

WEISS  
DAC2 / MINERVA  
FIREWIRE DAC

Amendment to the  
OPERATING MANUAL

for DAC2 / Minerva units with serial numbers between  
**1000 and 1040**

The latest firmware [update](#) for the DAC2 / Minerva (DAC) units with serial numbers between 1000 and 1040 offers the following new features:

- level control mode
- insert mode
- bit transparency check

The Firewire, AES/EBU, and S/PDIF switches are used to toggle between these modes.

### Level Control / Input selection modes

Starting with the "input selection" mode, if the **Firewire** switch is held pressed for longer than 1.5 seconds, the mode of the DAC is set to "volume control" mode. If then the **Firewire** switch is pressed for longer than 1.5 seconds the DAC is switched back to "input selection" mode.

#### "Input selection" mode:

In this mode the input source can be selected with the three switches to the right of the power switch.

#### "Volume control" mode:

Both AES/EBU and S/PDIF switches are lit to indicate this mode in which the S/PDIF switch becomes the "volume up" control, the AES/EBU switch becomes the "volume down" control, the FIREWIRE switch becomes the "dim" control. The dim switch lowers the volume by 20dB. When dimmed, the Firewire switch flashes. The up / down switches step the volume up / down in 0.5 dB steps over a 120 dB range. If the up or down switch is held pressed, the volume changes continuously and volume control accelerates to 1.5 dB steps. The volume control is applied in the digital domain and is properly dithered, which means that the quality of the level control is at least on par with an analog volume control. Ideally the DAC unit is operated at digital volume levels at or near to the maximum level in

order to utilize the dynamic range of the DAC.

### Insert Mode

Starting with the normal signal path mode, if the **AES/EBU** switch is held pressed for longer than 1.5 seconds, the mode of the DAC is set to "insert signal path". If then the **AES/EBU** switch is again pressed for longer than 1.5 seconds the DAC is switched back to "normal signal path".

#### "Normal signal path" mode:

In this mode the DAC2 accepts signals from the selected input, i.e. From Firewire, XLR, RCA, Toslink inputs.

#### "Insert signal path" mode:

In this mode an external digital audio device (e.g. a digital equalizer) can be looped into the signal path via the XLR input / output connectors. The resulting signal path thus looks as follows: Firewire (or RCA or Toslink) input → XLR output → external device → XLR input → DAC chip. The "insert signal path" mode is indicated as follows: If the Firewire is the main input, the Firewire and AES/EBU switches are lit. If the S/PDIF is the main input the S/PDIF and AES/EBU switches are lit. So to enable the insert mode when the Firewire input is selected press the AES/EBU switch for longer than 1.5 seconds. To enable the insert mode when the S/PDIF input is selected press the AES/EBU switch for longer than 1.5 seconds. To leave the insert mode again press the AES/EBU for longer than 1.5 seconds.

Note that you may also enter the "volume control" mode when "insert signal path" is active by pressing **Firewire** for longer than 1.5 seconds.

### Bit Transparency Check

The DAC allows to check the player software running on the computer for bit trans-

parency. This is done by playing a test audio file on the computer. The DAC then checks whether it receives the special bit pattern from the test file. This check is running in the background of the DAC software, i.e. as soon as the DAC detects such bit patterns it flashes three of the LEDs on the frontpanel. I.e. the flashing LEDs indicate that the player is indeed bit transparent.

There are a total of 12 files for bit transparency check, one for each sampling rate (44.1, 48, 88.2, 96, 176.4, 192) and for 16 and 24 bit wordlengths. We suggest to start with testing the 24 bit wordlength. The files are in WAV format which is an uncompressed format supported by most players. If the player does not seem to be bit transparent then this can have several causes, such as:

- a volume control not at 0dB gain
- an equalizer
- a sampling rate conversion
- a "sound enhancer" feature and more

Make sure all these processing elements are bypassed. Particularly the sampling rate conversion can creep in "unnoticed". I.e. the sampling rate in the Weiss Firewire IO window has to match the sampling rate of the file played, else a conversion is going on in the operating system. For iTunes there is another thing to know: Whenever the sampling rate is changed in the AudioMidi setup or the Weiss Firewire IO window, the iTunes program has to be restarted to gain bit transparency again. For iTunes running on a Mac computer a program like Sonic Studio's "Amarra" is highly recommended. With Amarra it is possible to switch the sampling rate in AudioMidi (i.e. in the DAC) automatically depending on the sampling rate of the file played. Amarra works in conjunction with iTunes.

On a Windows based system the use of ASIO or WASAPI is highly recommended. These systems make it simple to achieve bit transparent playback. In addition the sampling rate of the DAC is switched automatically depending on the sampling rate of

the file played. Note that the test audio files do not generate any audible audio signal. This makes sure that your speakers are protected when doing the test.

## Firmware

Download the latest firmware from here: [www.weiss.ch/downloads/dac2fw/v101/minerva\\_tcd22x0Debug.bin](http://www.weiss.ch/downloads/dac2fw/v101/minerva_tcd22x0Debug.bin)

(login: *weissuser*, password: *saracon0505*)