

Amplifier Models: V250, V150, V100, V60, V35

Wall-Mount Amplifier Models: WV250, WV150, WV100

Mixer Model: VMIX



## Power Vector Series Modular Amplifiers & Mixers

- CONVENIENT SIGNAL PROCESSING
- INPUT FLEXIBILITY
- MORE POWER!

**BOGEN**

# Power Vector Amplifier Product Features



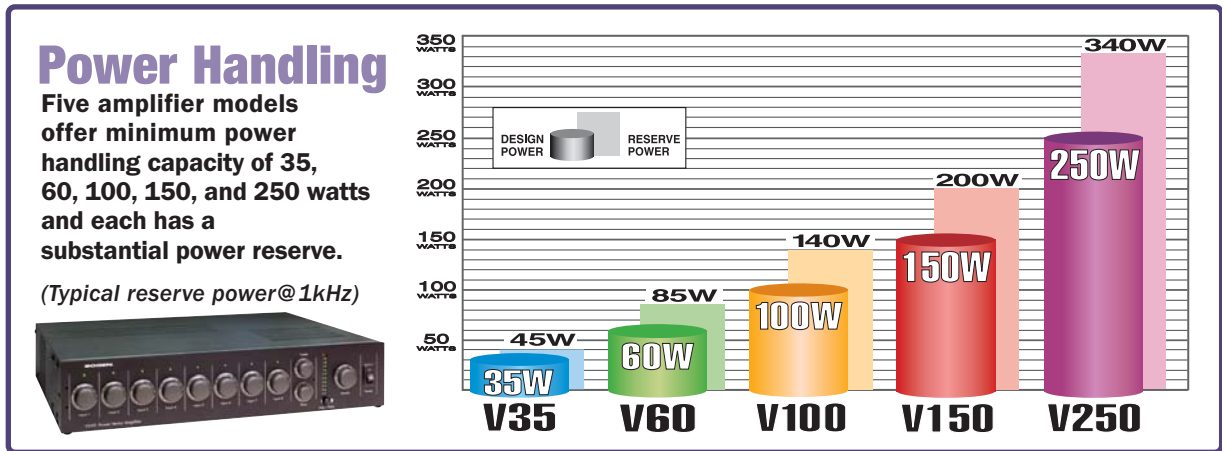
Bogen's Power Vector modular input amplifier series consists of five models, ranging from 35 to 250 watts of power. Each model accepts up to 8 plug-in modules with 4 levels of priority between modules. Two module bays also accept signal-processing output modules.

Each input has its own independent volume control and a signal/clip indicator. An 11-segment LED meter indicates output level, while a motorized master volume control allows smooth and accurate operation of the unit's master volume control from a remote control panel (*sold separately*).

## FEATURES LIST:

- 5 models ranging from 35W to 250W, with a large power reserve
- Capable of handling 70V, 25V, 8-ohm, and 4-ohm speaker loads
- 8 module bays
- Wide selection of advanced plug-in modules (see pages 3 & 4)
- 2 module bays capable of handling signal processing output modules
- 4 levels of priority between modules
- 11-segment LED output level meter monitors the output level of the power amplifier, with Avg./Peak meter switch
- Motorized master volume control that can be remotely operated
- Two-color LED for each input channel indicates input signal and clipping
- Master Mute function overrides all audio from the mixer section of the amplifier
- Lockable switch permits user to select either transformer-coupled outputs or a direct low-impedance output
- Bass and treble controls with bypass switch
- 3 priority mute buses are available externally for system expansion and external control
- Bridging connection available for expanding number of Power Vectors in a system
- 125 Hz Lo-cut switch
- Signal processing insert jacks allow external equipment to be inserted between the pre-amp output and the power amp input
- Pre-EQ, unbalanced, buffered output signal "post" all unit controls, but "pre" any external signal processing equipment inserted
- Grounded convenience receptacle
- 8 Module Security Covers (PVMC) included (*not on Wall Mount units*) (see below)
- Front panel security cover (PVSC) with break-away access tabs available (see below)
- 2 rack spaces high (3-1/2")
- Listed to UL Standard 60065 for U.S. and Canada

Wall Mount versions and Mixer only version (VMIX) also available. (see page 6)



## Accessories for Power Vector Amplifier Models

RVCP  
Remote Volume  
Control Panel



PVMC  
Module  
Security Cover



PVSC  
Power Vector Security Cover



RPK87  
Rack  
Mounting Kit



# Modular Flexibility



## Wide Selection of Advanced Plug-In Modules

Bogen's new advanced input modules provide a wide range of input types allowing for custom configuration of inputs - in both type and number - for a particular application. Modules are fully-featured for their application, many with Bass/Treble, Gain, Music Ducking, Mute Send, and Mute Receive. Mix and match a variety of modules to meet your specific installation needs. Each of Bogen's modules support different signal-source/processing requirements. Included interface features are: balanced and unbalanced inputs; stereo or mono; telephone systems/PBXs; transformer-isolated; microphones; tone generator; and bridging.

## Signal-Processing Output Modules

Bogen's new output modules offer a cost effective and convenient way to add specific signal processing capability into a system. These modules automatically insert themselves into the audio signal path and eliminate the need for external wiring as well as accessory outboard equipment. The selection includes an ambient noise sensor, compressor/limiter, and parametric equalizer. Each Power Vector amplifier accepts up to two signal-processing output modules. The amplifier automatically detects the presence of an installed signal-processing output module, and automatically inserts it into the audio signal path of the amplifier. All connections are done internally, so there is no need for patch cords to connect to the inserts. When two output modules are installed, the signal processing effects are cascaded. In addition, each output module includes an unbalanced input that is controlled by the amplifier's input control so an input is not forfeited when an output module is used.

Output modules afford two other benefits:

- (1) the effects insert jacks are still available for use by external processing equipment.
- (2) the signal processing output modules act on the signal on the raw mix bus signal before any other user controls (such as volume, bass, and treble) can affect it. This then ensures that signal level dependent processors, such as the Compressor/Limiter and the Ambient Noise Sensor modules, perform as intended regardless of front panel control changes (excluding input volume controls).

## Signal-Processing Output Modules

Automatically insert themselves into the mix bus signal path leading to the power amp stage when installed.

### RELAY INPUT/OUTPUT - RI01S



- Transformer-isolated, balanced line-level input
- 600-ohm or 10k jumper selectable input impedance
- 8-ohm, 750mW output
- Input and output level controls
- Relay responds to selectable priority level
- External control of priority muting
- N.O. or N.C. relay contacts
- Input can be muted from higher priority modules, with signal fade back
- Output can gate with relay priority level
- Screw terminal strips
- RJ11 connection with line output and dedicated N.O. relay contact

### AMBIENT NOISE SENSOR - ANS1R



ANS1R  
with Sensor  
Microphone

- Maximum Gain control
- Ramp Speed control
- Activity Threshold control
- Ambient MIC input threshold control
- Stereo AUX input (*summed mono*)
- AUX level input control
- Gradual fade back from mute
- Connect up to 4 sensor mics (*1 included*)
- Mutable input (*lowest priority only*)
- RCA connectors

#### Accessories

ANS500M Sensor Microphone  
(One included; additional available)



### COMPRESSOR LIMITER - CMP1R



- Compressor Ratio control
- Threshold control
- Make-up Gain control
- Bypass switch
- Unbalanced input
- Gradual fade back from mute
- Mutable input (*lowest priority only*)
- RCA connector

### PARAMETRIC EQUALIZER - PEQ1R



- 2 full parametric bands
- Frequency control
- 'Q' bandwidth control
- Gain control
- Bass and Treble control
- Unbalanced input
- Bypass switch
- Mutable input (*lowest priority only*)
- Gradual fade back from mute
- RCA connector



# Input Modules

**REMOTE VOLUME CONTROL**

## LINE/MIC INPUTS - LMM1S, LMR1S

*Actively Balanced Emulated Transformer Inputs*



**LMR1S**  
with Remote Volume Control



- Input level controlled by remote panel or direct voltage (*LMR1S*)
- Wall Plate Control included (*with LMR1S only*)
- Limiter with LED activity indicator (*LMR1S*)
- Line/MIC gain switch
- Gain/Trim control
- Bass & Treble controls
- Noise gate w/threshold control
- Fade back from mute
- 24V phantom power
- Priority & bus assignments
- Screw terminal input
- Mutes lower priority modules
- Mutable by higher priority modules



**LMM1S**

## MICROPHONE INPUTS - MIC1S, MIC1X

*Low-impedance, Transformer-balanced Microphone Inputs*



**MIC1S**

- Gain/Trim control
- Bass & Treble controls
- Noise gate w/Threshold & Duration control
- Limiter w/Threshold control
- 24V Phantom power
- Priority & Bus assignable
- Balanced, transformer-isolated
- Screw terminals (*MIC1S*); XLR connector (*MIC1X*)



**MIC1X**

## MICROPHONE INPUTS - MIC2S, MIC2X

*Low-impedance, Electronic-balanced Microphone Inputs*



**MIC2S**

- Gain/Trim control
- High Cut/Low Cut controls
- Enhance control
- Noise gate w/Threshold control
- Limiter w/Threshold control
- 24V Phantom power
- Priority & Bus assignable
- Screw terminals (*MIC2S*); XLR connector (*MIC2X*)



**MIC2X**

## TELEPHONE INPUT - TEL1S

*Interfaces to Telephone System's Loop Start/Ground Start Trunks or Paging Ports*



- Loop start or ground start trunk interfacing
- Dry loop interface to paging ports
- Audio-activated paging in dry loop
- Gain/Trim control; Noise gate & Limiter
- Mutes lower priority modules
- Mutable by higher priority modules
- Bus assignable & Transformer-isolated
- Screw terminal connections

### Accessories

**PRS48**  
48V DC Power Supply



## BALANCED INPUT - BAL2S

*Stereo, Balanced Input*



- Stereo, high-impedance, electronically balanced inputs
- Professional-quality, low noise performance
- Selectable gain of 0 or 18 dB
- Compatible with telephone system page ports
- Mutable by higher priority modules
- Variable ducking level when muted
- Fade back from mute
- Screw terminal connections

Each amplifier can accept up to 8 Bogen input modules, with user-settable priority levels. Plug-in modules support different input options including the ability to interface to balanced and unbalanced high- and low-level inputs, stereo or mono, telephone PBXs, and microphones. Each amp can accept up to 2 output signal processing modules, such as Ambient Noise, Parametric EQ, and Comp/Limiter.

## STEREO AUX INPUT - SAX1R

*Unbalanced Stereo Input*



- Gain/Trim control
- Bass & Treble controls
- Gate feature mutes lower priority modules
- Mutable by higher priority modules
- Variable ducking level when muted
- Fade back from mute
- Stereo-to-mono summing option
- Bus assignable
- RCA connectors

## MONO AUX INPUT - MAX1R

*Unbalanced Mono Input*



- Gain/Trim control
- Bass & Treble controls
- Gate feature mutes lower priority modules
- Mutable by higher priority modules
- Variable ducking level when muted
- Fade back from mute
- Bus assignable
- RCA connector

## BRIDGING INPUT - BRG1R

*Daisy Chain Multiple Amplifier Inputs*



- Gain/Trim control
- Ground isolated input to eliminate ground loop
- Input signal available at buffered output
- Priority assignable
- Variable ducking level when muted
- Fade back from mute
- Buffered output not muted
- Bus assignable
- RCA input and output connector

## TRANSFORMER-BALANCED INPUT - TBL1S

*Transformer-Balanced AUX Input*



- Gain/Trim control
- Bass & Treble controls
- Transformer-isolated, dual-impedance, line-level input
- Variable ducking level when muted
- Mute send & receive
- Fade back from mute
- Mute send threshold & duration adjustments
- Priority & Bus assignable
- Pluggable screw terminal connections

## TONE GENERATOR - TNG1S

*Multiple Tone Generator Input*



- Level control
- Select 4 of 8 tones to trigger
- Burst/steady, slow whoop, siren, mechanical bell, Klaxon, night ringer, double chime, & doorbell tones
- Momentary & continuous playback modes
- Microprocessor-controlled
- Priority assignable
- Mute send & receive
- Screw terminal trigger connections



## FRONT PANEL

### Signal/Clip Indicators

A two-color LED indicates the audio activity for each of 8 input channels.

**Green** - The input's signal is present on mix bus.

**Red** - The channel's input is being overdriven.

### Bass & Treble Controls

Select the amount of cut or boost of bass frequencies below 100 Hz and treble frequencies above 10 kHz (bypassable).

### LED Output Meter

This 11-segment LED meter monitors the output signal level of the power amplifier or the mixer.

### Power Indicator & Switch

An LED indicates whether the amplifier power status is on or off. A rocker-type switch applies or removes power to the amplifier.



### 8 Independent Inputs

Each input source is individually controlled by a corresponding volume control knob for complete system customization.

### Average/Peak Switch

The Power Vector can register the average or peak level of the output signal on the 11-segment LED meter.

### Master Volume Control Knob

Controls overall volume level of the mixed input signals. The control is motorized and can be adjusted manually or by an optional remotely mounted control panel.

## REAR PANEL

### AC Receptacle

Grounded, unswitched power receptacle conveniently provides a maximum 500W capacity for external equipment.

### Trans Out/ Direct Out Switch

Amplifier can be used with 70V, 25V, and 8-ohm speaker systems via its output transformer or with low-impedance speakers via direct drive (4Ω min.).

### Lo-Cut Switch

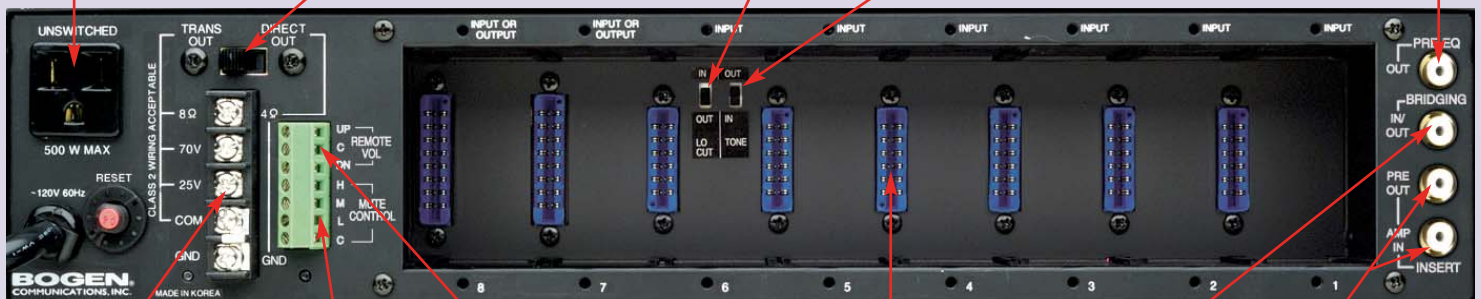
This slide switch allows roll off of frequencies below 125 Hz for protecting horn speakers.

### Tone Control Bypass Switch

This slide switch allows the effects of the Front Panel Bass and Treble controls to be bypassed.

### Pre-EQ Jack

Output jack provides unbalanced, buffered output signal "post" all unit signal processing, but "pre" any external signal processing equipment connected to the Insert jacks.



### Speaker Output Barrier Strip

A 5-position barrier strip, with clamping washers, provides connections for speaker loads.

### Mute Control Terminals

These terminals make the priority buses available externally for linking Power Vectors together into larger systems or for external control.

### Remote Volume Control Terminals

Connect the optional Remote Volume Control Panel (RVCP) to these terminals to provide remote operation of the Master Volume Control knob.

### Module Bays

Each of 8 module bays can accommodate advanced plug-in input modules. Bays 7 & 8 also accept signal-processing output modules. Up to 4 levels of priority can be programmed between modules.

### Bridging Connector

Allows system expansion by linking multiple Power Vectors' mix buses together.

### Signal Processing Insert Jacks

Allows external equipment to be inserted between the pre-amp output and the power amp input.

## Other Available Power Vector Products...

### Wall-Mount Power Vector Amplifier

The Wall-Mount Power Vector Series combines up to 8 modular inputs and 2 signal-processing outputs to meet various application requirements. The amplifier's convenient and efficient wall-mount design provides a protected and accessible audio system in a permanent and inconspicuous mounting.

- 100-, 150-, and 250-watt models; each with large power reserve
- 8 module bays, accepts up to 2 signal-processing output modules and up to a total of 8 input modules
- Wide selection of advanced input and signal-processing output modules (see pages 3 & 4)
- Four priority levels between modules
- 4-ohm, 8-ohm, 25V, and 70V outputs
- Secure, permanent wall mounting (*in-wall with BBF or surface-mount with BBS*)
- 11-segment LED output level meter registers Peak or Average output
- Adjustable output level limiter with active indicator
- Front-mounted Tape Output provides unbalanced line level output signal
- Independent volume controls for each input
- Motorized master volume control, w/optional accessory RVCP for remote operation
- External mute control
- Bass and treble controls with center detent and bypass switch
- 125 Hz Low Cut switch
- Thermal, short-circuit, and overload protection
- Thermally controlled 3-speed fan
- Listed to UL Standard 60065 for U.S. & Canada
- Components required for installation: Door (WMAD) and Back Box (BBF or BBS), both sold separately
- Modules required, but sold separately



**WV100,  
WV150,  
WV250**

#### Accessories

**RVCP**  
Remote Volume  
Control Panel



#### Components

NOTE: These items are required for installation: BBF or BBS, and one WMAD.



**BBF**  
Flush-Mount  
Back Box



**BBS**  
Surface-Mount  
Back Box



**WMAD**  
Front Cover/  
Door

### Power Vector Modular Mixer

This 8-channel Power Vector mixer/pre-amplifier offers a wide variety of operational features and functions for superior audio performance. Eight module bays accept plug-in modules, allowing up to four levels of priority between modules. Security covers for both the front and rear of the unit prevent tampering with settings. For large applications, several Power Vector Mixers can be bridged together.

- Wide selection of plug-in modules (see pages 3 & 4)
- 8 module bays
- 2 module bays capable of handling signal-processing plug-in output modules
- 4 levels of priority between modules (see pages 3 & 4)
- 8 inputs, with independent volume controls for each
- LED signal/clip indicator for each channel
- Bass and treble controls
- 11-segment LED output level meter monitors the output level of the mixer with Avg/Peak switch
- Balanced output signal level switch (-50, -10, and +4 dBμ)
- Balanced transformer-isolated output
- Join multiple Power Vector mixers together using bridging jack and mute terminals
- Motorized master volume control that can be remotely operated (*with RVCP Remote Volume Control Panel, sold separately*)
- Unbalanced signal output jack
- 125 Hz Low Cut feature switch
- Tone control bypass switch
- Module security cover prevents tampering with module controls (*8 included*)
- Resettable circuit breaker
- Rack mountable (*rack mounting kit RPK87, sold separately*)
- Security cover (PVSC) to protect front controls with break-away access to installer selected controls (*sold separately*)
- Listed to UL Standard 60065 for U.S. & Canada



**VMIX**

#### Accessories for Power Vector Mixer (VMIX)

**RVCP**  
Remote Volume  
Control Panel



**PVMC**  
Module  
Security Cover



**PVSC**  
Power Vector  
Security Cover



**RPK87**  
Rack  
Mounting Kit





# Performance Specifications

	Power Vector Amplifiers, Rack-Mount (V-Series)	Power Vector Amplifiers, Wall-Mount (WV-Series)	Power Vector Mixer
<b>MODELS:</b> (Model Number: Power Output Rating**)	<b>V250: (250W / 340W*)</b> <b>V150: (150W / 200W*)</b> <b>V100: (100W / 140W*)</b> <b>V60: (60W / 85W*)</b> <b>V35: (35W / 45W*)</b>	<b>WV250: (250W / 340W*)</b> <b>WV150: (150W / 200W*)</b> <b>WV100: (100W / 140W*)</b>	<b>VMIX</b>
<b>Frequency Response</b> <i>Transformer:</i> <i>Direct:</i>	45 Hz to 20 kHz; 0/-2 dB 20 Hz to 20 kHz; 0/-1 dB	45 Hz to 20 kHz; 0/-2 dB 20 Hz to 20 kHz; 0/-1 dB	+/- 1 dB (20 Hz to 20 kHz) ——
<b>Distortion</b> <i>Transformer:</i> <i>Direct:</i>	0.5%** 0.1%** (.05% typical @ 1 kHz)	0.5%** 0.1%**	0.01%† ——
<b>Signal-to-Noise†</b> <i>Fundamental:</i> <i>With AUX Module:</i> <i>With MIC Module:</i> <i>With TEL Module:</i>	-94 dB -70 dB -60 dB -70 dB	-94 dB -70 dB -60 dB -70 dB	-99 dB -94 dB -64 dB -92 dB
<b>Tone Controls</b> <i>Bass Frequency:</i> <i>Treble Frequency:</i> <i>Low Cut Frequency:</i>	100 Hz (+/- 10 dB minimum) 10 kHz (+/- 10 dB minimum) 125 Hz (@ -6 dB/octave)	100 Hz (+/- 10 dB minimum) 10 kHz (+/- 10 dB minimum) 125 Hz (@ -6 dB/octave)	100 Hz (+/- 10 dB minimum) 10 kHz (+/- 10 dB minimum) 125 Hz (@ -6 dB/octave)
<b>Sensitivity</b>	0.4V (at backplane connector)	0.4V (at backplane connector)	0.4V (at backplane connector)
<b>Output Regulation</b>	2 dB or better, no load to full load	2 dB or better, no load to full load	——
<b>Output Impedance</b> <i>Transformer-Coupled:</i> <i>Direct Coupled:</i> <i>Balanced:</i> <i>Unbalanced:</i>	70V, 25V, 8 ohms (bal or unbal) 4 ohms —— ——	70V, 25V, 8 ohms (bal or unbal) 4 ohms —— ——	—— —— 50 ohms @ +4 dBu, 600 ohms @ -10 dBu, 5 ohms @ -50 dBu 100 ohms
<b>Output Level</b> <i>Balanced:</i> <i>Unbalanced:</i>	—— ——	—— ——	Selectable +4, -10, -50 dBu (typical when meter reads "0"); +18 dBu max.  0 dBu (typical when meter reads "0"); + 20 dBu max.
<b>Inserts</b> <i>Insert "OUT" Level:</i> <i>Insert "OUT" Impedance:</i> <i>Insert "IN" Sensitivity:</i> <i>Insert "IN" Impedance:</i>	1 VRMS (@ FRP) 50 ohms maximum 1 VRMS 10k ohms minimum	—— —— —— ——	—— —— —— ——
<b>Pre-EQ Output (on V Series); Tape Out (on WV Series)</b> <i>Output Level:</i> <i>Output Impedance:</i>	4 VRMS (@ FRP) 50 ohms maximum	4 VRMS (@ FRP) 50 ohms maximum	—— ——
<b>Signal/Clip Indicator</b> <i>Signal Detect Threshold:</i> <i>Signal Indicator Hold Time:</i> <i>Clip Detect Threshold:</i> <i>Clip Detect Hold Time:</i>	10 mV @ output of module 50 mS green indicator 6V @ output of module 50 mS red indicator	10 mV @ output of module 50 mS green indicator 6V @ output of module 50 mS red indicator	10 mV @ output of module 50 mS green indicator 6V @ output of module 50 mS red indicator
<b>AC Power Receptacle</b>	500W max. power, unswitched	——	500W max. power, unswitched
<b>AC Voltage</b>	120V AC, 60 Hz	120V AC, 60 Hz	120V AC, 60 Hz
<b>AC Current</b>	V250: 5.5A; V150: 3.5A; V100: 2.0A; V60: 1.3A; V35: 0.6A	WV250: 5.5A; WV150: 3.5A; WV100: 2.0A	0.2A
<b>Product Weight</b>	V250: 32 lb.; V150: 31 lb.; V100: 28 lb.; V60: 26 lb.; V35: 22 lb.	WV250: 28 lb.; WV150: 29 lb.; WV100: 27 lb.	18 lb.
<b>Dimensions</b>	17-1/4" W x 3-7/8" H x 14-3/4" D (all models)	WV100/150/250: 14-1/8" W x 21" H BBF: 14-1/2" W x 24- 3/4" H x 3-7/8" D BBS: 16-1/4" W x 26- 3/4" H x 3-7/8" D WMAD: 16-1/4" W x 26- 3/4" H x 1" D	17-1/4" W x 3-7/8" H x 14-3/4" D

\* Typical, @ 1 kHz/0.1% THD/4 ohms \*\* THD+N, Maximum, full bandwidth @ FRP

† Referenced to FRP output level, 20 Hz to 20 kHz bandwidth limited



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COMMUNICATIONS, INC.

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