not work for PS1, PS2, DVD, BD or Pass-Through mode.

Any value other than '0' will default back to the behavior of switching to no eject menu being present. By default the option is enabled since firmware 2.1.

### **game.pt=1**

If set, the ODE will always work in passthrough-mode.

### **eject.delay=INT**

This option allows to control the delay in milliseconds between the moment the disc is ejected and the moment the disc is reloaded into the tray for QSB systems (2k, 2k5, 3k and 4k). The default value is 1000ms

### **manager.on\_eject=0**

If set, the manager will not be reloaded when a disc is ejected. This option will only have an effect if a PS3 game is loaded, it will be ignored if using Pass-Through mode, PS1, PS2, DVD or BD mode. To return to manager, you need to either reboot if `manager.on_reboot=1` is set, or use the Remove Disc option in the XMB or the Return to Manager option if `eject.add_menu=1` is enabled or by disconnecting the HDD.

Any value other than '0' will default back to the behavior of returning to the manager when a disc is ejected. By default the option is enabled since firmware 2.1.

### **leds.disable=0/1/2/3/4/5/6/7**

Disable a LED color. This is useful for people who find the LED annoying when trying to sleep for example.

Disabling one color can affect combined colors. For example, when loading a DVD movie which shows a white LED (green, red and blue), disabling the green LED will show a purple (blue, red) color instead.

0	No color disabled (default)
1	Disable blue LED
2	Disable red LED
3	Disable blue and red LED (1 + 2)
4	Disable green LED
5	Disable green and blue LED (1 + 4)
6	Disable red and green LED (2 + 4)
7	Disable all LED colors (1 + 2 + 4)

Table 5.6: LED configuration options.

### **bypass.4.55=1**

Bypass the new PS3 firmware 4.55 Anti-ODE security on Super Slim (4xxx models) models. Refer to the corresponding user manual **Erreur ! Source du renvoi introuvable.** for instructions on how to bypass the new authentication system.

If you have a Super Slim (4xxx model) console with PS3 firmware 4.55 or up, then you must enable this option.



### **mcu.underclock=0**

Underclock the MCU to 180MHz. This will make the ODE use less power and generate less heat.

If you think your ODE is overheating and it causes it to freeze, then enabling this option will fix this and make it more stable. By default, the MCU runs at 270MHz. Enabling this option decreases the performance by approximately 30%.

Any value other than '0' will default back to the behavior of the MCU not being overclocked. By default the option is enabled since firmware 2.1.

### **bypass.delay=10000**

Allows to change set the delay for switching discs in the 4.55 bypass, value in milliseconds. Default is 10000 *ms* (10 seconds) and can be from 0 *ms* (instantaneous) to 30000 *ms* (30 seconds).

Instantaneous (0 *ms*) setting is useless as it is humanly impossible to change the swap disc in said time. Also values above 30000 *ms* might work but have not been tested and can result in freezing.

### **folders.<setting>=STRING**

Setting	Description
folders.ps3_games=	Sets the directory to search for ps3 games, default is /PS3_GAMES.
folders.ps2_games=	Sets the directory to search for ps2 games, default is /PS2_GAMES.
folders.ps1_games=	Sets the directory to search for ps1 games, default is /PS1_GAMES.
folders.bd_movies=	Sets the directory to search for Blu-Ray movies, default is /BD_MOVIES.
folders.dvd_moves=	Sets the directory to search for DVD movies, default is /DVD_MOVIES.

Table 5.7: Table of folder settings.

**Example:** folders.ps3\_games=/MY\_GAMES

folders.bd\_movies=/MY\_MOVIES

### **games.encrypted=1**

Setting this option will disable iso encryption by the ODE. This can only be used if you pre-encrypt your iso games with the same key as the boot disc that you used. Disabling encryption will significantly speed up the read speed of the iso giving you full speeds when loading games.

This option is required for bypassing the new anti-ODE security measures introduced in the 4.60 firmware and must be used when converting your iso with the convertps3iso tool.

### **psx.region=usa|jap|pal**

Set this option to usa, jap or pal to select the PSX games' region for your console. The ODE will then automatically patch the ps1 disc image to the region of your console so it can be played. For this option to work, you will need to add the PSX\_USA.BIN, PSX\_JAP.BIN and PSX\_PAL.BIN files to the COBRA directory.

If the option is not specified, the psx game image will not be modified.

### **bypass.dmc=1**

Enables the use of the DMC module for the bypass method. (Cobra ODE 2.4)

### 5.1.9 Valid COBRA/cobra.cfg configurations

Homebrew manager with automatic return to manager mode on reboot:

```
manager.type=homebrew  
manager.on_reboot=1
```

Configuration excerpt 5.1: Automatic return to manager mode on reboot.

Manager is disabled and the /PS3\_GAMES/Uncharted.iso game is automatically loaded.

```
manager.type=disabled  
game.path=/PS3_GAMES/Uncharted.iso
```

Configuration excerpt 5.2: Automatic loading of a single game.

### 5.1.10 Recommended cobra.cfg configuration (Cobra ODE 2.0 update onwards)

This is the recommended configuration of the cobra.cfg file after the 2.0 update of Cobra ODE. All users except users who have a Super Slim (4xxx model) should use this configuration:

```
manager.type=browser  
eject.add_menu=1  
eject.on_selection=1
```

Configuration excerpt 5.3: Recommended configuration for cobra.cfg (non 4k).

Users who have a Super Slim (4xxx model) should (must!) use this configuration:

```
manager.type=browser  
eject.add_menu=1  
eject.on_selection=1  
bypass.4.55=1
```

Configuration excerpt 5.4: Recommended configuration for cobra.cfg (4k).

Custom manager appearing as Blu-Ray disc with triggers for 3 games and returns to manager mode on reboot.

```
manager.type=custom
manager.disctype=bd
manager.on_reboot=1

iso.0.sector=400
iso.0.path=/PS3_GAMES/Uncharted.iso
iso.0.type=ps3
iso.1.sector=6A0
iso.1.type=ps3
iso.1.path=/PS3_GAMES/GTA5.iso
iso.3.sector=AC0
iso.3.path=/PS1_GAMES/Doom.iso
iso.3.type=ps1
```

Configuration excerpt 5.5: Loading of a custom manager with triggers for 3 games.

**Note:** The PS3 always reads in groups of 32 sectors, on the 0x20 sector boundary. For a trigger to be effective, it must not be accidentally read when a different file is read from the same group of 32 sectors.

**Note 2:** In the case of custom disc with PS3\_CONTENT/VIDEODIR, the PS3 will read the header and footer of every MP4 file to retrieve its duration and validate it, which will trigger every game. It is therefore recommended to always use MP4 file longer than 128KB and set the trigger to 32 sectors or more after the start and before the end of the file.

## 5.2 Valid homebrew ISO generation

In order to generate an iso of a homebrew application, create the necessary directory structure (PS3\_GAME directory containing the PARAM.SFO and other standard files just like the .pkg would), and generate the EBOOT.BIN using Nachwert's scetool using the following command:

```
scetool --sce-type SELF --compress-data FALSE --self-type APP
--key-revision 0004 --self-fw-version
0003004100000000 --self-app-version 0001000000000000 --self-
auth-id 1010000001000003 --self-vendor-
id 01000002 --self-cap-flags
00000000000000000000000000000000000000000000000000000003b0000000100040
000 -e homebrew.elf
EBOOT.BIN
```

Configuration excerpt 5.6: Scetool command for generating the EBOOT.BIN.

Or you could add the following line to your makefile:

```
EBOOT.BIN: $(TARGET).elf
scetool --sce-type SELF --compress-data FALSE --self-type APP
--key-revision 0004 --self-fwversion
0003004100000000 --self-app-version 0001000000000000 --self-
auth-id
1010000001000003 --self-vendor-id 01000002 --self-cap-flags
0000000000000000000000000000000000000000000000000000003b000000010004
000 -e $< $@=
```

Configuration excerpt 5.7: MAKEFILE line for EBOOT.BIN generation.

To generate the iso for an existing homebrew app for which you do not have access to the source code you simply extract the .pkg file into a directory, then un-self the EBOOT.BIN and recreate it using the above mentioned command.

### 5.3 Valid ISO file specification

If you wish to generate a valid ISO file programmatically, or implement your own version of genps3iso, then we provide you with the specifications of the iso file so it can be recognized by the PS3 as a valid disc image.

A disc image is a normal iso file with the exception of the first two sectors which contain information that will be used by the PS3. The iso file's content can either be encrypted or plain text, the first sector defining which sector regions are encrypted and which aren't. Another consideration is that the PS3 will always read in 64KB blocks, 32 sectors at a time of 2048 bytes each. An encrypted region must always start and end at the 0x20 sector index boundary.

#### The first sector has the following format:

32 bit big endian integer: number of plain regions in the disc image

32 bit zeroes

array of <num\_plain\_regions> containing :

32 bit big endian integer: start sector of the plain region

32 bit big endian integer: end sector of the plain region (inclusive)

The encrypted regions are any region that exists between plain regions. For example:

```
00000000 00 00 00 02 00 00 00 00 00 00 00 00 00 00 02 3f |.....?|
00000010 00 00 07 c0 00 00 08 5f 00 00 00 00 00 00 00 00 |....._|
```

Configuration excerpt 5.8: ISO encrypted and plain regions.

This iso has 2 plain regions, starting from sector 0 to 0x23F and from 0x7C0 to 0x85F, and one encrypted region from 0x240 to 0x7DF. The total number of sectors in the iso would be 0x860 sectors.

All SELF files must reside on encrypted sectors, as well as the LICDIR/LIC.DAT license file.

The second sector of the iso must contain the string “PlayStation3” padded with zeroes to 16 bytes total, followed by the game id padded with spaces to 32 bytes total, then 16 bytes of zeroes then 448 bytes of random data.

**For example:**

```
00000800 50 6c 61 79 53 74 61 74 69 6f 6e 33 00 00 00 00 |PlayStation3....|
00000810 42 43 45 53 2d 30 30 39 30 38 20 20 20 20 20 20 |BCES-00908      |
00000820 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |                |
00000830 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
00000840 c9 27 db 82 7c 18 b5 c5 7e 39 4e cb ba f0 ec 2e |.'...|...~9N....|
...
000009f0 38 f3 59 1d 97 42 7d 17 35 aa c7 f5 ec cc 08 5b |8.Y..B}.5.....[|
```

Configuration excerpt 5.9: Second ISO sector.

### 5.4 Specifications for third party manager compatibility

On loading the manager iso, the Cobra ODE will automatically and dynamically add a /COBRA directory to the disc structure and populate it with files. Since firmware version 1.2, a COBRA.NFO file will be available with information about the ODE firmware and other data the ODE needs to communicate. See below for more information. Each valid ISO found on the HDD will appear as a file with its game id as the respective filename. The generated file will have a size of 2048 bytes and will contain information about the iso file. See below for more information. Each title will also have a file with .PNG, .SFO and .RUN extensions, where the base filename will be the game id. The .PNG and .SFO files respectively represent the ICON0.PNG and PARAM.SFO files inside the .iso and the .RUN file, if read, will tell the COBRA ODE that that game must be selected. For a PS3 game, an iso file must provide a .SFO file, but some discs do not have the ICON0.PNG file, such as install discs, so the .PNG file may not be available. For PS1 games, PS2 games, DVD and BD movies, the .SFO and .PNG files will be missing.

A DISC.ISO file will also be made available which will be a direct access to the real disc in the drive of the PS3.

This can be useful for dumping games. Note that the COBRA ODE will trick the PS3 into automatically decrypting the DISC.ISO, however, the decryption will not be perfect due to

the sector position on the disc. Post-processing of the DISC.ISO is therefore required in order to obtain a valid copy of the disc. See below for more information.

Since firmware version 1.6, a EJECT file will also be made available which can be read in order to trigger the auto-eject feature of the ODE.

**Example:**

Assuming the HDD has a PS3 ISO "game.iso" with game id BLUS12345, on loading of manager, it will have access to the following files:

/dev_bdvd/COBRA/COBRA.NFO	File containing extra information from the COBRA ODE
/dev_bdvd/COBRA/DISC.ISO	Disc image of the disc in the drive
/dev_bdvd/COBRA/EJECT	Auto-eject disc trigger
/dev_bdvd/COBRA/BLUS12345	File containing information on the iso file
/dev_bdvd/COBRA/BLUS12345.PNG	ICON0.PNG file contained inside game.iso
/dev_bdvd/COBRA/BLUS12345.SFO	PARAM.SFO file contained inside game.iso
/dev_bdvd/COBRA/BLUS12345.RUN	Game selection trigger

Table 5.8: Accessed files on ISO load.

Our downloads section on the cobra-ode.com website provides for a simple function (manager.h and manager.c) provided for free use (public domain) which will parse the directory and provide a simple structure, enabling access to all files. Developers using those functions should find it easier to integrate with our product.



### 5.4.1 ISO file information format

**Firmware 1.0:** A null-terminated string containing the original filename of the iso from the HDD. The remainder of the file will be empty.

**Firmware 1.3:** The first byte will be zero to allow backward compatibility and recognize the format, it is then followed by the filename of the iso from the HDD, preceded by a single byte containing the length of that string. It is then followed by 64 bits representing the file size of the iso file in littleendian format. The remainder of the file will be empty.

**Example:**

```
00 08 67 61 6d 65 2e 69 73 6f 78 56 34 12 00 00 |..game.iso.....|
00 00 ..... |.....|
```

Configuration excerpt 5.10: Basic ISO file information.

**Firmware 1.9:** We have added a 1 byte game type indicator, followed by 32 bytes containing the ISO volume name.

**Firmware 2.0:** A new Game type has been added for Pass-Through mode support. If game type is 0, and filename is PT-000000, then the game will trigger switching to Pass-Through mode. It is recommended to only allow disc dumping capabilities if the Pass-Through mode file exists, as it ensures the firmware supports disc dumping without corruption.

The game type indicator can have the following values:

Game type indicator value	Game type
0	Trigger Pass-Through mode
1	PS1 game
2	PS2 game
3	PS3 game
4	BD Movie
5	DVD Movie

Table 5.9: Game type indicator values.

**Example:**

```
00 08 67 61 6d 65 2e 69 73 6f 78 56 34 12 00 00 |..game.iso.....|
00 00 03 50 53 33 56 4f 4c 55 4d 45 20 20 20 20 |...PS3VOLUME    |
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |                |
20 20 20 .....|
```

Configuration excerpt 5.11: Extended ISO file information.

5.4.2 COBRA.NFO format

**Firmware 1.0:** File did not exist

**Firmware 1.2:** The file contains 2 bytes, the major and the minor version of the ODE firmware respectively.

**Example:**

```
01 02
```

Configuration excerpt 5.12: Basic COBRA.NFO format (2 bytes).

**Firmware 1.3:** The file contains 6 bytes, the structure is extended with a 32 bit little-endian value representing the sector of the disc in which the DISC.ISO file starts. This is necessary for the post-processing of the DISC.ISO to recreate the original image.

**Example:**

```
01 02 0c 0b 00 00
```

Configuration excerpt 5.13: Extended COBRA.NFO format (6 bytes).

**Firmware 1.6:** The file contains 7 bytes, the structure is extended with an 8 bit boolean to determine if the console support a quick eject method when the /dev\_bdvd/COBRA/EJECT file is read. Quick-eject is only possible on FAT and 2xxx/21xx models. The information is not required for the auto-eject feature to work.

**Example:**

```
01 02 0C 0B 00 00 01
```

Configuration excerpt 5.14: Extended COBRA.NFO format (with quick eject byte).

### 5.4.3 Information about DISC.ISO post-processing

While the disc is encrypted, the COBRA ODE will instruct the PS3 to decrypt the encrypted sectors from the disc automatically while being read. However, the PS3 uses the sector LBA as the initialization vector for decrypting the sectors. Since the sectors of the DISC.ISO file are positioned on the manager disc on a different sector than the original disc is, the decryption will use the wrong initialization vector. It is therefore needed to XOR the first 16 bytes of every encrypted sector with the appropriate value to recover the original decrypted data. The LBA sector of the DISC.ISO is provided in the COBRA.NFO file since MCU firmware v1.3.

The first 16 bytes of every encrypted sector must first be XORed with the disc's LBA + sector in the file to retrieve the AES decrypted block, then XORed with the original sector to get the AES-CBC decrypted block. All other blocks use the cipher data as IV so they will be decrypted correctly.

The third-party library can be used to do it automatically, or can be used as reference for the post-processing algorithm.

## 6 REFERENCES

- [1] [Anti-ODE Security Bypass Manual \(English\) v1.2.pdf](#)
- [2] [Cobra ODE Installation Manual \(FAT to 2k1\) \(v3 v4 v5\) \(English\) v1.5.pdf](#)
- [3] [Cobra ODE Installation Manual \(2k5 to 4k\) \(v3 v4 v4-QSV\) \(English\) v1.1.pdf](#)
- [4] [Cobra ODE Installation Manual \(2k5 to 4k\) \(v5 - v5-QSV\) \(English\) v1.1.pdf](#)
- [5] [Cobra ODE Database \(05-03-2015\).rar](#)