T+A DAC 200 eXtended Firmware

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Preliminary remarks

1. The eXtended DAC200 firmware is a private project of the author.
2. The eXtended firmware is not an official T+A firmware release and it is not authorized by T+A.
3. T+A does not take any responsibility and can not give any support for this firmware.
4. If you encounter any problems with this firmware, please contact the author directly (e.g. by a personal message to user *OE333* on the Audiophile Style forum).
5. This firmware is for T+A DAC200 only – don't try to flash it on to a HA200, it will not work !!!
6. The eXtended firmware X 1.1B is based on the T+A firmware version V1.1B.
7. In the following only the differences and additions to the standard T+A firmware are described. Standard features and general operation of the DAC200 are described in the DAC200 user manual V1.1

Additional features of the eXtended firmware X1.1B

- Settings for Oversampling, analogue reconstruction filter and inverted mode are stores separately for each input
- 2nd USB input
- „Exclusive" headphone mode with separate volume and balance settings for Headphone and Pre outputs
- Screen saver

Additional features of the eXtended firmware X1.1C

- Home Theatre Bypass
- User editable input names

1.) Separate OVS, WID, INV settings

The settings for oversampling (OVS), inverted mode (INV) and analogue reconstruction filter (WIDE) are stored separately for each input. The settings will be restored when the input is changed.

Note by the author: *Separate individual settings for each input have their pros and cons:*

PRO: Easily retrieve different settings for each input – e.g. for a USB source with internal upsampling: „NOS2+WIDE“ and for a red-book CD player on SP/DIF input: „BEZ2+LP60“. Switching between these inputs will automatically retrieve their individual settings for oversampling and filter.

CON: To switch generally to e.g. OVS=BEZ2, the “BEZ2” oversampling selection has to be repeated for each input – this can be quite exhausting for 12 inputs !

2) Additional USB input

The DAC200 has two physical USB input sockets. One of which is normally reserved for the T+A streamer MP200. If no MP200 is connected, the 2nd USB input can be used for connecting a second USB device.

The eXtended firmware makes the 2nd USB input available as a general USB input. This extended feature is disabled by default and it needs to be enabled if it shall be used (see “*Enabling the 2nd USB input*” further down below).

Switching to USB S2 input
After enabling this feature, the 2nd USB input can be selected either with the front panel „USB“ button or with the ½ key on the remote control. The front panel USB button will toggle between USB and USB S2
The ½ button on the remote will cycle through the inputs RCA → USB → USBS2

Limitations:

The DAC200 has only one USB receiver. The USB and USB S2 inputs are connected to this receiver via a USB switch. Switching to the second USB (USB S2) input will disconnect the source device connected to the first USB input and vice versa.

Notes:

- *Switching between USB inputs will disconnect the other USB source device. This is equal to unplugging its USB cable. Maybe not all source devices will react „gracefully“ to such an unpluging event. Please check with your source devices if they handle this correctly.*
- *The 2nd USB input feature was tested with HQPlayer NAA (on a Radxa RockPi E SBC) and a PC (Audio DAW). This worked perfectly well. Both devices stopped playback when switching to the other input and playback could be restarted after coming back to the first input.*
- *If encountering transmission errors (drop-outs, pops, clicks etc.) please use a standard USB cable with specifications according to the USB.ORG standard*

Enabling the 2nd USB input

To enable the 2nd USB input, execute the following steps, using the buttons **on the front panel**:

1. Open the ***System Settings*** menu (MENU button long keypress)
2. Navigate to ***Device Info & Service*** and press **OK**
3. Navigate to ***System Status***, press **OK**
4. Press the ***METER*** and ***WIDE*** buttons at the same time and keep them pressed until the number of menu items (displayed in the bottom display line) changes from 5 to 6.
5. You get an additional Menu item called „Service Menu“
6. Navigate to ***Service Menu*** and press **OK**
7. Navigate to menu item ***USB-SYS***
8. press OK – the enabled/disabled indication on the right will get highlighted
9. select “***Enabled”*** and press **OK** --- The 2nd USB input is now enabled
10. leave the Menu (by pressing the **MENU** button)

Important Note:

Do not change any other items in the Service Menu, *as this will affect basic factory calibration settings of the DAC200.*

3.) „Exclusive“ headphone mode

The DAC200 has only one volume control. This means that if both (i.e. PRE and PHOnes) outputs are switched ON, they both will operate at the same volume setting.

The „exclusive“ phones mode of the eXtended firmware will switch OFF the PRE output when switching ON the PHOnes output and it will switch OFF the PHOnes it the PRE output is selected.

The VOLUME and BALANCE settings are saved separately for the PRE and PHOnes outputs. Volume and balance will be restored when coming back to the PRE or PHOnes output.

Note:

If the PRE output mode is set to „Line“ mode, the volume&balance only affect the PHOnes output (in line mode the volume control is bypassed for the PRE output). In this case the volume control is not needed for the PRE output and can be used exclusively for the PHOnes output.
In this „Line“ mode case PRE and PHOnes can both be switched ON at the same time and volume controls the PHO output only.

Limitations

With the „Exclusive“ headphone mode of the eXtended firmware version it is not possible to have both, the PRE and PHOnes outputs switched ON at the same time.

4.) Screen saver

OLED displays, like used in the DAC200, have a very good contrast and good readability but they have a limited life-time – especially when operated at maximum brightness. Notably if a device is left switched ON for 24/7 at high brightness levels this might become a problem.

The eXtended firmware has a Screen Saver feature which, five minutes after the last operation will turn down the brightness of the display from brightness levels 6 and 7 to level 5.

When the DAC200 is left for 2 hours without operation, the brightness will be dimmed further to level 2.

The next user operation of the DAC will restore the original brightness.

Note:

In the standard T+A firmware there is a „Temporary“ display mode which will switch OFF the display some minutes after the last operation. Also the display brightness can be set to a lower value.
These are also good ways to protect the display from wear.

5.) Home Theatre Bypass

For the Analog input a Home Theatre Bypass function is now available. In HTB mode the signal of the analog RCA input is directly passed to the RCA and XLR outputs of the DAC200. The internal volume control of the DAC200 is bypassed and the gain is fixed at 0.5 dB.
To make use of the HTB function, connect the L&R front channel outputs of your multichannel amp or your Surround receiver to the RCA inputs of the DAC200. Connect the pre-amp outputs of the DAC200 to the inputs of your front channel stereo amp.

Enabling / disabling HTB:
Open the Source_Configuration submenu: (Setup_Menu → Input_Configuration)

The Analog RCA settings now have a third option: Disabled / Enabled / ***Home_Theatre_Bypass***
To enable the HTB function, just select Home_Theatre_Bypass and leave the setup menu.

Notes

HTB and PHONES output
If the Phones output of the DAC200 is selected, the HT-BYPASS function is automatically switched off and the volume control will work as usual for the phones output.

APP volume control
In the iOS/Android T+A Navigator APP the volume slider will not be available if the source "RCA" is selected and HT-Bypass is active.

6.) Editable Source Names

The default input names can be replaced by user defined source names.

Changing an input name

1. Open the *Input_Configuration* submenu: (Setup_Menu → Input_Configuration->ok)
2. Navigate to the input which you want to change.
3. A short press on *OK* will highlight the "*Enabled*"/"*Disabled*" setting on the right hand side
4. Select "Enabled" by rotating the *VOLUME* knob
5. Now (with "Enabled" still highlighted) press "*OK*" and keep it pressed until a small edit marker (^) appears in the input name edit field in the middle of the screen
6. A short "*OK*" press will highlight the edit field above the edit marker
7. Rotate the *VOLUME* knob to select a character (0...9, A-Z, a-z)
8. A short *OK* press will confirm the character and the highlight will disappear
9. By rotating the *VOLUME* knob you can now navigate the edit marker to the next (or previous) position
10. Repeat steps 6..9 until the whole name is complete
11. To save the name, press *OK* and keep it pressed until the edit marker disappears
12. The new source name is now stored and it will be displayed on the OLED display instead of the default input name when this source is active

Deleting an input name

1. Open the *Input_Configuration* submenu: (Setup_Menu → Input_Configuration->ok)
2. Navigate to the input which you want to change.
3. A short press on *OK* will highlight the "*Enabled*"/"*Disabled*" setting on the right hand side
4. Select "*Enabled*" by rotating the *VOLUME* knob
5. Now (with "*Enabled*" still highlighted) press "OK" and keep it pressed until a small edit marker (**^**) appears underneath the input name edit field in the middle of the screen
6. Rotate the VOLUME knob counter-clockwise
7. "*DELETE*" will be displayed
8. Press "*OK*" and keep it pressed, until "*DELETE*" disappears
9. The input name is now deleted and the default input name will be used again

Notes:

- Input names can be composed of the characters *0..9, A..Z, a..z* and "*SPACE*"
- The length of each input name is limited to max. 8 characters
- If the source name consists of many wide characters (like "*W*" or "*M*"), the space on the display may get a bit tight – especially when the displayed audio format description is also very wide (like "DSD1024 x 44.1k). In such a case the DAC200 will try to rearrange the format display a bit. If this is not sufficient to show the whole source name, the source name will be clipped. In such a case using lower case characters might be a possibility to make the source name a bit narrower.
- When "***Restore Factory Settings***" from the Device Info & Service submenu is executed, **all** user given input names will be deleted and the default input names will be displayed again.
- The name of the 2nd USB input "*USB S2"* (if enabled) is fixed. It can not be changed.

Flashing the eXtended firmware

To flash the eXtended firmware on a T+A DAC200 the official T+A programming adaptor (available in the T+A webshop) or the DIY programming adaptor is required.

Additionally the eXtended firmware file *“UPD_DAC200_X11B.txt”* is required.

Informations about the DIY programming tool and the programming software can be found here:
https://github.com/OE333/DAC200-HA200-Update-Tool/tree/main

Contents of the above repository:

/Executable	Programming software for Windows 10 / 11
/Original_Firmware_DAC200	latest original T+A firmware for DAC200
/eXtended_Firmware_DAC200	extended firmware for DAC200 *(UPD_DAC200_X1.1B.txt)*
/Related documents	Programming instructions and DIY programming tool

For flashing the DAC200, please follow the instructions from the manual of the original T+A programming adaptor or from the ”E_Link_Update_instructions.pdf” in the */Related documents* folder.

Reverting to the original standard T+A firmware

Method 1 (recommended)
If you have access to a T+A MP200 streamer, conenct the DAC200 to the MP200 and perform a firmware update of the DAC200 through the firmware update procedure of the MP200. This will flash the DAC200 with the latest available standard T+A firmware.

Method 2
The standard firmware can also be restored with the help of the T+A or the DIY programming adaptor.

For reverting to the standard firmware a T+A standard firmware file (*“UPD_DAC200_Vx.xx”*) is required.

For flashing the DAC200, please follow the instructions from the manual of the programming adaptor.