

# H0420

## Programmable MP3 Audio Player for Exhibitions and Kiosk Applications

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# Firmware Update: Version 1.4 Build 3665

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[For upgrading to the new firmware, please see page 2 for the procedure.](#)

This document describes the changes since version 1.3 of the firmware (build 3637). If you want to review the changes from versions 1.0 to 1.3, please see the documents “h0420\_3508.pdf”, “h0420\_3444.pdf” and “h0420\_3637.pdf” respectively.

## *New functionality & modifications*

### **1. Significantly better performance of the Pawn scripts**

Scripts programmed in PAWN now run significantly faster, even up to twice as fast. We obtained better run-time performance both by improved optimization strategies in the PAWN compiler, as well as through a rewritten run-time (a so-called “virtual machine”).

### **2. No delay at the start of a new track if not aborting a track**

The `play()` function has fade-out and fade-in parameters. The default value of the fade-in is zero, but that of the fade-out is 100 milliseconds. The purpose of the fade-in and fade-out is to avoid audible glitches when a track is aborted because another track starts. In the new firmware, the fade-out time is only taken into account when audio is indeed aborted. When no track was playing, the new track starts immediately.

### **3. Function `stop()` now has an optional fade-out**

The function `stop()` now allows for a fade-out parameter. The default value for the fade-out is 0 ms, for compatibility with earlier releases of the firmware.

### **4. PAWN scripting language & tools**

The compiler and toolkit have been improved in various areas, especially in the area of code generation. The new compiler creates more compact and quicker code.

The Quincy IDE has descriptions for all examples. These give an overview of the operation(s) of an example script, so that you can more easily find snippets and inspiration for your own scripts. The IDE was improved on other ways too.

# Upgrading the Firmware

When upgrading firmware, the scripts in the PAWN language should also be recompiled with the latest release of the PAWN compiler. Any “**amx**” file built for earlier versions of the firmware may not function accurately with the new firmware. The new release of the PAWN toolkit is included in each firmware update.

The procedure below describes how to upgrade the firmware using a PC running Microsoft Windows. When you do not run Microsoft Windows, please contact us for an alternative upgrade procedure.

We advise you to read through this procedure before starting the upgrade, so that you have a mental picture of the steps that are involved in the procedure.

## 1. Install the software

If you have not done so already, download the firmware update and then “open” or “run” the file. The firmware update file is a *setup* program that installs the required components. If you received the firmware update on CD-ROM, you can install it directly from the CD-ROM.

## 2. Connect the H0420 to a PC & remove the Compact Flash card

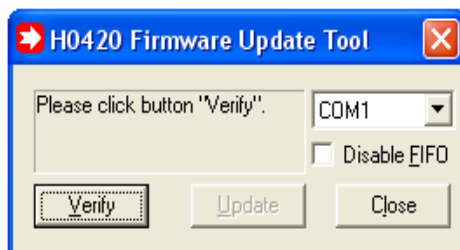
First unplug the H0420 MP3 player from the 5V power. Then remove the Compact Flash card from the H0420, and connect a standard RS232 cable (not a null-modem cable) between a PC and the H0420. Plug the power connector back into the H0420 once the serial cable is connected. Do not re-insert the Compact Flash card (this is done in step 5).

If you are using a simulated RS232 port (for example, through an USB-to-RS232 adapter), it is best to wait a few seconds between inserting the RS232 plug and the power plug —10 seconds should always be sufficient.

If the device was already connected to the PC through the RS232 cable and the Compact Flash card had already been removed, it is still advised to remove the power plug for a few seconds, so that the device does a full restart.

## 3. Run the “Firmware Update Tool”

Locate the “Firmware Update Tool” in the *Start Menu* (under *Programs / H0420 MP3 Controller*), and run it —this tool was installed in step 1. See the screen shot below for the appearance of the Firmware Update Tool.



Make sure that the correct COM port (RS232) is selected in the update tool.

Some simulated RS232 ports (USB-to-RS232 adapters) do not properly simulate the RS232 FIFO buffers. For these devices, you may set a check-mark in the “Disable FIFO” option.

## 4. First click “Verify”, then click “Update”

Click on the button “Verify” and allow it to complete. This function checks the current firmware version and the device model and reports these to you. If all is well, it will tell you the version number of the firmware that is currently in the H0420, as well as the version number of the latest firmware. If the device already has the latest firmware, this tool will tell you so.

If the "Verify" button found no error, you can click on the button "Update". Updating the firmware may take a minute. Do not abort the program while the firmware update is processing.

After the update has completed, the program will inform you that the device will automatically reset itself after a time-out of a few seconds. If you wish to check that the firmware has indeed been uploaded correctly, you will have to wait at least this number of seconds before clicking on the button "Verify".

## **5. Recompile the PAWN script**

Recompile the script and store the resulting file AUTORUN.AMX on the Compact Flash card.

Make sure that the script is compiled with the up-to-date PAWN compiler. You can now re-insert the Compact Flash card in the H0420 player.

# Trouble shooting — when uploading fails

If the “Verify” button times out and responds with the error message:

**Unable to synchronize with the device.**

**Please check the serial connection.**

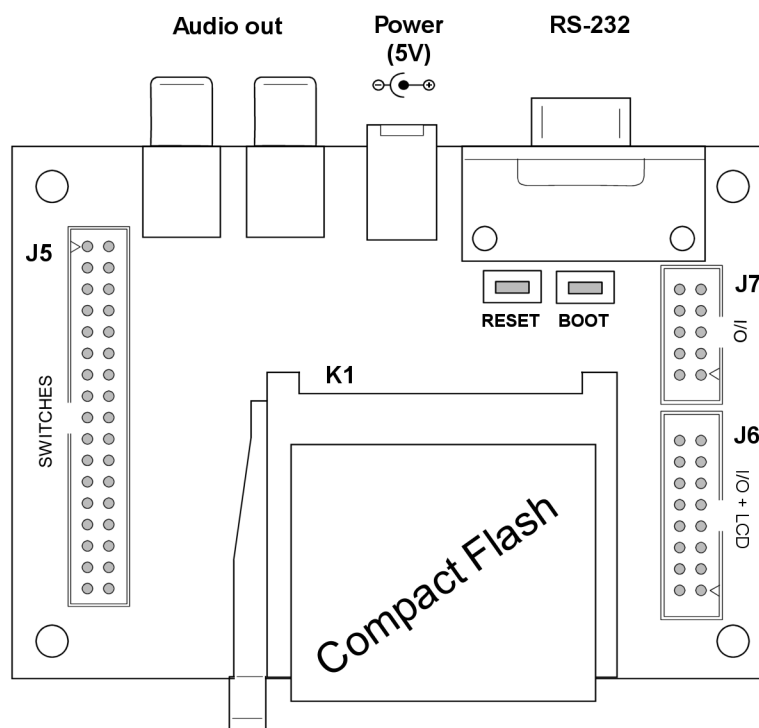
- check the RS232 cabling
- “power cycle” the H0420 MP3 player (remove the power plug from the device for a few seconds and then re-insert it)
- run the update procedure (on the previous page) again.

If this fails again, try to reset the H0420 while the Update Tool is busy verifying the device. That is: click on the button “Verify” and then press the “RESET” switch on the H0420. See below for the location of the reset button. You may also want to try to perform the procedure after rebooting the PC, or from a different PC.

If all fails, a last option that you can try is to set the H0420 in “Boot Loader mode” (see below), and run the procedure again. In this case, the “Verify” button will inform you that it cannot find the “current” version of the firmware in the H0420, but it still allows you to update to the latest revision. Resetting the H0420 to Boot Loader mode is typically necessary when an earlier upload has been aborted or interrupted.

## Resetting the H0420 to “Boot Loader mode”

The H0420 has two switches, behind the connector of the RS232. In order to gain access to these switches, it may be necessary that you open the case in which the H0420 is mounted.



These switches must be pressed and released in the correct order:

- Press (and hold) “RESET”
- Press (and hold) “BOOT”
- Release “RESET”
- Release “BOOT”

It is advised to “power cycle” the device before resetting it to boot loader mode, and to remove the Compact Flash card. (Do *not* power-cycle the device *after* switching it to boot loader mode, because this would reset the device to normal mode.)