

SuperVidel

Installation manual

revision 1

History of changes

Revision	Date	Changed
1	12-04-30	First release

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0 Foreword

Thank you for buying the SuperVidel!

It has more or less been a work in progress since before the CT60 was released, but a full time project since 2008. We who have developed it hope that you will be as pleased using it as we are.

Even though the SuperVidel is fully usable in its current state we have a list of stuff that may be added or optimized in the VHDL and software code after delivery. Some of those features can be found in italics on the SuperVidel project page at nature.atari.org.

We who have worked on the SuperVidel are:

Henrik Gildå - Hardware design, VHDL code, SW tools

Torbjörn Gildå - VHDL code, Hardware design, SW tools

Peter Persson – XBIOS, VDI, NVDI drivers and patches

This manual first discusses preparations that you need to do depending on which type of casing you have. Then the general installation chapter gives you the option of better Videl compatibility by soldering two wires on the motherboard. Also discussed is complications made by using more boards on the CT60 than the SuperVidel in a standard falcon case.

Some pictures will be replaced by real photos when the real hardware has been produced.

1 Installation preparations

Turn the power OFF and disconnect the PSU power cable from the wall socket, before starting any work. There is otherwise power on the +5VSB line even though the computer is off.

How to install the SuperVidel depends on what type of falcon case you have and if you have other boards to fit on the CT60 like an EtherNat or CTPCI (the Svethlana doesn't count here). Consider these 3 cases:

1. Tower casing. Go to [1.1 Tower or other large casing](#)
2. Original falcon casing with only a SuperVidel (+optional Svethlana). Go to [1.2 Standard falcon case with only a Supervidel on the CT60](#)
3. Original falcon casing with SuperVidel + either an EtherNat or a CTPCI (+optional Svethlana). Go to [1.3 Standard falcon case with the Supervidel and one other board](#)

1.1 Tower or other large casing

This casing is the easiest to install in. You can have several boards on top of the CT60 as long as the casing allows it. Note that the CT60 bus will get more delays and noise (signal reflections) the more boards you add, so you can't run the 68060-clock as fast as before.

No other special considerations apply, so go to [2 General installation](#).

1.2 Standard falcon case with only a Supervidel on the CT60

This case is almost as easy as the Tower casing. You can have an optional Svethlana ethernet board on the SuperVidel too. But you need to do this:

1.2.1 Remove a screw from the internal keyboard

If you intend to keep the original keyboard inside the original falcon case, you need to remove a screw from under the keyboard and put insulating tape on a bridging pin. Otherwise they may short circuit some pins on the SuperVidel. See the red rings in the image below.



becomes



Then go to [2 General installation](#).

1.3 Standard falcon case with the SuperVidel and one other board

If you intend to put the SuperVidel on top of a CTPCI or put an EtherNat on top of the SuperVidel (with no CTPCI below it) you need to follow these instructions.

Note the following:

1. Only two boards fit on the CT60. A third board will hit the ceiling of the standard falcon case.
2. If mounting the CTPCI requires putting extra connector sockets between the CT60 and the CTPCI, you **can not** fit a SuperVidel also on top of the CTPCI, since it will hit the ceiling.
3. We have not tested if a SuperVidel + CTPCI **and its PCI slots** actually fit inside a standard falcon case. You may have to remove the floppy drive to accomplish this.
4. See the [2.3 CTCM](#) section for a discussion of possible height problems with the CTCM.

The biggest work in this configuration, however, is that you need to fit the CT60 Extender boards below the CT60. **See the separate Extender boards installation manual for how to fit the Extender boards to your CT60.** It can be found on nature.atari.org. Then go back here and read [2 General installation](#).

2 General installation

These steps apply to all kinds of falcon cases.

2.1 Motherboard clocks

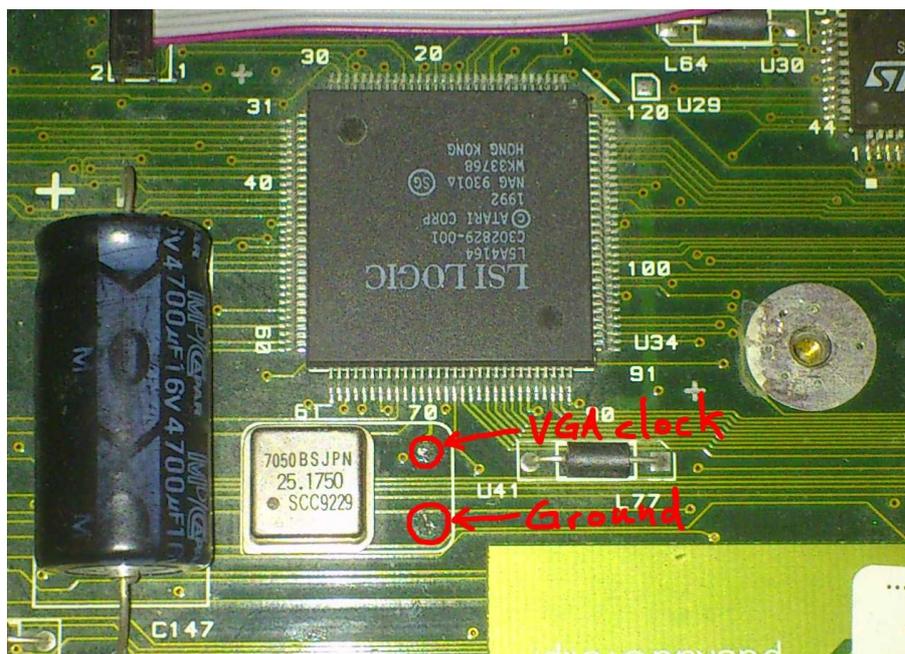
The SuperVidel mimics the Videl output by generating a video clock that differs by only a few ppm in frequency to the real 25.175MHz VGA clock on the motherboard. But since they can never be exactly the same, an emulated Videl output from the SuperVidel will slowly drift out of sync with the Videl video signal over time. This is no problem if you run desktop stuff only. **So you could skip this part and go to [2.2 CT60-jumper](#).**

But if you want to play games which use vertical sync, and especially those who use horizontal sync too (used for palette swapping), you will need to feed the original motherboard video clock(s) into the SuperVidel. They are not available as signals on the CT60 connectors, so they must be fed through a separate small flat cable to the JP7 connector on the SuperVidel. Right now the SuperVidel doesn't support RGB modes, so we'll just focus on feeding the VGA clock into the SuperVidel here.

The supplied flat 6-wire flat cable is used for this purpose. When holding it like this:



Find the 4th wire from the top of the image (counted from the red wire as #1), peel it about 3 mm and solder it to the point marked VGA in the next image. This is just right of the big capacitor on the motherboard:



Then you peel (3mm) the third wire from the top, and connect it to the point marked Ground in the image. **Note:** you should let the VGA clock signal and its ground wire be kept together for best signal quality. Only split them as much as necessary at the motherboard solder points.

2.2 CT60-jumper

By putting a jumper on J7 (near the front CT60 connector) you enable a filter on the CT60 clock which is necessary for stable operation. Only **one** such filter is allowed to be enabled on any board stacked on the CT60.

- If the SuperVidel is the lowest board on the CT60 you should put the supplied black jumper on J7.
- If you have a CTPCI at the bottom, it already has such a filter, so don't put the jumper on the SuperVidel.
- If you will put an EtherNat on top of the SuperVidel, remove the jumper from the EtherNat.

2.3 CTCM

The CT clock module, CTCM, is the only thing on the CT60 that is high enough to be able to cause trouble when mounting the SuperVidel on the CT60. **Put some insulation tape on the entire CTCM before putting the SuperVidel on the CT60.**

Note for original case users with an EtherNat on the SuperVidel:

If the SuperVidel can not be pushed down enough when the CTCM is too high you will have to lower it by either replacing the CTCM with a fixed oscillator, or lower the CTCM itself by removing its socket.

2.4 Possible Svethlana + EtherNat

If you want to use a Svethlana ethernet board together with an EtherNat on the SuperVidel, you should mount the supplied flat cable on the SuperVidel JP4 connector **before** putting the EtherNat on the SuperVidel. But read the Svethlana installation manual for this, at nature.atari.org.

2.5 Putting the SuperVidel in place

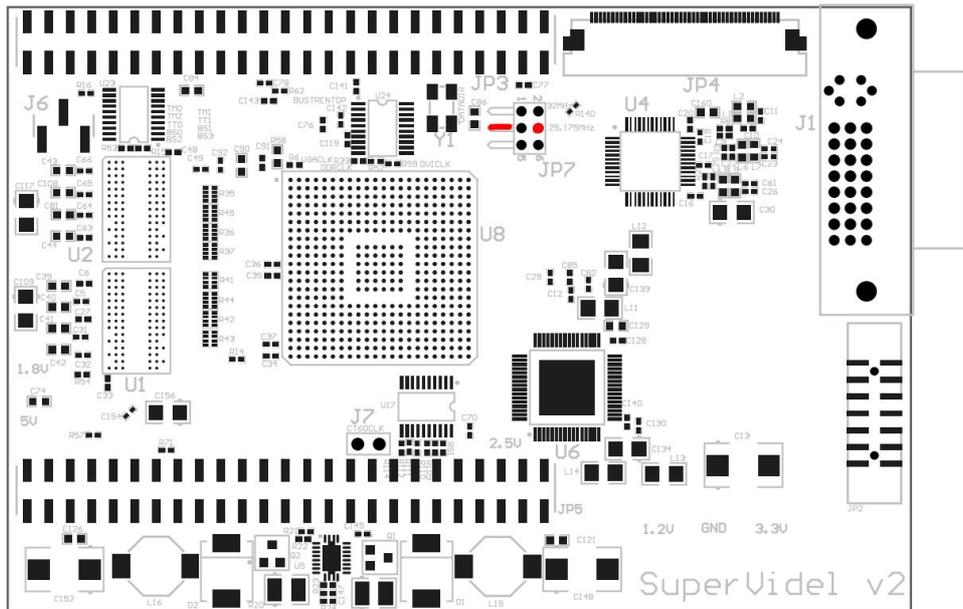
Now that you have read and done all the above you are ready to install the SuperVidel on the CT60. The DVI connector should be facing right.

If you have an EtherNat and Svethlana, make sure its flat cable is attached to the SuperVidel **before** putting the EtherNat on the SuperVidel. **Then** you put the whole package of SuperVidel (+ possible EtherNat) onto the CT60 expansion connector (or possibly the CTPCI).

- **Be extremely careful that you align the connector pins correctly before pushing down the SuperVidel! Turning the power on when it is incorrectly aligned could kill any chip on either the SuperVidel or CT60!!!**
- **Be very careful not to apply pressure on ANY CHIP when pushing down the SuperVidel (EtherNat)! Only press on the upward going 50 pin headers on the front and back sides.**
- **Gently push the SuperVidel down a few mm at a time on each side so you don't push it all the way down on one side first!**
- **Be aware the the CTCM may be too high to be able to push the SuperVidel down all the way. In that case read [2.3 CTCM](#) again.**

2.5.1 Motherboard clocks (optional)

When you have put the SuperVidel in place you can install the motherboard clock signal cable (optional) from section [2.1 Motherboard clocks](#).



Here we have marked in red on which pin on the JP7 connector the VGA clock should be fed. The connector is a right-angle type (facing left). Now that the SuperVidel has been mounted on the CT60 the flat cable connector should be connected to JP7.

Note: The SuperVidel will still work fine without this cable, since it has sensor logic for detecting if the motherboard clock(s) are present and only then it uses them. If not present the VGA clock is emulated with a few ppm error. The cable is only necessary when playing games/demos to not lose the vertical and horizontal sync over time.

2.6 Drivers

The SuperVidel works without any drivers and will emulate the current Videl mode. But since the built in VDI uses the motherboard Blitter for its drawing, which the SuperVidel can not "spy" on, you will get garbage on the screen. NVDI doesn't use the blitter, so running it will fix this problem.

But the special SuperVidel drivers both remove the use of the old Blitter and accelerate drawing by putting the video screen in the new SuperVidel graphics RAM, so it is recommended to use them.

All these drivers/programs are available for download on <http://nature.atari.org>.

2.6.1 Auto-folder

SV_XBIOS.PRG

Run this first in the auto folder. Extends the VDI, XBIOS and GEM Desktop, to support new graphics modes, fast video memory, and SuperBlitter acceleration. Also replaces the TOS built in screen resolution selector with a new one where you can select SuperVidel, Videl and ST modes.

2.6.2 NVDI 5

SVSCREEN.SYS, SV_BPS16.SYS, SV_BPS32, SV_BPS8C.SYS

Accelerated drivers for NVDI5, supporting new color depths and screen resolutions. Put these in your GEMSYS folder, and edit the entry for device 5 in ASSIGN.SYS as follows:

Before:

```
05p SCREEN.SYS
```

After:

```
05 SVSCREEN.SYS
```

2.6.3 MagiC

CHGRES.PRG

Resolution switcher for MagiC.

2.6.4 Other programs

SV-JTAG.TTP

The SuperVidel firmware is upgraded using this program. It has been tested under Mint mostly, but should work under TOS/MagiC too. It only generates text output, and **must** be run in 060 mode. New firmwares come as XSVF files and are put on nature.atari.org. Run SV-JTAG.TTP with path and filename of the XSVF-file to upgrade the SuperVidel firmware. A percentage is incremented as the two Xilinx PROMs on the SuperVidel are erased and programmed. At 47% the second PROM is erased, so a pause is noticed in the progress. **Be aware that you must not cut the power to your falcon during the update. If this should happen the SuperVidel flash chips will be incompletely programmed and your SuperVidel will be "dead" until programmed using a Xilinx Platform USB cable and the Webpack software available from Xilinx.**