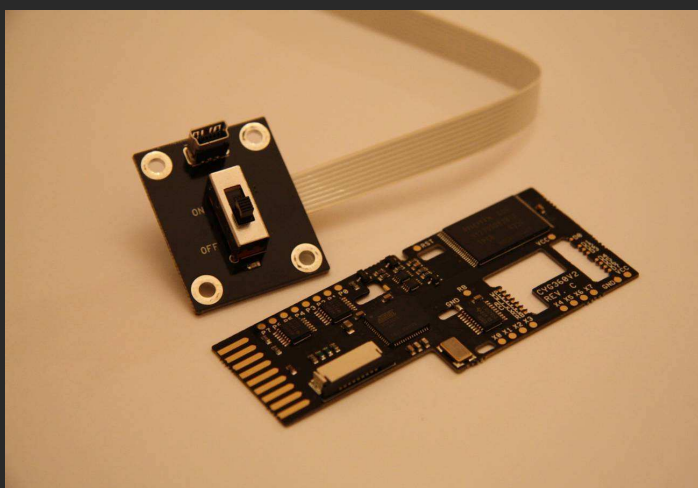


Cygnos360 V2 Installation Manual



VERSION 1.03 - JANUARY, 2010

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1. What you need

1.1. Tools

Cygnos360 V2 has been designed to require as little as possible skills to install and use. However, to ensure a good and clean installation some tools may come very handy to you. We assume you know how to open your Xbox360. If not, there are good tutorials on the net. What you need is:

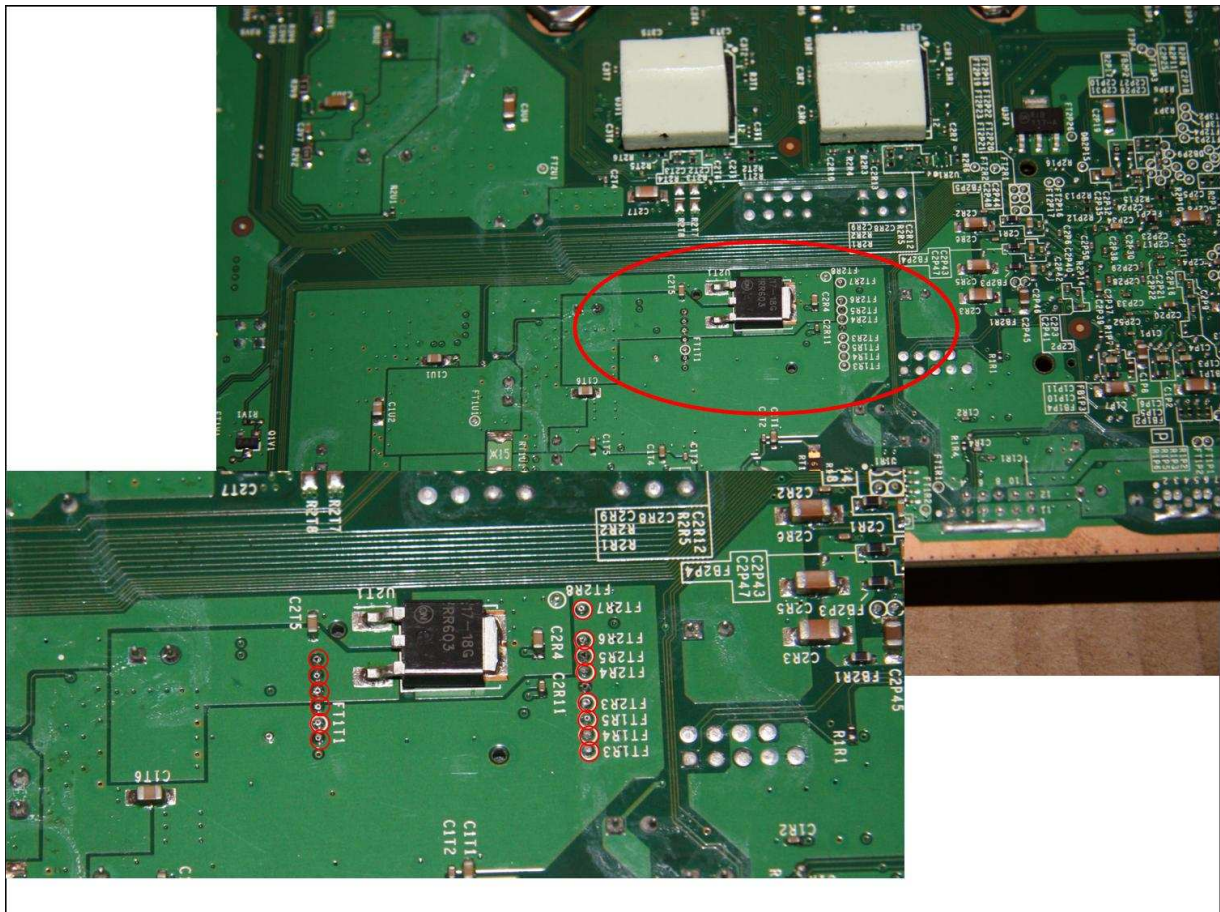
- 1) a Cygnos360 V2
 - 2) 4 x 330 Ohm resistors (**THESE ARE NOT NECESSARY ANYMORE IF YOU USE firmware v1.03 beta 2**)
 - 3) An Xbox360 with 16Mb NAND (please note that the 256 and 512 Mb Jasper mainboards are not supported yet)
 - 4) A soldering iron (it should have a fine tip, as the quicksolder pads are very small)
 - 5) Some good solder (flux core for example sn60pb40 or sn63pb37 alloy)
 - 6) some thin wires ("30 kynar" wire or AWG28/30 would be preferred)
 - 7) 4 M3 screws with nuts
 - 8) A PC with Windows (XP or Vista)
 - 9) The Cygnos360 V2 Toolbox
- (Please check our Forum news section for updates <http://www.cygnos360.com/forum/index.php?board=6.0>)
- 10) Some patience

2. Preparation

In order to make sure that the installation of your Cygnos360 is smooth and you do not have to troubleshoot later on, you should make some preparations before you install it.

2.1. Preparing the solder points

Cygnos360 V2 is soldered directly onto the bottom side of the Xbox360 mainboard. Microsoft uses lead-free solder for manufacturing. This causes some trouble when trying to solder anything onto the mainboard. We therefore highly recommend that you mix some good solder (try to get some SMD solder) onto all the points where you will solder Cygnos360 V2 onto. This ensures that you do not end up with cold solder joints and a non-working Cygnos360 V2.

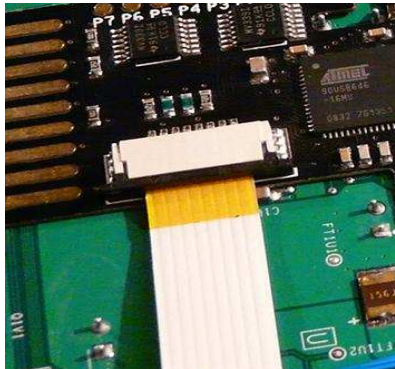


3. Installing in your Xbox360

3.1. Installing the main PCB

Cygnos360 V2 is installed directly onto the bottom side of the Xbox360 mainboard underneath the flash memory (NAND). Please make sure you have done the preparation as stated above. Put the flat cable into Cygnos360 V2 before you install it! It is easier than if you try that later.

(NOTE, there are two types of connectors out there. On the flat cable make sure the tin part on the cable is on the metal part of the connector. On some Cygnosses the yellow needs to be facing downwards.)



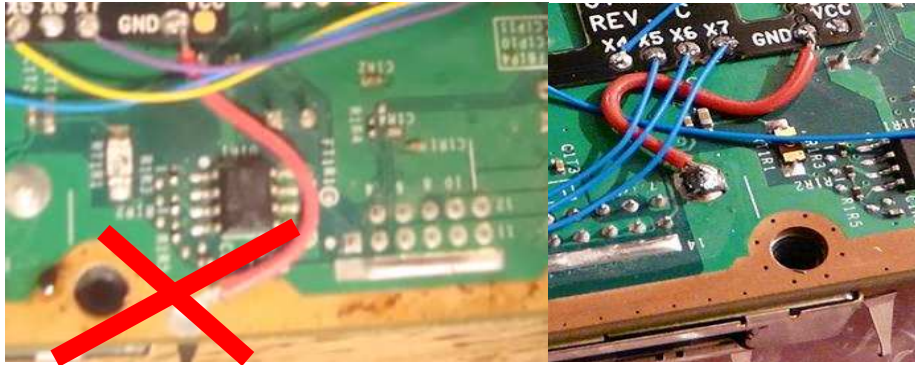
3.2. Wires

Before you start to solder the wires, please look at this little hint, it will save you a lot of trouble: (self explanatory)
Best to use is "30 kynar" wire or AWG28/30.

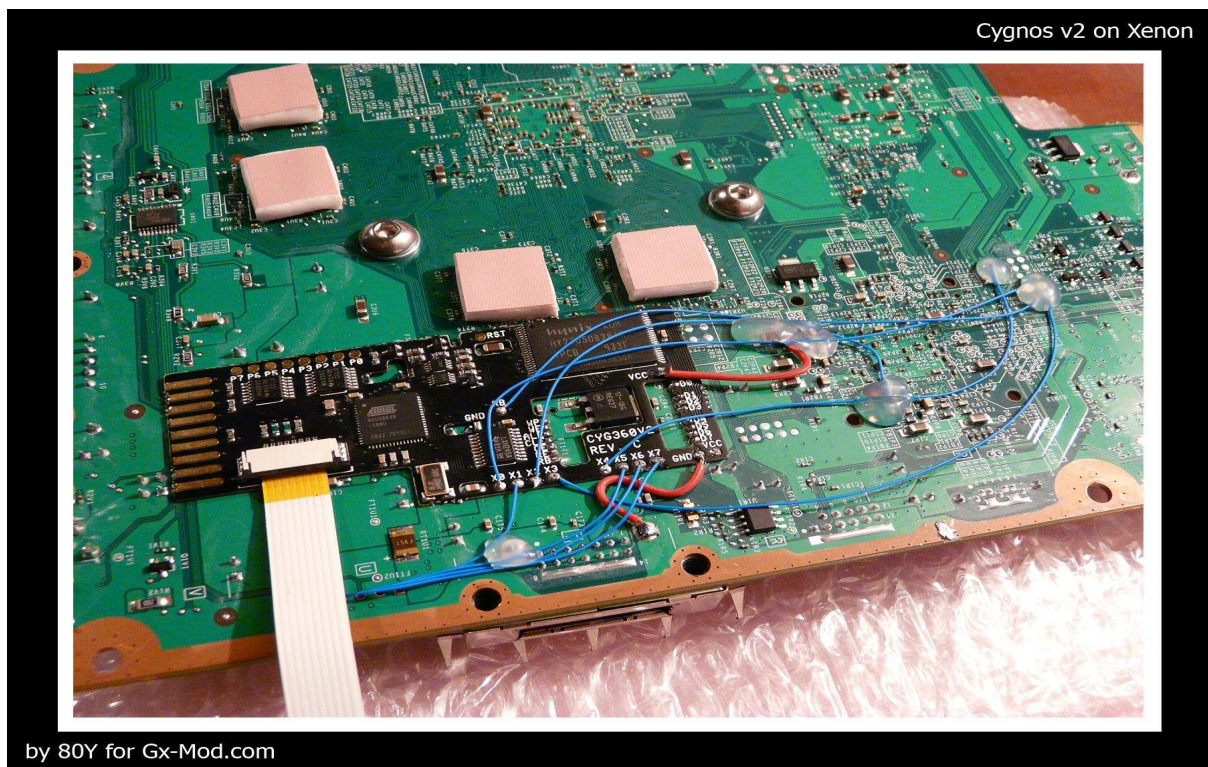


Place the PCB directly onto the bottom solder points of the Xbox360 onboard NAND flash and make sure it is even on the surface of the mainboard. Use the quick-solder pads to align Cygnos360 V2 and fix it with some duct tape to the mainboard to avoid it from moving around. As the next step solder the quick-solder pads. If you have prepared them before with some good solder this should not take more than 3 minutes.

As the next step, solder the GND wire ground, for example on the SATA ground point. **DON'T solder to the copper as this might not work if your soldering iron is not strong enough.**



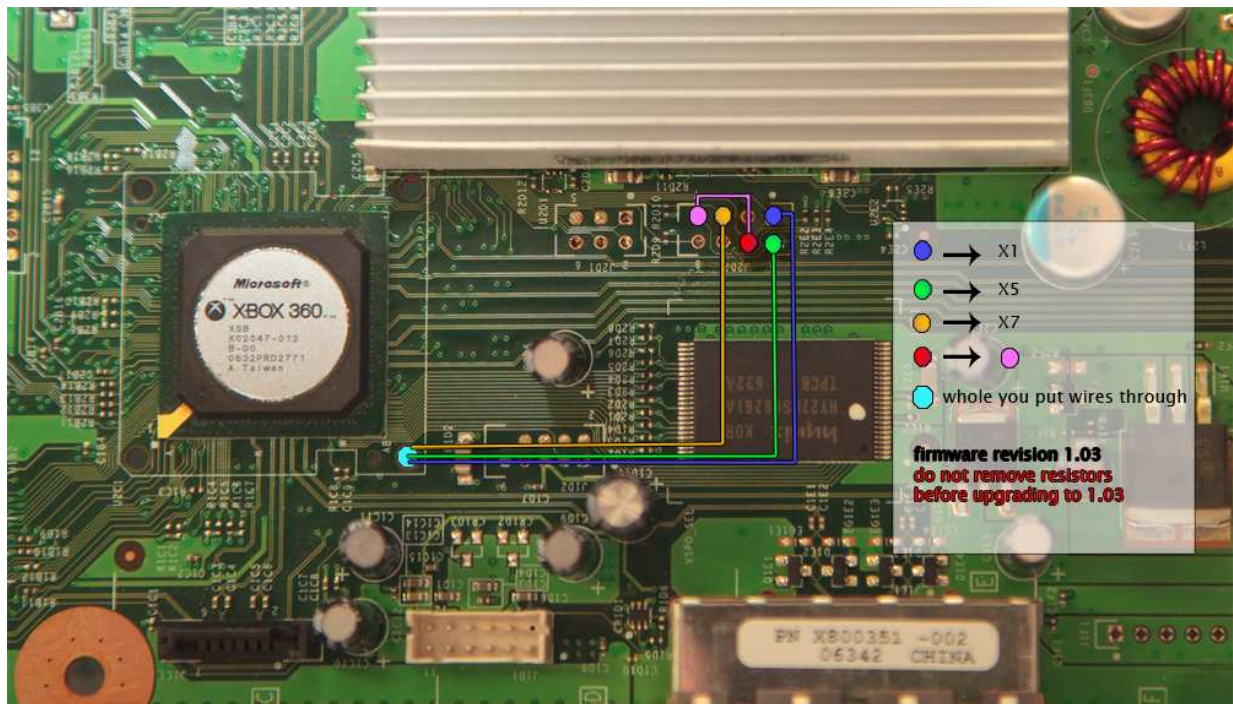
Then also solder the RB cable if you have not chosen to scratch off the pad (images further below show where you can solder RB)



Top Side of mainboard (thanks 80Y for the pic)

As an alternative to the RB cable you can scratch off the RB point on the mainboard as described in the chapter 2.1

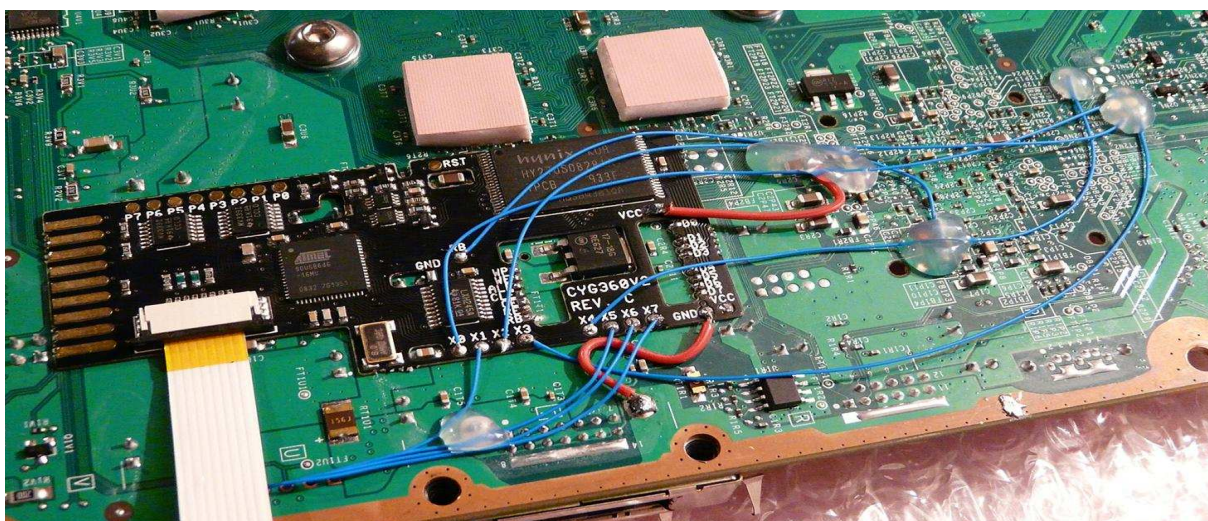
Cygnos360 V2 Solder Point	Xbox360 solder point	Comments
VCC	C2R6	
GND	Good GND, preferable copper	
RB	Above the line at R1P7	
X0	J2B1 PIN 5	
X1	J2D2 PIN 1	Via 330 ohm! IF YOU ARE BELOW CYGNOS FIRMWARE 1.03 Beta 2
X2	J2B1 PIN 2	
X3	J2B1 PIN 1	
X4	FT2N3	
X5	J2D2 PIN 2	Via 330 ohm! IF YOU ARE BELOW CYGNOS FIRMWARE 1.03 Beta 2
X6	J2D2 PIN 4	Via 330 ohm! IF YOU ARE BELOW CYGNOS FIRMWARE 1.03 Beta 2
X7	J2D2 PIN 5	Via 330 ohm! IF YOU ARE BELOW CYGNOS FIRMWARE 1.03 Beta 2



Bottom Side of mainboard

WHEN USING FIRMARE 1.03 Beta 2 OR HIGHER THE RESISTORS ARE NOT NEEDED ANYMORE.

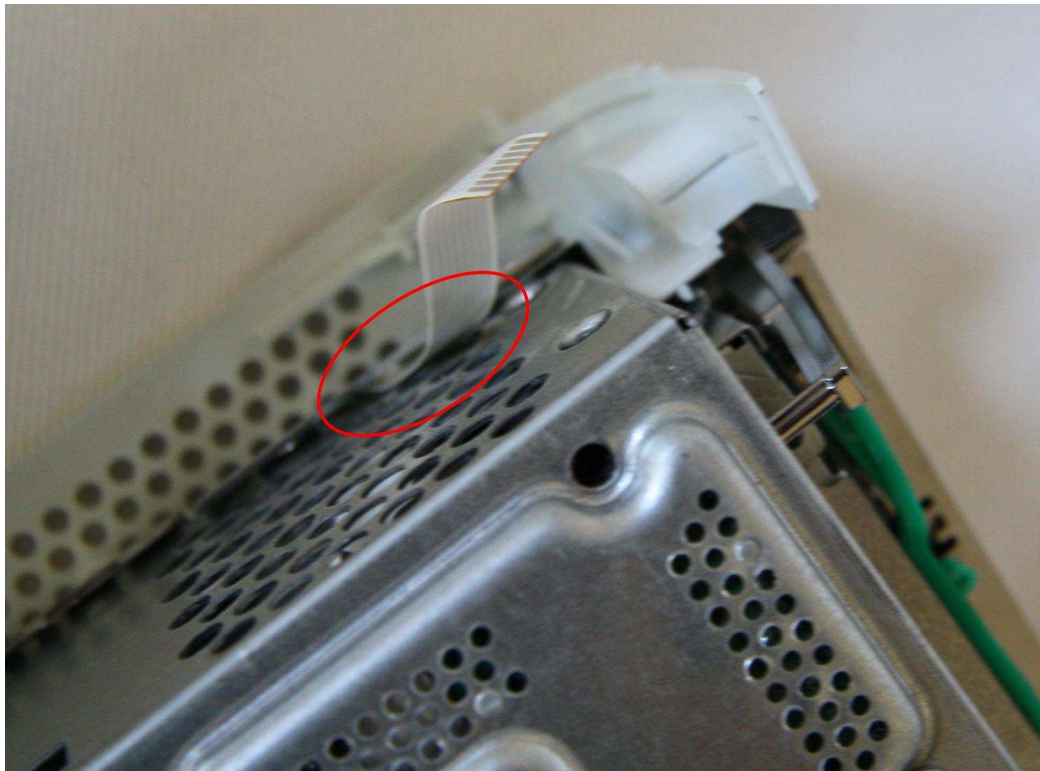
LEAVE OUT RESISTORS ONLY IF YOU ARE ON 1.03 Beta2 OR HIGHER!!! OTHERWISE YOU CAN DAMAGE YOUR 360!!!



After soldering the Cygnos360 V2 main PCB, we recommend that you put some tape on top of the places where you soldered cables. This is to avoid that you short circuit anything with the metal cage.

Put the mainboard back in the cage, attach the USB board and move to section 4 Software installation before continuing with the installation.

When closing the box, also use some duct tape to protect the flat cable from cuts of the metal cage to avoid any damage. Leave out the screw in the corner to not put too much pressure on the cable.



3.3. Installing the USB board

You are free to install the USB board where you want but we recommend the following installation:

A good place to put the USB board is in front of the HDD slot. The place is easy to reach and not hard to cut a hole into and the blue LED of the Cygnos360 V2 USB board shines through nicely.



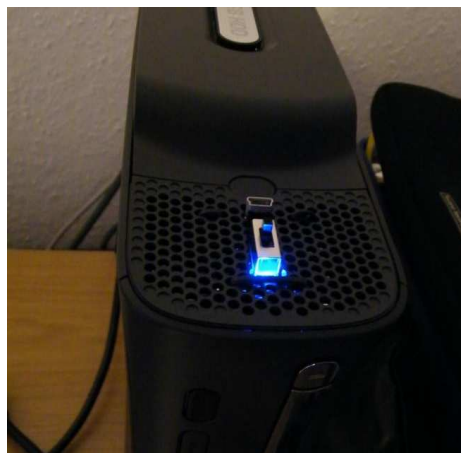
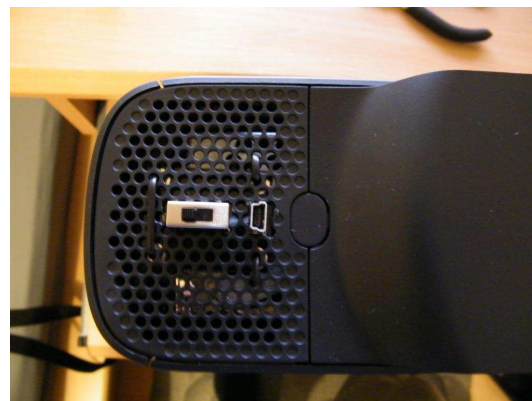
Make sure you cut the hole exactly as in the pictures here, otherwise you might hit some plastic parts on the front which will hinder you from closing the part while the Cygnos V2 USB board is installed.

Before fixing the USB board here with the M3 screws, attach the flat cable to it. Make sure you don't do it upside down! Plug the power into your Xbox360 and check if the blue LED shines when you switch to "ON". Take out the power plug again to avoid any shorting on the metal cage.

Now screw the M3 screws directly into the grid. Place the USB board onto the screws and attach the nuts from below. Now you can put the part back on the Xbox360 and you are done!



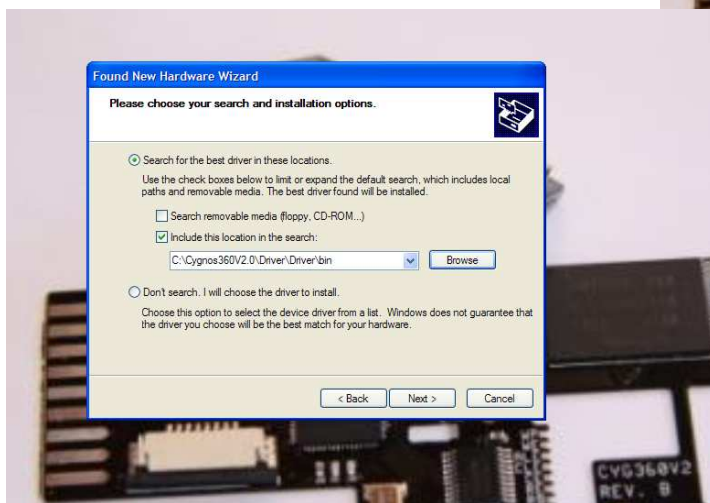
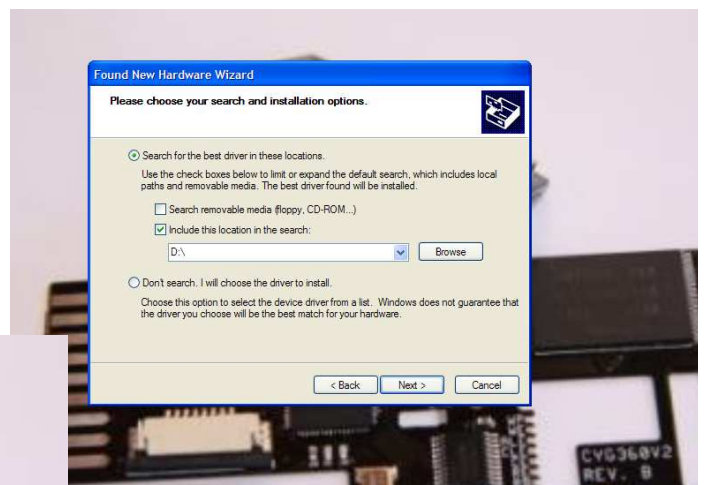
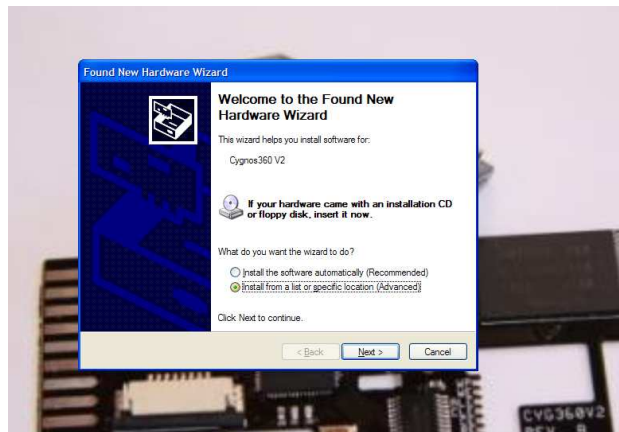
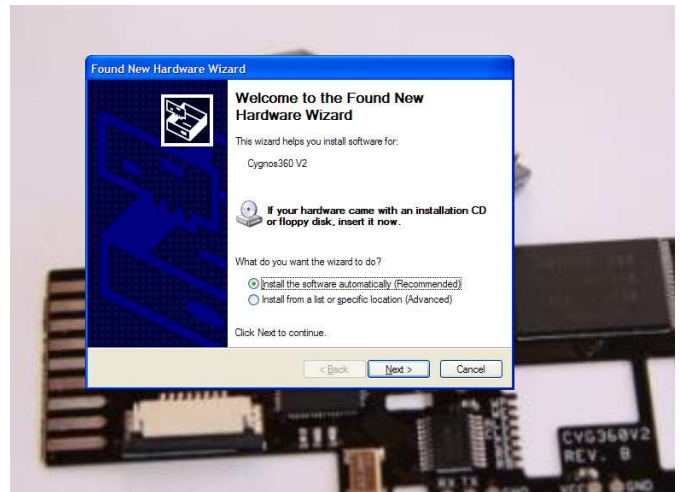
Some people are using wires instead of screws. Also looks nice if it's done well.

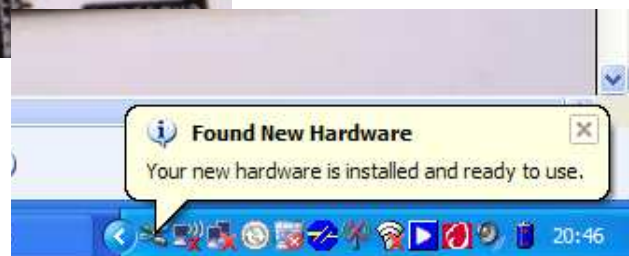
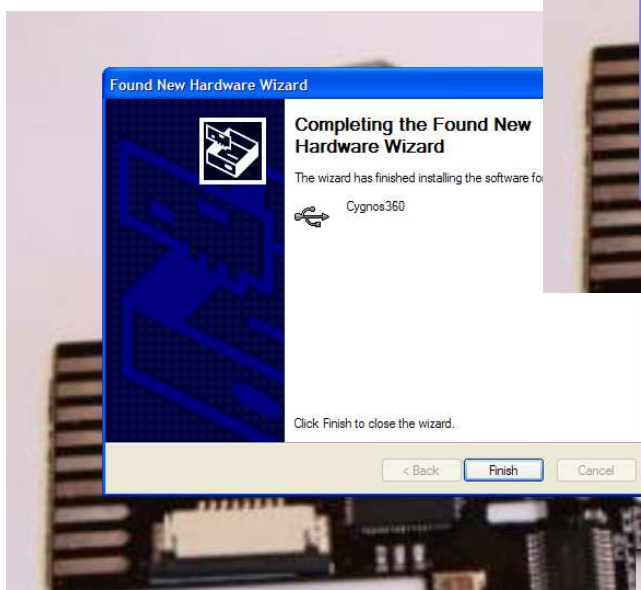
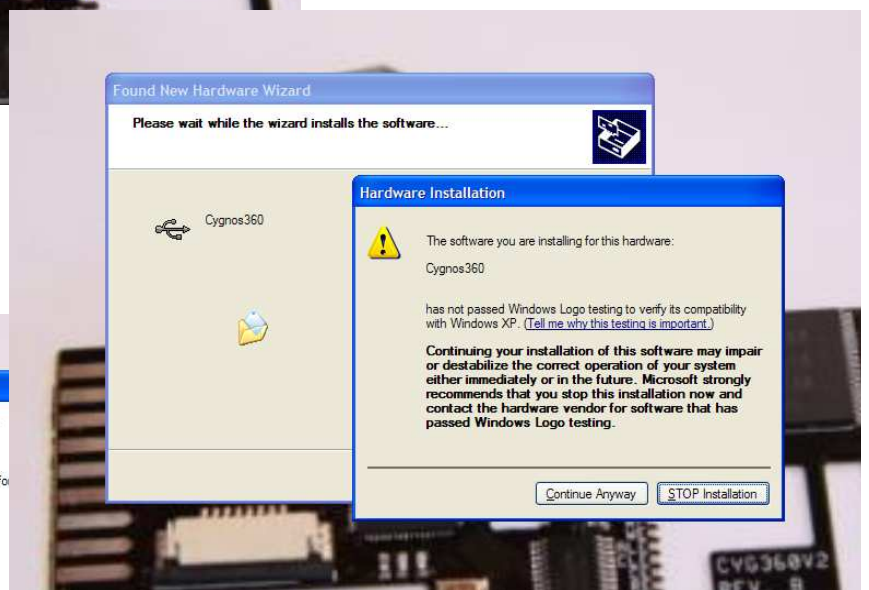
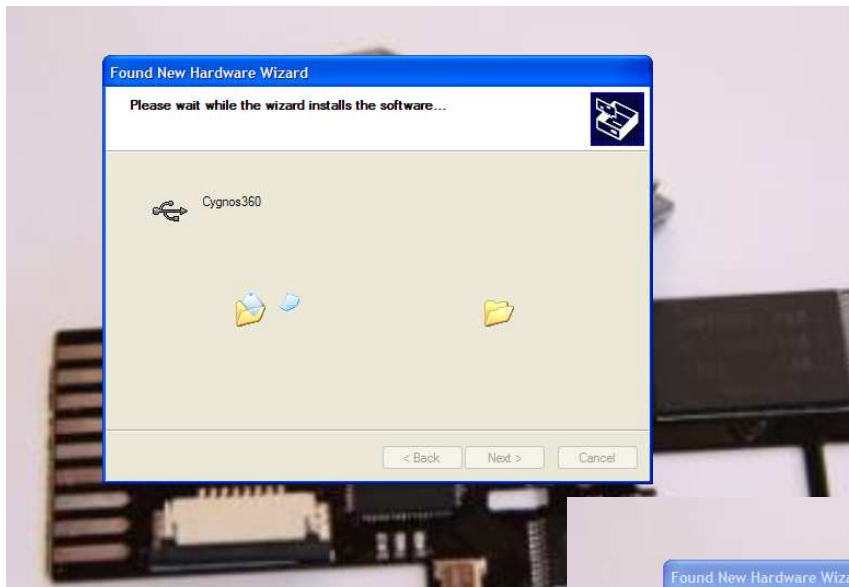


4. Software installation

Plug in the power of your Xbox360. Don't turn on the Xbox360. Switch Cygnos360 V2 to "ON" so you can verify if the LED is lit. If you switch Cygnos360 V2 to "ON" and then plug the power of the Xbox360 in, Cygnos360 V2 will go into bootloader mode and the LED will be blinking.

If everything is fine, connect Cygnos360 V2 with the USB port of your PC. You should see the following prompts. Select "install from a specific location" and point to the directory where you put the Cygnos360 V2 drivers.





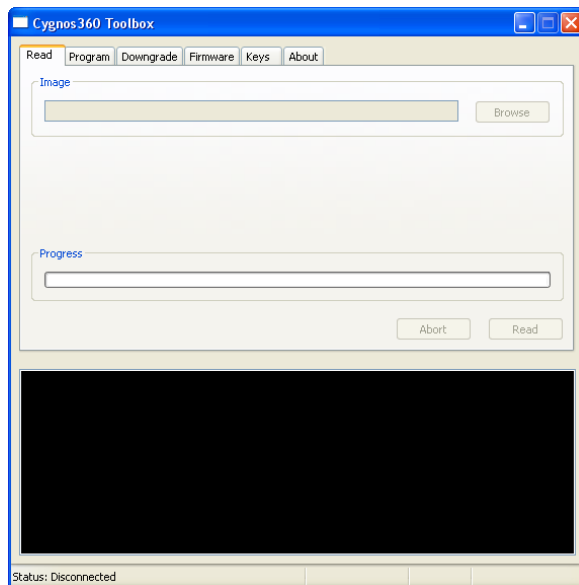
Now that you have successfully installed Cygnos360 V2 drivers on your PC, you can proceed and launch the Cygnos360 V2 Toolbox.

5. Cygnos Toolbox

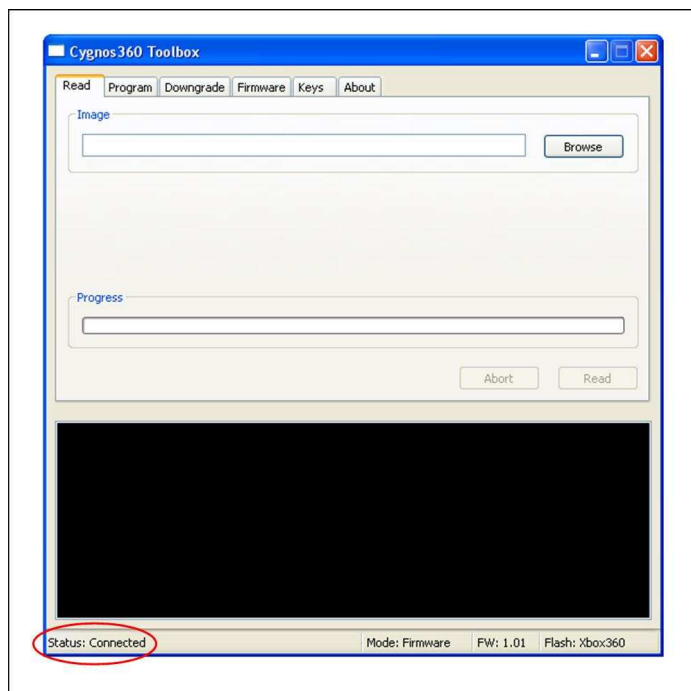
When you start the Cygnos Toolbox you will see that all the controls are marked out grey.

PLEASE CHECK THE NEWS SECTION IN THE FORUM FOR THE LATEST TOOLBOX VERSION

(<http://www.cygnos360.com/forum/index.php?board=6.0>)



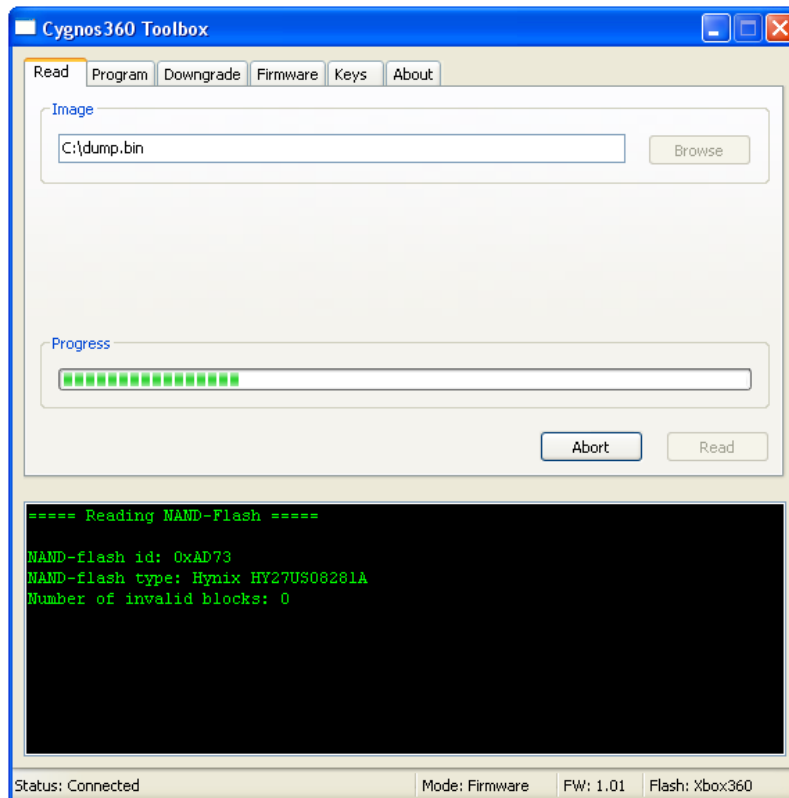
As soon as you plug in your USB cable and connect it to Cygnos360 V2 the toolbox will recognize it and show the status “connected” as well as the currently selected NAND flash. (either Cygnos NAND or Xbox360 NAND). If you flip the switch you can see that the selection of the flash memory changes. When the LED is lit in blue the toolbox should show “Cygnos NAND” if it is not lit it should be “Xbox360 NAND”.



Now that you have established the connection between the toolbox and Cygnos360 V2 you can start to read flash, program the flash or program Cygnos360 V2 with a new firmware.

Reading the NAND-Flash:

To read out the flash and dump it to your hard disk, simply go to the read tab. Select “Browse” to define the location and the name for the dump file. Make sure you have selected the correct flash that you want to read out. Either the Cygnos360 V2’s own NAND or the one on the Xbox360 mainboard. After selecting location and filename press **“Read”**. You will see a progress bar to indicate how far you are in the dump. If anything goes wrong here, please refer to the troubleshoot section below.

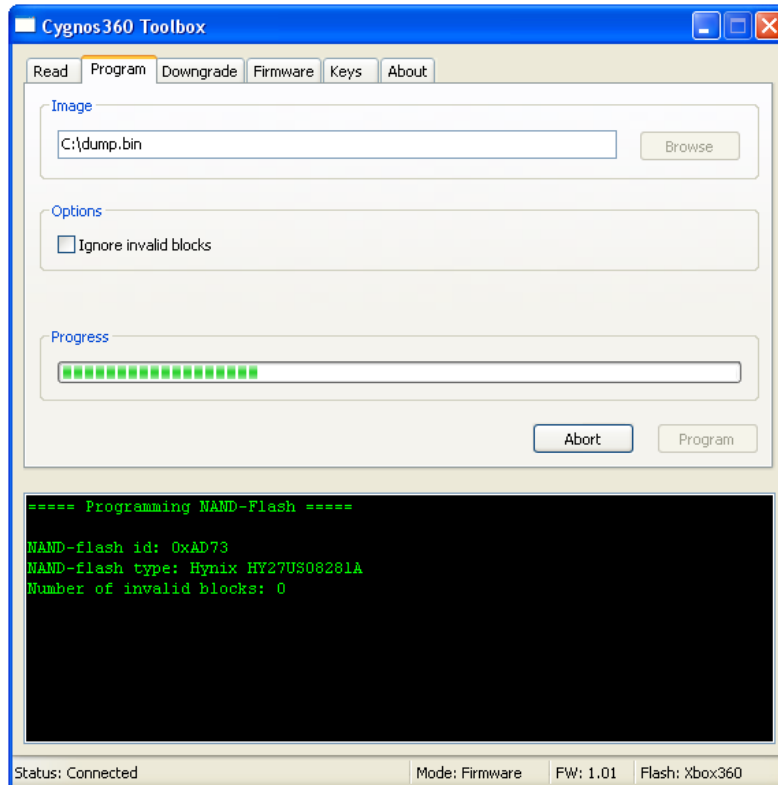


In this screenshot you are reading the flash of the onboard NAND-flash

Programming the NAND-Flash:

Ok, you are going to program something to your Xbox360 NAND or the Cygnos360 V2 NAND now. PLEASE **make sure that you have a dump of the original before you proceed**. It will save you a lot of time ;-)

Klick on “browse” to select the image file that you want to flash to the NAND. Make sure you have the correct one selected (either Cygnos360 V2 NAND or Xbox360 NAND) before you proceed. After selecting the file click on “**program**” and the toolbox will erase the flash and then program the image you have selected. The progress bar will indicate how long it will take. If anything goes wrong here, please refer to the troubleshoot section below.

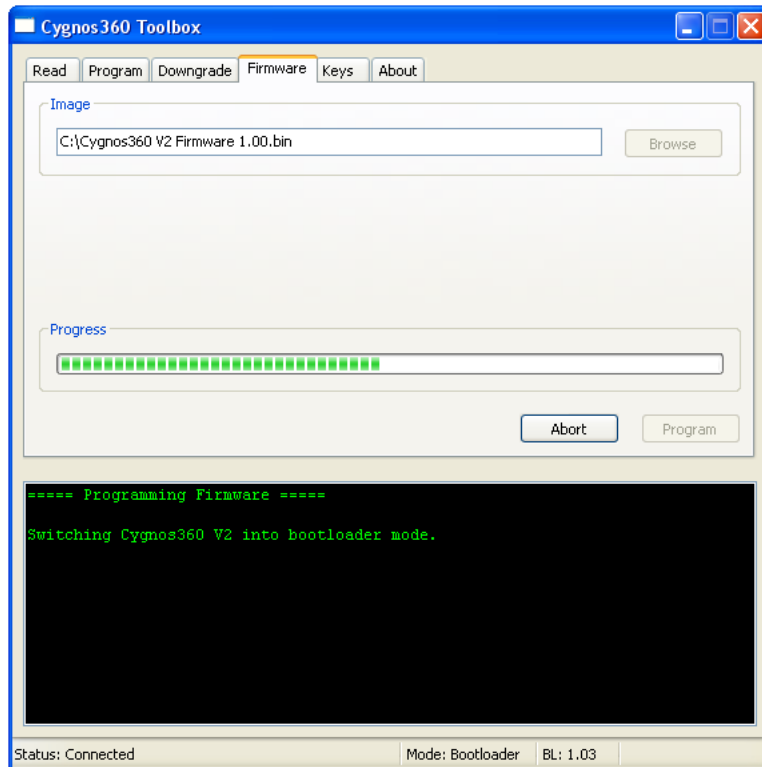


In this screenshot you are programming the flash of the onboard NAND-flash

Programming the firmware:

This process will erase the firmware of the microcontroller on the Cygnos360 V2 and replace it with a different version. Please make sure that you ONLY use firmwares that you have directly downloaded from our website.

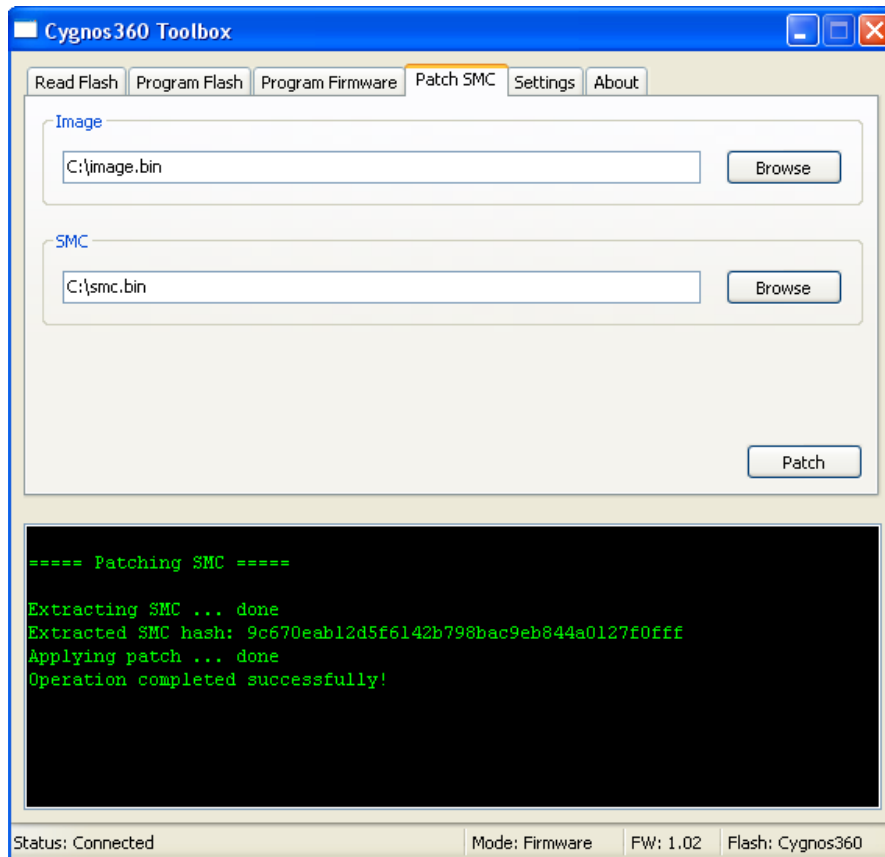
Click the **"Firmware"** tab and select "browse". Now choose the firmware image you want to flash to the Cygnos360 V2. It does not matter if you have your switch set to Cygnos360 or Xbox360. Click on **"Program"** to start the firmware update. This will go very fast, so don't wonder why you don't see much.



(in this screenshot you are programming firmware on the Cygnos360 V2 microcontroller)

Patching SMC

Load your image into the toolbox to receive the SMC patch.



Just select your original image in the "Image" box and pick an output file for the patched SMC in the "SMC" box. Once you press the "Patch" button, the SMC will be extracted from your original image, its hash checked, the patches will be applied to it and finally it will be saved

6. Building the “jtag hack” image

6.1. *Preparing the necessary tools*

1) Getting Xell

Since our microcontroller cannot handle serial communication at 115200 baud, we had to make a minor modification to XeLL. The modification will set the baud rate register of the Xbox 360 to 38400 baud, 8 data bits, no parity and one stop bit. This implies that **you have to build a custom JTAG hack image for Cygnos360 V2** with our modified XeLL. You can download the XeLL binaries and sources from here:

XeLL (Redline99) 20091205 Binaries for Cygnos360 V2.zip

Get it here:

[http://www.cygnos360.com/Downloads/XeLL%20\(Redline99\)%2020091205%20Binaries%20for%20Cygnos360%20V2.zip](http://www.cygnos360.com/Downloads/XeLL%20(Redline99)%2020091205%20Binaries%20for%20Cygnos360%20V2.zip)

(<http://www.cygnos360.com/Downloads/XeLL%2020091010%20Binaries%20for%20Cygnos360%20V2.zip>)

XeLL (Redline99) 20091205 Sources for Cygnos360 V2.zip

Get it here:

[http://www.cygnos360.com/Downloads/XeLL%20\(Redline99\)%2020091205%20Sources%20for%20Cygnos360%20V2.zip](http://www.cygnos360.com/Downloads/XeLL%20(Redline99)%2020091205%20Sources%20for%20Cygnos360%20V2.zip)

(<http://www.cygnos360.com/Downloads/XeLL%2020091010%20Sources%20for%20Cygnos360%20V2.zip>)

2) Getting imgbuild

The free60 imgbuild tool does by default not generate a full image as required by our toolbox. We therefore modified the build script accordingly. You can download the whole package from here:

imgbuild 20091010 for Cygnos360 V2.zip

Get it here:

(<http://www.cygnos360.com/Downloads/imgbuild%2020091113%20for%20Cygnos360%20V2.zip>)

3) Get and install Cygwin

Building your own image under Windows requires the installation of a Python interpreter. The simplest way is to download and install the Cygwin base system along with the "python" and "python-crypto" packages from here:

<http://www.cygwin.com/>

6.2. Build your image

Our modified imgbuild tool does not require a full binutils/gcc toolchain to generate an image. We included a precompiled payload binary instead. The SMC config block is taken from a dump of your Xbox 360. A typical command to generate an image would look like this:

Code:

```
python . /build.py original_dump.bin falcon_hack.bin xboxupd.bin xell-1f.bin smc_hacked.bin
```

- **original_dump.bin**: This is your original NAND dump. **MAKE SURE YOU KEEP THIS SAFE!**
- **xboxupd.bin**: **hypervisor and kernel 4548 extracted with wxPirs from the archive HD_DVD_10-2006.zip**
- **falcon_hack.bin**: an XeLL image suitable for your console
- **xell-1f.bin**: **contained inside the archive XeLL (Redline99) 20091205 Binaries for Cygnos360 V2.zip**
- **smc_hacked.bin**: a patched SMC created with our toolbox

7. Troubleshooting

PLEASE ALWAYS CHECK THAT YOU HAVE THE LATEST VERSION OF THE CYGNOS360 V2 FIRMWARE

(<http://www.cygnos360.com/forum/index.php?board=6.0>)

Indication: The LED is very faint

Solution: You have probably a cold solder joint at the GND solder points. Please re-solder the GND again and make sure that you have a good connection there.

Indication: The LED is blinking when I plug in the power of the xbox 360

Solution: This is a feature, not a problem ☺ If you plug in your power while the switch is set to “ON” you are entering the safemode / bootloader mode. This is used for recovery from a bad firmware. You can leave the bootloader mode by switching to “OFF” and then “ON” again.

Indication: The LED does not light up at all, no matter if the switch is at ON or OFF setting

Solution: Most likely you have not soldered the VCC connection correctly. Please re-solder it and make sure you have a good connection there.

Indication: The toolbox does not find my Cygnos360 V2.

Solution: Please make sure that you have installed the drivers correctly. Also make sure that in one of the switch settings the blue LED is shining bright. If not, check the indications above.

Indication: I get RROD when I power on the Xbox360.

Solution: Check that there is a video cable connected! Without a video cable plugged in, you will get RROD.

Indication: Toolbox gives me error 0101

Solution: It seems that you have made some bad soldering. Re-check all solder points with a magnifying glass and make sure all points are good. Try to carefully re-solder all points.