

Introduction

ALLDSP hardware can contain up to 3 processors, running up to 4 separate firmware programs. Many ALLDSP products are also customised in several ways, further complicating the “firmware landscape”. This document describes the firmware updating process.

Main Firmware Areas

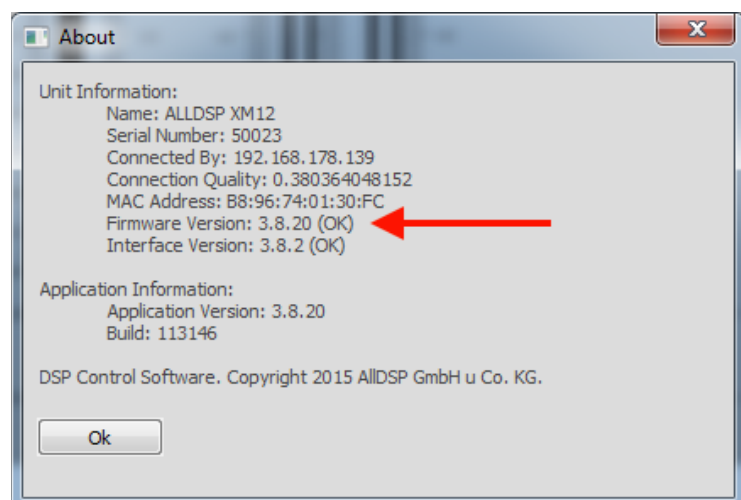
Every ALLDSP product runs on a central DSP chip, which at the moment of writing this Application Note can be an AM682 (low channel count products), AM683 (discontinued but still used on some existing designs), AM684 (products with medium channel count or including SDRAM), or AM685 (MK2.0 new generation products). The firmware that runs this DSP is the main application that defines the user interface, functionality etc. and can be upgraded in the field if the product has an Ethernet or USB interface.

Then, there is a second processor that takes care of the USB interface (if applicable); this processor has its own firmware that is programmed into it in our production and can not be changed.

For products with an Ethernet interface, there is a 3rd processor that handles Ethernet communication. This processor runs a so-called bootloader, which is programmed in our production and can not be changed; and an Ethernet application that can be upgraded in the field.

Updating Firmware

First, it is important to realise that there are 2 different processors that can be updated: the main DSP processor, and the Ethernet interface. To update the main DSP firmware, the Ethernet interface **MUST** be up-to-date. You can check this if you open the software, connect to a unit, open the unit panel, and click Help - About. Here you will see the Firmware Version, which is the main DSP firmware version; and the “Interface Version”, which is the Ethernet interface firmware version. If the version is OK, it will say so as in the screenshot here. If not, it will say “Update Available”. Depending on your hardware and software version, this window may also state a build number or “Unknown Build Number”; you can ignore this for now.

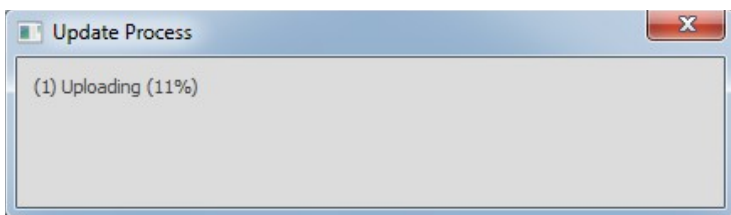


When the interface firmware needs updating, there are 2 ways to do that: (1) from the network window; and (2) from the unit panel. The default method uses the unit panel. Please note that when you update the interface firmware, the main DSP firmware is also automatically updated. It is not possible to start an interface update process separately.

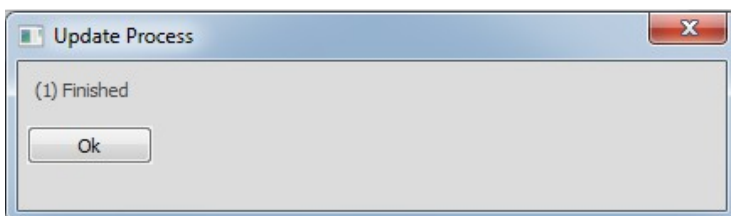
When the interface firmware is up-to-date, there is a 3rd method for main DSP firmware update which will update all connected units simultaneously (selected hardware / software only).

Updating Firmware from the Unit Panel

Open the unit panel, and enter the development or administrator password. Then, click Hardware - Update Firmware. The software will ask you if you want to backup and restore your presets; click "Yes" to do just that (this process will take some time) or "No" to do a clean firmware upgrade. There will also be warnings; read them and think about the consequences of updating firmware. Things can go wrong; and according to a Mr. Murphy, they WILL go wrong when you really can't have that. So, we **STRONGLY RECOMMEND** to make a flash image and / or a factory file and / or backup your presets before doing a firmware update.



During the Interface firmware update process a progress window is shown. The number (1) means this is the first step of the update process, updating the interface firmware

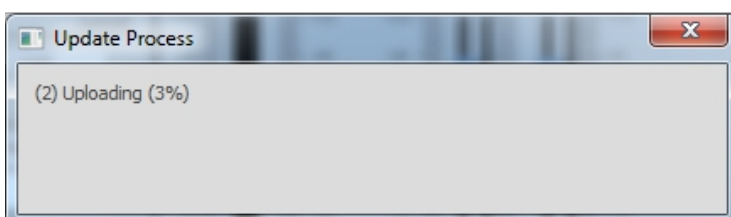


After the interface update, the progress window will say "Finished" and the unit will restart and reconnect.

Should it not reconnect automatically, or if any other problem occurs, power cycle the unit. There can be several causes for this, including update failure, networking problems, or simply a new IP assignment by the DHCP server when the unit restarts.

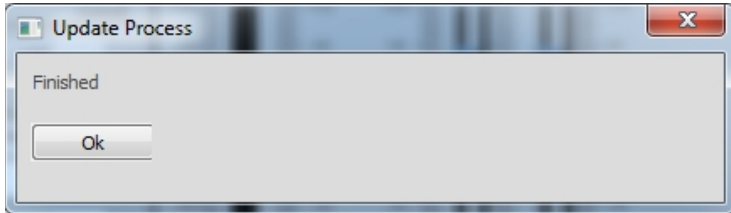
In the worst case, the interface will fail to upgrade and the unit will not come back online, even after a power cycle. Don't worry, there is a solution; we have yet to find the first unit that was really bricked. Please refer to AN024 Ethernet Firmware Update and Recovery if this happens.

After reconnecting, the update will continue with the main DSP update.



During the DSP firmware update process another progress window is shown. The number (2) means this is the second step of the update process, updating the main firmware.

Again, it will say "Finished" when the update is finished. Depending on the software, it may ask



you if you wish to load a factory file; for this document, click "No" - it is the same function as loading a factory file manually.

If this second stage of update goes wrong for any reason, power cycle the unit and the DSP will come back online

as "No Name". In such a case, the firmware must be updated from the Network Window.

Updating Firmware from the Network Window

Updating firmware from the network window can be easier than from the unit panel, especially if you need to update multiple units. There are two major differences though: You will not have the option to backup and restore presets, or load a factory file; and the update will only be enabled if the firmware is not up-to-date.

To enable the update functionality, click Tools - Enable Update. Then enter a valid password that enables the update functionality for the units, e.g. the administrator or developer password. An orange button will appear next to any connected unit that can be updated. If the button is greyed out, the unit can not be updated or does not need an update. Click the button to start the update process, and the same process as above will start.

Firmware Update All Units

Click Tools - Firmware Update All Units (after enabling updates) to update all units simultaneously. Note that this process can take a while, and will only work if (a) the network is stable and (b) the interface firmware of all units is up-to-date. All units will be updated, all presets will be lost. ALLDSP does not recommend this function unless you know what you're doing, or don't care if all settings are lost.

About Model Number Programming

When a unit has been programmed with a specific model number (see AN314: About Firmware, Flash Images, Factory Files and Model Number Programming), there is a scenario that can occur where the Model Number appears to have been ignored, and wrong firmware will be loaded. The programmed Model Number can not be affected by a firmware upgrade. However, it is possible that the PC can not read the Model Number. The Model Number is read from the OTP and communicated to the PC by the main DSP firmware. If a firmware update has failed, and the main DSP is not running, or if wrong firmware has been loaded, the PC does not know the Model Number and will revert to the default Firmware ID. On older firmware, this was still allowed, and a unit could run with the default firmware rather than the Model Number specific firmware. In such a case, just repeat the Firmware Update process and the correct firmware will be loaded.