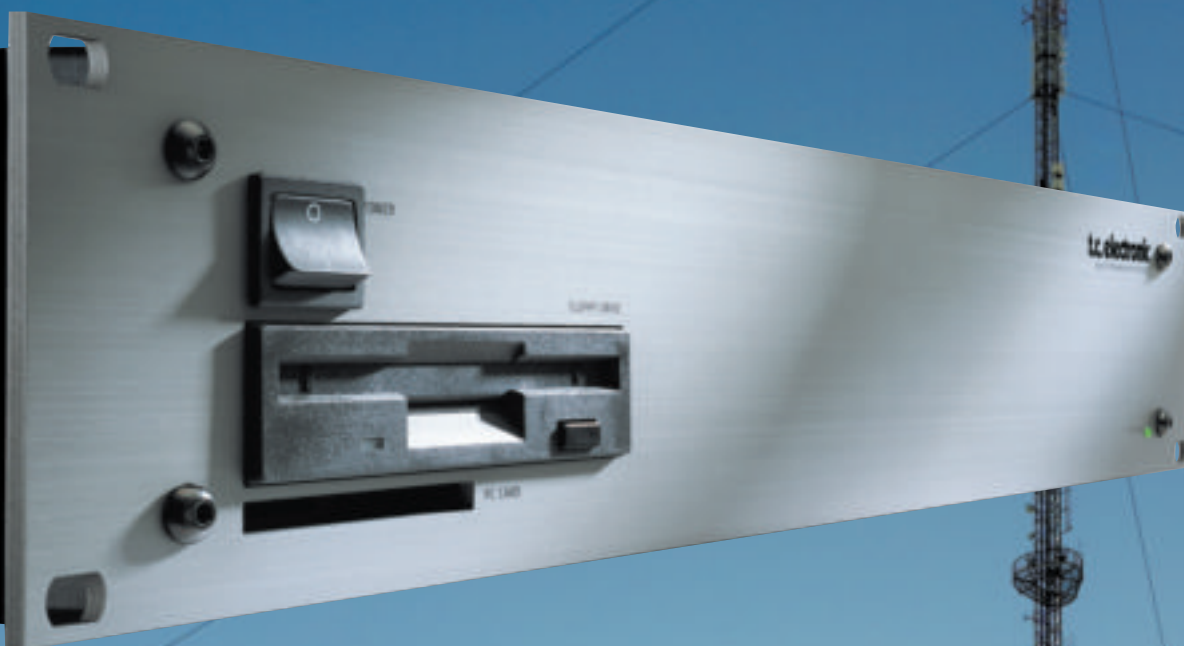


Broadcast Audio Processors



Loudness Control

True Loudness and Multiband Processing

- ▶ Loudness control across programs and commercials
- ▶ Maximum speech intelligibility



Peak Control

Prevent Listener Fatigue

- ▶ Intersample accurate Limiting for maximum sound quality from Data Reduction Codecs



Format Control

Convert between Formats without Latency

- ▶ Down-convert 5.1 to stereo or mono
- ▶ Up-convert stereo or LtRt to 5.1

Loudness and Format Control

DB4 and DB8 have set a new standard for realtime, low latency loudness control, peak level limiting and format conversion, and comply with ITU recommendations in all aspects.

Consistency in loudness and speech intelligibility are the most important audio issues to get right in broadcast. One DB4 or DB8 tailors audio for multiple transmission platforms, such as HDTV, SDTV, Webcast and Mobile, and is the most widely installed digital transmission processor today.

The new UpCon™ algorithm continuously monitors the format of the incoming audio, and if the signal falls back from a true 5.1 to stereo it seamlessly cross-fades into a convincing 5.1 surround up-conversion. The DownCon™ algorithm performs perfect down-mixing from 5.1 to stereo with more flexibility and predictability than down-conversion at the consumer. Regardless of input format, a feed for SDTV can therefore stay in mono or stereo, while an HDTV feed remains 5.1.

Transmission, Production and Ingest

DB4 or DB8 may be inserted directly as a Loudness and Format control in the main TV Transmission feeds. The processors are ultra low latency, and need no picture delays to keep audio and picture synchronized. They condition audio perfectly for AAC, Dolby E and AC3 codecs, and include features to minimize metadata handling, thereby reducing workload at the station.

DB4 or DB8 include presets for use in prestigious sports, music or show production; when tightly controlled stereo and 5.1 feeds are needed. One processor, together with extra speakers, takes advantage of the studio or OB track's stereo production topology and, without further changes, upgrades its capacity to 5.1.

DB4 and DB8 also include presets for use at the ingest point, in order to automate loudness correction, and for dynamic range re-mapping of feature films to prevent loss of speech intelligibility.

DB4 and DB8 for Your Broadcast Environment

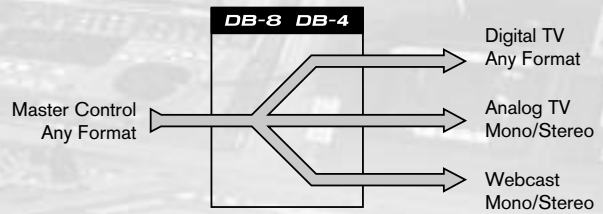
DB4 and DB8 interface directly with standard master control applications. Changes are applied using serial control, GPI or ethernet, and multiple units can be monitored via SNMP trapping. Local or remotely located DB4 and DB8 units can also be controlled from the Icon program included with the machine. Icon runs under Windows 2k, XP, NT and Mac OS X.

Compatibility between DB4 and DB8

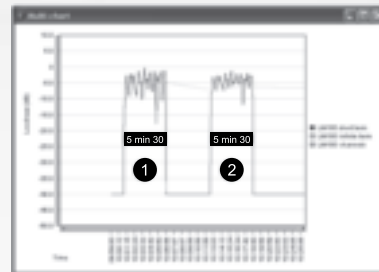
DB8 is primarily designed for large broadcast centers, while DB4 may be a more appropriate match for OB, linking or a regional station, but they share the same processing, the same presets and the same physical I/O structure.

Both DB4 and DB8 employ cutting edge technology to enable stations get rid of listener complaints about jumping levels, and to transmit in analog and digital with optimum processing for both feeds. DB4 includes the same processing and I/O capabilities as DB8, except for holding two separate processors, instead of the four inside DB8. For example, one DB4 can apply different processing to four mono, two stereo or two 5.1 signals, or to a combination such as one stereo and one 5.1 signal. DB4 and DB8 are preset compatible. If you know how to operate one of them, you know how to operate both.

DB4 and DB8 are true multi-format

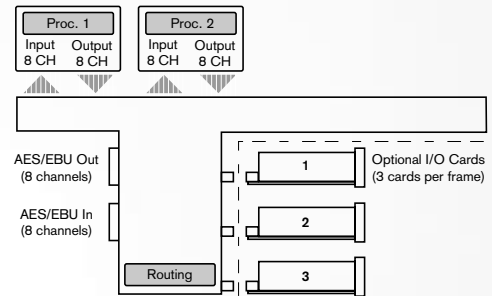


Improved AC3 handling and transmission

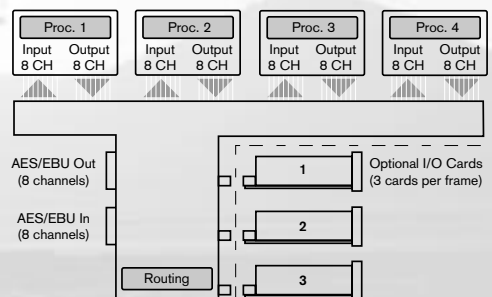


This screendump shows the loudness of 12 challenging broadcast segments measured by a Dolby LM100 meter 1) before DB4 and 2) after. The processor employs a more advanced loudness measure than the LM100 meter, but they still work well together, and the processor eliminates new metadata workloads at the station.

TWO Separate Processors in one DB4



FOUR Separate Processors in one DB8

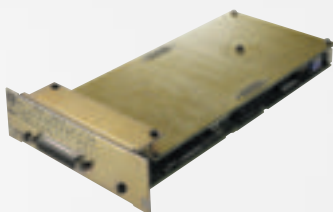




The standard configuration of DB4 and DB8 includes 8 channels of AES/EBU I/O balanced or unbalanced. The picture shows the backpanel of a DB4 or DB8 with AES/EBU on BNC (unbalanced) and one optional ADA24/96 analog I/O card. Other options include a second AES/EBU card for a total of up to 16 input and 16 output channels. *SDI 8 channel HD interface option available from 2nd half 2006.*



Optional Analog I/O card
ADA 24/96



Optional Extra Digital I/O card
AES8 AES/EBU w/o hardware bypass
AES8 Coax AES/EBU with hardware bypass
SDI8 I/O interface available 2nd half 2006



SubD breakout cable included with
AES/EBU balanced I/O cards.

Technical Specifications

Digital Inputs and Outputs

Connectors:	D-SUB, 25 pole (8 channels AES/EBU in/out)
Formats:	AES/EBU (24 bit)
Processing Delay:	0.15 ms + 0.21 ms per engine @ 48 kHz,
Additional Delay:	Up to 4 seconds (24 bit, stereo) per processor
Word Clock Input:	BNC, 75 Ohm or Hi-Z, 0.6 to 10 Vpp
Internal Sample Rate:	48.0 kHz, 44.1 kHz
Internal Clock Precision:	+/- 30 ppm
Jitter rejection	
External Sample Rates:	30 to 34 kHz, 42.5 to 45.5 kHz, 46.5 to 48.5 kHz,
Rejection Filter (4th order):	< -3 dB @ 50 Hz < -65 dB @ 500 Hz < -100 dB @ 1.4 kHz
Rejection Filter Peak (jitter gain)	< 1 dB @ 2 Hz
Intrinsic Interface Jitter:	< 1 ns peak, BW : 700 Hz to 100 kHz
Digital Output Phase:	< 3 % of sample period
Input variation before Sample Slip:	+27 % / -73 % of sample period
Output Dither:	HPF/TPDF dither 8-24 bit, mono, stereo, inverted
Frequency Response DIO:	DC to 23,9 kHz +/- 0,01 dB @ 48 kHz,

Control Interface

Ethernet:	10/100 Mbits/s, Base-T
GPI control input:	Program and Routing change between up to 8 presets
Remote:	RS485/RS422 program and parameter serial control
SMPTE:	Timecode input for timed program changes
MIDI:	In/Out/Thru: 5 Pin DIN
Floppy Drive:	DOS compatible, 3 1/2", 1.44 Mb

Dimensions:	3 1/2 x 19 x 12 inches
Weight:	19 lbs. (8.6 kg)
Mains Voltage:	100 to 240 VAC, 50 to 60 Hz (auto-select)
Power Consumption:	45 watts

Note: Due to continuous development and standardization all specifications are subject to change without notice



Technical Integrity

Years of dedicated research on distortion reduction, channel correlation and bandwidth limiting is built into these processors in order to optimize audio quality at the transmission as well as the receiving side of the signal chain. Therefore, DB4 and DB8 gets the most out of any data reduction codec, be it MPEG4, Dolby AC3, MP3, AAC, DTS etc. At the station, it can route and delay Dolby E encoded signals, so the same signal-path can be used partly for linear stereo, partly for data-reduced audio.

Synchronous 48kHz sampling and 48 bit processing throughout, in combination with massive jitter rejection, ensures high audio resolution and perfect timing, even when long, digital transmission lines are used to feed a processor.

The DB8/DB4 platform is without compromises, and allows you to take advantage of technology used by the world's best music and film production mastering facilities today. In fact, hundreds of machines can be cascaded without degrading the transmitted sound. Please visit www.tcelectronic.com for further information and related whitepapers.



Multiple PC control stations and DB8 or DB4 mainframes can be networked using standard TCP/IP and Ethernet components.

TC Processors for Broadcast

TC Electronic is a leading supplier of digital audio equipment for the music, film and broadcast industry. TC interacts with broadcast regulatory groups, academic communities and users around the world, and employ one of the biggest R&D departments in audio processing to keep equipment at the edge.

Comprehensive studies of the broadcast signal chain and constant evaluation of processing needs, combined with our extensive knowledge of surround audio and dynamics control, enable us to lead the way in defining operational procedures and processing in times of transitioning broadcast to digital.

TC Broadcast Audio Processors facilitate the delivery of optimum, standardized and predictable sound at the end listener with a minimum of production time expenditure at the station.

www.tcelectronic.com