DSP-3
Digital Signal Processor

Save space and weight by plugging the DSP-3 into the back of most DataPort equipped QSC amplifiers. Or use multiple DSP-3s as a stand alone, rack mountable DSP solution.

The DSP-3's two channels of independent signal processing deliver more power, flexibility, and features—in short, more of everything you really need in a DSP—for less. Simple to install and compact, the DSP-3 is the advanced and affordable digital signal processing solution for your audio system.

Powerful

The DSP-3's powerful processor allows you to perform a wide range of signal processing functions. Whether you need speaker crossovers, EQ, signal delay, or infrasonic filters, the DSP-3 is as flexible as your system's needs.

Each channel includes:

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

Configurable

The DSP-3'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-3 eliminates the need for expensive outboard processing gear, reducing cost and installation time for almost any application. The compact DSP-3 also plugs directly to the back of most QSC DataPort equipped amplifiers for use in systems where rack space is a premium.

DSP-3

Signal Processing Functions and Additional Features

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 (total of all delays)

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

Bypass one EQ	Delete EQ
Bypass all EQ's	Show Response
Add EQ	Cutoff Frequency

High and Low-Pass Shelf Filters, 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

Clip and Protect Indication of the amplifier's output

Predictive Delay Feature — produces less signal distortion than analog compressor/limiters — especially for fast attack times

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 inputs

Contact closure to trigger preset changes

Post DSP output signal for daisy chaining

Selectable input sensitivity: 1.5, 4, 9, 13 Vrms; 6, 14.5, 21.5, 24.5 dBu; 3.5, 12, 19, 22.2 dBV

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 at 800 x 600 (min.); 1024 x 768 recommended

CD-ROM drive

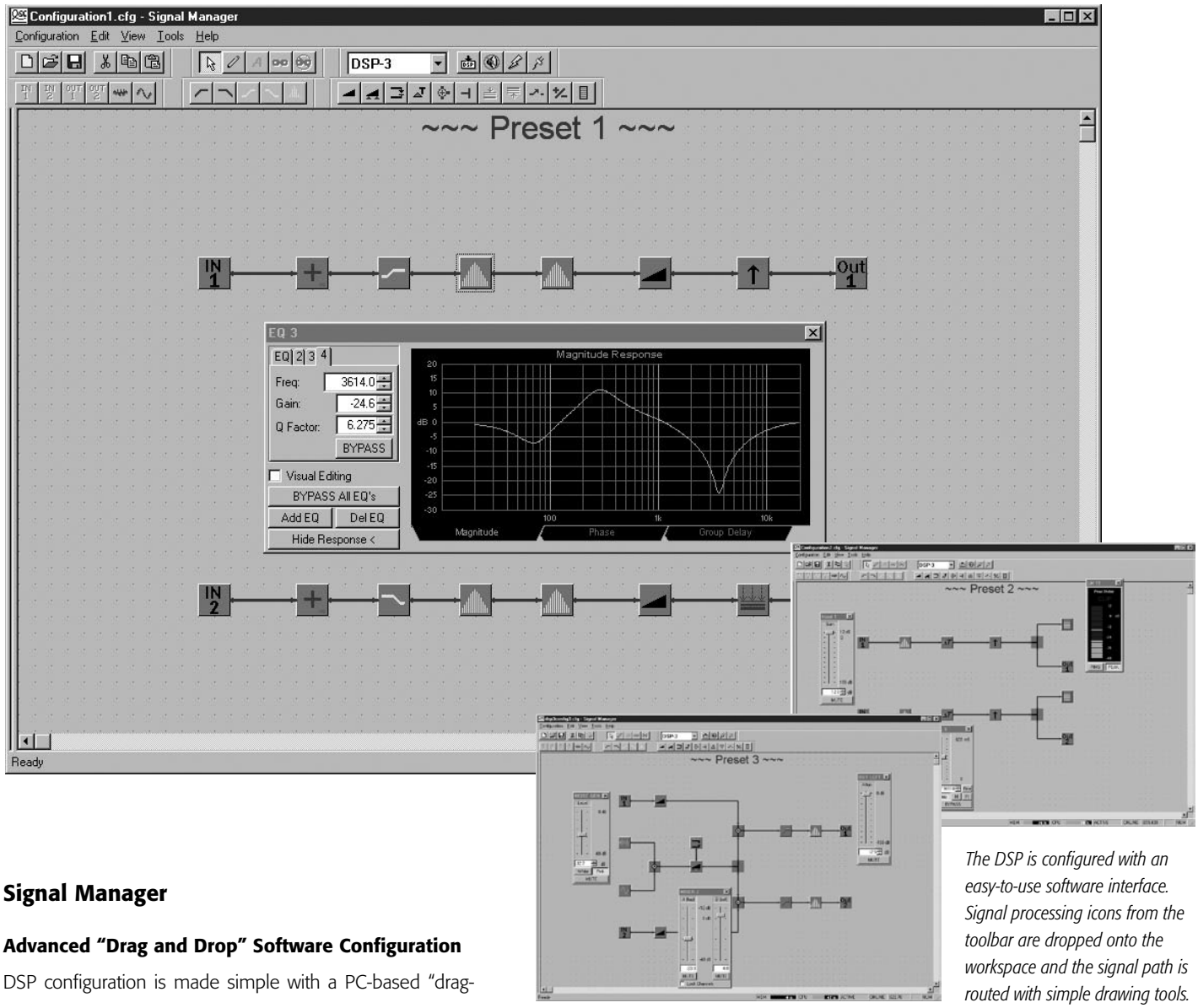
32 MB RAM (min.)

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*



The DSP is configured with an easy-to-use software interface. Signal processing icons from the toolbar are dropped onto the workspace and the signal path is routed with simple drawing tools.

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-3 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.

Compatible Amplifier Models

The DSP-3 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)

- 4-channel CX Series
- 4-channel DCA Series
- PowerLight Series
- 8-channel CX Series

Reduced Feature Set

- MX
- USA
- PLX
- RMX
- Non-QSC amplifiers

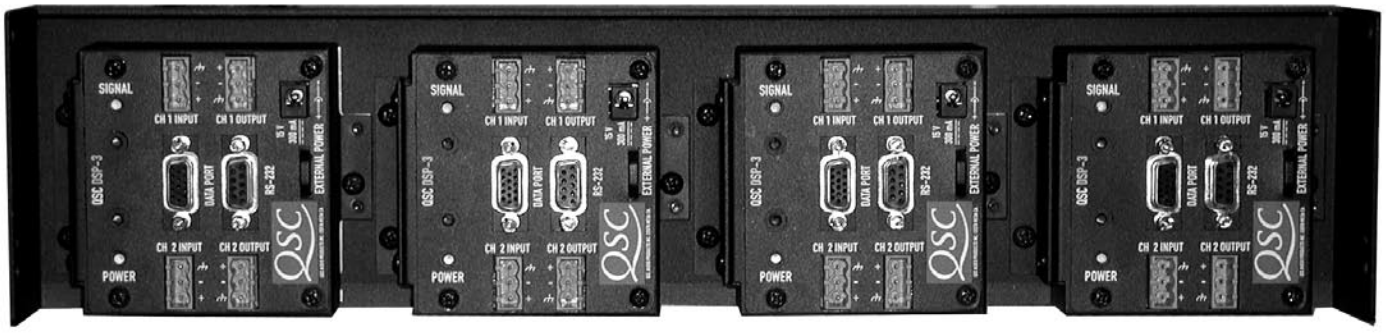
DSP-3

Specifications

Audio Converters	24 bit, 48 kHz
Frequency Response	
Euro Input	20 Hz -10 kHz, ± 0.3 dB / 20 Hz - 20 kHz, ± 0.7 dB
DataPort	20 Hz - 20 kHz, ± 0.2 dB
Distortion	< 0.01% THD+N at +4 dBu
Throughput Delay	1.00 milliseconds (A/D – DSP – D/A)
Dynamic Range Unweighted	> 93 dB, 20 Hz to 20 kHz for 1.5, 4, 9V input sensitivities
AES-17 -60 dB Method	> 88 dB, 20 Hz to 20 kHz for 13V input sensitivities
Input Impedance	8.3k ohm balanced / 3.7k ohm unbalanced
Commom Mode Rejection	> 50 dB, 20 Hz – 20 kHz typical | > 40 dB and 20 kHz worst case
Input Sensitivity (selectable)	1.5, 4, 9, 13 Vrms | 6, 14.5, 21.5, 24.5 dBu | 3.5, 12, 19, 22.2 dBV
Crosstalk (inter-channel within DataPort pair)	> 72 dB separation, 20 Hz - 20 kHz
Audio Input Connectors	Two 3-pin Euros (1 for each audio channel) / One HD-15 female DataPort* / One RS-232 female (PC input)
Audio Output Connectors	Two 3-pin Euros (for daisy-chaining each audio channel out) One HD-15 male DataPort amplifier connection
Indicators	Front: Power (one blue) | Signal (one green)
Contact Closure Inout	
Inputs	1 discrete input (pin #9 of RS-232 port)
Configuration	Single-ended input, pull LOW (to GND, pin5) for closure detect
Resistance for closure detect	< 150Ω
Resistance for open detect TTL compatible thresholds with 9V DC max input	> 1.9k ohms
External Power Requirements (DPX-1 recommended)	15 VDC, 0.3 A Required only for PowerLight®, QSC non-DataPort amplifiers, or non-QSC amplifiers, using remote rack mounting bracket
DImensions (HWD)	3.47" (8.81 cm) x 3.37" (8.56 cm) without flanges / 3.75" (9.52 cm) with flanges x 1.37" (3.48 cm)
Weight - Net / Shipping	0.6 lbs (0.27 kg) / 1 lb (0.45 kg)
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*

PowerLight is a registered trademart of QSC Audio Products Inc.



*A remote rack mounting bracket (the DXP-4) is available to use with 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.*

1675 MacArthur Boulevard • Costa Mesa, CA 92626 • Ph: 800/854-4079 or 714/957-7100 • Fax: 714/754-6174

qscaudio.com