

# Orix/Twilightte Manual



**v2022.1**

**(rev 01/01/2022)**

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# **EXTRA DOCUMENTATION**

## **Rom loader and firmware twilighte board menu**

<https://raw.githubusercontent.com/orix-software/systemd/master/doc/pdf/systemd.pdf>

# **INTRODUCTION**

## **What is new (v2022.1) ?**

### **Firmware menu (Systemd Rom)**

- Displays ROM

### **Loader Menu (Systemd Rom)**

- Launched atmos tape file included osid, and some demo running on microdisc only (Ripped)

## General informations

This documentation must be use when you have installed orix version **2021.4** (see at the top of the banner on the oric at boot).

On <http://orix.oric.org>, you will have some youtube videos links showiint how to use some fonctionnality.

The board has a firmware version. This firmware can be upgarded see « Hardware and firmware upgrade » section.

The board can be upgarded too but you have to send it to upgrade the board see « Hardware and firmware upgrade » section » too.

The card has a 512KB of eeprom, and 512KB of RAM. This RAM is saved with a battery. For instance, only bank 4, 3, 2 and 1 can be switched to see others sets. It's a software limit. In the future, you will be able to displays all bank and starts any binary from theses banks. If you wants to change the set, you can use twil command. This command can switch to eeprom bank or ram bank and can switch to any set.

Some extra devices (TOM2, logitech joypad) are explained a bit in this manual, but it's not adverts, we don't ear anything:) It explains some ways to use joystick, others hardware exists in the same way)

## Features

- .tap file fast loading (with multitap files)
  - Joysticks support for a lot of games on atmos mode
  - the hobbit, defence-force (and others games) works without any patch for loading
- in system : kernel update, roms and ram update (with [orixcfg](#) binary)
- 2 DB9 Joysticks (atari)
- 512KB of EEPROM (banking mode)
- 512KB of RAM (banking mode)
- read/write from sdcard (MAX 64GB) or usb drive (mass storage)
- drag and drop from the PC to the oric : It will be available on the oric (with WIFI connexion) : It requires extra hardware with a raspberry pi zero
- fast loading : 46KB per second. A game require less than one second to load and start
- cumulus compatible with the help of an other amplibus board (not provided)

# **GETTING STARTED**

## Content

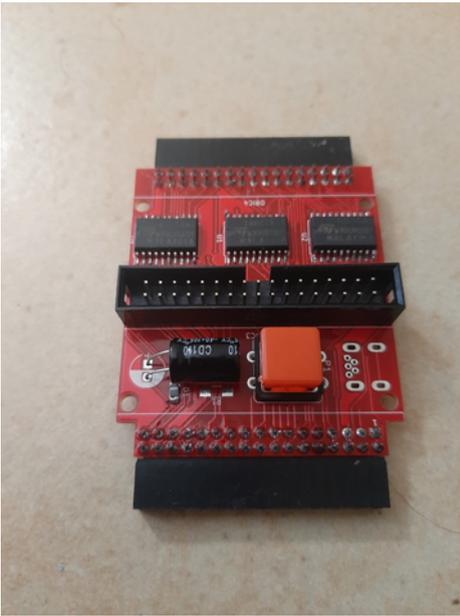


Figure1 : Expansion board and reset button



Figure 2: Twilichte board

## Physicals ports



Figure 1: 2 joysticks port : left port and right port, 1 usb port



Figure 2: sdcard port

## Hardware limits

The usb controller manage FAT32 only. Sdcard and usb key must be formatted with FAT32 filesystem. If you want to use pi zero gadget trick, you need to do a mkfs to FAT32 file system.

All tests had been done with samsung evo sdcard and sandisk usb key. A lot of sdcard works, and we did not see incompatibility with sdcard.

Sdcard controller and usb key controller can work with 32GB storage Max. But it can handle 64 GB sdcard (tested). It can handle larger sdcard/usb key reader, but only 32 and 64 GB devices was used.

## Software limits

The sdcard/usb controller can handle long filename, but Orix handles 8+3 filename only.

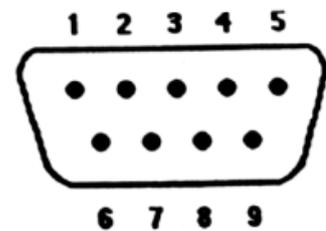
## Information about joysticks part

The left port has only 1 button. The right port has 3 buttons. The joystick pinout is atari pinout. You can use standard DB9 joystick. You can also plug « TOM2 » hardware (not provided), it can connect a usb mouse or usb joypad (wireless) to these ports. For example, logitech joypad F710 (wireless) works with TOM2.

Please note that TOM2 can only handle 2 buttons. It means that the third button can't work with TOM2 connected.

### Prise Joystick

- |                       |                       |
|-----------------------|-----------------------|
| 1 . ↑                 | 6 . Souris bouton n°1 |
| 2 . ↓                 | 7 . + 5 V.            |
| 3 . ←                 | 8 . Masse             |
| 4 . →                 | 9 . Souris bouton n°2 |
| 5 . Souris bouton n°3 |                       |



## First boot : Initialize the storage

When the card is sent, kernel is built with a default storage. In order to know which device is the default one, you can type « mount ». You can only use one device at the same time, but you can swap easily these devices from command line.

If you see « sdcards », then sdcards will be read by default. You can

change it, with a command : « twil -u », it will switch to usbdrive. If you want to have usb drive by default, you can program kernel with the tool « orixcfg ». See Orixcfg section.

Now, if you know which device you will use by default, you can install all software on it.

Plug the device on your PC (sdcard or usb key). If you have a pi zero w, you can do this with drag and drop solution from the PC.

Download sdcards.tgz from this : <http://repo.orix.oric.org/dists/official/tgz/6502/>

```
ORIX v2021 .1 CPU:6502
560 KB RAM/512 KB ROM - 2020-12-03 23:37
/#mount
rootfs on / type FAT32 /dev/sda1 <sdcard>
>#
```

It contains all software for orix there is others which are not available in this archive.

Now, use 7zip on your PC (or tar/gzip under linux), and unzip all files from this sdcart.tgz. Put all these new files in your device root folder.

Now, you can insert the device (sdcart or usbkey – or pi zero) in the twilight board and play.

## Upgrade from v2021.4 to v2022.1

If your card is below v2021.4 version, please go to annexes part at the end of this document, before you try to upgrade to v2022.1

- Download <http://repo.orix.oric.org/dists/official/tgz/6502/sdcart.tgz>
- untar/gunzip sdcart.tgz (use 7zip under windows) on your device usb or sdcart : It could require some time to copy because there is a lot of small files (tap, hlp etc)
- you can start orix on real machine, and type :

```
/#cd usr  
/usr#cd share  
/usr/share#cd carts  
/usr/share/carts#cd 2022.1
```

If you want to use usb drive for default device :

```
/usr/share/carts/2022.1#orixcfg -r -s 4 kernelus.r64
```

If you want to use sdcart for default device :

```
/usr/share/carts/2022.1#orixcfg -r -s 4 kernelsd.r64
```

- press ‘y’, and **wait until Orix reboots**

(Don't switch off the Oric at this step)

## Optional step for upgrade

Now bank displays all banks from 1 to 64. It means that you should have some strange bank signature for eeprom. Now an empty set is provided in `/usr/share/carts/2021.3` folder. With Orixcfg you can initialize your set with this cart. Don't use « -s 4 » flag for orixcfg when you want to load emptyset.

## First step : type a command

You can access to available command from many ways :

- From `/bin` folders, there is binary available on current device, ‘ls’ will show you available commands

- From banks : type « help -b5 » you will see available commands

**BANK**

## Usage

Bank command is command line tool to see which bank are loaded into EEPROM bank and RAM bank. Each bank has a « signature ». Bank allows to see theses banks.

Bank can also starts a ROM with his id. In that case, you don't need to have a rom « orix friendly » and you can start it from command line. In the current bank version, there is restriction to launch a command.

### List all bank (when ROM signature is valid)

```
/#bank
```

Bank 1 to 32 is eeprom bank and bank 33 to 64 are ram bank

### Displays all signature even when ROM is not valid

```
/#bank
```

### List all commands from a bank

```
/#help -b5
```

### Start a specific bank

```
/#bank 1
```

If you need to load a rom into a bank, you need to have a look to orixcfg binary.

# SHELL

## Flush the current command line

Ctrl+c

## Available commands

You can see available commands with this command :

```
/#help -b5
```

The command line is limited in characters. If you reach this limit, you won't be able to type the complete command line

## Known bugs

- 1) If you return to a line when your command line is bigger than 40 columns, if you try to del a chars at the previous line, you can't.
- 2) « ./ » can not be used to launch a binary

# **BASIC11**



When KEYDISPLAYED is the key displayed in key column. Please note that the key must be in **UPPERCASE**

## Load a tap file from command line

Note that MYFILE must be in **UPPERCASE**

```
/# basic11 «MYFILE
```

If MYFILE is in the oric.org database, it will launch the software with the filename MYFILE.

If basic11 command does not find MYFILE in the oric.org database, it will try to load it from /home/basic11/ folder.

## Save your program

If you start « basic11 » with no options, basic rom will starts and each csave (or cload) actions will store files in « /home/basic11 » folder

## Start basic11 menu

If you type « basic11 -g » on command line or FUNCT+G, you will have a menu with all software which have a download link on oric.org (only atmos version and when a tape file is available).

```
/#basic11 -g
```

You can use left and right letters to change to a new letter. If the letter is empty, it means that there is no available tap file for this letter.

You can use up and down link to navigate into software. If you press enter, the software will starts.



Note that not all games are working yet. Some times, chars are corrupted. If the joysticks does not works, there is two case :

- the game does not call rom routine to manage keyboard
- keyboard mapping is not done yet

You can use arrows to navigate into the menu :

- up and down to select the software
- right and left to switch to the menu letters

Some letters are empty. It means that there is no software with tape file available on oric.org for this letter

## Quit basic11

If you want to quit basic11 from interpreter command line, you can type « QUIT ». This will force to reboot to Orix (you can also use reset button)

## How the .tap file starts

If you only type « basic11 », this will start bank 6 (normal basic rom). The default folder in that case is «/home/basic11 »

If you type « basic11 » with a tape file as an argument, there is 2 cases

1. The tape file (key) is already known in oric.org website, then basic11 try to find it in its databank file (/var/cache/basic11/ folder). If the key is found, it will start the tape file located in «/usr/share/basic11/... »
2. If the key is unknown, it will try to find it in «/home/basic11 »

If the tap file is in the oric.org db file, basic11 will load the software configuration from the db software file (as joystick configuration, and the id of the rom). Basic11 load the right rom into ram bank, override the default basic11 path to the tape file folder (« *usr/share/basic11/[firstletter software]*).

It means that if you load this kind of software and you can quit the software, each file action in basic11 rom, will be performed in « *usr/share/basic11/[firstletter software]*. »

## Not working tapes (for instance)

- All Oric-1 games (but it can be fix with a new basic rom )
- Software which does not work (25), but the number can be reduced in future release.

cobra	Cobra pinball	Damsel in distress
Le diamant de l'île maudite	Durendal	HU*BERT
Hunchback	Schtroumpfs	Stanley
Them	Titan	Visif
Xenon III	Dig Dog	Elektro Storm
Kilburn Encounter	Le tresor du pirate	L'aigle d'or
Compatible (micropuce)	Volcanic demo	Clavidact
DAO Cobra Soft	CW-Morse	The Hellion
Goldoric	MARC	

## Tape with altered charset

Fire flash 3D fongus (i,f letters)	Scuba Dive	Stniccc 2000
---------------------------------------	------------	--------------

## Joysticks issues

We did keyboard/joystick mapping for a lot of games, but we did not set the keyboard mapping for all software. If you want to help us, contact us.

Some game does not work because they handle their own keyboard routine. It could be handle with hardware tricks but, it's not done.

Some others games uses special keys (SHIFT, CTRL) for direction or the first button. Theses cases are not handle yet : but it could in the future.

## Software update changelog

You need to download software.tgz in the official repo for :

- Mr wimpy added to the archive (takes effect 20/01/2021)
- Airfox added to the archive (takes effect 20/01/2021)
- Atlantid added to the archive (takes effect 20/01/2021)
- Centrale nucléaire added to the archive (takes effect 20/01/2021)
- Cobra invaders added to the archive (takes effect 20/01/2021)
- Coctail Recipies added to the archive (takes effect 20/01/2021)
- Crusher added to the archive (takes effect 20/01/2021)
- Death Driver added to the archive (takes effect 20/01/2021)
- Challenge voile added to the archive (takes effect 20/01/2021)
- Breakout 1K added to the archive (takes effect 20/01/2021)
- DAO added to the archive (takes effect 20/01/2021)
- echecs asn
- dialogue

« added to the archive » means that you need to download softwares.tgz from the repo after the displayed date to get it in the archive

**BOOTFD**

## Introduction

bootfd is a tool to boot the boot sector when a drive is connected. Insert a disk and type :

```
/#bootfd
```

The binary is located to bin folder. It will load microdisc rom and start it. If the binary displays that it does not found microdis.rom, then place microdis.rom file in the right folder.

If you have firmware 1, you will be able to load « blake's 7 ». If you have firmware 2, all sedoric .dsk should start.

For instance, only Space99 does not work, it stops after intro.

# CKSUM

## Usage

Cksum is a tool to compute a checksum of a file and displays its size.

```
/usr/share/basic11#ls
basicd0.rom basicd1.rom
basicd2.rom basicd0.rom basicd1.rom
basicd2.rom basicus.rom basicus0.rom
basicus1.rom basicus2.rom
/usr/share/basic11#cksum basicus2.rom
2153917165 16384 basicus2.rom
/usr/share/basic11#
```

**DE**

## Usage

It displays available blocks on current device

```
ORIX v2021.2 CPU:6502
560 KB RAM/512 KB ROM - 2021-04-25 00:38
/#df -h
512-blocks Used Avail. Use% Mounted on
168430090 293831626 xxx /dev/sda1
/#
```

# **DSK-UTIL**

## Introduction

This tool is useful to extract files from dsk file. You can extract it, and uses command line tool to use it. For example, if you extract a basic program (.bas in FTDOS .dsk file), you can see it with « list » binary. If it's a .hrs/.hir file, you can read it with viewhrs file.

You can create a «*/home/sedoric/* » folder and adds .dsk sedoric files in this folder

Some .dsk files are imported in sdcad.tgz. For sedoric, you can have a look to «*/usr/share/sedoric/* » and for ftdos : «*/usr/share/ftdos* »

## List files from .dsk (sedoric)

```
/home/sedoric# dsk-util -s ls sed.dsk
```

## Extract a file from sedoric .dsk file

```
/home/sedoric# dsk-util -s e sed.dsk myfile.hrs
```

## Extract only .hrs files from sedoric .dsk file

```
/home/sedoric# dsk-util -s e sed.dsk *.hrs
```

# FORTH

## Use forth

You can use forth language. It works the same ways than Tele forth (it's teleforth but it write file on sdcard/usbdrive).

You can download Teleforth langage in order to see how to program in forth.

When you type « forth » forth starts with the current folder directory.

If you were in /, forth will load and save file in this folder.

In others cases, you can create a forth folder in home and goes into it in forth for example :

```
/#mkdir home  
/#cd home  
/#mkdir forth  
/#forth
```

if you type « cd forth» in forth environnement, all files actions will be perform in « /home/forth »

# HEXDUMP



# IOPORTS

## **Introduction**

Displays I/O address of the board

**LS**

## Introduction

« ls » list all the file in the current folder. Token are supported (\*,?) ex : « ls ?e.tap » will list all files with a 'e' in the second letter

### list all the files in the current folder

```
#!/s
```

### List all \*.tap files

```
#!/s *.tap
```

### List size and datetime of the file

```
#!/s -l
```

# LSCPU

## Introduction

Displays cpu info. It detects : 6502, 65c02 and 65816

# **MONITOR**

## Usage

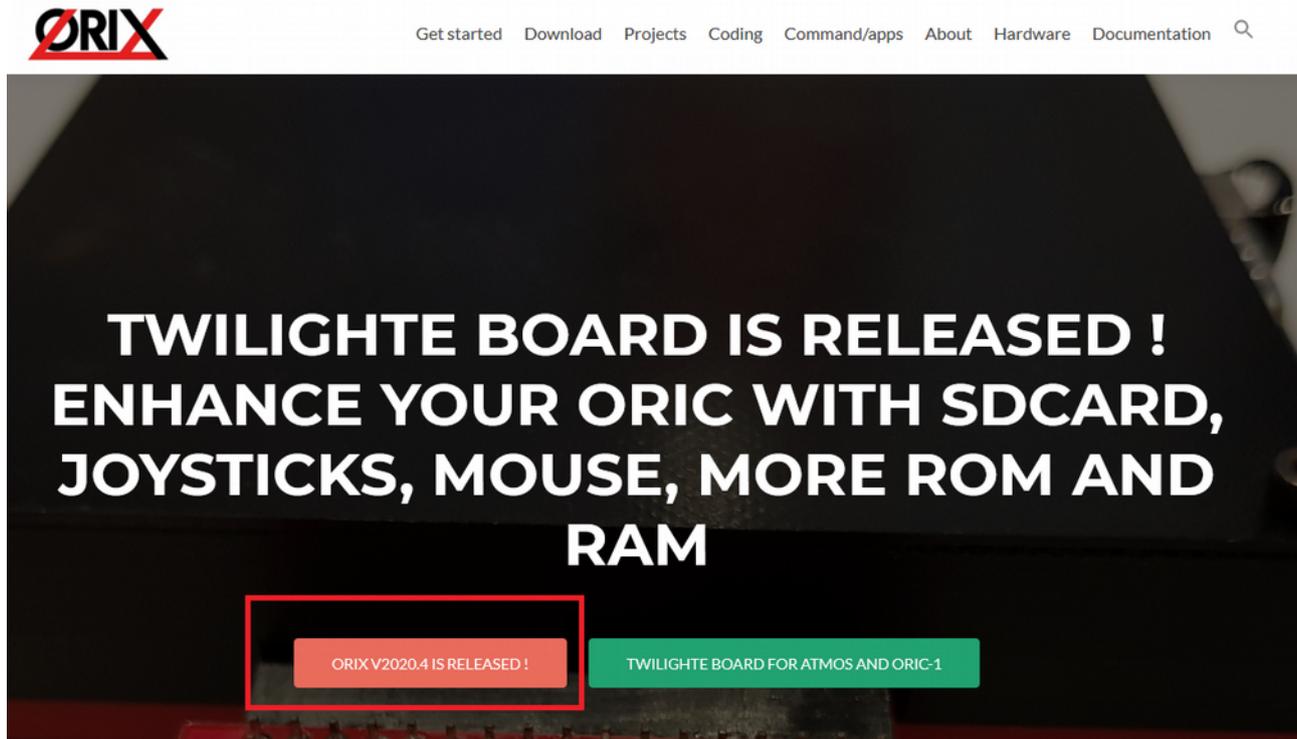
Monitor is a rom which can displays a monitor. It's teleass without assembler part.

# **ORIXCFG**

## Update kernel, shell : orixcfg

When a new released is done, you can update the eeprom with the new kernel and new roms.

If you want to know if you need to update the kernel, you can compare your current version, and the last release version. You can go to <http://orix.oric.org> You need to have a look to this release below :



If on your Oric screen, it's not the same value, you can update it. The sequence of the Orix release is Year.X. There is 4 releases a year, and each one must be done until you reach the final one, in order to avoid some case. If your version is v2020.3 and the last available version is v2021.4. You need to update to v2020.4, then v2021.1, v2021.2, v2021.3, v2021.4.

It's maybe possible to jump to version v2021.4, but it's at your own risk because there is a « chance » that some kernel calls changed, and orixcfg could do wrong step.

## Update kernel, shell

When you need to update kernel, you can update it with orixcfg. You just need to define set 4 on the command line. This step is very **dangerous** if you don't load the right file. There is no verification and any file on the command line will be load in the kernel set. Usually, kernel set file is named kernxxxx.r64.

If you did something wrong on this step, you won't be able to start orix again. It means that you will need to remove eeprom from the card and program it with a eeprom programmer

This next command will load kernel.r64 to kernel set. Please wait until Orix reboots. If you have a kernel 2020.3 and you need to load a kernel 2021,1, you will need to load previous kernel set before the update of 2021.1.

.r64 extension means that it's a 64KB set. It's usually used to define that the file contains 4 roms of 16KB.

Please note that we provide 2 kernels version. One named « kernelsd.r64 » which means that the default device will be sdcard, and the other one « kernelus.r64 » which means that default device will be « usb » (usbkey). If you load the wrong kernel at this step, you can use twil command to switch to the right device, and you can start again kernel update with the right file (kernelsd.r64 or kernelus.r64 depending of your configuration).

```
/#orixcfg -r -s 4 kernelsd.r64
```

## Load a ROM into a ram slot

Space between values and switches are not optionnal, orixcfg needs theses spaces

```
/#orixcfg -b XX -l myrom.rom
```

This command will load myrom.rom (in the current path), in RAM bank XX

Older usage as : orixcfg -r -s X -b Y myrom.rom is no longer included in orixcfg since orixcfg v2021.3

## Load a set of ROM into ROM slot

```
/#orixcfg -r -s 0 myrom.r64
```

This command will load myrom.r64 (in the current path), in set 0. For instance, you can not load one bank, you need to load 64KB set.

## Clear bank ram or initialize it

Ram bank are not initialized when the board is tested. If you have garbage on screen when you uses bank (after you used twil -w). You have to clear all ram bank (ram bank are battery saved).

If you want to clear bank 4 of the set 0, you can do this command. You need to do this command for each bank of each set. For instance, there is no switch to clear all the ram with one command.

```
/#orixcfg -w -s 0 -b 4 -c
```

## Flush all ram bank

```
/#orixcfg -w -f
```

# **OSID MUSIC**

## How to play osid music ?

You need to check if you have twilight board firmware 2 :

```
/#twil -f
```

If it returns 2 or greater, you can download some osid files :

[https://www.oric.org/software/osid\\_music-2534.html](https://www.oric.org/software/osid_music-2534.html)

Place all .tap files in /home/basic11

And launch :

```
/#basic11
```

Load patch to avoid to load sedoric routines (in basic command line)

```
CLOAD«OSID
```

And then load the osid file you want :

```
CLOAD«OSNEVER
```

**PWD**

# Introduction

Displays current PWD

# SHA1

## Usage

Sha1 is a tool to displays a string into sha1 encoding

# **STORMLORD**

## Introduction

Stormlord is Stormlord game port to Orix. You can use joysticks to plays to this game.

Only one joystick port is working on this version

# **SYSTEMD**

Systemd is a rom which can load another ROM in ram slot. When you type systemd, it will reads /etc/systemd/banks and will load rom declared in this file sequencialy. It means that the first rom will be load in bank id 33, the second one in bank id 34.

*This roms can be used in a eeprom bank, you can load it with orixcfg*

You can set roms in « /etc/systemd/banks » as :

*[MYROMNAME1]*

*path=/usr/share/rom/my.rom*

*[MYROMNAME2]*

*path=/usr/share/rom/my2.rom*

**TWIL**

## Introduction

Twil command can displays the current firmware of twilightte card, and can swap root folder to usbkey or sdcard.

Twil command can also swap bank 4, 3, 2 and to eeprom set or ram set.

## Displays Twilightte board firmware

```
/#twil -f
```

## Swap to sdcard for root file system

```
/#twil -d
```

## Swap to usb key for root file system

```
/#twil -u
```

# **PI ZERO CONNECTION FOR DRAG AND DROP**

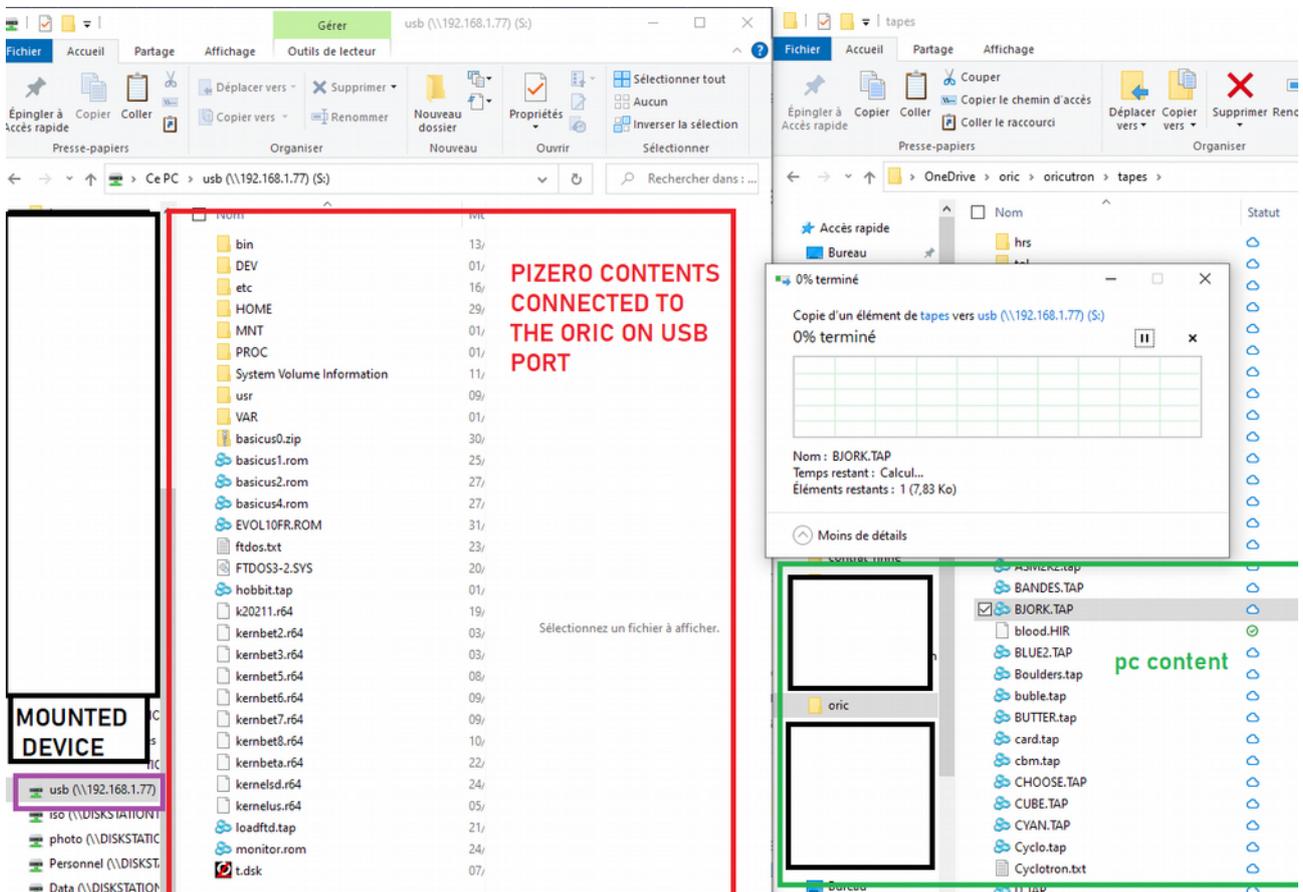
# Drag and drop or file copy to the pi zero

If you have a pi zero, you can use it to simulate a usb key with wifi connectivity for drag and drop.

You need to follow this documentation : <http://orix.oric.org/drag-and-drop-files-from-pc-to-the-card/>

Please note that you must connect pi to usb twilighte port on his usb port (not the psu port). Also note that pi consumes power and if you use a psu lower than 2 A, you should have some hardware errors

Some usb cable are only for charge, it means that it won't work with the card and pi zero, because it missed data wires



# **CUMULUS COMPATIBILITY**

## How to connect a cumulus

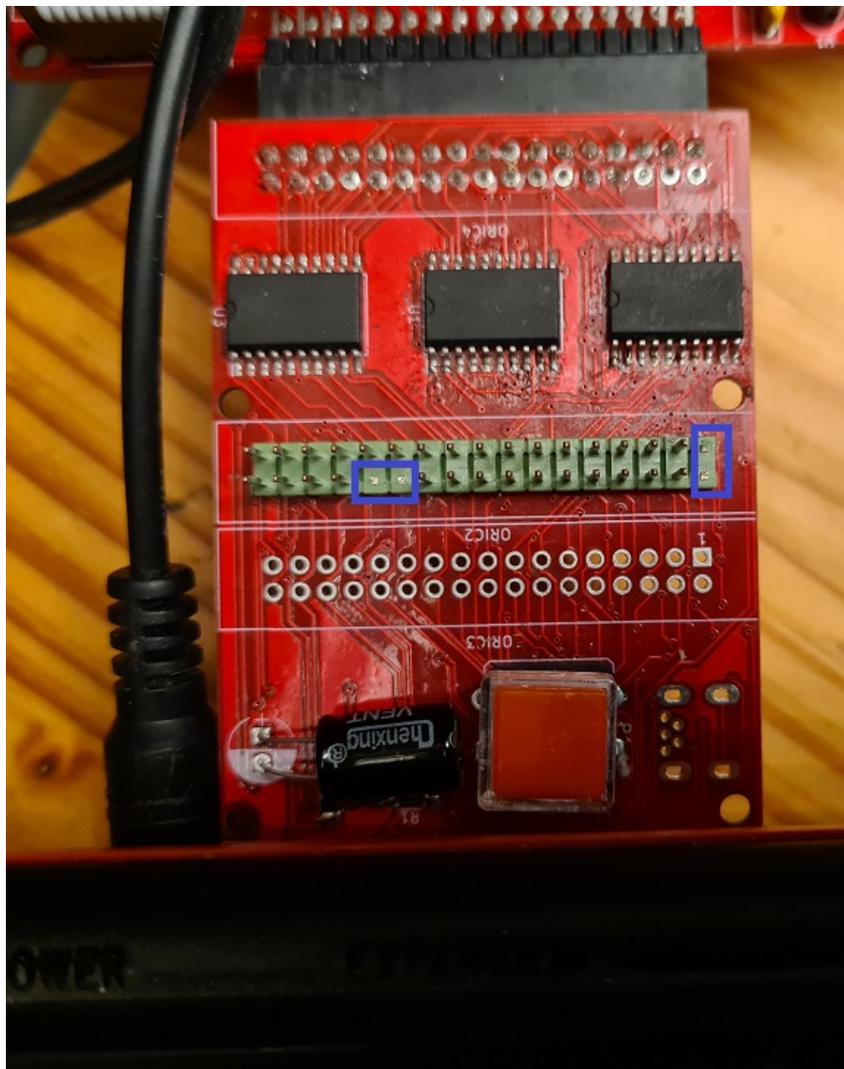
On the current firmware (Firmware 1) : and current hardware (board version v0.65), we have to do some hacks to have cumulus working. But, you will only launch two diskfile. Anyway, you can access to drive with no restriction, except bank switching. See « Hardware and firmware upgrade », if you want to avoid theses modifications

In firmware 1, and with board modification, there is only two working disk : Blake's 7 and VIP2015.

Please, test your cumulus on the oric connected to the board. If it does not work on your Oric, it won't work too with card plugged !

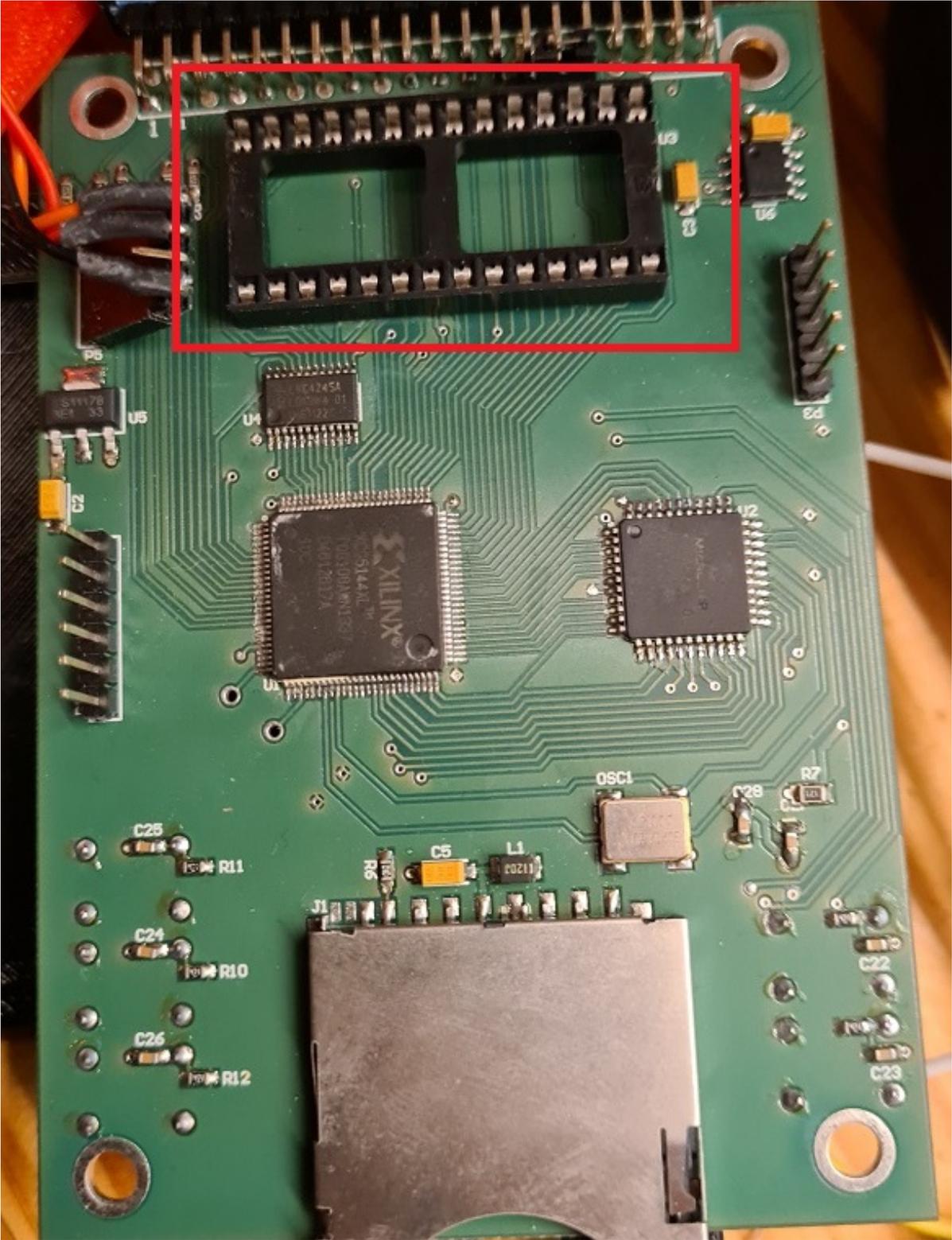
If you want to use cumulus, you have to :

- 1) cut 4 pins on daughter card (ROMDIS, MAP, A14, A15)

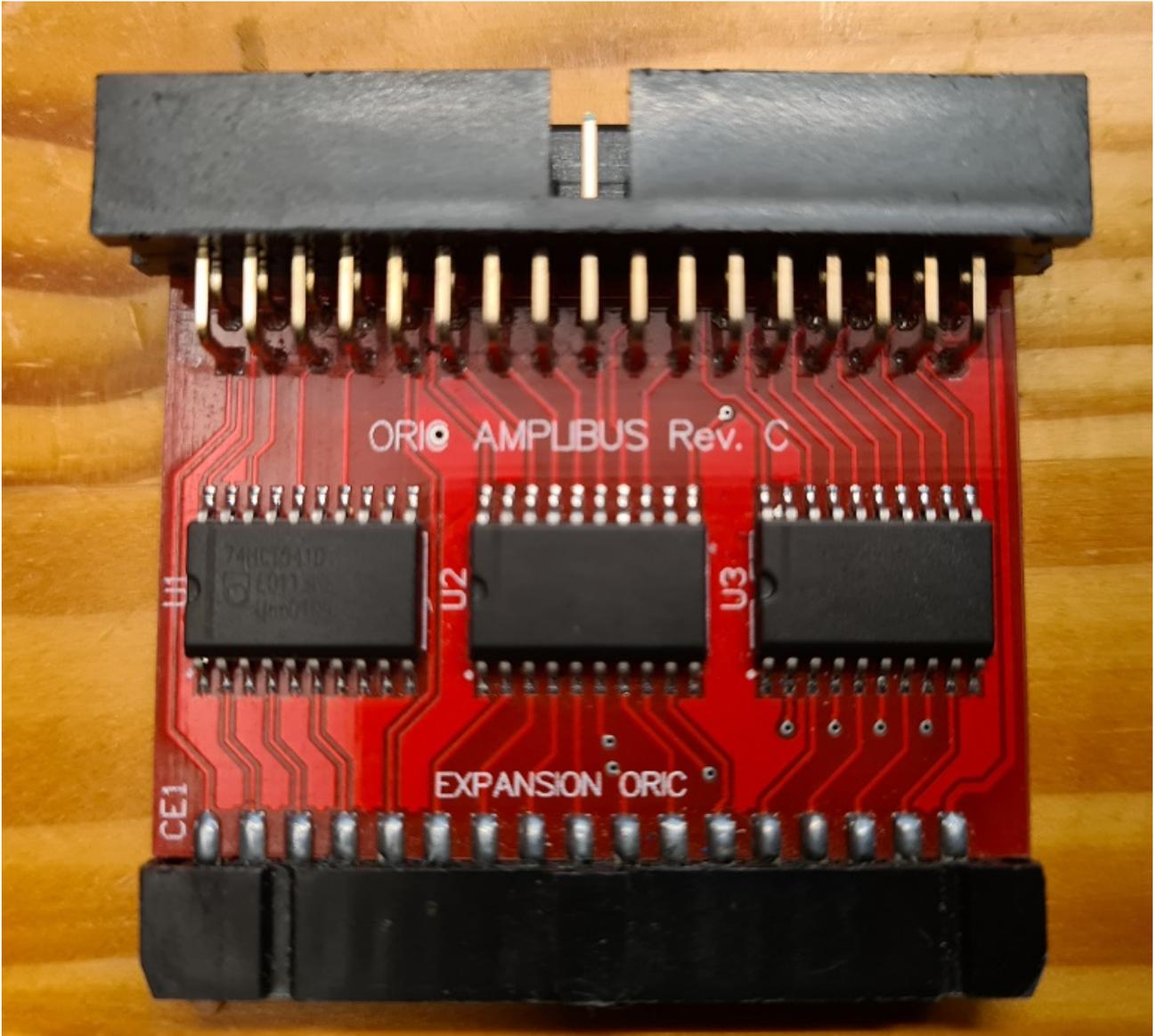


- 2) remove eprom from cumulus

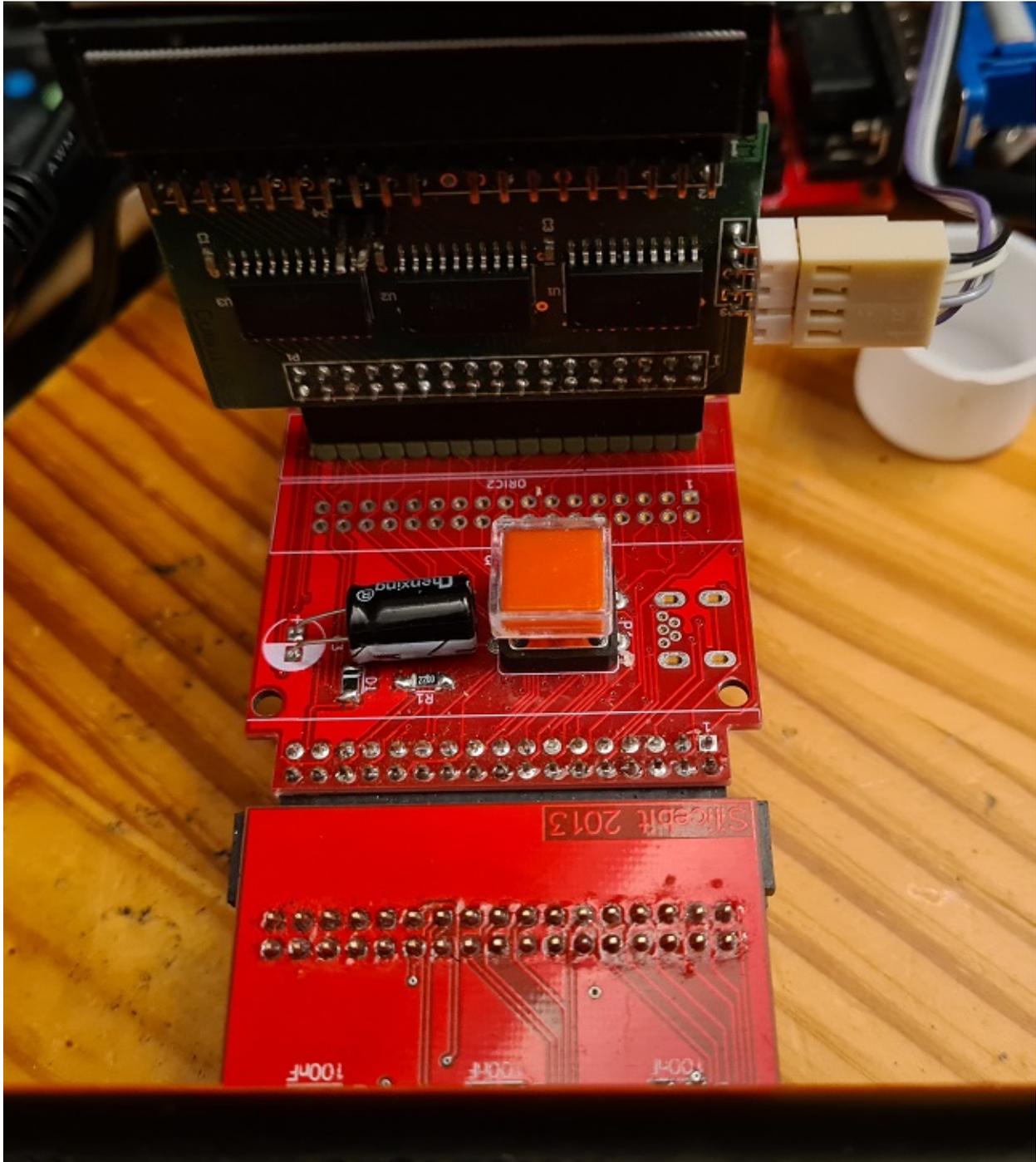




3) add another amplibus before twilighte daughter board



4) Connect all cards to the oric



## Twilghte board firmware compatibility

Only firmware 2 is available to use boot sector to start Microdisc disk.

# **HARDWARE AND FIRMWARE UPGRADE**

## **Firmware upgrade**

There is only one firmware available. The version 2 is in development.

### **First method : For those who have programmers and some hardware tool**

But, when it will be released, you could update the firmware with :

- 1) a plcc extractor
- 2) altera software (Quartys v13)
- 3) a Jtag programmer
- 4) solder the jtag connector
- 5) get .pof file

### **Second method : send the card to the author of the card (me)**

In that case, fimware upgrade will be done, and you could ask to upgrade to new board version to add (sometimes new fonctionnality)

# **TROUBLE SHOOTING**

## **'ls' displays garbage on screen**

Insert your sdcard or your usb drive into your PC. You should have strange « file » on the sdcard : remove these files.

## **Impossible to mount a usb key or a sdcard**

The sdcard must be in FAT32 format

## **Screen garbage when i use bank**

If you have screen garbage when you switched to ram bank before with « twil -w »

It means that ram bank are not initialized. See orixcfg section to fix it

## **Pi zero always reboots**

Check your PSU. If you have a 2A PSU and you have a pi zero, cumulus and TOM2 connected, you should reach the PSU limits. If you can't get another PSU, you can disable bluetooth of you pi zero, or you can also downclock from 1Ghz to 700mhz for example.

You can also use a 3A PSU. In the future, it will be possible to add another PSU on the board.

## **When i start Orix, filesystem is unstable or displays usb controller not found**

If you have pi zero connected, it could answer to the controller partial information or could hang the usb controller because controller does not understand usb data when it sends information to usb port.

You have to wait a bit. If you want to verify this, you can switch off the oric (and then the pi zero), switch on the oric with Orix, and type 'debug', if you have another value than #AA for ch376 check exists, it's the problem, if you do 'debug' another value will be displayed but not #AA. In fact, when pi zero boot, usb controller is unstable.

## **« I/O Error » is displayed**

You can reach this message in some case :

1. device (sdcard or usbdrive is missing)
2. after a launch of « df » command : There is an issue, the controller is in incorrect state after this command. It's a bug

You can usually fix it by launching « ls » twice. Because « ls » handles a reset order to the usb controller when it does not produce the correct answer. It means that if USB controller is not working well, ls displays the error message and will produce a reset command to the controller. If you launch ls again, it will work.

## **The oric does not work : black screen**

If you have a pi zero connected on usb port, unplug it. Boot the oric, and now insert pi zero into usb port

## **Kernel panic**

When kernel can't solve a « free memory kernel call» in a binary, it could produce a kernel panic. In that case, you need to do a reset. There is a bug in kernel 2021.1 which could produce this error. It will be corrected as soon as possible.

## **A folder is displayed on my PC but not under my Oric**

Sometimes sdcard or usbkey has bad format for the usb controler and it can reads some content. Format the usb key or sdcard and install again all files. Or try another usb key/sdcard

## **I have strange behavior when un do csave or cload on basic ROM : It's always the same file event i cload another content**

Sometimes sdcard or usbkey has bad format for the usb controler and it can reads some content. Format the usb key or sdcard and install again all files. Or try another usb key/sdcard

## Q&A

## **I want to change the current directory**

See « cd » command

## **I want to see which bank are loaded into ROM and RAM**

See «bank» section

## **I want to read a .dsk file**

You can only extract files from a .dsk file (see « dsk-util »)

If you have a cumulus board, you can use « bootfd » and connect your cumulus on expansion board « see how to connect a cumulus section »

## **I can't type anything in basic rom (« basic11 » command)**

There is a firmware bug on some board which generate a false state for the third button of a joystick. The easier step to avoid this, is to connect a joystick to the left port on the board.

The issue can be fixed by upgrading firmware board (it needs to open the box and program the firmware with Jtag port)

# **ANNEXES**

## Firmware version

Version	Features	Known bugs
1	RAM/ROM switch, ROM programming, joysticks, usb controler	N/A
2	Start all sedoric disks from cumulus	N/A

## Upgrade from older version

### Upgrade from v2021.3 to v2021.4

If your card is below v2021.3 version, please go to annexes part at the end of this document, before you try to upgrade to v2021.4

- Download <http://repo.orix.oric.org/dists/official/tgz/6502/sdcard.tgz>
- untar/gunzip sdcard.tgz (use 7zip under windows) on your device usb or sdcard : It could require some time to copy because there is a lot of small files (tap, hlp etc)
- you can start orix on real machine, and type :

```
/#cd usr  
/usr#cd share  
/usr/share#cd carts  
/usr/share/carts#cd 2021.4
```

If you want to use usb drive for default device :

```
/usr/share/carts/2021.4#orixcfg -r -s 4 kernelus.r64
```

If you want to use sdcard for default device :

```
/usr/share/carts/2021.4#orixcfg -r -s 4 kernelsd.r64
```

- press 'y', and **wait until Orix reboots**

(Don't switch off the Oric at this step)

### Upgrade from v2021.2 to v2021.3

You need to unzip/untar orixcfg new version here :  
<http://repo.orix.oric.org/dists/2021.3/tgz/6502/orixcfg.tgz>

- Download <http://repo.orix.oric.org/dists/official/tgz/6502/sdcard.tgz> or <http://repo.orix.oric.org/dists/2021.3/tgz/6502/cardridge.tgz>
- untar/gunzip sdcard.tgz (use 7zip under windows) on your device usb or sdcard : It could require some time to copy because there is a lot of small files (tap, hlp etc)
- you can start orix on real machine, and type :

```
/#cd usr
/usr#cd share
/usr/share#cd carts
/usr/share/carts#cd 2021.3
```

If you want to use usb drive for default device :

```
/usr/share/carts/2021.3#orixcfg -r -s 4 kernelus.r64
```

If you want to use sdcard for default device :

```
/usr/share/carts/2021.3#orixcfg -r -s 4 kernelsd.r64
```

- press ‘y’, and **wait until Orix reboots**

(Don't switch off the Oric at this step)

## Optionnal step for upgrade

Now bank displays all banks from 1 to 64. It means that you should have some strange bank signature for eeprom. Now an empty set is provided in `/usr/share/carts/2021.3` folder. With `Orixcfg` you can initialize your set with this cart. Don't use « -s 4 » flag for `orixcfg` when you want to load emptyset.

## Upgrade from v2021.1 to v2021.2

If your card is below v2021.1 version, please go to annexes part at the end of this document, before you try to upgrade to v2021.2

- Download <http://repo.orix.oric.org/dists/official/tgz/6502/sdcard.tgz>
- untar/gunzip sdcard.tgz (use 7zip under windows) on your device usb or sdcard : It could require some time to copy because there is a lot of small files (tap, hlp etc)
- you can start orix on real machine, and type :

```
/#cd usr
/usr#cd share
/usr/share#cd carts
/usr/share/carts#cd 2021.2
```

If you want to use usb drive for default device :

```
/usr/share/carts/2021.2#orixcfg -r -s 4 kernelus.r64
```

If you want to use sdcard for default device :

```
/usr/share/carts/2021.2#orixcfg -r -s 4 kernelsd.r64
```

- press ‘y’, and **wait until Orix reboots**

(Don’t switch off the Oric at this step)

## From 2020.4 to 2021.1

Download : <http://repo.orix.oric.org/dists/2021.1/tgz/6502/carts.zip>

Unzip it on your device (sdcard/usbkey)

- you can start orix on real machine, and type :

```
/#cd usr  
/usr#cd share  
/usr/share#cd carts  
/usr/share/carts#cd 2021.1
```

If you want to use usb drive for default device :

```
/usr/share/carts/2021.1#orixcfg -r -s 4 kernelus.r64
```

If you want to use sdcard for default device :

```
/usr/share/carts/2021.1#orixcfg -r -s 4 kernelsd.r64
```

- press ‘y’, and **wait until Orix reboots**

(Don’t switch off the Oric at this step)