DSP-30

Computer Configurable Digital Signal Processor

ADVANCED SYSTEMS PRODUCTS

Optimize Your Sound With DSP From QSC

Featuring intuitive PC system configuration combined with "set-and-forget" convenience, the DSP-30 unites easy-to-use, customizable, two-channel digital signal processing (DSP) with a simple preset selection interface that requires only two buttons. It can be used with all amplifiers and is housed in a 1RU, 19-inch rack-mount steel chassis. Sampling frequency is 48 kHz with 24-bit resolution. Dynamic range is greater than 95 dB. Rugged and dependable in the spirit of all QSC professional audio products, the DSP-30 is well suited to a variety of applications including mobile DJ, club PA, and pro touring.

Powerful

The DSP-30's powerful processor enables a wide range of signal processing functions. Whether you need speaker crossovers, EQ, time delay, or subsonic filters, the DSP-30 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**

Configurable

The DSP-30'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. The DSP-30 provides eight fully configurable user presets, selectable from front-panel switches.

Cost-effective

The power and flexibility of the DSP-30 eliminates the need for individual outboard signal processors—reducing cost, space, and installation time for almost any application. Housed in a 1RU, 19-inch rack-mount steel chassis, it can be used with all audio systems.

QSC™ AUDIO

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 — Variable Q
  Variable Gain — 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
- **High and Low-Pass Shelf Filters**, assignable anywhere in the signal chain:
  Variable Corner Frequency — Variable Q
  Variable Gain — 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
- **RMS and Peak Metering with Clip Indication**
- **Add or delete up to 7 additional bands of "EQ" per filter block**
- **Visual editing of composite filter response, using cursor controls in graphical display**
- **Individual or group bypass of EQ bands per filter block**
- **Predictive Delay feature** — produces less signal distortion than analog compressor/limiters — especially for fast attack times

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
- Easy PC connection with front panel RS-232
- Balanced Neutrik® Combo (XLR and 1/4") inputs and XLR outputs
- Power and signal present LEDs with signal level
- Numeric display indicates current preset
- Eight fully configurable user presets
- Preset Browse and Accept buttons with lock-out feature
- Selectable input sensitivity: 1.5, 4, 9, 18 Vrms; 6, 14.5, 21.5, 27.5 dBu; 3.5, 12, 19, 25 dBV

Software

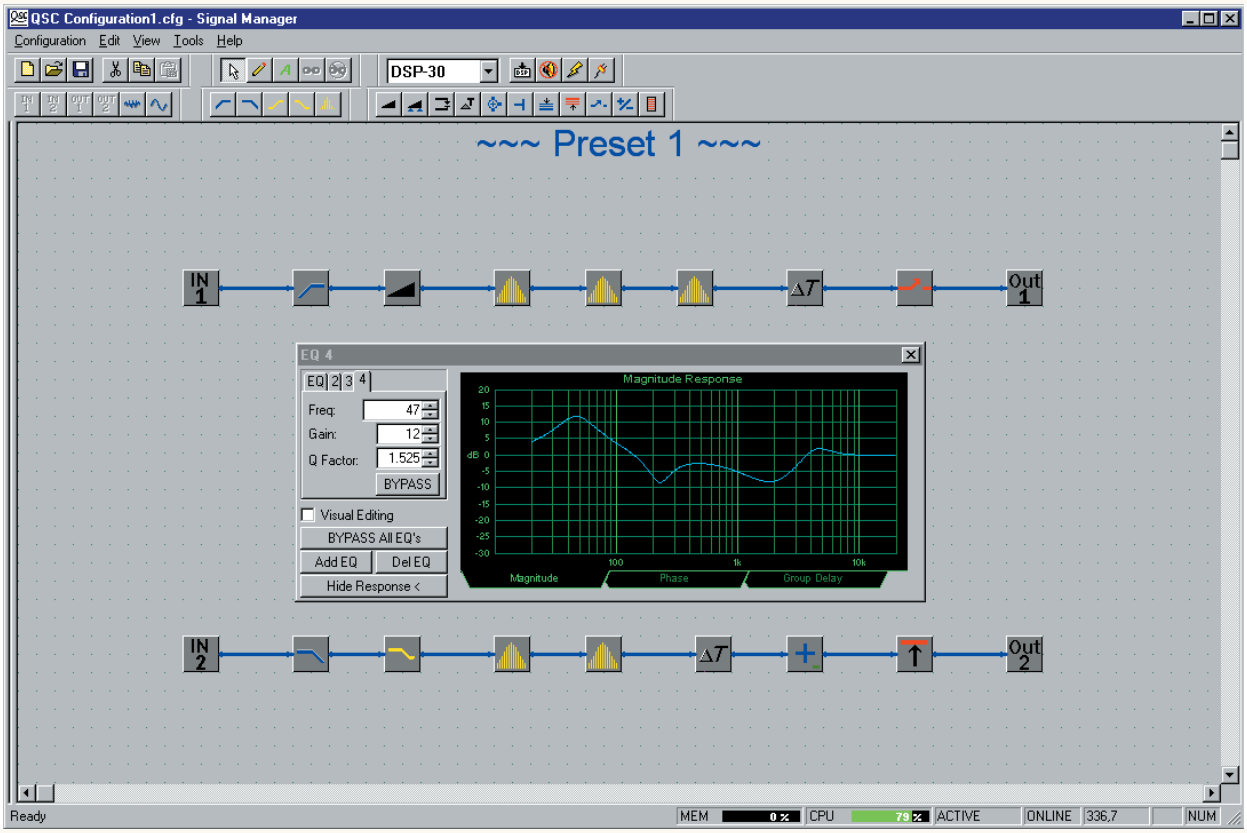
- "Drag-and-drop" configuration software
- Hard copy printout of configuration layout or parameter settings
- DSP processing power and memory is dynamically assigned to signal processing functions — eliminating the limitations imposed by fixed signal chain designs.
- Graphical representation of DSP resources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

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

DSP-30 CONFIGURATIONS



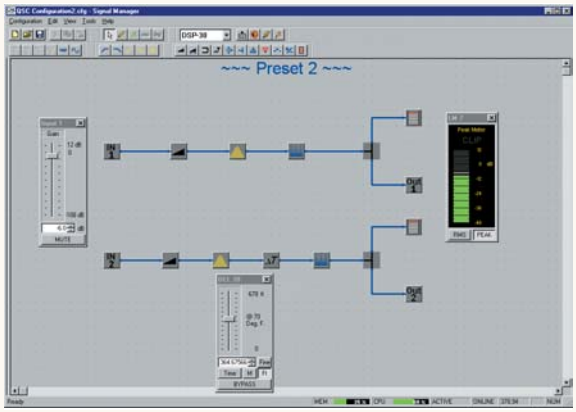
SIGNAL MANAGER

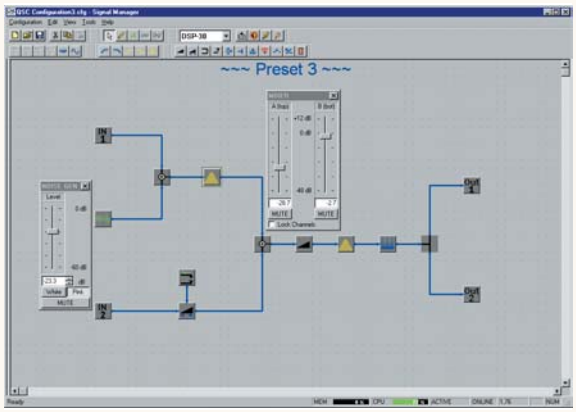
Advanced "Drag-and-Drop" Software Configuration

DSP configuration is made simple with a PC-based "drag-and-drop" software program called *Signal Manager*. Users 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. 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-30 via an RS-232 serial connection. The software package also offers real-time control and set-and-forget convenience. Once saved, configurations (presets) can be recalled via the DSP-30's front panel switches-without the need for a computer.

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.





DSP-30 SPECIFICATIONS

Characteristics	Specifications
AUDIO CONVERTERS	24 bit, 48 kHz
FREQUENCY RESPONSE	20 Hz to 20 kHz ± 0.4 dB at 1 dB below full scale input voltage (all sensitivities)
DISTORTION	<0.007% THD+N at 1 dB below full scale output, (all sensitivities) 20 Hz to 20 kHz
THROUGHPUT DELAY	1.00 milliseconds (A/D – DSP – D/A)
DYNAMIC RANGE	>95 dB unweighted, 1.5V, 4V and 9V input sensitivities
AES-17 -60 dB METHOD	>93 dB unweighted, 18V input sensitivities
POLARITY	In-phase or inverted
MUTE	>95 dB attenuation
INDICATORS	Power: 1 blue LED Channel 1 and Channel 2 signal level: 2 green LEDs Preset Display: 7 segment LED

INPUT SENSITIVITY

Volts	dBU	dBV	
1.5	6.0	3.5	Full scale sine wave
4	14.5	12.0	RMS before clipping.
9	21.5	19.0	Full scale output
18	27.5	25.0	voltage 9.3 Vrms.

AUDIO INPUT CONNECTORS	
Program inputs	2
Connector	Balanced Neutrik Combo
Type	Electronically balanced
Grounding	All shield terminals connected to chassis
INPUT IMPEDANCE	8.3 kΩ balanced 3.7 kΩ unbalanced
COMMON-MODE REJECTION	>54 dB, 20 Hz–20 kHz
CROSSTALK (inter-channel w/in DataPort pair)	>78 dB separation, 20 Hz to 20 kHz

Specifications subject to change without notice.

Characteristics	Specifications
AUDIO OUTPUT CONNECTORS	
Program outputs	2
Connector	3-pin male XLR receptacle
Type	Electronically balanced
Grounding	All shield terminals connected to chassis
Output level	Level and units are selectable in software interface
Maximum output (full scale)	9.3 Vrms (+21.5 dBu), THD <1.0%
Output pad	-6 dB
Output impedance	600 ohms balanced
POWER AMPLIFIER INTERFACE	
Compatibility	Works with all professional audio products
RS-232 PORT	
Port type	RS-232, female
Cable type	9-pin serial cable, male-to-female (serial extension cable)
Maximum length	25 feet (7.6 meters)
CONTACT CLOSURE INPUT	
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	<150 Ω
Resistance for open detect	>1.9 kΩ
TTL compatible thresholds with 9V DC max input	
PHYSICAL	
Chassis Type	Steel (chassis and covers)
Height	1.73 inches (4.39 cm)
Width	18.9 inches (48.0 cm) including rack ears
Depth	14.9 inches (37.8 cm) including rack ears 13.7 inches (34.8 cm) excluding rack ears
Weight	9.5 lb. (4.31 kg) net 12.5 lb. (5.67 kg) shipping
Mounting	May be rack mounted or may be used separate from rack
Operating temperature	0° to 50° Celsius
INTERNAL POWER SUPPLY	
AC Input Voltage	Autodetect 100-240 VAC
AC Input Current	0.3 Amps rms
Frequency	50 to 60 Hz
Power Cord	IEC-type detachable 6 ft. cord