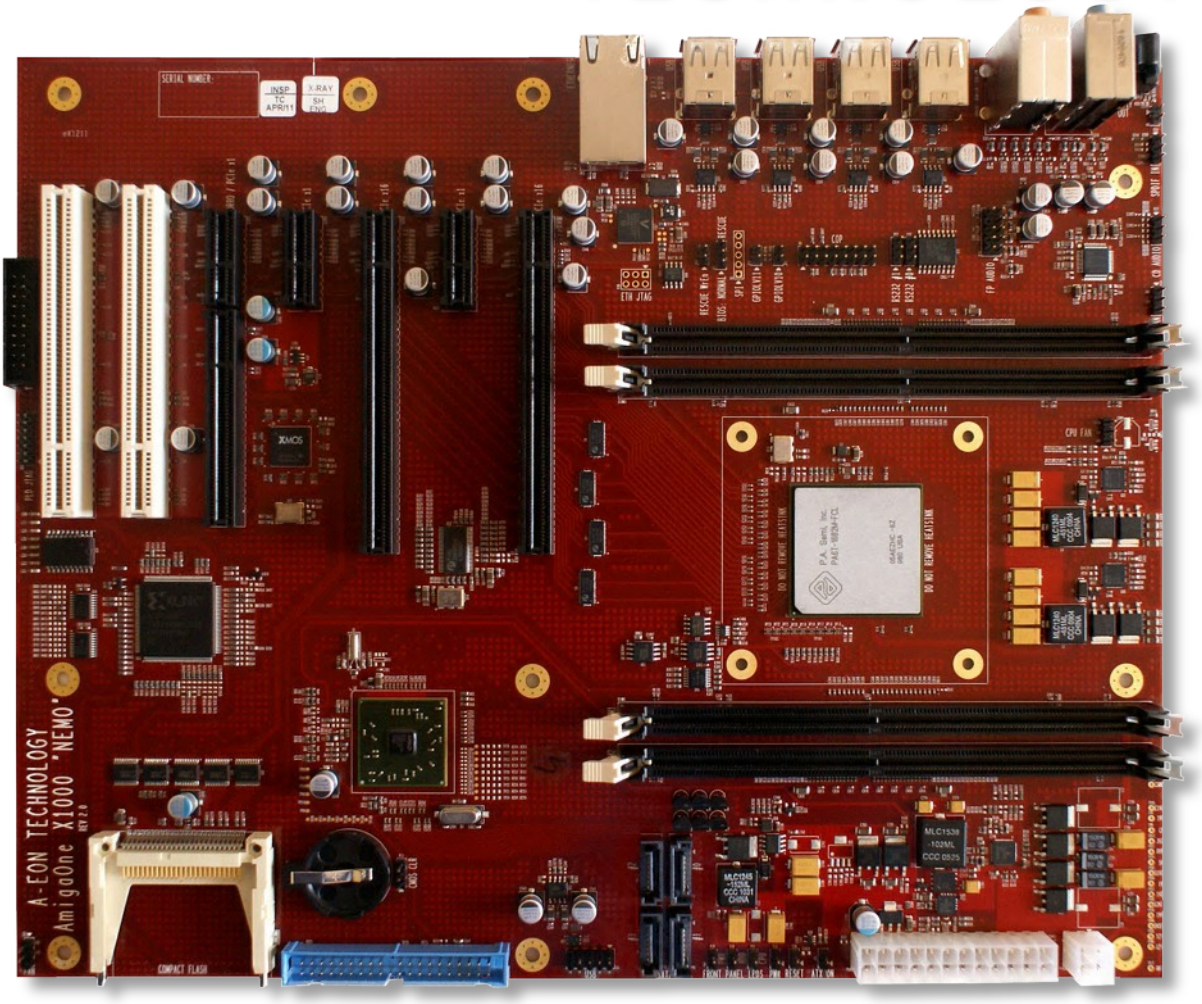
A-EON TECHNOLOGY



AmigaONE X1000

Nemo revision 2.1 Motherboard
Firmware re-flash guide

Version 1.1

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FIRST CONTACT
AmigaOne X1000
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How to apply a firmware update to your AmigaOne X-1000.

The AmigaOne X-1000 firmware is programmed into a one megabyte flash ROM on the main board. The flash ROM contains code and data that gets executed once you switch on the power button. From time to time, new firmware might become available offering bug fixes or additional features. If this happens, you may or may not want to update your firmware.

In general, the process is pretty straightforward and not very risky. This is because there is a second one megabyte flash ROM on the board that always holds a (write-protected) backup copy of the firmware. In case your update failed, you should always be able to recover by using the alternate firmware image to repair the problem.

However, it is important that you follow the steps below very carefully. Even if there is little danger of doing permanent damage to your system, having to repair the firmware after a failed flash attempt is annoying if nothing else. With a bit of care, this situation can be avoided, though.

Firmware updates are contained in a file called “cfe.bin”. This file needs to be available to you and must be stored on a medium like:

1. A CD-ROM
2. A USB stick or Compact Flash card
3. A network accessible TFTP server

The usual method is via USB stick or CD-ROM .

Updating your firmware

1. Boot up your board and press 'F' at the menu (if you have one configured) to get into the firmware prompt.

2. Load the firmware image into memory. There are a variety of ways you can do that, the easiest way being to load from a CD-ROM:

   ```
   load -raw -iso -max=0x8000000 atapiX.Y:cfe.bin
   ```

   From a USB stick:

   ```
   load -raw -fatfs -max=0x8000000 usbdisk0:cfe.bin
   ```

   From a TFTP server:

   ```
   ifconfig eth0 -auto
   load -raw -tftp -max=0x8000000 hostname_or_ip:cfe.bin
   ```

3. After the image has loaded, there will be some output on the console. This output will look similar to this:

   ```
   Loading: .. 915248 bytes read
   Entry at 0x0000000020000000
   *** command status = 0
   CFE>
   ```

   Note the line that reads “915248 bytes read”. You will need that number. It will likely be different that this one, somewhere in the 900K range.

Also note the “Entry” line. This is the 64 bit address where the image was loaded, and should almost always be 0x20000000. If not, write the number down as well.

4. WARNING: Anything beyond this point is potentially dangerous.

   You need to erase the previous content of the flash ROM. This is done with the **`spi erase`** command:

   ```
   spi erase
   ```

   This is almost instantaneous.

5. Now you can flash the new content. This is done with the **`spi copy`** command:

   ```
   spi copy 0xf00000 0x20000000 915247
   ```

   Note the two coloured numbers. The light blue one is the Entry address given in step 3. Usually this is 0x20000000 (a 0x2 followed by seven zeroes). It might be different. Make sure to get the correct number.

   The yellow number is the size of the image. In our example above, this was 915248. Your number might be different (in fact, this is the only number that usually varies a lot between updates).
   To recap: The first part of the command is always the same (“`spi copy`” followed by 0xf and five zeros). The next part is *usually* the same (an 0x2 followed by seven zeros) but might differ. The last part is almost always different. All variable values can be seen from the `load` command's output (see step 3).

   If you have cross-checked the values, press enter.

6. Re-flashing will take a while. It can take up to a minute to copy the full image over. Eventually you will be returned to the firmware prompt.

   As a quick verification you can enter the following command:

   ```
   spi read 0xf00000 32
   ```

   (Again this is an 0xf followed by five zeros). The output will look very similar to this:

   ```
   00F00000% 55AA55AA 43464531 436F6D6D 6F6E2046
   00F00010% 69726D77 61726520 456E7669 726F6E6D
   00F00020% 656E742C 20286329 20323030 34204272
   00F00030% 6F616463 6F6D2043
   ```

   The exact values are mostly irrelevant, but the output after the first percent sign MUST start with 55AA55AA (the ROM signature). If it doesn't, then verify that the **`spi read`** command was entered correctly. If it was, verify that you entered the command in step 5 correctly. If this is also the case, then something went wrong when loading the image.

   Note that as long as you did not reset your machine, you can repeat this process indefinitely, so if loading went wrong, go back to the beginning and start over.

7. Assuming everything came out correctly, you can simply reboot your machine now. The new firmware should come up after the boot.

If something went wrong

If your machine does not start up again after the reset, do not panic. The AmigaOne X-1000 has a backup ROM that has a working firmware copy. In order to activate this, you need to open the case since you require access to the board. If you are not comfortable with doing this, ask your dealer to perform the rescue.

1. Switch off your machine.
2. Open the case and find the CPU. Next to the CPU, towards the rear of the machine, are two DIMM slots and then a group of connectors/jumpers. One of the jumpers is called “BIOS:” (see this picture)

(note that the picture is upside-down if you have your board in a tower case).
The BIOS jumper has a plug on it that connects the first two (“NORMAL”) pins. Move it over to the second two (“RESCUE”).

3. Power on your machine again, leaving the case open. It should now boot with the old “rescue” firmware.
4. *While the board is powered on*, move the jumper back to the old (“NORMAL”) position. This re-enables the flash ROM with the (defunct) firmware.
5. Repeat the steps explained above in the first section of this document (steps 1-7).
6. If your machine still refuses to boot with the re-flashed image, you will most likely have to return it to your dealer for repairs.