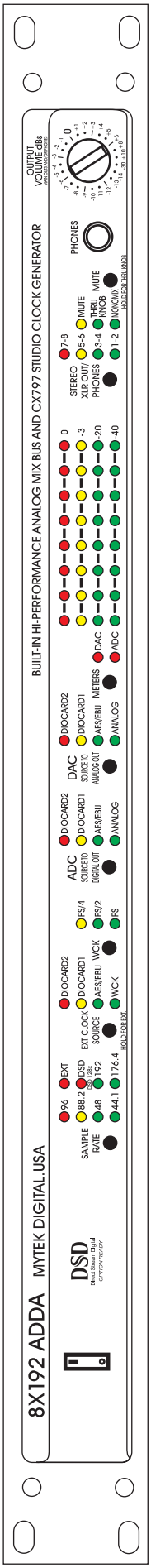


MYTEK DIGITAL.USA

8X192 ADDA

8 CHANNEL MASTERING ANALOG TO DIGITAL AND DIGITAL TO ANALOG CONVERTER

USER MANUAL

VER.FEB/2006

This manual may be updated

Download the newest version at:

http://www.mytekdigital.com/manuals/8x192adda_manual.pdf

For technical support, technical tips and support check:

http://www.mytekdigital.com/products/8x192adda.htm

or contact Mytek tech support at:

info2006@mytekdigital.com

or at:

tel. (646)-613 1822
fax.(212)-202 5331

Mytek
151 Lafayette Street 3rd Fl
New York NY 10013
USA

OWNER'S RECORD:

The serial number is located on the bottom of the unit. We suggest you record the serial number in the space provided below. The firmware version label is located on the 8 pin emprom chip located in a socket under the top lid. The firmware can be updated and chip replaced by the user if necessary. Please be sure to return your completed warranty card.

8x192 ADDA Serial NO.:

Firmware Version:

Purchase Date:

Dealer/ Contact:

Cards Installed, Serial ##

WARRANTY

This 8X192ADDA digital audio converter is warranted by Mytek to the original purchaser against defects in workmanship and materials used in manufacture for a period of one year from the date of purchase. Faults due to customer misuse, unauthorized modifications or accidents are not covered by this warranty.

No other warranty is expressed or implied.
Any faulty unit should be sent, shipping prepaid, to the manufacturer service center. Prior to shipping the client should obtain from Mytek an RMA# for warranty services. Units sent without RMA# will not be accepted.

Mytek extends affordable repair service for all units manufactured to date that are not covered by this Warranty.

INTRODUCTION

Mytek 8X192 ADDA is an 8 channel Analog to Digital and an 8 channel Digital to Analog converter maticoulsly designed to provide the highest quality signal path. No compromises have been made to sound quality, and we feel that this is the best sounding Mytek converter to date. In trial tests in comparison with other hi-end brands this unit provided the same or better sonic performance, which makes it suitable for the most demanding mastering and recording applications.

Users choose Mytek converters primarily for their outstanding sonic quality. The sound of Mytek converters can best be described as "transparent". We design our converters to be as faithful to the original signal as possible, rather than adhering the philosophy of some other manufacturers who offer "analog" or "tube" sounding converters. Mytek converters are designed to be as close to a straight wire as possible,which is especially evident when used at full 24/192 or DSD resolution.

On the Mytek website you can find and download various sound samples to evaluate the 8X192's sound quality and compare it to the sound of other high end converter units. Please log onto: http://www.mytekdigital.com to download samples. Thanks to the wide choice of daughter interface cards (DIO Cards), the 8X192 becomes an 8 channel "digital swiss army knife",which allows the user to adapt converter performance to most studio setups and situations."

In addition to typical converter functions, the Mytek 8X192 features a unique analog mix bus designed with transparency in mind, a monitor section with a mastering grade stepped attenuator, and a hi-end headphone amp.

The built in CX 797 clock generator with multiple wordclock outputs is the best source for stable studio house clock, and the 8x192 will perform best using this internal clock.

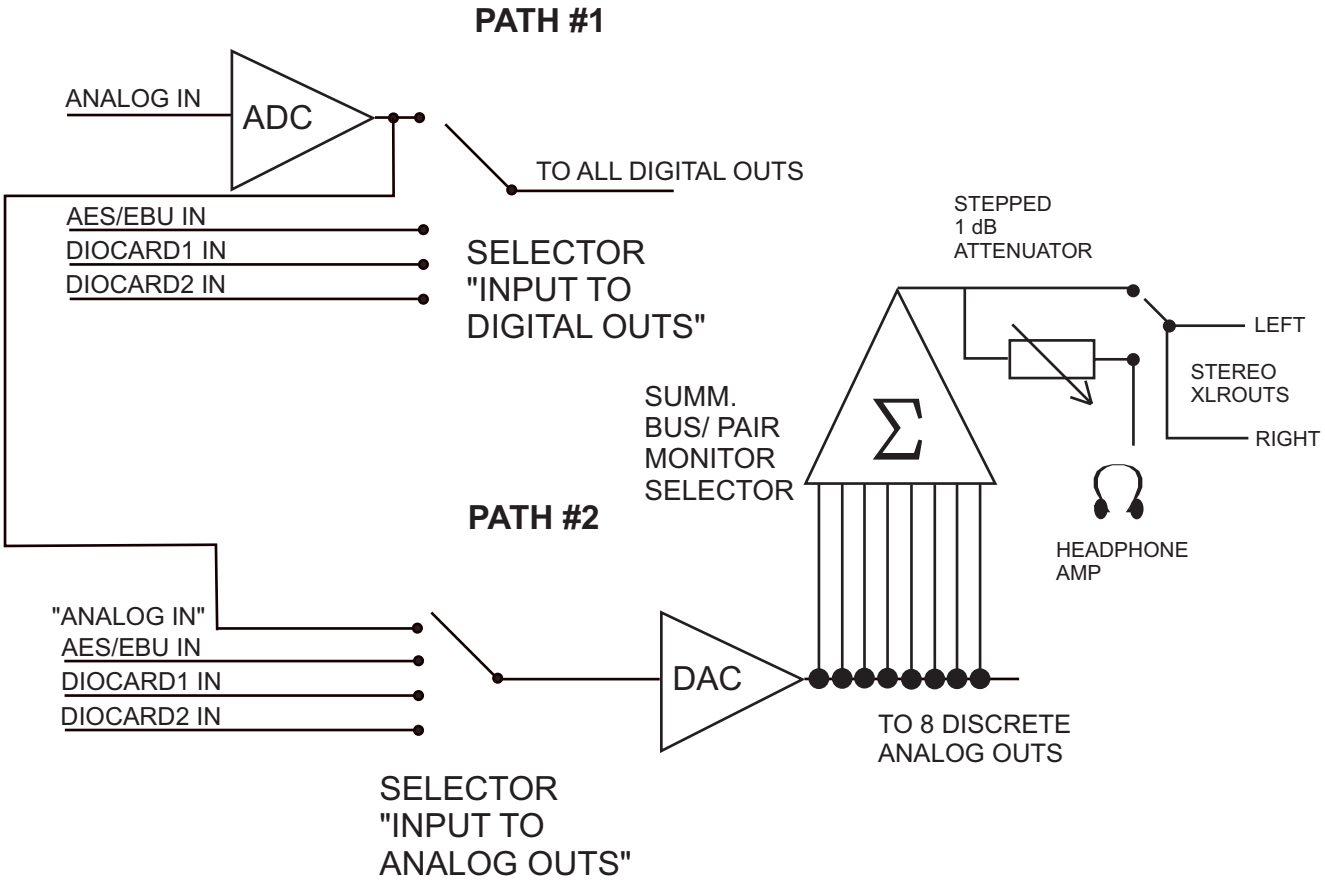
SIGNAL FLOW

The 8X192 ADDA has two independent signal paths within the unit. They offer independent signal paths but must operate at the same clock source and sampling frequency. It's recommended that as much as possible the unit should be clocked from its internal CX 797 clock generator. This mode offers minimum jitter allowin for the best performance and system stability. Associated equipment should be slaved to 8X192 clock outputs whenever possible. There is no measurable improvement (rather typically a degradation) when the unit is clocked by external clock generator.

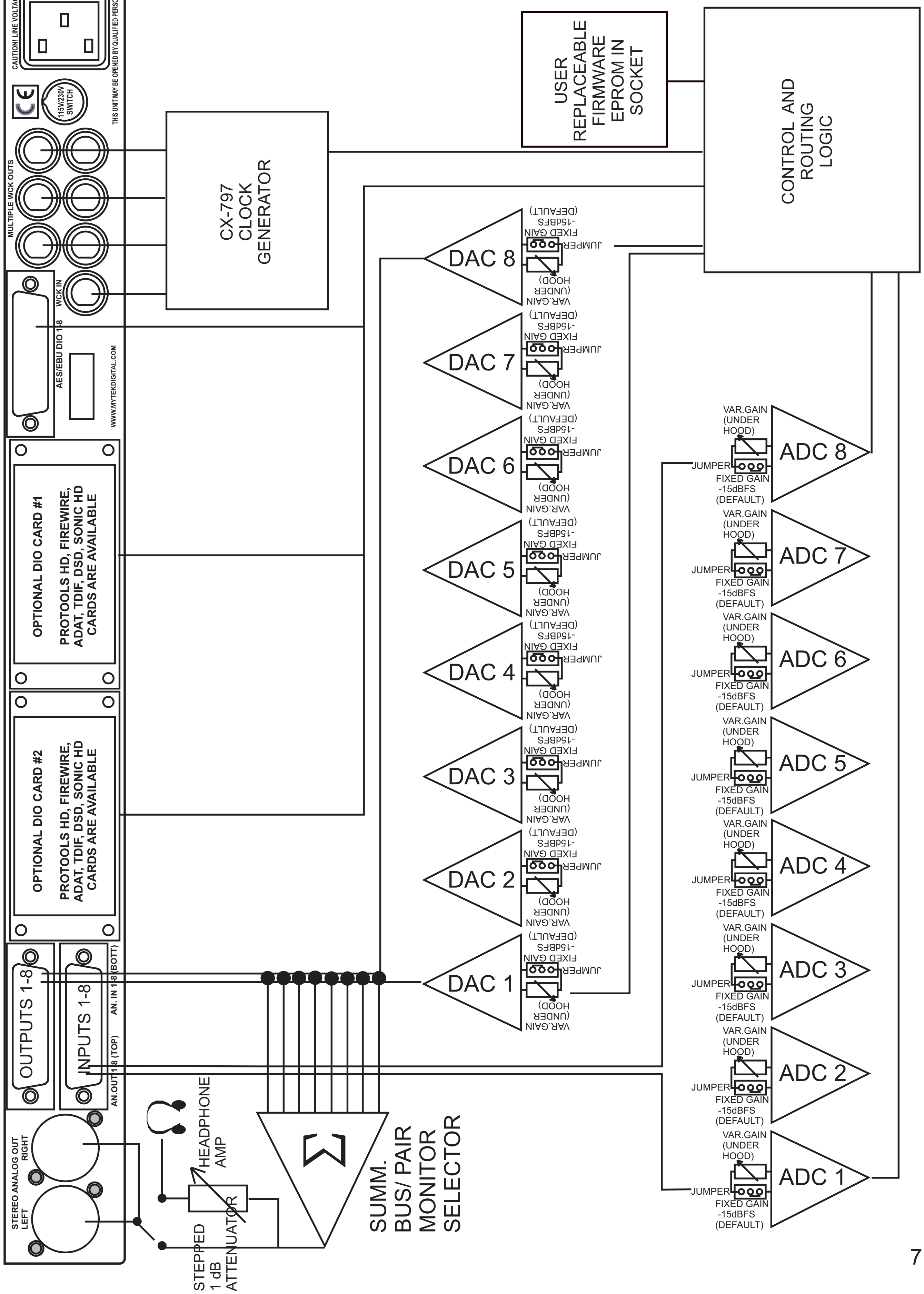
1) The first path is built around the ADC converter and essentially defines what input is selected to be sent to digital outputs. All digital outputs are simultaneous, so if the analog input is engaged, the analog signal is converted to digital and sent to all installed digital outputs.

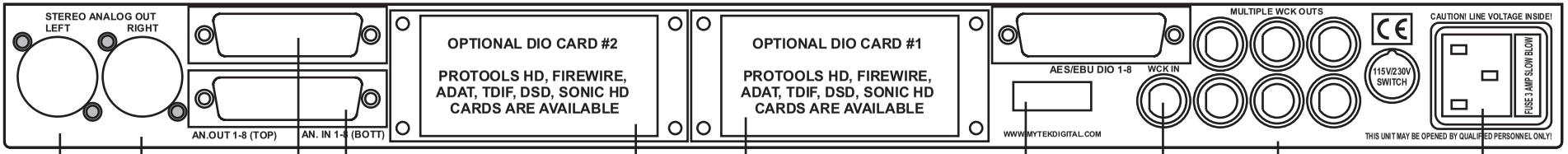
If the digital input is selected, only digital format conversion is performed, and the signal is then passed to the digital outputs. There is no SRC or any kind of digital processing induced. When operating in DSD mode only the inputs and outputs compatible with DSD format are active.

"2) The second signal path is built around the DAC. It defines what signal is present at the analog outputs. The selected digital signal is converted to analog. If the analog input is selected, it's first converted to digital by the ADC and then sent to the DAC and converted back to analog.



BLOCK SCHEMATIC





Stereo monitor XLR outputs. These are +4dB balanced outputs with 75 Ohm output impedance. They are buffered following mix bus/monitor selector and can be run directly from bus/selector or via 1dB precision stepped attenuator by holding down selector button until "through knob" led is on. When driving unbalanced loads pin 3 should be lifted (not shorted to gnd). There is no internal gain adjustment on this output other than the volume knob. **Headphone jack present on front panel** features the same signal as XLR outs but it is always routed through knob. Mute switch mutes XLR outs only.

Discrete 8 analog inputs. These are direct inputs to each A/D converter. The inputs are balanced +4dB and have a set gain of +4dB=-15dBFS or can be adjusted (see previous chapter). They have 10 kOhm input impedance and can be driven by single ended sources (including -10dBV consumer). The DB25 pinout is described elsewhere on this page.

DIP Switch enables addtnl special functions. ON is down OFF is up.

dipsw8 ON: wckin 75 ohm termination
dipsw7 ON: dual wire - for FSx2 or x4.
dipsw6 ON: makes BNCs superclock instead of wordclock.

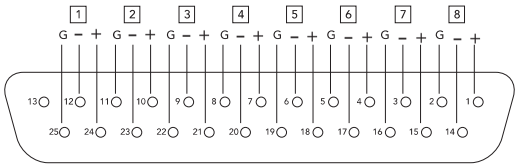
Internal hi-performance **CX 797 Clock Generator** features one wordclock input (TTL or 3-5V) which can be terminated (see DIP switch). It can be multiplied if necessary by switch on front panel. There are also multiple wordclock outputs for synchronizing the rest of studio to the 8X192 ADDA. Both in and outs can also be Protools Superclock
(256x FS) (see DIP switch).

Two optional DIOCARD slots. Up two two extra digital interfaces can be installed for formats stated on the back of the slot. These cards can be installed by user without voiding the warranty, providing the connecting ribbon is properly insterted on both ends. To install the card: Power down, remove top unit cover and the back small slot cover. Secure the card with 4 screws and connect short ribbon straight to motherboard (without twisting the cable). Make sure all pins match the connector properly. Power up- once card is identified by system, it will become accessible from front panel.
DSD DIOCard additionally to providing DSD I/O will also load the DSD firmware into the unit thus enabling DSD conversion.

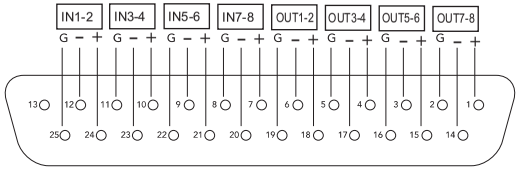
Powers supply is an oversized linear type and has to be set for appriopriate line voltage by the user using the round switch. The fuse is 20 mm 3Amp SLOW BLOW type and can be replaced by lifting the module next to power cord receptacle.

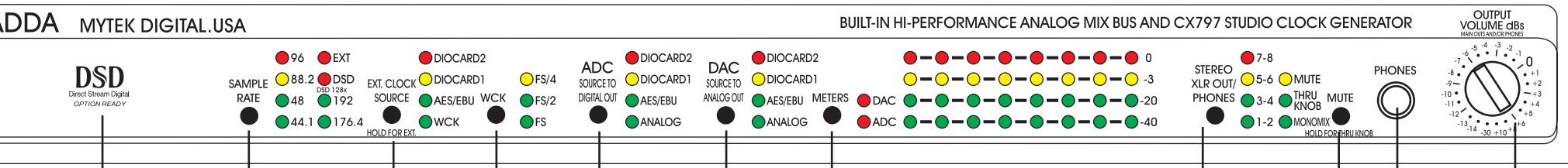
Discrete 8 analog outputs. These are direct outputs from each D/A converter. Since they are not followed by more electronics they are slightly more transparent than the monitor outputs and recommended for use whenever ultimate transparency is desirable. The outputs are balanced +4dB and have a set gain of +4dB=-15dBFS or can be adjusted (see previous chapter). They have 75 Ohm output impedance and can drive single ended (including -10dBV consumer) outputs. For single ended drive lift all cold signals. The DB25 pinout is described elsewhere on this page.

Analog input and output DB25 pinout corresponds to standard used by Protools, Tascam, Radar and Apogee as in drawing below. High end versions of DB25 to XLR breakout cables are available from Mytek, while basic cables are available through larger music retailers. Note that all DB25 pinouts including AES DIO are similarly wired with only difference being the sex of XLR connectors.



AES DIO DB25 pinout corresponds to standard used by Protools as in drawing below. **Note , it is different than Apogee Standard**. High end versions of DB25 to XLR breakout cables are available from Mytek, while basic cables are available through larger music retailers. Note that all DB25 pinouts including AES DIO are similarly wired with only difference being the sex of XLR connectors.





DSD and 128xDSD (hi-speed) feature can be enabled by installing the DSD DIOCARD.

Sample Rate switch toggles btwn sampling rates for PCM and if DSD option is installed, sets the unit to DSD or 128xDSD mode. This switch sets sample rate for both AD and DA and has to be set manually even if ext. clock is applied. In such case it has to be the nearest approximation of applied clock (or its multiplication if FS/2 or FS/4 is selected).

Pressing and holding **Ext.Clock Source** button enables or disables external sync. Toggling this switch selects the source of external clock.

WCK switch allows wordclock (both in and out) to be a division of sampling frequency. For example- when FS/4 is selected, the converter will operate at FS=176.4k while the wordclock is 44.1k.

Source to Digital Out- See Signal Flow on pg 6.

Source to Analog Out- See Signal Flow on pg 6.

Meters- Selects signal displayed by Meters- either ADC or DAC. Red meter LED is a full scale signal at 1 sample or more. We do not recommend peaking at red.

Stereo Output selector determines what is present on stereo XLR outputs and headphone. It can either be any pair of DACs or L/R sum of them (odd channels summed to L and even to R) or Mono sum of all 8 chan.
Holding this button selects Thru Knob function which routes the XLR output via volume attenuator. These outputs are typically connected directly to power amp or powered speakers providing hi-fidelity short signal monitor path.

Mute button mutes main XLR outs.

Hi- Fidelity, high drive headphone out can drive any type of headphones with ultimate fidelity. It's able to provide up to 1 Amp of instant current drive. The headphone out is the same as XLR and it's always routed through the knob.

Precision 1dB steeped attenuator features a precision 24 step switch and precision resistor ladder resulting in very accurate level monitoring for mastering purposes.

FRONT PANEL CONTROLS

INPUT/OUTPUT GAIN
AND OTHER INTERNAL ADJUSTMENTS

Analog input/output alingment

The 8X192 ADDA analog input/output sensitivity comes as factory default fixed at -15dBFs corresponding to +4dB (OVU=1.228VRMS measured between hot and cold). This gain is optimal for most situations and unless another level "is necessary for systemic reasons, we recommend leaving the gain at the default setting. If the gain has to be changed the appriopriate jumpers and trimpots have to be accessed by lifting the top cover. Please review the drawing on following page.

The gain alignment does not affect audio quality, only input/output sensitivity. A small tweaker or screwdriver is necessary. First you have to arbitrarily decide what will be your studio "0 VU" analog/digital reference level. It is usually between -20 and -14dB. It defines how much headroom is left over the normal operating "0 VU" level. You may set it at the same level as other piece of equipment in your studio.

Step 1 - Analog output alignment

1. Play a digital audio source (DAW generator, test CD etc.) set to approx. 1kHz at the peak operating level you have chosen (let's say you have chosen -18dB).

2. Send the signal from the analog output to the console VU meter. If you don't have a VU meter you can use an AC voltmeter set to measure AC RMS values. "0 VU"at + 4dB corresponds to 1.225 Volts RMS measured between pin hot and pin cold of the output signal.

3.Using a tweaker or a small screwdriver adjust the analog outputs until the VU meter reads "0 VU".

4. Repeat the same for all outputs.

Step 2 - Analog input alingment

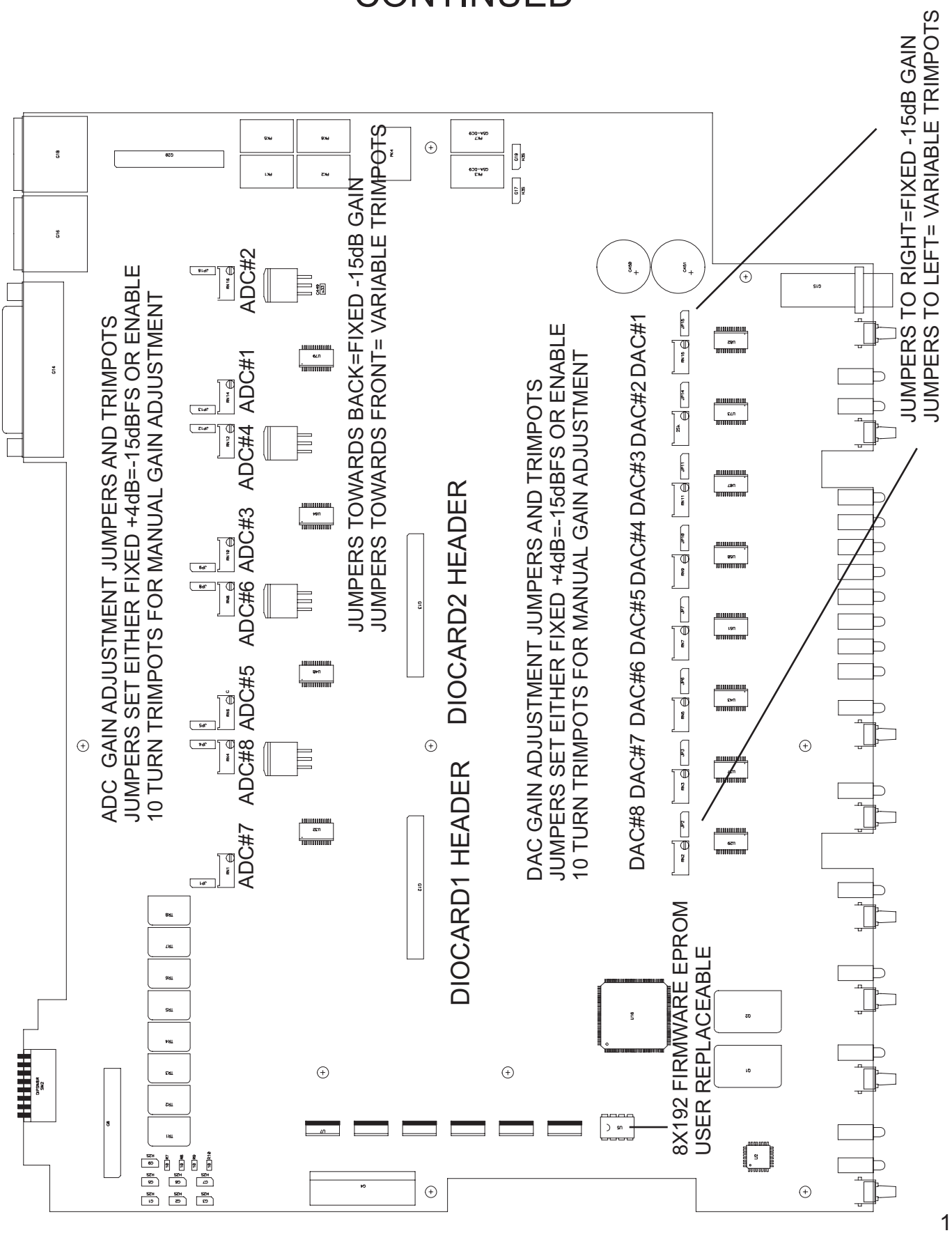
1.Set the oscillator in your console at 1kHz and "0 VU". Send the oscillator to the 8X192ADDA analog input."0 VU" at + 4dB corresponds to 1.225 Volts RMS measured between pin 2 and 3 of the output XLRs. If you do not have an analog oscillator, you can use a calibrated analog out of a DA converter and generate a sinewave inside the DAW. Alternatively, if you do not have an oscillator you can use the analog outputs you have just aligned as a source of a sinewave at +4dB (generating sinewave digitally as in step 1).

2.Select the "analog input". Connect a digital meter to a digital output. If you don't have a dedicated digital meter use the most precise meter available in you existing digital recording equipment or DAW.

3. Adjust the analog input level to get appropriate reading of the meter
(for example -18dB).

4. Repeat the same for all of the analog inputs.

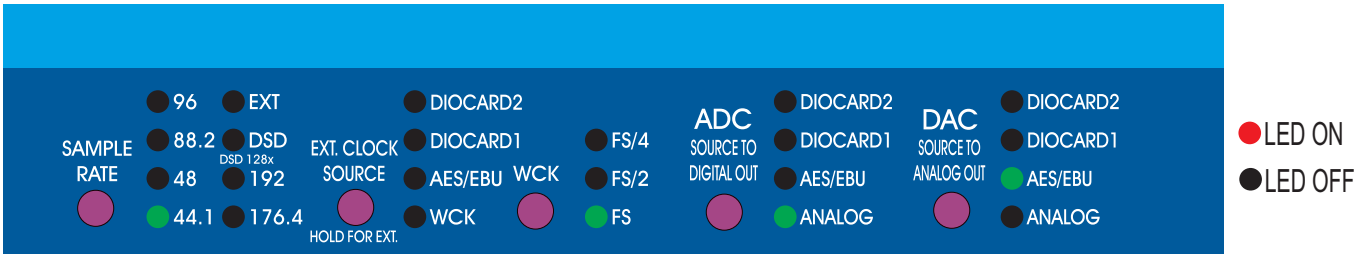
INTERNAL ADJUSTMENTS
CONTINUED



SETTING CLOCKING AND SIGNAL SOURCES

1. NORMAL OPERATION. AD AND DA ON INTERNAL CLOCK.

AD FEEDING THE RECORDER, DA MONITORING RECORDER



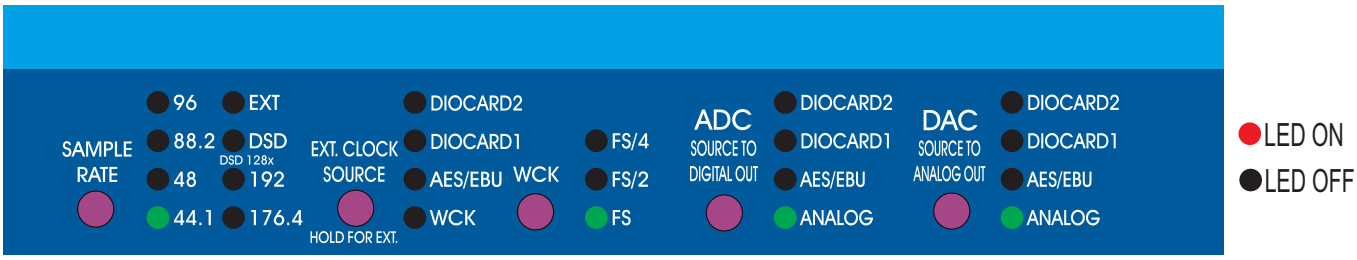
In this mode both the AD and DA run on the internal clock. This mode provides the lowest jitter and most sonically robust performance. External recorders (such as DAW etc) have to be synchronized either to the AD digital outputs (any format: AES or DIOCARD1 or DIOCARD2) or to the converter Worclock output.

This example shows 44.1 PCM, but any FS can be any selected, including DSD and 128x DSD. Also instead of AES, any other digital input to DA can be selected, depending on the particular system configuration. The unit will output on its BNC outs Wordclock corresponding to the sampling frequency unless it's divided by using WCK button.

If the DA converter receives no selected digital in OR this input is not synchronous with AD clock, the LED will flash and DA converter will mute."

2. FEED THROUGH OPERATION. AD AND DA ON INTERNAL CLOCK.

AD FEEDING DA DIRECTLY

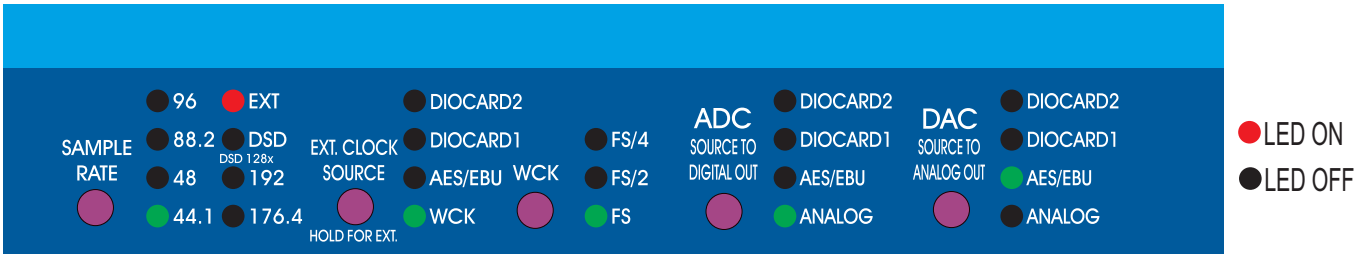


In this mode both the AD and DA run on the internal clock. This mode also provides the lowest jitter and most sonically robust performance. External recorders (such as DAW etc) must be synchronized either to AD digital outputs (any format: AES or DIOCARD1 or DIOCARD2) or to the converter Worclock output.

In this mode signal is fed from AD to digital outputs and also to DA directly. This mode may be usefull when conversion latency has to be minimized during the recording. It functionally corresponds to a multitrack tape machine always on "input". This example shows 44.1 PCM, but any FS can be any selected, including DSD and 128xDSD. Also instead of AES any other digital input to DA can be selected depending on particular system configuration. The unit will output on its BNC outs Wordclock corresponding to the sampling frequency unless it's divided by using WCK button. "

3. NORMAL OPERATION. AD AND DA ON EXTERNAL WORDCLOCK.

AD FEEDING THE RECORDER, DA MONITORING RECORDER



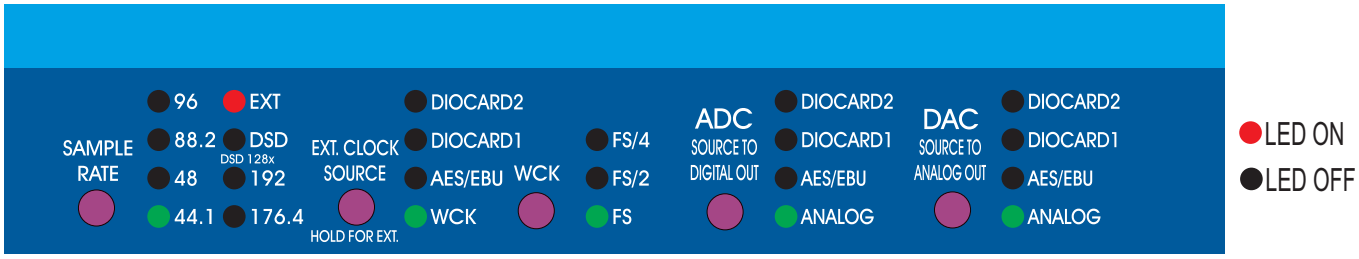
In this mode both the AD and DA run on an external clock. Holding the "Ext. Clock Source" button selects this mode. Although this mode does not provide the lowest jitter performance it might be desirable for systemic reasons. External recorders (such as DAW etc) can be synchronized to external wordclock sources OR AD digital outputs (any format: AES or DIOCARD1 or DIOCARD2) OR to converter Worclock output.

This example shows 44.1 PCM, but any FS can be selected, including DSD and 128xDSD. Also instead of AES any other digital input to DA can be selected depending on a particular system configuration.

The unit will output on its BNC Wordclock outs corresponding to the sampling frequency provided externally unless it's divided by using WCK button. If the DA converter receives no selected digital in OR this input is not synchronous with AD clock, the LED will flash and DA converter will mute. Sample Rate has to be selected manually to match wck or its nearest approximation. WCK will be the base of sampling rate. If no WCK source is detected, WCK LED will flash and the unit will not pass signal.

4. FEED THROUGH OPERATION. AD AND DA ON EXTERNAL CLOCK.

AD FEEDING DA DIRECTLY



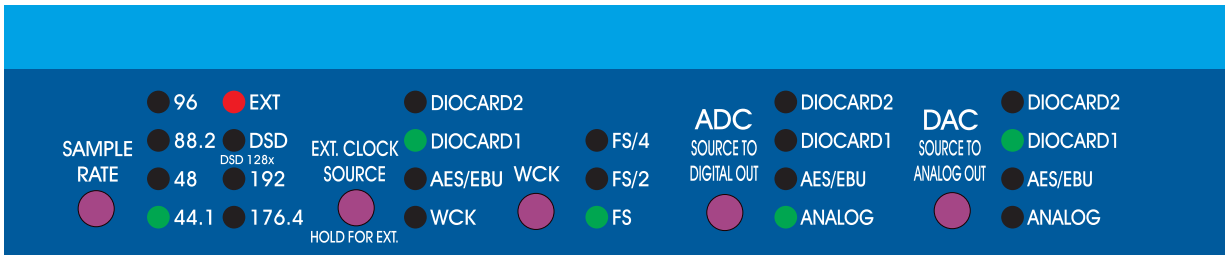
In this mode both the AD and DA run on an external clock. Although this mode does not provides the lowest jitter performance it might be desirable for systemic reasons. External recorders (such as DAW etc) can be synchronized to an external wordclock source OR AD digital outputs (any format: AES or DIOCARD1 or DIOCARD2) OR to a converters Worclock output. In this mode signal is fed from the AD to digital outputs and also to DA directly. This mode may be useful when conversion latency has to be minimized during the recording. It functionally corresponds to a multitrack tape machine always being on "input".

This example shows 44.1 PCM, but any FS can be selected, including DSD and 128xDSD. Also instead of AES any other digital input to DA can be selected depending on a particular system configuration.

The unit will output on its BNC outs a Wordclock signal corresponding to the sampling frequency provided externally, unless it's divided by using the WCK button. If the DA converter receives no selected digital in OR this input is not synchronous with AD clock, the LED will flash and DA converter will mute. The Sample Rate has to be selected manually to match wck or its nearest approximation. WCK will be the base of sampling rate.
If no WCK source is detected, the WCK LED will flash and the unit will not pass signal.

5. NORMAL OPERATION. AD AND DA ON EXTERNAL CLOCK OTHER THAN WCK.

AD FEEDING THE RECORDER, DA MONITORING RECORDER



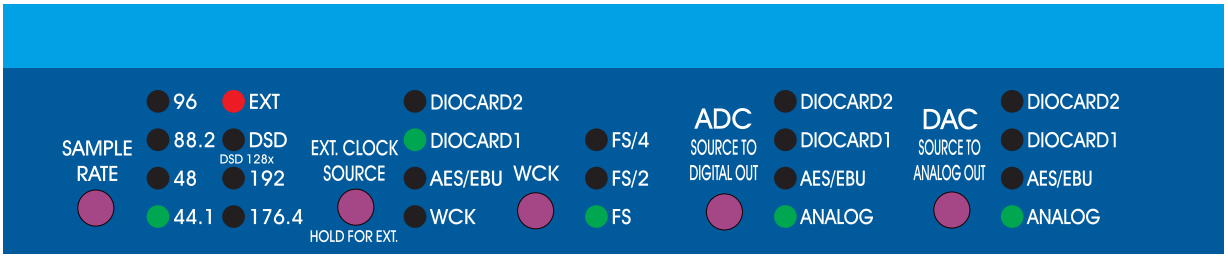
In this mode both the AD and DA run on an external clock. Although this mode does not provides the lowest jitter performance it might be desirable for systemic reasons. For example a second 8X192 unit running can be coupled with a master 8X192 unit via Firewire cable only. In this case the clock for the second unit is provided via a Firewire card (DIOCARD1 in this example). External recorders (such as DAW etc) can be either AD digital outputs (any format: AES or DIOCARD1 or DIOCARD2), converter Worclock outputs, or can run in asynchronous Firewire mode.

This example shows 44.1 PCM, but any FS can be any selected, including DSD and 128xDSD. Also instead of AES any other digital input to DA can be selected depending on a particular system configuration.

The unit will output on its BNC outs Wordclock corresponding to the sampling frequency provided externally unless it's divided by using WCK button. If the DA converter receives no selected digital in OR this input is not synchronous with AD clock, the LED will flash and DA converter will mute. The Sample Rate has to be selected manually to match wck or its nearest approximation. WCK will be the base of sampling rate. If no WCK source is detected, WCK LED will flash and unit will not pass signal.

6. FEED THROUGH OPERATION. AD AND DA ON INTERNAL CLOCK.

AD FEEDING DA DIRECTLY



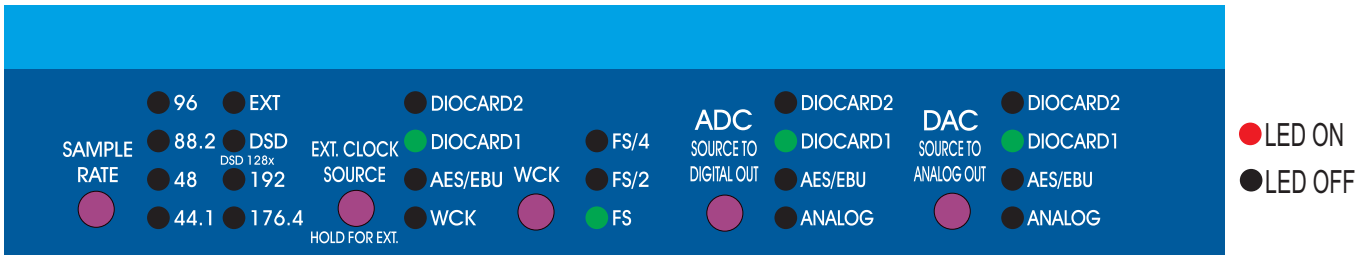
In this mode both the AD and DA run on an external clock. Although this mode does not provides the lowest jitter performance it might be desirable for systemic reasons. For example a second 8X192 unit running can be coupled with a master 8X192 unit via a Firewire cable only. In this case the clock for second unit is provided via Firewire card (DIOCARD1 in this example). External recorders (such as DAW etc) can be either AD digital outputs (any format: AES or DIOCARD1 or DIOCARD2), converter Worclock output, or can run in asynchronous Firewire mode. In this mode signal is fed from AD to digital outputs and also to DA directly. This mode may be usefull when conversion latency has to be minimized during the recording. It functionally corresponds to a multitrack tape machine always on"input".

This example shows 44.1 PCM, but any FS can be any selected, including DSD and 128xDSD. Also instead of AES any other digital input to DA can be selected depending on a particular system configuration.

The unit will output on its BNC outs Wordclock corresponding to the sampling frequency provided externally unless it's divided by using WCK button. If the DA converter receives no selected digital in OR this input is not synchronous with AD clock, the LED will flash and DA converter will mute. The Sample Rate has to be selected manually to match wck or its nearest approximation. WCK will be the base of sampling rate. If no WCK source is detected, WCK LED will flash and unit will not pass signal.

7. FORMAT CONVERSION OPERATION.

ADC IS OFF, DIGITAL IN TO DIGITAL OUT, DA MONITORING DIGITAL IN.



In this mode the 8X192 unit can be used for format conversion between all installed digital interfaces. Once a digital input is selected for "SOURCE TO DIGITAL", the "SAMPLE RATE" switch is disabled and EXT.CLOCK SOURCE and SOURCE TO ANALOG OUT automatically set to selected digital input. The incoming digital signal is converted to all available digital formats simultanouesly as well as is sent to DA converter for monitoring. The wck divider affects only WCK outs. WCK is derives from incoming digital input, in this example DIOCARD1.

Specifications ADC*

Conversion:	Linear, 1 Bit * 128x oversampling at 44.1-48kHz 64x oversampling at 88.2-192kHz, optional 64xDSD and 128xDSD
Resolution:	24 bit, (or 1 bit DSD)
Sample rates:	44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz or wordclock 25-200kHz
Dynamic Range:	120dB A-weighted, 117dB Total
THD+Noise:	-106dB (<0.0005%)
Internal clock jitter:	<10picoseconds
Analog Inputs:	+4dBm balanced or unbalanced, 10 kOhm

Specifications DAC

Conversion:	Linear, multibit delta-sigma PCM and 64xDSD and 128xDSD
Resolution:	24 bit, (or 1 bit DSD)
Sample rates:	44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz or wordclock 25-200kHz
Dynamic Range:	123dB A-weighted, 120dB Total
THD+Noise:	-110dB (<0.0004%)
Internal clock jitter:	<10picoseconds
Analog Outputs:	+4dBm balanced or unbalanced, 75 Ohm

Specifications Other

Digital outputs:	Hi-Speed AES/EBU built in up to 200k or dual wire for 4 chan operation Other formats on optional DIO Cards
External Sync.:	Wordclock in and out. or 256x Superclock
Wordlock Out used as house clock:	15 LS TTL loads max. Can be terminated with 75 Ohm. 6 Outs
Wordlock In	TTL/5V input- internally switchable termination 75 Ohm.

Wordclock can be replaced by Superclock fiunction

Mains:	100/115V-220/240V 50/60Hz switchable
Weight, Dim::	14 pounds (7 kg), 1U x 19 inch x 10.5 inch deep

** This ADC uses a 1 bit delta sigma modulator which achieves instristically better low level linearity than the multibit counterparts. Although multibit ADC THD measurements are marginally better, the distribution of distortion subjectively sounds less desirable than in 1 bit converter which tends to exhibit certain silky quality. The same, currently worlds' highest performance 1 bit modulator is used to produce genuine 1 bit DSD signal.*