TECHNOLOGY

PRODUCT OVERVIEW



JIGITAL AUDIO SOLUTION тм

SOLUTIONS



Fairlight's New QDC Technology

Introduction

In a development effort that has taken over two years, Fairlight has dramatically enhanced and advanced the already legendary speed and audio performance of every Fairlight product. Fairlight has invested millions of dollars and countless hours on technology advances that take the perception of what digital audio products can be, and how they perform, to a new level.

QDC Technology epitomizes the classic upgrade:

Better - QDC delivers audio with exceptional figures and brilliant subjective listening.

Faster - QDC communicates with disks at lightning speed, responds to editing and recording commands with

no perceptible delay, delivers realtime processing on all channels, and eats up your day's work at voracious speed.

More - QDC delivers more tracks, more quality, more graphics resolution, more buses. It is scalable up to the largest DSP engine available today in a Digital Audio Workstation.

All Products

QDC technology is available as standard on all new Fairlight editors and recorders as of September 2000. In keeping with the philosophy of providing a continual upgrade path for existing customers all existing Fairlight product can be upgraded to take full advantage of these developments.

QDC Technology Benefits

Disk Speed

Fairlight has led the industry in tracks-per-disk from the early 90's. QDC technology now has embedded Fast Wide SCSI and advanced drive support, and comfortably moves the goal posts once again - this time right out of the stadium! Here's how it affects workstation performance:

48 track Punch-in/out to a Single Disk

QDC provides seamless, gapless punch-in and punch-out on all 48 tracks simultaneously at 48kHz, 24 bit resolution. This means a true bandwidth from disk of 96 tracks! So you never have to copy audio from track to track, you can back up a single piece of media regardless of the number of tracks in a project, and you have easy project portability on removable hard drive.

Unlimited Duration Crossfades

QDC Technology offers unlimited duration simultaneous real time crossfades on all 48 tracks. All you need to do is set the crossfade range on the screen, and you can start listening to it immediately – no rendering, no waiting.

Instant Access to Recorded Audio

There are no caching delays before playback, so record-

ed audio is always ready and waiting.

It takes less than one second to buffer all 48 tracks ready for playback after a worst case locate.

Instant Waveform Display

Waveforms are displayed instantly, all the time, and are always perfectly in sync with the audio - in fact they ARE the audio.

Blinding Speed

QDC Technology enhances the performance of the already legendary MFX3^{plus}. Whatever you do, the new technology approach makes all Fairlight products ready immediately, under any circumstances. There is no waiting for audio to load, or waveforms to redraw. Jog, shuttle, locate, Jump, Edit, crossfade; the real time processing power and stunning disk access speed eliminate system delays – the system is ready for you at all times.

Ultra-fast Background Backup

Back up to Exabyte Mammoth 2 tapes in the background at over 40 times faster than mono play speed.

DSP Power

40-bit floating point DSPs

If you're working with 24-bit audio, you need DSPs with more than 24-bit resolution, and Fairlight's 40-bit floating point DSP architecture is simply as good as it gets.

Unlike systems with 24-bit fixed point architecture, the QDC system has literally thousands of dBs of headroom, meaning there is no loss of resolution, however much audio processing is loaded on to any signal path. QDC's DSP engines are Analog Devices SHARC chips. These are

the industry standard for high end advanced architecture mixing platforms, delivering realtime 40-bit mathematics on every processing function in the system.

Power to Spare and Grow

We now have DSP power to spare - every QDC (channel card) employs 8 SHARC processors and 128 MB of Waveform memory! A 24-track workstation with full on-board real time processing uses a single QDC. The system rack



holds 4 QDCs and the architecture supports up to 8 QDCs. This is enough for 96kHz work, enough for advanced mixing and processing functions, enough to upgrade your humble workstation into a full top end mixing solution. In short, enough to keep you going for the next 10 years, right out of the box.

Audio First and Foremost

The Fairlight legend continues. Audio performance that surpasses anything previously achieved with any digital recording system, whether tape based or disk based.

Sub-nanosecond Jitter

Clock system exceeds AES specifications for a measurement reference clock, regardless of Sync source. Sync to video, word clock, AES or Internal - you can't get better clock performance. The power supply switches on the sample clock to eliminate interference products.

Analog Perfection

State of the art A/D and D/A convertors in fully optimized circuitry on dedicated I/O boards offer 128 times oversampling at 96kHz.

Thru Noise <-110dB A weighted

THD +N <0.0008%

Frequency Response 10 Hz to 20kHz +0dB/-0.25 dB

Storage Optimization

All QDC-based systems can record at 16, 20 or 24 bit resolutions. These resolutions can be mixed freely in any Project at any time with no impact whatsoever other than on disk storage requirements. Choose the resolution you need at any time without fear of Project, Library or Clip compatibility problems.

A Platform for Growth

Dual Processor Architecture

Fairlight developed the world's first dual processor computer in 1972, and every Fairlight system since then has capitalised on the significant advantages that dedicated multiprocessor, multi-tasking real time systems offer above conventional single processor architectures. QDC exploits this experience to the full, with twin high-speed processors built in to the very heart of the control system, and separate processors for every essential sub system such as Graphics and DSP management. Memory allocation in every area has been completely redesigned to take advantage of the latest RAM technologies, ensuring that there is plenty of headroom for expansion of both control processor and audio applications.

Expansion with No Performance Impact

QDC's distributed processor architecture means that the load on the central processing system is not significantly impacted as the system's audio and DSP capabilities are expanded. Therefore performance remains constant (and blindingly quick) regardless of what capacity has

Embedded Connectivity

Second Generation MediaLink Networking

Fairlight's MediaLink fast networking system has set the standard for networked audio systems since its introduction nearly 5 years ago. QDC was designed from scratch for audio networking. Whereas an original MFX3^{plus} can play 24 tracks of 16-bit 48kHz audio across a single network connection, QDC now extends to as much as 32 tracks of 24-bit audio. This improvement in network bandwidth naturally extends to all areas of file transfer -Backup, Move, Copy, Restore and Record, as well as Playback.

Compatible

MediaLink for the QDC systems is totally compatible with existing MediaLink systems. Non-upgraded systems, upgraded systems and new systems can happily reside on the same network, sharing Projects and SFX databases.

With QDC Technology, Fairlight continues to set the standard for performance and audio quality in the digital arena, leaving the competition to play catch up yet again.



been installed or what tasks are being performed. Thus a full 48-track FAME 2 system enjoys the same operational performance as a small 16-track editor/recorder.

Software Re-configurable Circuitry

QDC technology makes extensive use of leading edge programmable logic from Altera and Xilinx. These devices are programmable elements that effectively allow electronic circuit designs to be implemented in software and then programmed onto a chip, in place. Significant changes and enhancements to the circuitry can therefore be made via software downloads rather than component or subassembly replacement. The hardware can be almost completely redesigned and reconfigured without a single component change. This ensures that the system lifetime can be extended to the absolute limit without the need for expensive upgrades. High reliability is also achieved because fewer external components and connections are required.

QDC TECHNOLOGY

System Specifications

Analog Inputs & Outputs	Input impedance	>10k Ohms
	Output impedance	<55 Ohms
	Maximum input level	+24dBu
	Maximum output level	+24dBu
	Standard operating level	adjustable from +14 dBu to +24 dBu
	Input signal to noise	>113 dB A-weighted (A/D conversion)
	Output signal to noise	>113 dB A-weighted (D/A conversion)
	Through system signal to noise	>110 dB A-weighted
	Through system THD	<0.0008%
	Bandwidth (.25dB)	20Hz to 20kHz
	Sample rate	32kHz to 48kHz (locked to sync source)
	Internal sync crystals	32, 44.056, 44.100, 44.044, 47.952, 48, 48.048 kHz
AES/EBU Inputs	Minimum differential	200mV
	Input impedance	110 Ohms transformer isolated
	Input frequency	30Hz to 50kHz
	Channel status	QDC Technology systems are insensitive to channel status
AES/EBU Outputs	Output level	4V
	Output impedance	110 Ohms transformer isolated
	Output frequency	30Hz -5% to 50kHz +5% (locked to sync source)
	Channel status	professional
		normal audio
		source locked
		sample frequency set to project sample rate
		stereophonic

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24-bit word length

Fairlight

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