

## DSP Option Cards DSP-1, DSP-2

When you add a Protea<sup>ne</sup> DSP Option Card to your PE-Series amplifier, you have just simplified system implementation for many applications in live sound, commercial sound reinforcement and installations. Best of all, standard Ethernet protocol (auto or manual IP configuring), a PC and Ashly's easy to understand and navigate Protea<sup>ne</sup> Software is used to control everything.

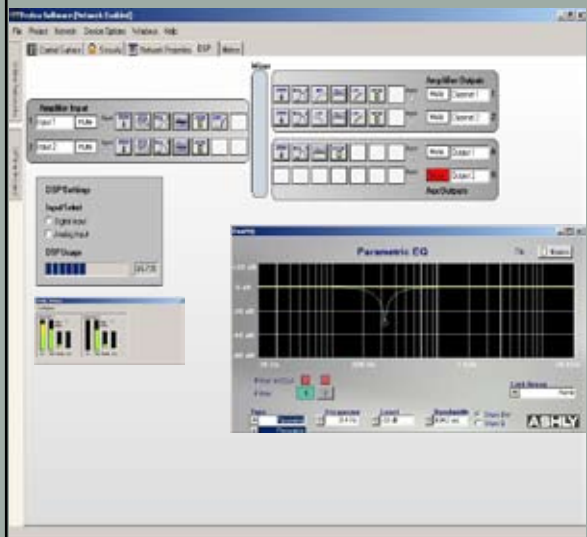
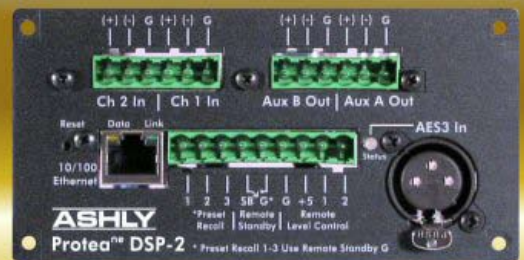
Protea<sup>ne</sup> DSP Option Cards use a SHARC 200MHz, 32-bit floating-point processor and operates from 48 to 96kHz with a 24-bit AD/DA. Both the XLR and Euroblock versions offer both analog and digital (AES3) inputs and two additional processed output channels to drive additional amplifier channels. (One card will control two 2-channel amps!)

Protea<sup>ne</sup> DSP cards have an extensive DSP library including: a full set of filter types for graphic, parametric, notch and shelving equalization. Additionally, there are Bessel, Butterworth and Linkwitz/Riley high and low pass crossover filters with slopes of up to 48dB/octave. For phase correction, Ashly has included all pass filters as an option. Additional processing blocks include: signal delay, compressor/limiter, gate, matrix mixer, signal generators (sinewave, white and pink noise) and metering.

All DSP functions use a "Click and Hot-Plug" user interface to place processor blocks in the signal chain. This method allows you to select a processing block and place it wherever you need it in your signal chain. The process is seamless and in real time, with no need to wait for your system to recalculate or recompile its settings.

Remote control of the front panel attenuators, power standby/power down and recall of up to three presets can be done using the contact closure terminals.

Installation is quite simple. Or, you can order your PE amplifier with the DSP Option Card factory installed!



## General Specifications Protea<sup>ne</sup> DSP-1 and DSP-2

Input: Active Balanced, 10 kohms  
Max Input Level: +20 dBu  
Aux Outputs: Active Servo Balanced, 112 ohms  
Max Output Level: +20 dBu  
Frequency Response: 20 Hz-20kHz,  $\pm 0.25$  dB  
THD: <0.01% @1 kHz, +20 dBu  
Dynamic Range: >110 dB (20 Hz-20 kHz) unweighted  
Aux Output Noise: <-90 dBu unweighted

### Hot Plugs

*Hot Plugs are any of the following DSP functions and can be inserted into any of the eight blocks available on each input and output*

#### Parametric Eq

Style: 10-Band, 6-Band, 4-Band, or 2-Band  
Bandwidth: 1/64th Octave to 4 Octave  
Range: +15/-30dB, 0.1 dB increments  
Frequency Resolution: 1Hz

#### Graphic EQ

Bands: 28  
Boost/Cut: +15dB to -15dB  
Increment: 0.1dB  
Types: Constant or Proportional Q  
Filter Bandwidth: 1/2 octave to 1/4 octave

#### High Pass Filter

Type: Linkwitz-Riley, Bessel, Butterworth  
Slope: 12, 18, 24 and 48dB/Octave  
Frequency Range: Off to 20kHz, 1Hz increments

#### Low Pass Filter

Type: Linkwitz-Riley, Bessel, Butterworth  
Slope: 12, 18, 24 and 48dB/Octave  
Frequency Range: Off to 20kHz, 1Hz increments

#### Low-Shelf

Slope: Selectable 6 or 12dB/Octave  
Frequency Range: 20Hz to 2kHz  
Range: +/-15dB, 0.1dB increments

#### High-Shelf

Slope: Selectable 6 or 12dB/Octave  
Frequency Range: 3.886kHz to 20kHz  
Range: +/-15 dB, 0.1 dB increments

#### All-Pass

Type: Second-Order (-180 degrees)  
Frequency Range: 20Hz to 20kHz

#### Notch

Bandwidth: 1/64th Octave to 4 Octave  
Frequency Resolution: 1Hz  
Type: LPF and HPF  
Slope: 12dB/octave, Butterworth

#### Delay

@ 48kHz Sampling  
Input Maximum Delay: 967ms  
Increment: 20.8 $\mu$ s  
@ 96kHz Sampling  
Input Maximum Delay: 483.5ms  
Increment: 10.4 $\mu$ s

#### Gate

Threshold: -80 to +20dBu, 1dBu increments  
Range: Off, -80 to 0dBu, 1dBu increments  
Attack: .2, .5, 1, 2, 5, 10, 20, 50ms/dB  
Release: 5, 10, 20 50, 100, 200, 500, 1000ms/dB

#### 2x4 Cross Point Mixer

Gain: Off., -50 to +12dB, 0.5dB increments with Mute

#### Compressor

Threshold: -20dBu to +20dBu, 1dB increments  
Ratio: 1.2 :1 to Infinity (1.2, 1.5, 2., 3, 4, 6, 10, 20, Infinite:1)  
Attack: 0.5 ms to 50 ms per dB  
Release: 10 ms to 1 sec. per dB  
Detecting: Average or Peak

#### Limiter

Threshold: -20dBu to +20dBu, 1dB increments  
Ratio: Infinite:1  
Attack: 0.5 ms to 50 ms per dB  
Release: 10 ms to 1 sec. per dB

#### Signal Generator

Waveforms: Sinewave, Pink Noise, White Noise  
Frequency Range: 20Hz to 12kHz  
Level: Off, -50dBu to +12dBu  
Increments: 0.1dB

#### Gain

Level: Off, -30dB to +12dB  
Increments: 0.1dB  
Polarity Switch  
VCA Groups: 4

#### Level Meter

Range: -60dB to +20dB  
Increments: 1dB  
Peak hold indicator

#### Linking

All functions can be linked to 1 of 8 link groups

#### Processors

Input A/D: 24 bit (Burr Brown PCM4204)  
Output D/A: 24 bit (Burr Brown PCM4104)  
DSP Processors: 32-bit floating point (Sharc ADSP-21262)  
Sample Rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz  
Propagation Delay @ 48kHz: 1.42 ms  
Propagation Delay @ 96kHz: 0.71 ms

#### AES3 Digital Audio Input

Type: 110 ohm transformer balanced XLR  
Sample Rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz  
Max Cable Length: 100 meters

#### Other

Power Requirements: Internally powered by amplifier  
Shipping Weight: 2lbs (Maximum)  
Dimensions: 5.0"W x 2.5"H x 8.0"D  
Connections DSP-1: XLR  
Connections DSP-2: Euroblock  
Environmental: 40-120 deg. F, (4-49 deg. C) noncondensing