K Series Firmware Update

How to update the firmware of the KFRONT, KCNTRL, KDSP and KAESOP boards.

K Series and Duecanali amplifiers are based on a flexible architecture that has been developed to meet specific expandability criteria.

The minimum configuration is based on two boards, named **KFRONT** and **KCNTRL**. KFRONT handles the front panel display and the smart card reader/writer, while KCNTRL supervises the amplifier and the power supply, performing the remote control through the RS485 port. Each board has its own microcontroller and its own firmware microchip.

An optional DSP board can be installed: the **KDSP** hosts one powerful SHARC DSP processor – supported by one microcontroller – and its related firmware microchip.

The amplifier can be fitted with a further optional Ethernet remote control board, the **KAESOP**. With this board the amplifier is able to manage 2 streams of AES3 digital audio. KAESOP board houses one more microcontroller along with its own firmware microchip.

Regarding the number and the type of intalled boards there are four possible K Series amplifier configurations:

- ▶ Basic amplifier   KFRONT + KCNTRL

- ▶ DSP amplifier   KFRONT + KCNTRL + KDSP microcontroller & processor

- ▶ AESOP amplifier   KFRONT + KCNTRL + KAESOP (without KDSP!)

- ▶ DSP+AESOP amplifier   KFRONT + KCNTRL + KDSP microcontroller & processor + KAESOP

The fully populated configuration is made by a total of 5 CPUs and 5 related firmwares microchips.

Microcontroller's firmware name is labeld as follow:

- ▶ K Series firmware name: powersoft_X.Y.Z-B
- ▶ Duecanali Series firmware name: duecanali_X.Y.Z-B

X.Y.Z is the version number, and B the build count. The SHARC processor has a progressive version number (for example 3041).

Firmware update package consists of:

- ▶ **Powersoft Firmware Update Smart Card** labeled with the firmware version for the microcontrollers – KFRONT, KCNTRL, KDSP – and the SHARC processor (i.e. PC000112 Firmware card FW 5.3.2 3041) – provided by Powersoft.

- ▶ **Powersoft Firmware Updater software** – downloadable from the Armonìa forum.

- ▶ **kaesop_X.Y.Z.bin** firmware file for the KAESOP microcontroller – downloadable from the Armonìa forum.

- ▶ **powersoft_X.Y.Z.pff** file for updating the smart card – downloadable from the Armonìa forum.

FIGURE 1: Firmware Update Smart Card.

- ▶ **sharc_firmware_X.Y.Z.ldr** file, in order to update sharc dsp via software (See appendix)

1 KFRONT + KCNTRL + KDSP firmware update procedure

The procedure will update the firmware of the KFRONT, KCNTRL and KDSP board (if installed).

Before starting the update procedure, check if the amplifier is connected to a reliable power source. **The use of an UPS (Uninterruptible Power Supply) is recommended**. In case of mains failure during firmware update, the procedure needs to be re-started, switching the amplifier off and back on. If the firmware update fails for any reason, no damage will be caused to the amplifier. Do not remove the firmware smart card during the update procedure; always wait until the amplifier is updated.

1.1 Checking the current firmware version

Check the current firmware versions to avoid downgrading the unit. For both K Series and Duecanali the procedure is:

- ▶ Power on the amplifier

- ▶ Press the **MENU** button

- ▶ Scroll down to **SETUP** and confirm with **OK**

- ▶ Press **OK** to enter the **HARDWARE INFO**

- ▶ Display will show amplifier model and serial number

▶ Press **MORE** and the following info will appear:

```
KFRONT:  X.Y.Z-B
KCNTRL:  X.Y.Z-B
KDSP:    X.Y.Z-S        [if KDSP optional board is
                        NOT installed this row displays
                        KDSP: N.A. (not available)]
(in the following page)
KAESOP:  X.Y.ZW-V       [if KAESOP optional board is
                        NOT installed this row displays
                        KAESOP: N.A. (not available)]
```

Write down the version numbers and compare them against those on the smartcard and the KAESOP file.

1.2 KFRONT, KCNTRL and KDSP Firmware update

KFRONT and KCNTRL microcontrollers update takes about 5 minutes; if KDSP board is installed, KDSP firmware update starts before KCNTRL firmware update and the whole procedure last in about 12 minutes.

1. Switch off the amplifier.

2. Holding the Firmware Update Smart Card with Powersoft logo facing up and the electric contacts facing down, insert it softly into the smart card slot just above the display of the amplifier. Be sure to completly insert the card reaching the end of the slot. Please consider that electrical contact can fails either if the card does not fill completly the slot or if there is dust and debris into the slot.

3. While keeping the first and second buttons on the left of the front panel pressed, turn on the amplifier and wait 3 to

FIGURE 2: Switch on while pressing two left-hand buttons; keep them pressed until yellow LEDs start blinking.

6 seconds.

4. The fan test (full throttle blow) is performed and after a while the yellow LEDs on the panel start blinking: release the two front panel buttons in order to start the KFRONT firmware update. The KFRONT update takes about three minute to complete: the yellow LEDs continue to blink and the LCD

display still light on but no messages are shown (during KFRONT update the board is unable to manage the display).

5. Once the KFRONT firmware is up to date, the system looks for the presence of the DSP board:

▶ **If the KDSP board is not installed** the display shows a warning message informing that the KDSP firmware update can not be performed: press a confirmation button to proceed.

▶ **If the KDSP board is installed**, the KDSP firmware update takes place: on the display appears the message ''**Updating KDSP**'' and a progress bar. The KDSP firmware update requires a few minutes to complete.

After completing the KDSP firmware update the display shows the message ''**Do you want to update SHARC DSP?**'': pressing **YES** the SHARC processor firmware update starts, lasting about 20 minutes. (Read appendix if you want to upgrade SHARC DSP via software).

6. After completing the firmware update of KFRONT and KDSP, the KCNTRL firmware update starts automatically: a message and a progress bar is shown on the display.

At the end the message ''**Firmware update completed, press OK to restart**'' indicates that the procedure has been successfully completed. Remove the firmware card before restarting the amplifier.

2 Update KAESOP firmware

The following is necessary only if a KAESOP board is installed: be sure to get the smart card and the KAESOP firmware file with exactly the same version number. K Series and Duecanali share the same KAESOP firmware.

The KAESOP board firmware update must be performed using the **Powersoft Firmware Updater software** – provided by Powersoft – connecting the amplifiers to a PC running Microsoft Windows, via an **Ethernet network** CAT 5 cable.

The Powersoft Firmware Updater software is a zipped Windows executable file: it has to be unpacked and installed in the PC in order to perform the update. In a networking environment the software can perform the update of an unlimited number of amplifiers at the same time, taking just a couple of minutes to complete the operation.

1. Download the firmware package from the Armonìa forum: www.powersoft-audio.com/en/support/armonia-support-forum.html

2. Unpack all the files from the downloaded ZIP archive; unpack and install the **Powersoft Firmware Updater software** (FirmwareUpdater_[version]_Setup.zip) on your PC.

3. Using point-to-point, daisy-chain or star Ethernet topologies connect the PC to all the amplifiers you want to update.

4. Launch the Firmware Updater Software.

5. Select **Update K-Series Networking Firmware (K-AESOP)**:
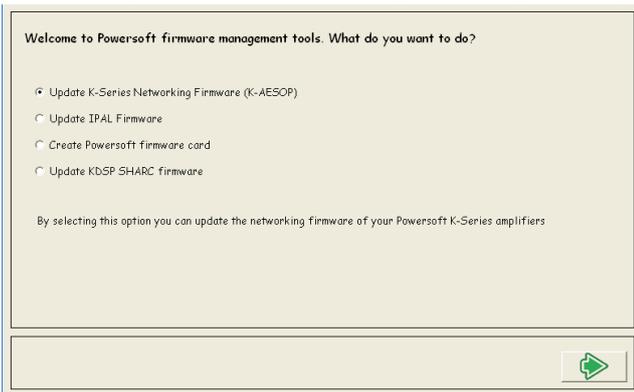
6. Insert path and filename of the .bin firmware file stored on your local file system:
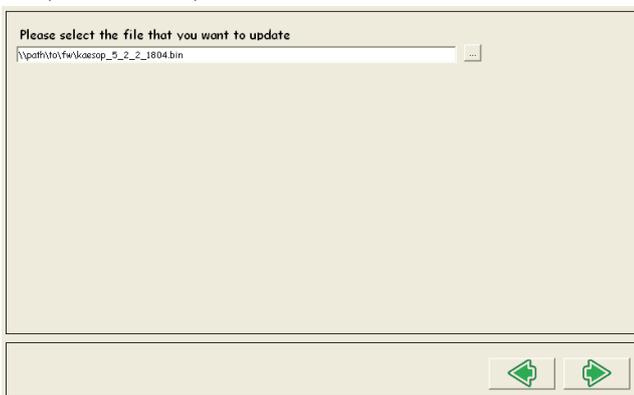
7. Select the ethernet interface connected to your devices, or selected the "Use RS485" checkbox, depending of your hardware configuration. Move to the next step:
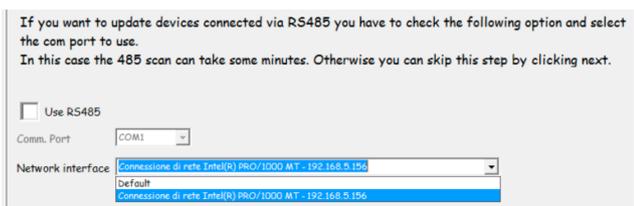
8. Select the devices you want to update:
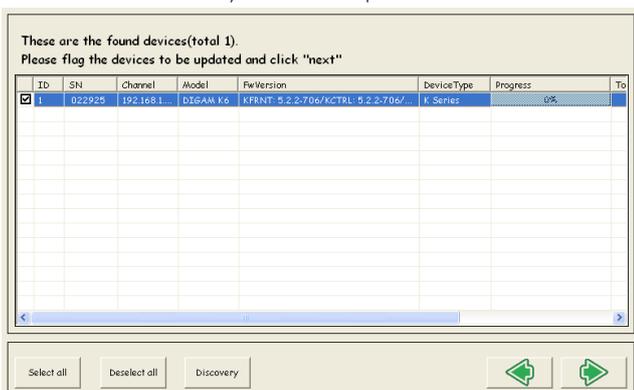
9. Wait until the firmware has been completly loaded:
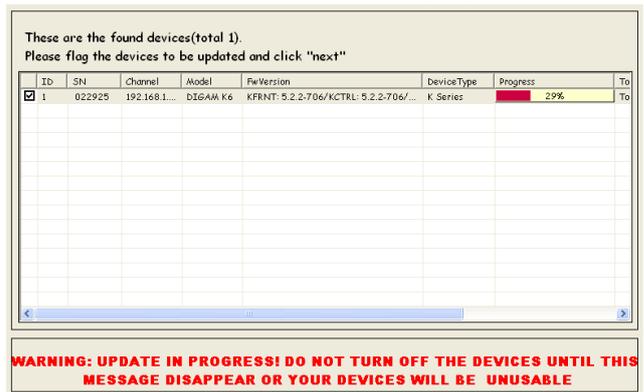
10. At the end of the KAESOP update procedure a status message is shown:
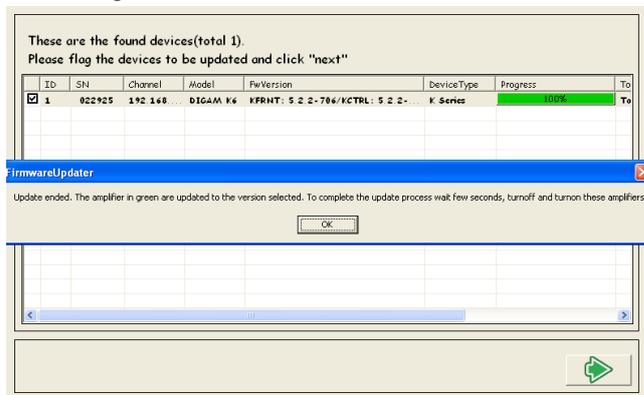
3   Final assessment

Verify the result of the firmware update procedure. Turn on the amplifier, go to **Menu > Setup > Hardware Info** and read the version numbers. **All installed boards must have the same version number, and the SHARC firmware version must be the same as the one written on the smartcard label**.

In case of KFRONT, KCNTRL, KDSP and KAESOP firmware version 5.2.2. and SHARC firmware version 3034, you would read:

```
KFRONT:  5.3.2-746
KCNTRL:  5.3.2-746
KDSP:    5.3.2-3041
KAESOP:  5.3.2D-751
```

If something does not match, please check the smart card version and the KAESOP file version, then repeat the entire procedure from the beginning.

Please remember that if the firmware update process is interrupted before its completion (for mains drop or any other problem) you must restart the procedure from the beginning (switching the amplifier off and back on) as 2 different firmware versions could be present at the same time each on a different board in the amplifier, causing possible problems to the amplifer.

4   Updating the Smart Card

By means of the PFF file and the Powersoft Firmware Updater Software it is possible to update the firmware stored into the Powersoft Firmware Update Smart Card.

The PFF file is a package of firmwares for KFRONT, KCNTRL and KDSP boards of K Series or Duecanali amplifier.

From version 1.1.32 the Powersoft Firmware Updater Software is able to overwrite the content of the smart card using a Powersoft K Series or Duecanali amplifier as a smart card writer. Once updated, the Powersoft Firmware Update Smart Card can be further used to update other Powersoft amplifiers (update once, use many).

You can connect the PC to the amplifier either via the RS485 plug (use the Powersoft USB to RS485 converter) or via the Ethernet plug in case the KAESOP board is installed (recommended).

Please consider that the smart card update process is pretty long: it takes about 40 minutes when performed via Ethernet connection (through the KAESOP board) and up to 1 hour via the RS485 serial connection.

Only Powersoft formatted smart card such as Preset cards and Firmware cards after version 3.26.4 are eligible to be updated.

In order to load the firmware into the Powersoft Firmware Update Smart Card follow these steps:

1. Download the firmware package from the Armonìa forum: www.powersoft-audio.com/en/support/armonia-support-forum.html

2. Unpack all the files from the downloaded ZIP archive; unpack and install the **Powersoft Firmware Updater software** (FirmwareUpdater_[version]_Setup.zip) on your PC. Be sure that the Powersoft Firmware Updater software version is higher than 1.1.32.

3. Connect the PC and the K Series or Duecanali amplifier using either the Powersoft USB to RS485 converter or an Ethernet CAT5 cable in case the KAESOP board is installed (recommended).

4. Switch on the amplifier.

5. On the amplifier, press the **MENU** button and insert the smart card into the slot. Be careful in this step since if you don't press the **MENU** button BEFORE inserting the smart card, the amplifier display shows "**Remove smart card**" and the update procedure fails.

6. Launch the Firmware Updater Software on your PC.

7. Select **Create Powersoft firmware card**.
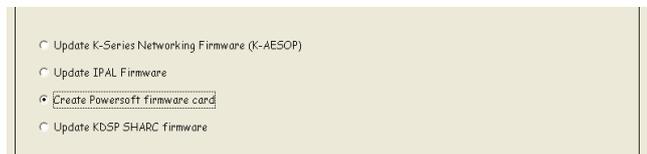
8. Insert path and filename of the .pff package file stored on your local file system.

9. Select "Use RS485" only if you want to perform the update of the smart card using Powersoft USB to RS485 converter. In case the KAESOP board is installed, we recommend to perform the update via the Ethernet connenction.
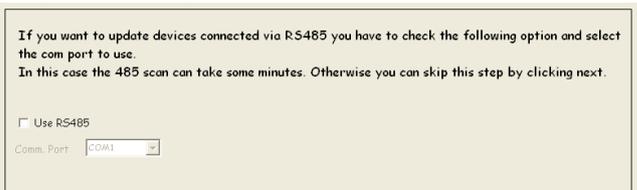
10. Select the device hosting the smart card. Please be patient if the connected amplifiers are not listed immediatly: the recognizing process can be quite slow even with an Ethernet connection.
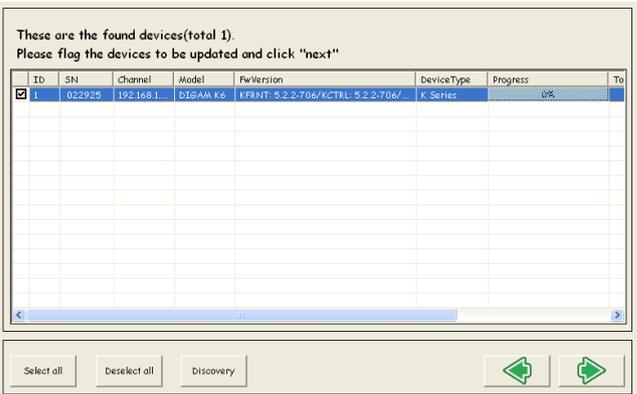

11. Launch the update and wait until the firmware has been completly uploaded into the smart card.
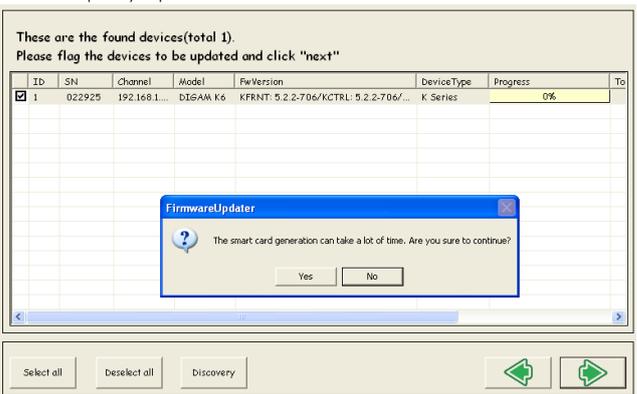
12. If you want verify the firmware loaded into the smart card, consider that the process takes more than one hour.
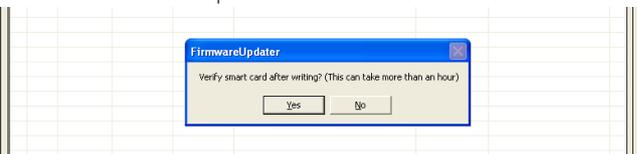
If you forget to press the first right-hand MENU button on your amplifier BEFORE inserting the smart card, the Powersoft Firmware Updater Software displays the following worning message:
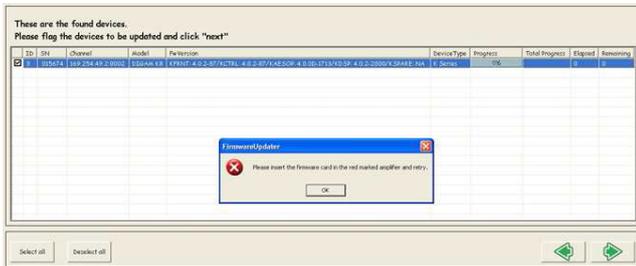
Move back to step 5 and start again the procedure.

13. Remember to mark the smart card accordingly to the firmware version.

5 Appendix

You can save a considerable amount of time if, during the update with the smartcard, you choose "no" when the amplifier prompts you to "Upgrade SHARC DSP firmware y/n".

Select "no" and then open the Firmware updater software.

Select **Update KDSP SHARC Firmware** and do the following:
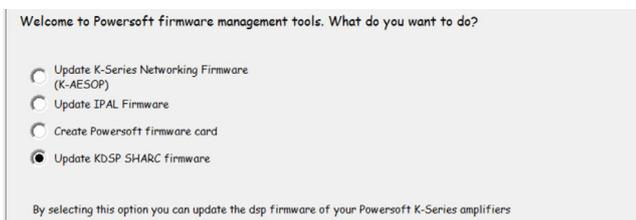
1. Insert path and filename of the .ldr sharc firmware file stored on your local file system.

2. Select the ethernet interface connected to your devices, or selected the "Use RS485" checkbox, depending of your hardware configuration. Move to the next step.

3. Select the devices you want to update:

4. Wait until the firmware has been completly loaded:

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