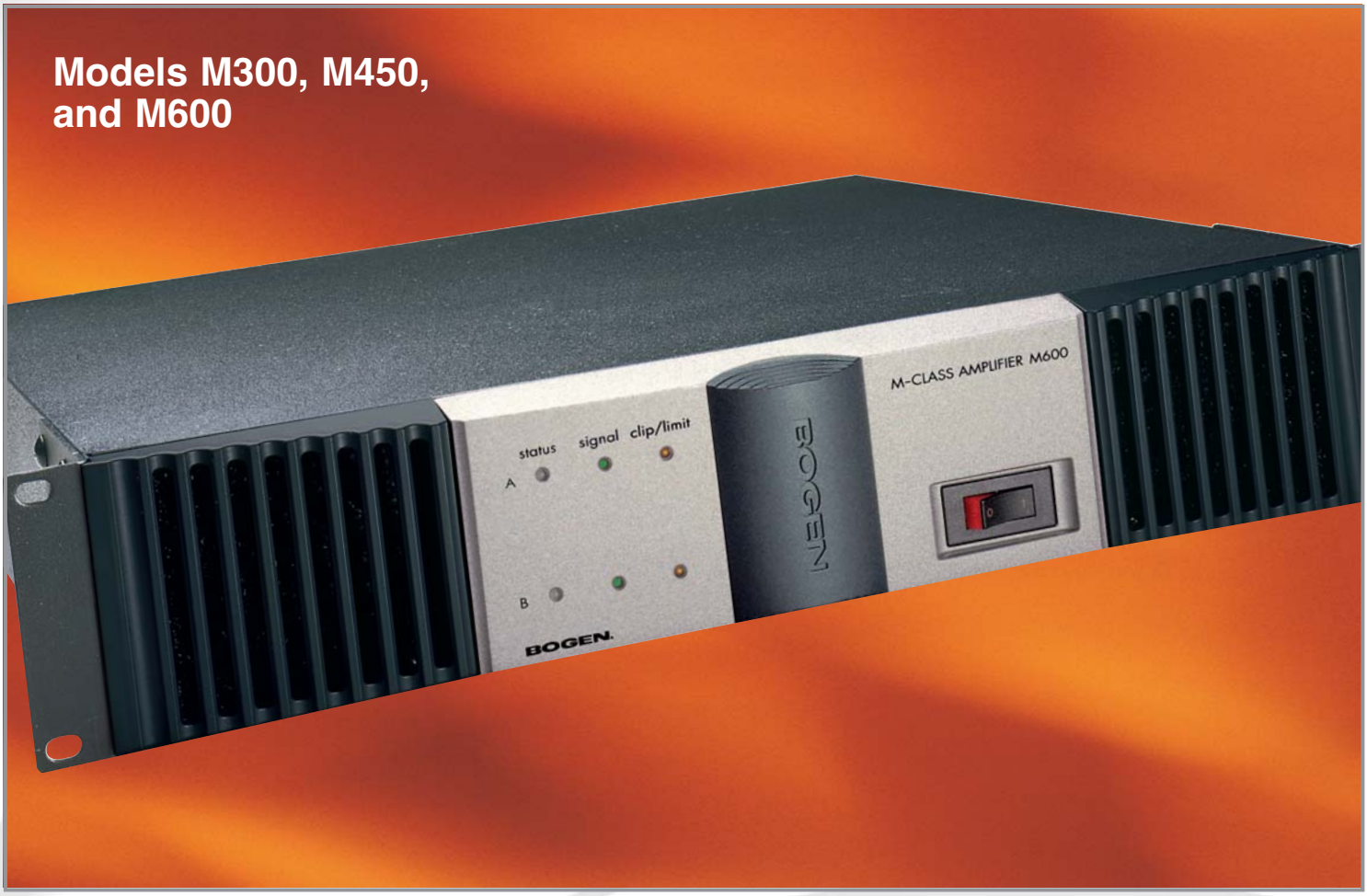
Models M300, M450,
and M600



M-Class Series Amplifiers

Designed for Reliability, Flexibility, and Power!

BOGEN®

One Series, Various Installation Needs

Bogen's M-Class delivers on what contractors need most:

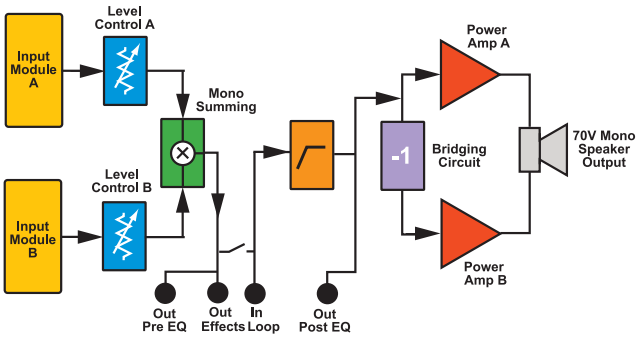
- **Reliability -** *Massive power toroid and heat sinks, heavy 14-gauge chassis, Back-Slope™ AC voltage stabilization, Clip limiters, DC voltage, over-current and thermal protection circuits.*
- **Flexibility -** *3 modes of operation: 70V Mono, Dual Mono, or Stereo; 2 modular input bays for a variety of prioritized input types.*
- **Power -** *up to 600W/ch stereo or 1200W of 70V mono power with low distortion and a high slew rate.*

All this wrapped into 2 rack spaces of some of the best looking metal in the industry.

Three, Flexible Operating Modes

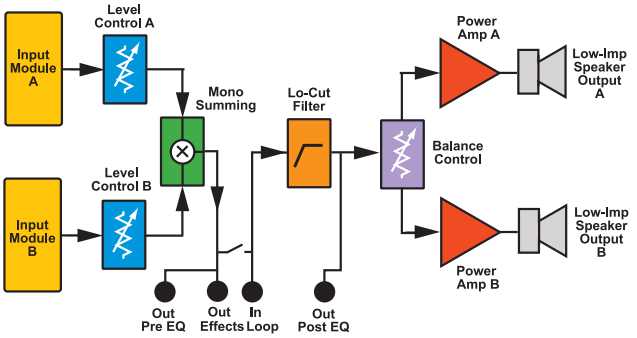
Flexible operating modes meet different installation needs.

70V Mono Mode



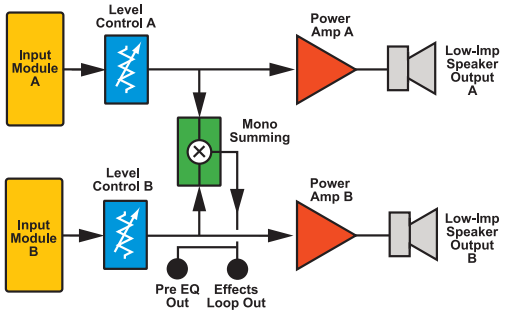
70V Mono Mode: Provides a single channel of output for 70V constant voltage speaker systems. Inputs form a 2x1 mixer with the front panel controls determining the signal levels from each input.

Dual Mono Mode



Dual Mono Mode: Dual mono provides the same mixer operation as 70V Mono Mode, but with two amplifier channels for low-impedance speaker systems. A balance control is provided to adjust the overall volume level between the two amplifier outputs. Inputs form a 2x1 mixer with the front panel controls determining the signal levels from each input.

Stereo Mode



Stereo Mode: In stereo mode, the front panel controls allow independent operation of the two power amp channels.

M-Class Series Features

- 3 Models: M600, M450, and M300
- 3 stereo power levels: 600W, 450W, or 300W per channel @ 4 ohms (both channels driven)
- 3 mono power levels: 1200W, 900W, or 600W for 70V speaker systems
- 3 modes of operation to choose from: 70V Mono, Dual Mono, or Stereo
- Low noise, low distortion, and high slew rate
- Flexible modular input capability (2 module capacity)
- Professional-quality, balanced, high-impedance input module (included)
- 3 selectable low-frequency roll-off choices
- 2x1 mixer function when in mono modes
- Prioritized inputs when in mono modes
- Insert connectors for outboard equipment (in mono modes)
- Post- and Pre-EQ Output Feeds (in mono mode)
- DC, overload, and thermal protection circuits
- Clip detection and limiting circuits for speaker protection
- Power-saving Sleep Mode for intermittent use applications
- Signal, Clip, Sleep Mode, and Protect indicators
- Back-Slope AC voltage stabilization for dependable performance over varying AC line voltages
- Heavy 14-gauge steel chassis with cast aluminum front panel
- Recessed volume control knobs with snap-on, protective cover
- Mounts in 2 rack spaces (3-1/2") directly stackable without need for extra space above or below
- 2 independent, continuously variable, cooling fans for dependable and quiet operation
- Easily removable front fan grilles
- Stable into 2-ohm loads

Back-Slope™ AC Voltage Stabilization

Bogen's patented Back-Slope circuitry assures consistent performance and reliability by regulating the proper amount of AC energy from the amplifier's power toroid, as AC line voltages rise and fall (up to 10%), thus maintaining maximum performance. This also prevents damage to the amplifier over varying line voltages and load conditions.

Back-Slope provides these advantages:

- the output voltage of the amplifier is better controlled when the unit is lightly loaded
- ensures better low-frequency performance into step-down transformers
- prevents component damage to the amplifier if the power line voltage goes above its nominal value and improves the reliability of the unit
- regulates the rail voltage of the amplifier efficiently with minimal wasted heat

Sleep Mode

Energy-saving Sleep Mode feature reduces amplifier power consumption during idle periods. When a signal is absent for more than three minutes, the unit will go into sleep mode. During sleep mode, the unit draws less power. Instant-on wake operation automatically returns the unit to full power when an audio signal is detected, without cutting off the beginning of the signal. (Sleep mode is defeatable.)

Input Options & Priorities

M-Class amplifiers support up to two input modules with up to two priority settings. Either module can be set as a higher priority, making the other module the lower priority. Both module inputs can be mixed together. Each amplifier comes standard with a professional-quality, stereo, high-impedance balanced input module. Other modules can be added as needed.

Input Modules

Each amplifier can accept up to two Bogen input modules, with user-settable priority levels. Plug-in modules support different signal processing options including the ability to interface to balanced and unbalanced high- and low-level inputs, stereo or mono, telephone PBXs, and microphones. A stereo, balanced, high-impedance, input module (BAL2S) comes standard with each amplifier. Other modules offer more advanced functionality.

LINE/MIC INPUTS - LMM1S, LMR1S

Actively Balanced Emulated Transformer Inputs

REMOTE VOLUME CONTROL

LMR1S
with Remote Volume Control

LMM1S
(Same as LMR1S, without Remote Volume capability)

- 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

MICROPHONE INPUTS - MIC1S, MIC1X

Low-impedance, Transformer-balanced Microphone Inputs

MIC1S

MIC1X

- 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)*

MICROPHONE INPUTS - MIC2S, MIC2X

Low-impedance, Electronic-balanced Microphone Inputs

MIC2S

MIC2X

- 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)*

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

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

LISTEN TO TONES ON THE WEB
www.bogen.com/tones

- 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

RELAY INPUT/OUTPUT - RIO1S

- Transformer-isolated, balanced line-level input
- 600-ohm or 10k jumper selectable input impedance
- 8-ohm, 750mW Mix Bus output
- Input and output level controls
- Relay contacts respond to selectable priority level
- N.O. or N.C. relay contacts
- External control of priority muting
- Input can be muted from higher priority modules, with signal fade back

Performance Specifications

Technical Specifications		M600	M450	M300
Power Output				
70V Mono		1200W @ 4 ohms	900W @ 5.5 ohms	600W @ 8 ohms
4-ohm		600W per channel*	450W per channel*	300W per channel*
8-ohm		400W per channel*	300W per channel*	200W per channel*
Input Sensitivity				
At Backplane Connector or using Standard Input Module (incl.)*		1.161V for 600W @ 4 ohms	1.010V for 450W @ 4 ohms	0.840V for 300W @ 4 ohms
S/N Ratio (20k BW)		109 dB ref. 8 ohms, F.P.	106 dB ref. 8 ohms, F.P.	103 dB ref. 8 ohms, F.P.
Class of Operation		H	H	AB
Product Weight		46 lb.	44 lb.	41 lb.
Connectors:	***Power***	20A line cord***	15A line cord	15A line cord
	Input	Dependent on Modules installed (stereo, high-impedance balanced module w/screw terminals included) / RCA (Mono/70V mode, unbalanced)		
	Output	5-pin "touch-proof" Barrier Strip, RCA Pre- & Post-EQ Output		
Power Bandwidth		20 Hz to 40 kHz .5% THD		
THD @ 1 kHz rated power		less than .02%		
Load Impedance		4-8 ohms, 70V		
Minimum Load Impedance (Stereo)		3.2 ohms		
Frequency Response @ 1 watt		20 Hz to 20 kHz +/- 0.25 dB		
Output Regulation,	***1 kHz direct***	0.5 dB @ 8 ohms		
	1 kHz bridged	1.5 dB @ 70V		
Inputs (Plug-in modules)		Electronically balanced, high-impedance module standard, other modular input types available		
AC Input Voltage Range		95 to 130V AC, 60Hz		
Maximum AC Current		20A***	15A	12A
Indicators		Status (On/Protect/Sleep), Clip/Limit, Signal		
Temperature Range		15 to 105 degrees F		
Thermal Emissions		1913 BTU/hr.	1537 BTU/hr.	1195 BTU/hr.
Cooling		Forced Air Variable Speed Fan		
Physical Dimensions (W x H x D)		17" X 3-1/2" x 18-1/2" (not including brackets)		
Protection		RF, DC, Low-frequency, Thermal, Low-Impedance, Circuit-Breaker, Short Circuit		
Special Features		Sleep Mode, Back-Slope regulation, Stereo, Dual Mono, 70V Mono Operation, Toroidal Power Transformer		
Approvals		Listed to UL Standard 60065 for U.S. and Canada		

* Both channels driven at nominal line voltage 120V AC, 60Hz. ** Module set to Gain of 1. *** Requires 20A, NEMA 5-20R Type Receptacle.

Accessories

RPK86
Rear Rack Mounting Kit

PVMC
Module Security Cover

Angled Front Panel - The top of the front panel is angled slightly, allowing easy removal of the knob cover and also allowing two units to be stacked on top of each other without empty rack spaces between them.

Clip Limit Indicator - Lights amber when amp enters clipping and limiter circuit activates or when there are excessively low impedance loads.

Recessed Volume Control *(shown with cover removed)* - 20-position, detented volume control, one for each channel. They are recessed in the cast aluminum front panel and are protected from casual tampering by a snap-on knob cover *(not shown)*.

Removable Fan Grilles - Secure, but easily removable for filter cleaning.

FRONT PANEL

Status Indicator -
Green – On/Normal Operation
Amber – Sleep Mode
Red – Protect (DC, Thermal, Overload)

Signal Indicator - Indicates audio signal is present.

Power Switch - High-quality, magnetic circuit breaker.

70V Speaker Output - For 70V constant voltage speaker systems. Provides a single channel of amplification.

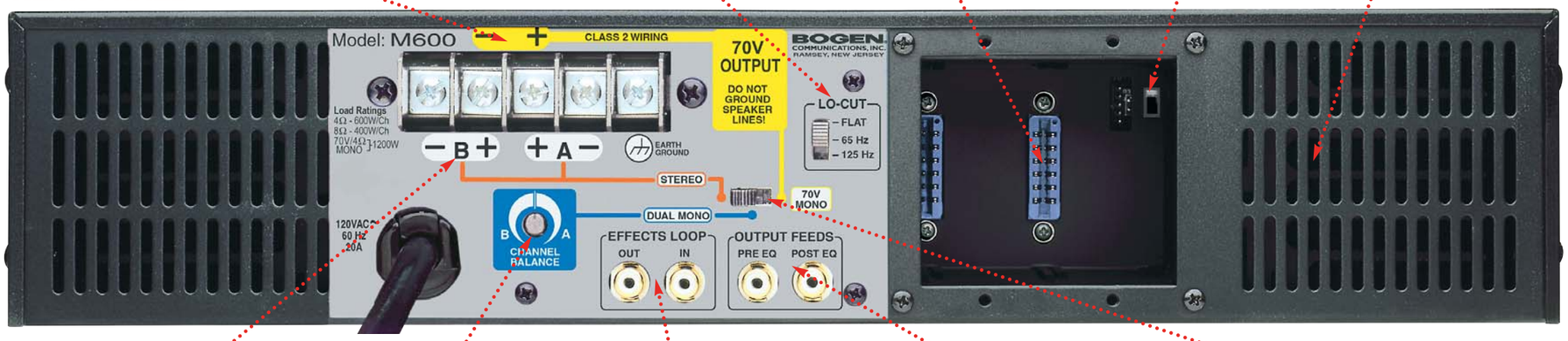
Lo-Cut Filter Switch - Select a low-frequency roll-off of 65Hz or 125Hz for transformer coupled and horn speakers. Flat position allows full low-frequency performance.

Module Bay - The unit can accept one or two Bogen input modules. Each amplifier comes with a balanced, high-impedance stereo input module.

Sleep Defeat - Turns off the power-saving sleep mode.

Cooling Fans - Two independent, variable-speed fans respond only as needed to keep the amplifiers cool which reduces dust build-up.

REAR PANEL



Low-Impedance Outputs - For 4- to 8-ohm speaker loads. Unit works into loads as low as 2 ohms without overloading.

Channel Balance Control *(in Dual Mono operation mode)* - Allows the output level of one channel to be lower than the other channel's output level.

Effects Loop - Provides insert point for outboard signal processing equipment when the amplifier is in either 70V Mono or Dual Mono modes (modular inputs are in a 2:1 mixer configuration). *(Not used in stereo mode.)*

Output Feeds - In mono modes, the connectors provide output signal feeds both before and after any outboard signal processing. In stereo mode, the Pre-EQ connector provides mono mix output of the stereo input signal.

Operational Mode Selector - Choose one of three settings to meet application needs: 70V Mono, Dual Mono, or Stereo. 70V Mono provides one channel of 70V constant voltage output with the two modular inputs combined in a 2:1 mixer. Dual Mono provides 2 identical channels of low-impedance power with modular inputs combined in a 2:1 mixer.

M-CLASS

Three M-Class models - M600, M450, and M300 - respectively provide 600W, 450W, and 300W per channel into 4-ohm loads or 1200W, 900W, and 600W for 70V systems. Each amplifier is powered by an oversized toroidal transformer for solid performance.

BOGEN®
COMMUNICATIONS, INC.

www.bogen.com

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