Glensound Electronics Ltd

DIGITAL CONVERTERS

Glensound DC-314
Digital Converter System

Single Card Frame

Three Card Frame

Fourteen Card Frame

Six Card Options

- Digital To Analogue Converter (DAC)
- Analogue To Digital Converter (ADC)
- Clock Generator (CLK GEN)
- Word Clock Distribution (CDA)
- Sample Rate Converter (SRC)
- Digital Distribution Amplifier (DDA)

A highly specified digital converter system with three frame options and six card modules. An intelligent design of the backplane allows for flexible multiple digital conversions within the same rack. Cards can be front or rear mounted, as can the power supply and optional redundant power supply.

Quality – Efficiency – Flexibility

digital converters

DC-314
digital converter system

DC-314

Audio Integrity Through Design

Digital conversion, clock generation, and distribution of digital signals are all standard requirements within a broadcast facility or outside broadcast vehicle. What the DC-314 system offers are these functions, in the most effective combination that you need now, whilst allowing simple upgrading as situations change in the future.

Glensound have also developed a system of a common backplane that makes the 3u version very flexible, allowing multiple clock frequencies within the same frame. Multiple conversions can therefore be simply managed without the need for additional hardware.

With the flexible option of 3 different base units, 6 card options, front or rear cabling, and redundant power supply, the DC-314 system from Glensound is a powerful digital conversion solution.

- **A highly specified digital converter system for high audio quality and reliability**
- **Very low distortion figures of less than 0.001%**
- **Clock converters with jitter figures of -0.7 parts per million (48kHz)**
- **24 bit 48kHz**
- **Sample rate from 32-192 kHz**
- **Low noise Wolfson chipsets**

DIGITAL CONVERTERS

DC-314
Design Features

Design Features

The Backplane

The development of the DC-314 digital converter started with the backplane. The card connections have an 'in' and an 'out' connector. After data and audio is received and used, if necessary, it is passed to the next card on the right.

Left Hand Priority
The backplane of the system first uses the leftmost card. The clock from this card is passed to the card to its right. This may be the clock from an AES input, or a new clock from the Clock Generator card. All subsequent cards to the right will operate at this frequency. When the backplane finds another Clock Generator card, it can set a new clock frequency to all further cards to the right without effecting the cards to the left. In this way, multiple frequencies can be utilised within the same system. There is no limit to this, and the high speed data required for digital clocks is maintained throughout.

The Control Bus
The system has an I^2C control bus integrated into the backplane. This gives the DC-314 the ability to control and integrate all connected modules.

The control bus passes information that allows remote analysis and control. A card with an integrated web browser will be available in the future for this purpose.

Plug And Play
All audio cards will plug and play while the system is active with no audio side effects - unless you remove a clock generator that a digital output is relying on of course!

Future Development
The design of the system lends itself to simple customisation: analogue distribution, line ident, two channel mixer. Whatever the project, custom modules can be integrated with the DC-314.

DC-314 DAC
Digital To Analogue Converter

DC-314 DAC
Digital to analogue converter

- **AES3 Digital Input On XLR S/PDIF Digital Input On Phono**
- **Optical TOSLINK Digital**
- **Balanced Analogue Outputs On XLRs**
- **Digital Sample Rates From 32 To 192kHz**
- **Handles Up To 24 Bit Digital Signals**
- **Auto Detection Of Valid Incoming Digital Signal On All 3 Inputs**
- **High Quality Low Noise Wolfson Chipsets**

Multiple Digital Inputs
To maximise the usefullness of the system, the DC-314 DAC includes not only the standard AES/EBU input, but also S/PDIF on an RCA phono and TOSLINK optical. The detection of the valid input is automatic.

Low Distortion
The DAC has a very low distortion figure of less than 0.0001%, ensuring the best analogue audio quality is achieved from a digital source.

AUDIO SPECIFICATIONS: DC-314 DAC

DIGITAL INPUTS	1 x AES/EBU Neutrik XLR 3 pin female 1 x S/PDIF RCA phono 1 x TOSLINK optical
ANALOGUE OUTPUTS	2 x XLR 3 pin male, balanced
DIGITAL INPUT SAMPLING FREQUENCY RANGE	32 kHz - 192 kHz
BIT RESOLUTION	24 bit
SIGNAL TO NOISE RATIO	109dB, +18dBu, 20-20kHz BW
THD+N	<0.0001% (-100dB) THD+N at 1 kHz, 0dBFS
DYNAMIC RANGE	110dB, +18dBU, 20kHz BW
CROSSTALK	109dB, 1kHz, +18dBU, channel to channel 108dB, 50Hz, +18dBU, channel to channel 109dB, 15kHz, +18dBU, channel to channel
OUTPUT IMPEDANCE	50 ohms, balanced
MAXIMUM OUTPUT LEVEL	+18dBU balanced, 20-20kHz
FREQUENCY RESPONSE	20hHz-20kkhz, -1dB
INTERMODULATION DISTORTION	IMD (SMPTWE/DIN) <0.001% (<106dB), 41HZ, 4:1, +4dBU
TEST CONDITIONS	1kHz test signal, no weighting, fs=48kHz, MCLK =256 fs, 24 bit audio data unless specified

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module options

DC-314 ADC
Analogue To Digital Converter

DC-314 ADC
Analogue to digital converter

- **AES3 Digital Output On XLR**
- **S/PDIF Digital Output On RCA phono & Optical TOSLINK**
- **Balanced Analogue Inputs On XLR**
- **Digital Sample Rates 32 To 192 kHz**
- **Clock Reference Taken From Card To Its Left**
- **24 Bit Output Resolution**
- **Simultaneaous Outputs On All 3 Digital Circuits**
- **High Quality Low Noise Wolfson Chipsets**

Multiple Digital Outputs

To maximise the usefullness of the system, the DC-314 DAC includes not only the standard AES/EBU output, but also S/PDIF on an RCA phono and TOSLINK optical.

Clock Frequency From The System Backplane

The DAC module takes its sampling frequency from the first valid module to its left. This could be the DC-314 CLK GEN module, or any other valid AES input on a card to the left.

AUDIO SPECIFICATIONS: DC-314 ADC

ANALOGUE INPUTS	2 x Neutrik XKR 3 pin female, balanced
DIGITAL OUTPUTS	1 x Neutrik AES/EBU XLR 3 pin male 1 x S/PDIF RCA phono 1 x TOSLINK optical
DIGITAL SAMPLING FREQUENCY RANGE	32 kHz - 192 kHz
BIT RESOLUTION	24 bit
SIGNAL TO NOISE RATIO	104dB, +18dBu, 20-20kHz BW
CROSSTALK	102dB, 1kHz, +18dBU, channel to channel 102dB, 50Hz, +18dBU, channel to channel 102dB, 15kHz, +18dBU, channel to channel
INPUT IMPEDANCE	22k ohms, balanced
MAXIMUM OUTPUT LEVEL	0dBFS=+18dBU
FREQUENCY RESPONSE	20hHz-20kHz, -1dB
INTERMODULATION DISTORTION	IMD (SMPTWE/DIN) <0.001% (<102dB), 41HZ/7993HZ, 4:1, +4dBU
THD+N	<0.002% (-97dB) THD+N at 1 kHz, 0dBFS
DYNAMIC RANGE	104dB, +18dBU, 20kHz BW
TEST CONDITIONS	1kHz test signal, no weighting, fs=48kHz, MCLK =256 fs, 24 bit audio data unless specified

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DC-314 CLK GEN
Clock Generator

DC-314 CLK GEN
Clock generator

- **Master Clock Generator**
  The CLK GEN module provides clock reference signal to other modules in slots to the right. This master clock is available externally via a front panel BNC output.
- **Low Jitter**
  The high speed data bus provides very low jitter. Two devices are used for exceptional jitter specifications at 48kHz and another device for 44.1 kHz.
- **Word Clock Input On BNC**
  The CLK GEN can sync to external references via a front panel word clock input.
- **World Clock Output On BNC**
  The CLK GEN can act as master clock to external devices via a front panel BNC output.
- **DARS (digital audio reference signal) Input On XLR (also locks onto AES3)**
- **Selectable Clock Frequency**
  A front panel push button scrolls through the following clock frequencies: 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz

Operational Modes

- **Master**
  The digital output frequency is set by the user and no lock will occur to any clock reference even if it is available.
- **Auto Sync**
  The output frequency will follow the reference input. If no reference is available then the output frequency is set by the user.
- **Auto Sync Follow**
  Will follow external reference if detected. If this reference is lost, then the output frequency will continue at the closest frequency to the input before it was lost.

The DC-314 CLK GEN remembers its operational mode even after power resets.

AUDIO SPECIFICATIONS: DC-314 CLK GEN

INPUTS	1 x AES/EBU Neutrik XLR 32-192kHz 1 x Word clock on BNC 32-192kHz, black and burst video
OUTPUTS	1 x Word clock BNC 32-192kHz MCLK, BCLK, LRCLK, and AES block on DIN41612 connector
WORD CLOCK OUTPUT IMPEDANCE	75ohms
SAMPLE RATES	32, 44.1, 48, 88.2, 96, 176.4, 192 kHz
JITTER	48kHz -0.7 parts per million 44.1kHz +5 parts per million

DC-314 CDA
Word Clock Distribution Amplifier

DC-314 CDA
Word clock distribution amplifier

- **Six Output Word Clock Distribution Amplifier**
  A distribution module containing six outputs of the system clock.
- **Outputs On BNC Connections**
  Clock outputs on standard 75 ohm BNC connectors
- **Output Frequency Taken From DC-314 Backplane**
  As the system works from left to right, whatever the current clock is at the CDA module will be the frequency distributed.

AUDIO SPECIFICATIONS: DC-314 CDA

INPUTS	Word clock from system backplane
OUTPUTS	6 x BNC female
OUTPUT IMPEDANCE	75 ohms
OUTPUT LOAD	=> 75 ohms
SUPPORTED SAMPLE RATES	32, 44.1, 48, 88.2, 96, 176.4, 192 kHz

DC-314 SRC
Sample Rate Converter

DC-314 SRC
Sample rate converter

- **Three Digital Input Options**
  - AES/EBU Digital input on Neutrik XLR
  - S/PDIF digital input on RCA phono
  - S/PDIF digital input on optical TOSLINK
- **Three Digital Output Options**
  - AES/EBU output on Neutrik XLR
  - S/PDIF digital output on RCA phono
  - S/PDIF digital output on optical TOSLINK
- **Output Frequency Taken From DC-314 Backplane**
  As the system works from left to right, whatever the current clock from the left as it reaches the SRC module will be the frequency output.
- **LED Lock Indication**
  When a valid digital input is detected the LED lights.

AUDIO SPECIFICATIONS: DC-314 SRC

DIGITAL INPUTS	1 x AES/EBU Neutrik XLR 3 pin female 1 x S/PDIF RCA phono 1 x TOSLINK optical
DIGITAL OUTPUTS (CONVERTED)	1 x AES/EBU Neutrik XLR 3 pin female 1 x S/PDIF RCA phono 1 x TOSLINK optical
INPUT RESOLUTION	Up to 24 bit
OUTPUT RESOLUTION	Up to 24 bit
SIGNAL TO NOISE RATIO	-137dB, +18dBu, 20-20kHz BW
THD+N	0.00001% (-100dB) THD+N at 1 kHz, 0dBFS
SYNCROMISATION INPUT	From backplane
SUPPORTED SAMPLE RATES	32, 44.1, 48, 88.2, 96, 176.4, 192 kHz

DC-314 DDA
Digital Distribution Amplifier

DC-314 DDA
Digital distribution amplifier

- **Three Way AES/EBU Distribution Amp**
  A single AES/EBU input is distributed to three AES/EBU outputs.
- **AES/EBU Digital Input**
  The input is on a high quality Neutrik XLR
- **Three AES/EBU Digital Outputs**
  The three digital outputs are identical and made available on high quality Neutrik XLRs
- **Clock Frequency Taken From Input**
  The clock frequency of the distributed outputs is identical to the clock frequency on the input. It is not re-clocked to take the frequency from the backplane.

AUDIO SPECIFICATIONS: DC-314 DDA	
DIGITAL INPUT	1 x AES/EBU Neutrik XKR 3 pin female
DIGITAL OUTPUTS	3 x AES/EBU eutril XLR 3 pin male
INPUT IMPEDANCE	110 ohms
OUTPUT IMPEDANCE	110 ohms
SAMPLING FREQUENCY RANGE	32-192kHz
RESOLUTION	Up to 24 bit

DC-314 FRAME
Frame Option

DC-314 FRAME
Fourteen Card Frame

- **3U Subrack Holds 14 Module Cards**
- **Versatile Main & Redundant Power Supply**
  The 100v-240v switch mode power supply can be mounted in the front or rear of the unit to suit the requirement. A second supply can be added for redundancy.
- **Card Mounting Options**
  Module cards can also be mounted in the front or back of the frame.
- **Modify Or Upgrade At Any Time**
  Any unused slots can be used at any time as requirements change by simply adding the the extra module card.

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DC-314 TRIO
Frame Option

DC-314 TRIO
Three Card Frame

- **1U Subrack Holds 3 Module Cards**
- **Additional Cards Can Be Added At Any Time**
- **With Single Or Twin Redundant Power Supply**
- **Power Supply Internal 100v-240v Switch Mode**
- **Two TRIO Frames Can Be Linked To Create Redundant Power Supplies For Each Other.**

The TRIO is the 1U subrack option allowing from 1 - 3 modules in a 1U 19” subrack. The same backplane design is used so clocks are taken from the left. Cards can hot swap and can be added at anytime. There is a a redundant power supply option, or two TRIO’s can be linked with each power supply acting as the dedundant for the other.

DC-314 UNO
Frame Option

DC-314 UNO
Single Card Frame

- **Freestanding Frame To Take One Of The DC-314 Module Cards**
- **Internal 100v - 240v Switch Mode Power Supply**
- **Will Freestand, Screw Under Desk, Or Screw To The Side Of A Rack**
- **Anodised Casing**

The UNO is the option when only a single DC-314 card is required. The flexible anodised case has wings for screwing under desks, or on the inside of a rack, or it can simple free stand.

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Your local dealer:

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