DSP·4

With more than three decades of experience pioneering cutting edge audio products, QSC raises the bar once again with the DSP-4 Digital Signal Processing Module. This compact module offers two channels of independent DSP and attaches to the back of most 2-channel DataPort-equipped QSC amplifiers—without occupying any additional rack space.

Capitalizing on the success of our DSP-3, the second-generation DSP-4 provides several enhancements in functionality and performance while also incorporating the universally popular XLR balanced connectors. These enhancements include new A/D and D/A converters for improved signal-to-noise performance and upgraded software that significantly increases the unit's operational characteristics.

Optimize Your Sound With DSP From QSC

Powerful

Simple to install, compact, and featuring "set-and-forget" convenience, the DSP-4's powerful processor enables you to perform a wide range of signal processing functions; and with its new A/D and D/A converters, its noise floor improves. Software refinements for the DSP-4 (which also retrofit to earlier QSC DSP products) include the addition of a true power limiting feature. Further, preset selection is now available via the contact closure input. Whether you need speaker crossovers, EQ, time delay, or subsonic filters, the DSP-4 is as flexible as your system's needs.

Each channel includes:

- Crossover filtering
- Multiple Parametric EQs
- Shelf filtering
- Multiple Delays (up to 910 ms)
- Compression and limiting
- Precision attenuation
- Mixing
- Tone and noise generation

Save space and weight by mounting the DSP-4 onto the back of most 2-channel DataPort-equipped QSC amplifiers. Or use multiple DSP-4s as a stand-alone, rack-mounted DSP solution.

Configurable

The DSP-4's processing horsepower is dynamically assignable so you are not limited by a fixed signal chain. Simply use QSC's powerful PC-based Signal Manager software to easily configure multiple processing functions and signal flow with "drag-and-drop" tools.

Cost-effective

The power and flexibility of the DSP-4 eliminates the need for expensive outboard processing gear, reducing cost and installation time for almost any application. The compact DSP-4 also plugs directly into the back of most QSC DataPort-equipped amplifiers for use in systems where rack space is a premium.

QSC
A U D I O

Hear the Power of Technology.

1675 MacArthur Boulevard
Costa Mesa, CA 92626
Ph: 800/854-4079 or 714/957-7100
Fax: 714/754-6174
www.qscaudio.com
email: info@qscaudio.com

SIGNAL PROCESSING FUNCTIONS

- **Multiple Parametric Filters**, assignable anywhere in the signal chain:

Variable Frequency	Bypass all EQs
Variable Gain	Add EQ
Variable Q	Delete EQ
Bypass one EQ	Show Response

- **Multiple Delays**, assignable anywhere in the signal chain:
  - 20.83 µsec Incremental
  - 910 msec Maximum

- **Compressor,** assignable anywhere in the signal chain:

Gain	Release Time
Threshold	Show Response
Ratio	Bypass
Attack Time	

- **Output Peak Limiter,** assignable anywhere in the signal chain:

Gain	Release Time
Threshold	Show Response
Attack Time	Bypass

- **High and Low-Pass Crossover Filters**, assignable anywhere in the signal chain:
  - Butterworth 6, 12, 18, 24 dB per octave slope
  - Bessel 6, 12, 18, 24 dB per octave slope
  - Linkwitz-Riley 12 and 24 dB per octave slope

Frequency	Delete EQ
Add EQ	Show Response

- **High and Low-Pass Shelf Filter**, assignable anywhere in the signal chain:

Variable Corner Frequency	Bypass all EQs
Variable Gain	Add EQ
Variable Q	Delete EQ
Bypass one EQ	Show Response

- **Signal Mute**
- **Attenuation:** 0.1 dB steps
- **Mix Post Crossover Audio** (2→1 Mixer)
- **Signal Splitter**
- **Built-in Noise Generator** (Pink & White)
- **Built-in Variable Frequency Tone Generator**
- **Signal Polarity Reversal**
- **Frequency Response** readout for each filter
- **Clip and Protect Indication** of the amplifier's output
- **Output Power Limiter** (for QSC DataPort amplifiers only)
  - Average or peak power limiting
  - Adjustable averaging time
  - Attack time
  - Release time
  - Amplifier model selection

ADDITIONAL FEATURES

Hardware

- Two independent channels of DSP
- 48 kHz, 24-bit converters
- No turn-on pops or "zipper" noise
- If the memory or hardware fails, unit turns on muted to prevent driver damage
- Host interface via RS-232 or QSControl Audio Network System via CM16a Amplifier Network Monitor
- Electronically balanced XLR inputs
- Contact closure to trigger preset changes
- Post-DSP output signal for daisy-chaining
- Peak and RMS meter displays with clip indication
- DataPort pass-through compatible with QSControl
- Selectable input sensitivity: 1.5, 4, 9, 18 Vrms; 6, 14.5, 21.5, 27.5 dBu; 3.5, 12, 19, 25 dBV
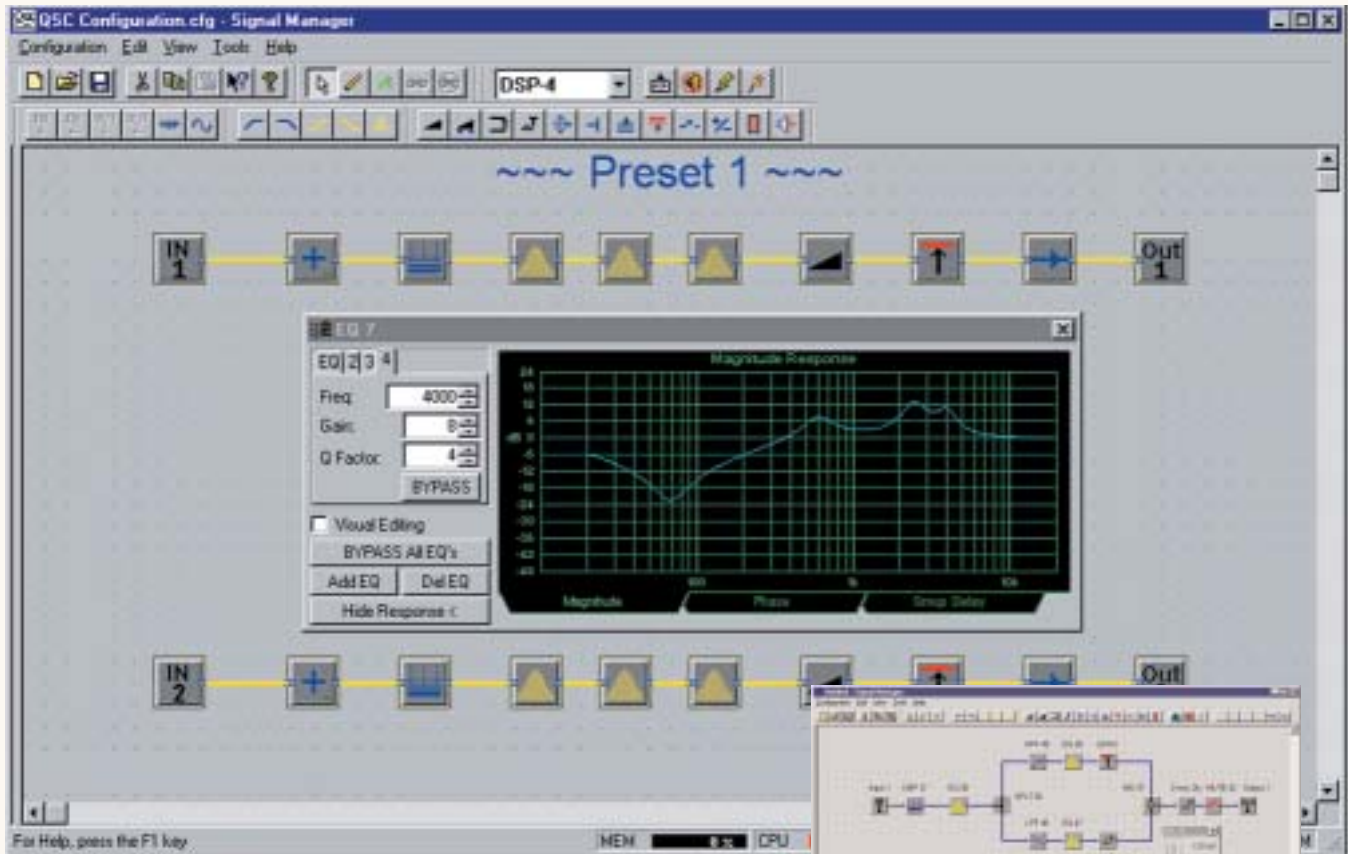- Output signal gain

Software

- "Drag-and-drop" configuration software
- DSP processing power and memory is dynamically assigned to signal processing functions — eliminating the limitations imposed by fixed signal chain designs
- Graphical representation of DSP resources
- Firmware upgrades via RS-232
- Hard copy printout of signal flow layout or parameter settings

System Requirements

- Windows® 98, NT4 (SP6), and 2000 (SP1)*
- SVGA monitor @ 800 x 600 (min.); 1024 x 768 recommended
- CD-ROM drive
- 32 MB RAM (min.)
- 10 MB free hard disk space (min.)
- Available RS-232 COM port
- Male-to-female 9-pin serial cable (for programming)

* Windows Me not supported

SIGNAL MANAGER

Advanced "Drag-and-Drop" Software Configuration

DSP configuration is made simple with a PC-based "drag-and-drop" software program called Signal Manager. Users can access a DSP "toolbox" and simple drawing tools to configure processing functions and signal flow. DSP processing power and memory is dynamically assigned to signal processing functions and any combination of functions may be configured until the total capacity is used. DSP resources are graphically displayed at the bottom of the screen.

Configurations can be downloaded directly to the DSP-4 via an RS-232 serial port or through a QSControl Audio Network System via a CM16a Amplifier Network Monitor for added simplicity. The software package also offers real-time control and set-and-forget convenience. Configurations can be saved and recalled for future use.
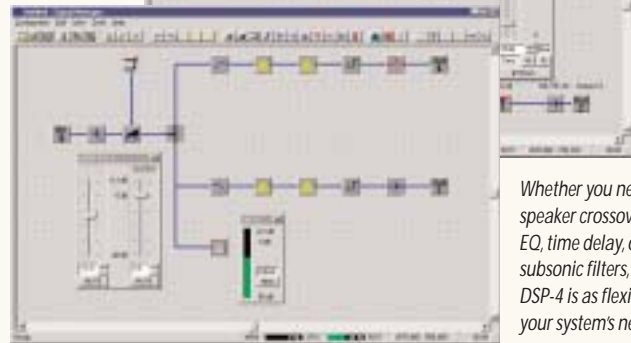
Whether you need speaker crossovers, EQ, time delay, or subsonic filters, the DSP-4 is as flexible as your system's needs.

COMPATIBLE AMPLIFIER MODELS

The DSP-4 mounts directly to the back of these models via the DataPort:

Full Feature
- Two-channel CX Series
- Two-channel DCA Series
- PowerLight 2 Series

Version 2 DataPort
- ISA (V2 DataPort – audio only; requires external power supply)

The following models require a Remote Rack Mounting Bracket:

Full Feature (DPX-2 cable required)
- Four-channel CX Series
- Four-channel DCA Series
- PowerLight Series

Without Power Limiting (Requires external power supply)
- MX
- USA
- PLX
- RMX
- Non-QSC amplifiers

DSP-4 SPECIFICATIONS

Characteristics	Specifications
FREQUENCY RESPONSE	3 dB below full scale input voltage
XLR Output	20 Hz to 10 kHz ± 0.3 dB
	20 Hz to 20 kHz ± 0.7 dB
DataPort	20 Hz to 20 kHz ± 0.2 dB
DISTORTION	<0.02% THD+N @ +4 dBu
DYNAMIC RANGE UNWEIGHTED	>104 dB 20 Hz to 20 kHz,
	1.5V sensitivity, unweighted
	>106 dB 20 Hz to 20 kHz,
	all other sensitivies, unweighted
	>106 dB 20 Hz to 20 kHz,
	1.5V sensitivity, A weighted
	>108 dB 20 Hz to 20 kHz,
	all other sensitivies, A weighted
COMMON-MODE REJECTION	>50 dB minimum 20 Hz to 20 kHz
	>60 dB typical 20 Hz to 20 kHz
INPUT SENSITIVITY (selectable)	1.5, 4, 9, 18 Vrms
	6, 14.5, 21.5, 27.5 dBu
	3.5, 12, 19, 25 dBV
CROSSTALK (inter-channel w/in DataPort pair)	>62 dB separation, 20 Hz to 20 kHz
INPUT CONNECTORS	Two XLR female
	(1 for each audio channel)
	One HD-15 female DataPort*
	One RS-232 female (PC input)
	One Power Jack
	Required only for PowerLight,
	QSC non-DataPort amplifiers, or
	non-QSC amplifiers, using
	remote rack mounting bracket

Characteristics	Specifications
OUTPUT CONNECTORS	Two XLR male
	(for daisy-chaining each audio
	channel out)
	One HD-15, male
	amplifier connection
INDICATORS	FRONT:
	Power (one blue)
	Signal (one green)
EXTERNAL POWER REQUIREMENTS (DPX-1 recommended)	15 VDC, 0.4 A
	Required only for PowerLight,
	QSC non-DataPort amplifiers,
	V2 DataPort (audio only) models,
	or non-QSC amplifiers.
DIMENSIONS	3.5" height
	3.75" width
	1.38" depth
WEIGHT	.93 lbs net
	1 lb shipping
CONSTRUCTION	Steel chassis and back cover

DataPort input for use with CM16a Amplifier Network Monitor in QSControl audio network systems for remote management of QSC amplifiers and other audio devices.

Specifications subject to change.

*A Remote Rack Mounting Bracket is available for PowerLight, 4-channel QSC amplifiers, or for non-DataPort-equipped amplifiers. Designed to be bolted to the rear of an amplifier rack, up to four modules can be mounted to each panel, providing up to **eight** channels of DSP processing in a three rack-unit space.*