Guidance for mounting a HDD fan in CT/ET 9x00
by Nascendi

Before opening the box make sure to disconnect the power supply plug and wait until the blue LED is off! Contacts with all of the construction units are to be avoided!

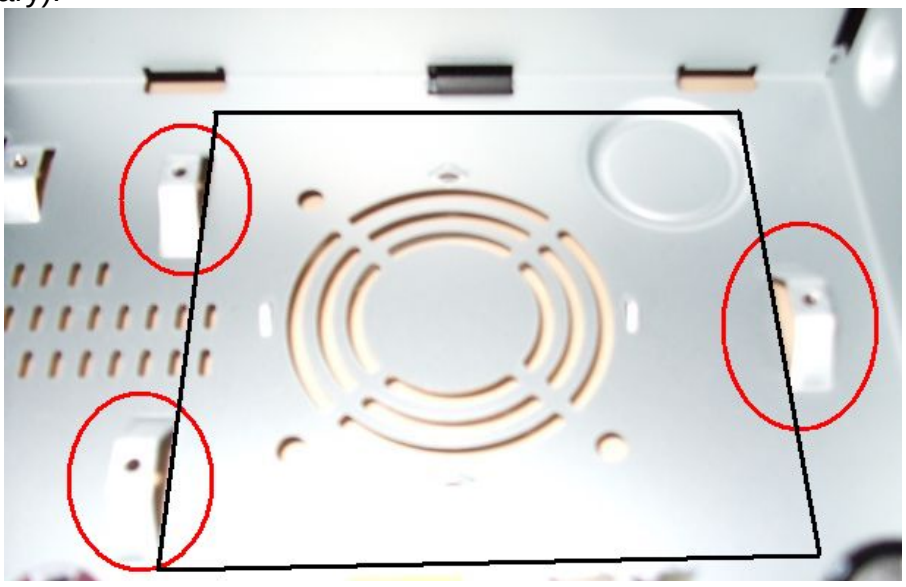
Although it is controversially discussed whether the installation of mechanical ventilation (thus a fan) is necessary in the CT/ET 9x00 or not, I did decide to mount a fan for the hard disk drive (HDD). Often it is stated that the box is supplied without a fan and explicitly is offered as „fanless“. That is correct and sounds comprehensively - but:

- Clarke tech/Xtrend delivers the STB without a HDD and without a fan.
- Clarke tech/Xtrend planned a ventilator opening underneath the HDD pit.
- Clarke tech/Xtrend integrated a 5V connector for a fan on the main board.

Keeping this in mind it can be concluded that with the installation of a HDD also the installation of a fan is judged by CT/Xtrend as meaningful (if not even necessarily). This is underscored by the fact that my hard drive (ST2000DL003) without a fan exhibits a temperature of 54°C at an ambient temperature of ~ 24 °C after approximately 1 hour continuous operation. These is a value within the specification (about 60 °C), but the HDD is „growing older” much faster, if it is operated permanently over 50 °C. They say the recommended temperature for HDDs is about 40 - 45 °C.

When you record (and replay) a lot of movies with the CT/ET 9x00 and also use the box as a music player, the HDD is in daily use over many hours. So mechanical ventilation seems indicated.

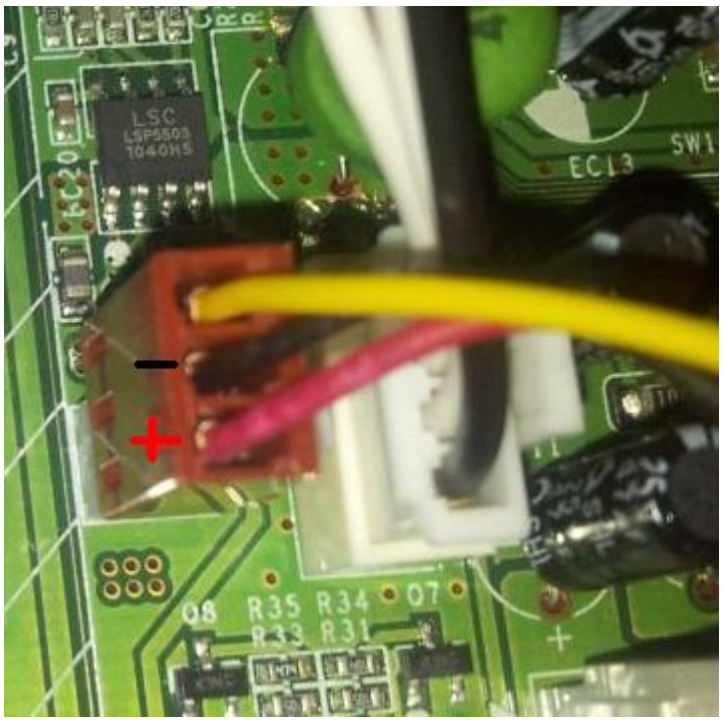
CT/Xtrend planned an opening and appropriate fastening spots for a 60x60mm 5V fan underneath the HDD in the floor plate of the box. I have mounted however a fan by Scythe (http://www.scythe-eu.com/) with the measures of 100x100x12mm with 2.000 revolutions at 12V (Kaze Jyu Slim, Mod NR. SY1012SL12M). You can buy such a fan for 8 euros for example at Amazon (inclusive shipping). This fan fits completely and marvelously perfect between the screw domes (see photo 1) and can be simply wedged there (no screw connection is necessary).



The fan is wedged simply between the red marked screw domes

The fan is mounted in such a way that the air is sucked in from the outside and blown on the lower surface of the HDD. The sticker on the fan hub shows thus towards the HDD.

You have to connect the fan with the 5V connector on the board (see photo 2), whereby at the plug of the fan the red and the yellow cable in the plug must be exchanged before, so that the plug can be put on the pin. The genuine plug is shipped with the red cable on the wrong side of the plug - so you have to modify this. The red cable comes thus to the pin that points to the housing front (see photo 3).



In order to run the fan, an appropriate Plugin (that switches the fan ON or OFF) has to be installed to the box. One of this two Plugins can be used, which I tested successfully:

Fansetup (switches the fan off also in normal Standby):
http://www.clarke-xtrend-support.com/Forum/attachment.php?attachmentid=1962&d=1315084246
If you switch off your STB often to the normal Standby mode, this Plugin is appropriate by selecting the mode AUTO in the Setup.

Fan Setup (no automode, only ON or OFF):
http://www.clarke-xtrend-support.com/Forum/showthread.php?237-Fan-Setup-und-VFD-Setup
If you switch off your STB always to DeepStandby mode, this Plugin is recommended.

Note: *Without the appropriate Plugin (software extension) the fan at the 5V connector does not start to run! The Plugin should be installed and activated before the mounting of the fan.*

Since the 2 pin power connection on the board supplies only 5V, but the fan is designed to operate with 12V, the fan turns with only about 830 revolutions and is practically inaudible thereby. Nevertheless after 3 hours of continuous operation of the HDD (at an ambient temperature of 24 °C) now the HDD temperature increases up to only 46 °C.

A side effect is that the air swirls within the housing too, which is cooling also the construction units on the motherboard a little bit. Who would like to cool particularly the construction units on the board, have to attach an additional fan at the upper cover (this is however not a component of this guidance).

To prevent that the fan does suck dust and other air pollutions into the box, I did attach a cut out piece of black stocking on the lower surface of the box sheet from the outside in such a way that this “nylon filter” covers the ventilation openings within the range of the fan. The nylon material is attached with double-sided tape (carpet tape) simply with some strips and can be exchanged if necessary without opening the box.

The author of this guidance does not take over any responsibility and liability for damage, which is caused by the user at the equipment or persons! The user modifies the box rather on his/her own risk and liability.

The author states expressly that the box in opened condition should be never attached to the power supply! If you ignore this warning to test the operation of the fan, **prevent to touch something in the opened box**! Just look – don’t touch!