

## Applications

For Mixing Console / DJ Mixer / Guitar Amplifier and other devices which need sound effects.

## Theory of Operation

The Module assembled that can be installed on main boards in products. Connection to the ADBXMP is simple. It has two audio input and output for stereo connection. Four digital input pins are used to select each of DSP programs. The additional analogue inputs (digital inputs) are used for program parameter adjustment. You can also add an external Double 7 segment LED for the program display.

## Features

- True stereo performance sound quality
- effects can reedit form customers such as reverbs, echo, phaser, chorus, flanger, etc. ( can support Tap delay / mute )
- Integrated the major components, control interfaces, and strengthen the electronic
- circuit design, also with the display circuit, for example: 7-segment LED and LCM 16\*2, that can save your BOM cost
- Programs run at 128 instructions per world clock. (6 MIPS @ 48 kHz sampling frequency)
- 32k location Static Ram provides over 0.68 sec of delay at 48 kHz sampling frequency
- 2 input and 2 output
- Low power 5V operation
- Competitive price
- RoHS compliant (PB-free)

## Specification

Analog Input	2ch
Analog Output	2ch
Input Impedance	110k $\Omega$
Output Impedance	10.5k $\Omega$
Max. Input Level	3..15 Vp-p
Max. Output Level	3.5 Vp-p
AD/DA conversion	48kHz/24bit
S/N ratio (A-weighting)	>95dB
THD+N	0.08%
Frequency Response	10Hz - 20kHz +/- 0.1 dB
Power supply	DC 5V, 90mA (stand-alone)
Power Consumption	450 mW

### Program and Binary Code Chart

No.	Program	Binary Code
1	Small Hall	1111
2	Large Hall	1110
3	Small Room	1101
4	Bright Room	1100
5	Thin Plate	1011
6	Large Plate	1010
7	Spring Reverb	1001
8	Multi-tap Delay	1000
9	Analog Delay	0111
10	Chorus Verb	0110
11	Stereo Chorus	0101
12	Flanger	0100
13	Phaser	0011
14	Gated Reverb	0010
15	FlangeVerb	0001
16	Vocal Echo	0000

### Program Table

#### Mixing Console

No.	Description	Parameter 1	Parameter 2
1	Small Hall	Reverb Time	High-boost
2	Large Hall	Reverb Time	High-Boost
3	Small Room	Reverb Time	High-Boost
4	Bright Room	Reverb Time	High-Boost
5	Thin Plate	Reverb Time	High-Boost
6	Large Plate	Reverb Time	High-Boost
7	Spring Reverb	Reverb Time	High-Boost
8	Multi-Tap Delay	Delay Time	Repeat
9	Analog Delay	Delay Time	Repeat
10	Chorus Verb	Reverb Time	Chorus Rate
11	Stereo Chorus	Rate	High-Boost
12	Flanger	Rate	Feedback



13	Phaser	Rate	Feedback
14	Gated Reverb	Gate Time	Pre-Delay
15	Flange Verb	Reverb Time	Rate
16	Vocal Echo	Delay Time	Repeat

**DJ Mixer**

No.	Description	Parameter 1	Parameter 2
1	Flanger	Rate	Feedback
2	Flange-Verb	Reverb Time	Flange Rate
3	Phaser	Rate	Feedback
4	Robot-Flange	Rate	Deep Feedback
5	Random-Pitch	Pitch Up	Pitch Down
6	Soft Scratch	Character1	Character2
7	Delay	Delay Time	Repeat
8	Trans	Rate	Depth
9	Phase-Wah	Rate	Feedback
10	Filter	Rate	Feedback
11	Auto-Wah	Rate	Feedback
12	Small Hall	Reverb Time	Bottom Boost
13	Thin Plate	Reverb Time	Bottom Boost
14	Plate	Reverb Time	Bottom Boost
15	Spring-Verb	Reverb Time	Bottom Boost
16	Gate Reverb	Gate Time	Tone

**Guitar**

No.	Program	Parameter 1	Parameter 2
1	Chorus	Rate	Depth
2	Flanger	Rate	Depth
3	Phaser	Rate	Depth
4	Tremolo	Rate	Depth
5	Spring	Reverb Time	Tone
6	Plate	Reverb Time	Tone
7	Hall	Reverb Time	Tone
8	Room	Reverb Time	Tone
9	Gate	Reverb Time	Tone
10	Modulate	Reverb Time	Tone

11	Auto-Wah	Rate	Depth
12	Phase-Wah	Rate	Depth
13	Auto-Filter	Rate	Repeat
14	Delay	Delay Time	Repeat
15	Octave-Down	Octave Level	Direct Level
16	Octave-Up	Octave Level	Direct Level

### Input Circuit

With internal op-amp input buffer, the AC-coupling capacitor is not required when connecting the BVO-16 module. Just connect the analog input directly to the module. The input analog signal can be up to a maximum of 2.8 Vp-p before clipping occurs. For applications that require a single channel, connect the input signal to both the Left and Right Analog Input pins. Otherwise, 6 dB of signal will be lost on DSP programs that expect a stereo input and sum the two inputs to mono.

### Output Circuit

Interfacing to the analog output of the module is also very simple. There's built in output RC filter for unwanted high frequency filtering and also an output opamp buffer. The output of the module must drive a load greater than 1 kΩ. For applications that use only a single channel, connect only to the Left Analog Output.

### Power Supply

The module has internal LDO for +3.3V power supply to achieve rated performance. Separate Analog and Digital Ground pins are provided to reduce the possibility of digital interference in the analog signal.

### Module Block Diagram

