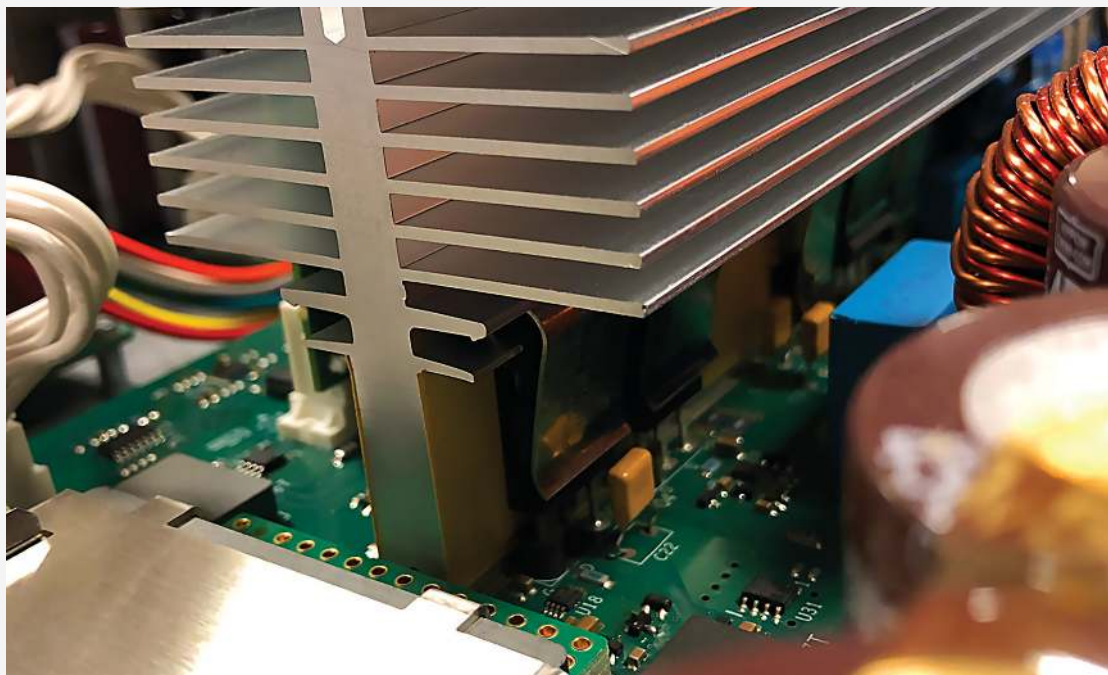




POWERMATCH

CONFIGURABLE PROFESSIONAL POWER AMPLIFIERS

Class-D installation amplifiers that deliver performance with efficiency, reliability and versatility



Pro audio is about creating incredible experiences.

But those experiences don’t just happen. They need to be built, one piece at a time.

That’s why we’re here.

Bose Professional is the division of Bose Corporation dedicated to pro audio ingenuity — including portable PA systems, conferencing solutions, and installed commercial sound systems. In classrooms, corporate buildings, houses of worship, restaurants, retail stores, hotels, and more — for nearly 50 years — we’ve partnered with AV integrators, installers, consultants, front-of-house engineers, and gigging musicians to build incredible audio experiences.

This catalog gives you a concise overview of Bose Professional products. For more up-to-date and comprehensive information, please visit [PRO.BOSE.COM](https://pro.bose.com).

Bose research applied — the PowerMatch configurable professional power amplifier

PowerMatch is a line of versatile multichannel power amplifiers — featuring outstanding performance in the dimensions of audio quality, configurability, efficiency and reliability.



PowerMatch amplifier, internal view

The PowerMatch design formula

Audio quality

Proprietary technologies are applied to deliver outstanding linearity, transient response, low noise and dynamic range. | page 4

Configurability

Throughout each stage of the job, from initial specification to final installation, advanced configurability features give integrators confidence that PowerMatch amplifiers can conform to and complement nearly any installation project. | pages 5–11

Efficiency

Combined together as a system, the PeakBank power supply and Class-D amplifier enables high efficiency. | page 12

Reliability

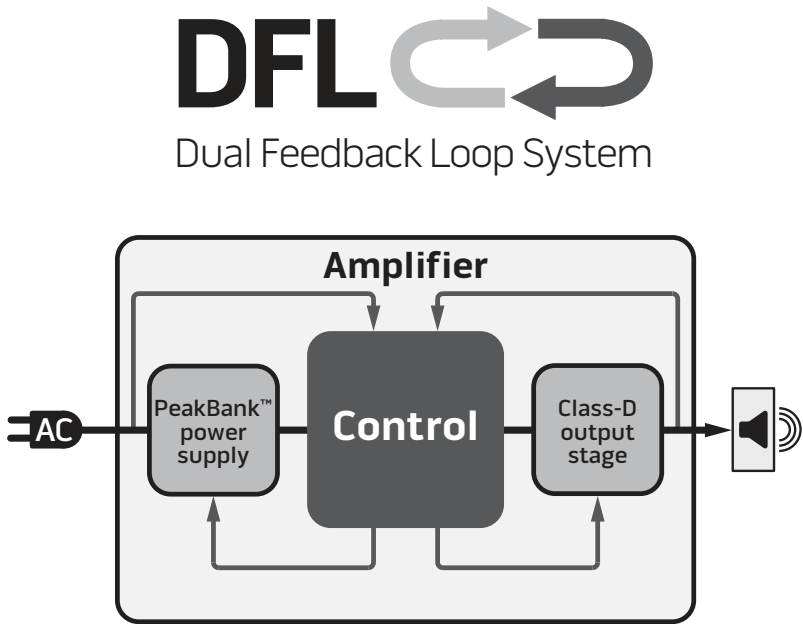
Reliability was built into each PowerMatch amplifier model thanks to careful component selection, thermodynamic modeling and 20 years of experience in the design and manufacture of rugged, reliable Class-D amplifiers. | page 13

AUDIO QUALITY

The Dual Feedback Loop (DFL) system ensures the highest possible audio quality

Bose engineers discovered the key to optimal audio amplifier performance was to design a control system that could precisely monitor all elements of the amplifier — the complete chain from AC outlet to loudspeaker — and make adjustments instantaneously to ensure the best possible audio experience at the loudspeaker.

Based on decades of amplifier research and products for audio and non-audio applications, the Power Electronics Research Team at Bose created a sophisticated combination of hardware and software to overcome the shortcomings of Class-D amplifiers. The proprietary system, called Dual Feedback Loop, enables Bose PowerMatch amplifiers to deliver unparalleled sonic performance.



The proprietary DFL system provides precision control required for optimal power supply and Class-D amplifier performance

CONFIGURABILITY

The PowerMatch amplifier line offers a distinct set of configurable models to suit more installation projects

PowerMatch amplifiers are available in 4- or 8-channel models at power levels of 250 W or 500 W per channel. All amplifiers are configurable to combine channel pairs to achieve higher power levels. For example, a 4-channel amplifier can easily be configured to serve as a dual-channel amplifier with twice the power per channel.

8-CHANNEL MODELS

PowerMatch PM8500N



8 channels | 500 watts per channel | 4,000 watts total

PowerMatch PM8250N



8 channels | 250 watts per channel | 2,000 watts total

4-CHANNEL MODEL

PowerMatch PM4500N



4 channels | 500 watts per channel | 2,000 watts total

CONFIGURABILITY

QuadBridge channel pairing technology brings power output options

QuadBridge configurability allows the amplifier to be arranged to run output channels individually or combined (2 or 4 channels), leveraging the total available power of the amplifier to meet the power and loudspeaker requirements of most installations. Mixed modes are also possible.

Mono	V-Bridge	I-Share	Quad
Individual output channels	Two output channels bridged for twice the voltage	Two output channels paralleled for twice the current	Four output channels combined for twice the voltage and twice the current

Mixed

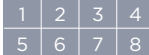
Differing output modes can be used together to create flexible power options

Mono	Mono	Mono	Mono
V-Bridge		V-Bridge	

Example 1

I-Share	Mono	Mono
Quad		

Example 2

	Mono	V-Bridge	I-Share	Quad
PM8500N	 2 Ω/4 Ω, 500 W 8 Ω, 300 W 50 V, 500 W	 4 Ω/8 Ω, 1000 W 70 V, 800 W 100 V, 1000 W	 2 Ω, 1000 W	 4 Ω, 2000 W 70 V, 1600 W 100 V, 2000 W
PM8250N	 2 Ω/4 Ω, 250 W 8 Ω, 250 W 50 V, 250 W	 4 Ω/8 Ω, 500 W 70 V, 400 W 100 V, 500 W	 2 Ω, 500 W	 4 Ω, 1000 W 70 V, 800 W 100 V, 1000 W
PM4500N	 2 Ω/4 Ω, 500 W 8 Ω, 500 W 50 V, 500 W	 4 Ω/8 Ω, 1000 W 70 V, 800 W 100 V, 1000 W	 2 Ω, 1000 W	 4 Ω, 2000 W 70 V, 1600 W 100 V, 2000 W

QuadBridge configuration modes across models

Configure loudspeaker outputs easily through software

Configuration of the loudspeaker outputs is easy. Wire-in your loudspeakers, then use the front panel of the amplifier or ControlSpace Designer software to set your desired output mode.



Amplifier front-panel menu selection

OR

Mode selection via PC software

Directly drive 70/100 V loads without transformers

PowerMatch amplifiers can power any loudspeaker load directly without the use of transformers. Built-in software selection of loudspeaker type (high-Z or low-Z) and QuadBridge configuration allow the amplifier to optimally drive loudspeaker loads as low as 2 Ω , 70/100 V loudspeaker lines, or a mix of both.

CONFIGURABILITY

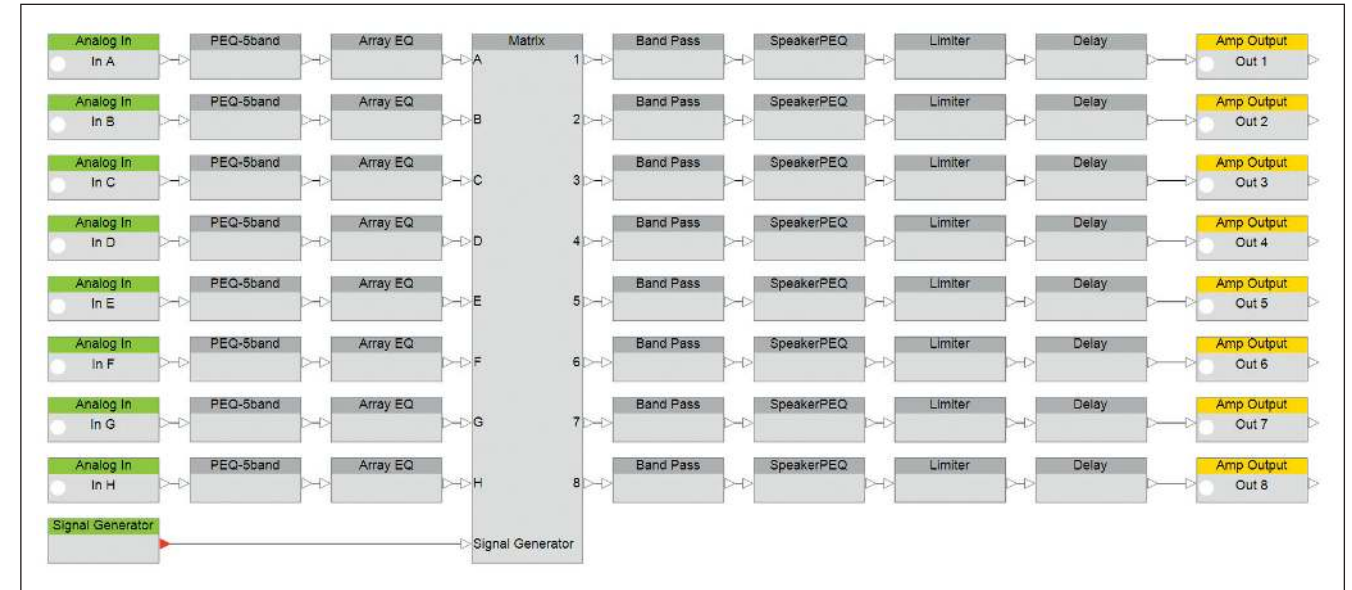
Built-in DSP saves on equipment cost, installation time and optimizes the sound of each installation

By integrating loudspeaker processing into all PowerMatch amplifiers, system integrators get to “good sound” quickly while saving on equipment costs and installation time.

The DSP can be accessed via the front-panel display or using ControlSpace Designer software where extensive configurability and control is available.

PowerMatch amplifiers include signal processing blocks for the following operations:

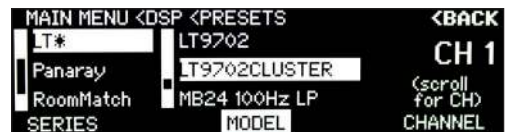
- Input selection, sensitivity and gain
- Input channel 5-band parametric EQ
- Array EQ for RoomMatch array module loudspeakers
- Programmable channel matrix
- Band pass
- 9-band parametric speaker EQ
- Bose loudspeaker presets
- Driver alignment delay
- Peak and RMS protection limiter
- Output gain



PowerMatch integrated DSP processing blocks (8-channel amplifier shown)

Install Bose Professional loudspeakers more quickly

While designed for use with any loudspeaker, PowerMatch amplifiers make installations even easier when paired with Bose loudspeakers. With just a few clicks, a loudspeaker preset can be recalled where limiter and EQ settings are auto-populated into the DSP chain — allowing an optimal starting reference for system integrators.



Front-panel selection for Bose loudspeakers

CONFIGURABILITY

Digital input cards enable sharing of audio between devices and networks

All PowerMatch amplifier models feature balanced analog line inputs (+24 dBu maximum). A digital expansion slot further enables input capability, allowing the amplifier to connect with digital sources.



DANTE™ NETWORK CARD



Input Channels: 8
Output Channels: 8, post-DSP
Interface: RJ-45, 1 Gbps Ethernet
Secondary Port: Switched, redundant, legacy HW
Format: Uncompressed 24-bit, 48 kHz

AMPLINK CARD

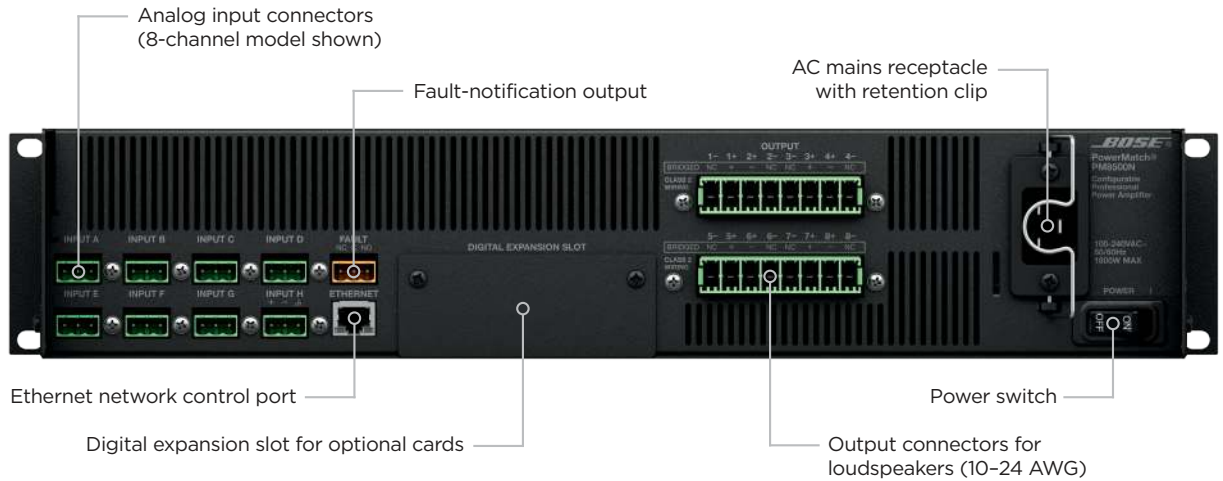


Input Channels: 8
Thru Channels: 8
Latency: 24 ns
Format: Bose-proprietary, uncompressed 24-bit, 48 kHz

CONFIGURABILITY

Controls and connection interfaces designed for fixed installations

PowerMatch amplifiers offer a set of useful yet simple controls and interface features to minimize setup time on the job.



Control PowerMatch amplifiers remotely

When used on a standard Ethernet network, the ControlSpace CC-64 control center can be quickly configured to control one or more PowerMatch network-version amplifiers.



ControlSpace CC-64 control center

Custom labeling and parameter controls allow system integrators the ability to offer either full access for qualified site personnel or limited access for less technical end users. For single-amplifier installations requiring remote CC-64 control, a direct RJ-45 cable connection can be used without additional network hardware.



Network cable

CONFIGURABILITY

All PowerMatch amplifiers feature three methods of configuration and monitoring:

Access amplifier settings and status from the front-panel interface

The front-panel user interface on all PowerMatch models allows for quick and simple access to most configuration parameters.

Whether checking for signal status, or using it for basic system configuration, the front panel is a convenient access point into any PowerMatch amplifier model.



Front-panel display and user interface



A 5-digit combination lock prevents unauthorized access to the front-panel interface.

Connect to the PowerMatch amplifier using USB or Ethernet

Each PowerMatch model comes with a front-panel USB port for programmability using ControlSpace Designer software.



Front-panel USB

PowerMatch models feature a rear-panel RJ-45 Ethernet connection for additional functionality over standard IP-based networks. This functionality includes monitoring and control via ControlSpace Designer software, Serial-over-Ethernet and ControlSpace CC-64 control.



Rear-panel Ethernet

Configure, control and monitor using ControlSpace Designer software

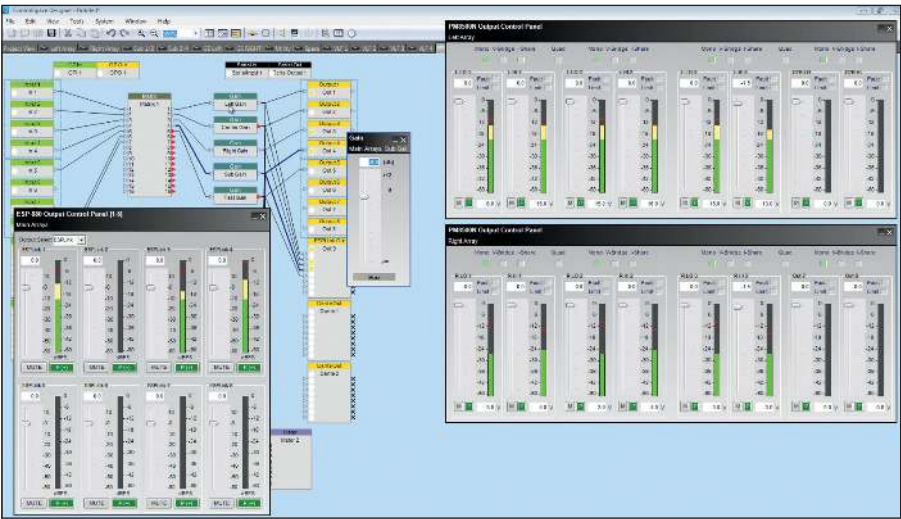
With ControlSpace Designer software, users gain access to all PowerMatch amplifier features and functions, including detailed signal processing, amplifier status and control programming.



System troubleshooting is built into PowerMatch amplifiers via a set of remote monitoring and fault-reporting utilities. Issues logged by the amplifier, such as power line and loudspeaker wiring faults, are reported on the amplifier front panel.

Fault reporting also can be viewed via an Ethernet connection with ControlSpace Designer software or using Serial-over-Ethernet with third-party control and monitoring systems.

System-wide control, configuration and monitoring of all connected Bose networked devices is available through ControlSpace Designer software, allowing users real-time access to both PowerMatch amplifiers and ControlSpace processors.



Real-time network monitoring of multiple amplifiers

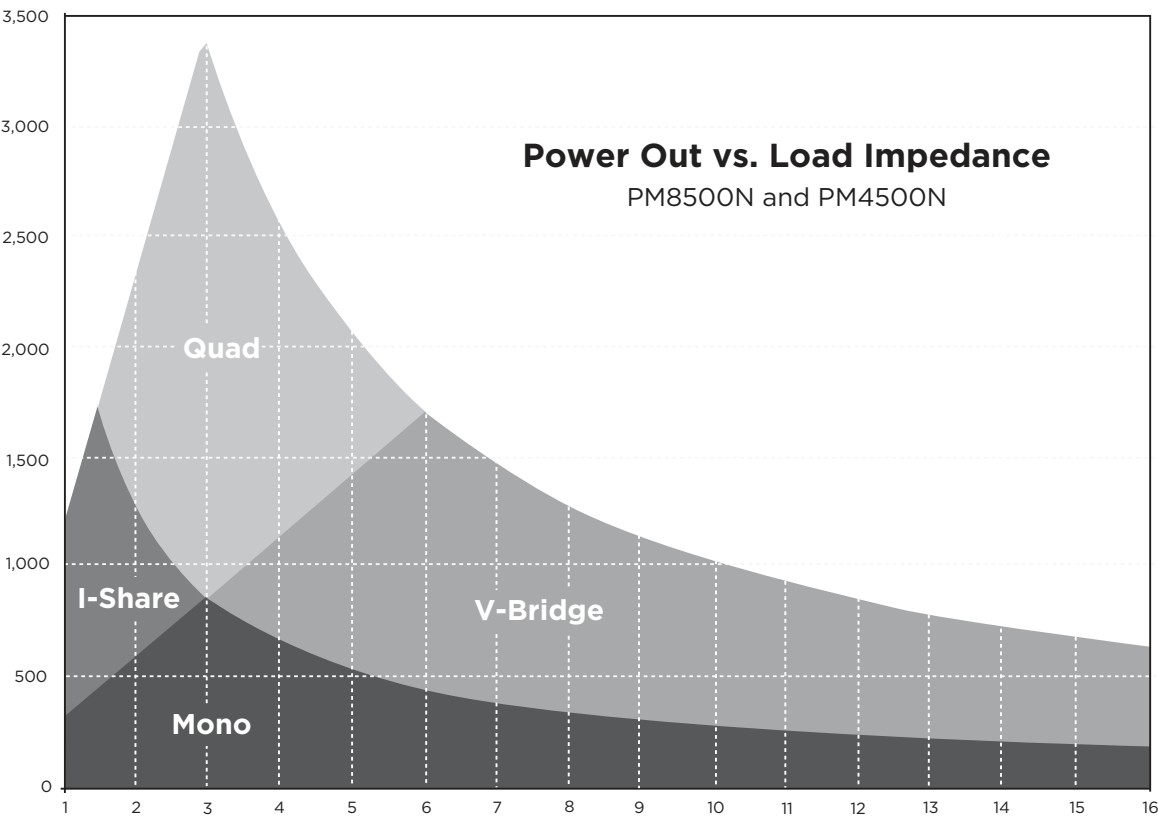
CONFIGURABILITY

Power Out vs. Load Impedance

PowerMatch amplifiers offer QuadBridge channel pairing technology, allowing system installers to easily configure the amplifier to match target loudspeaker requirements.

The Power Out vs. Load Impedance graph shown on this page, for models PM8500N and PM4500N, can serve as a tool to help identify the best amplifier mode for nearly any loudspeaker impedance and power level. Models PM8500N and PM4500N share similar guidelines (at half the power shown).

To use this chart, first locate the loudspeaker's nominal impedance on the X axis. Follow the vertical line up on the chart to the desired power level for the loudspeaker (Y axis). The shaded area represents the amplifier configuration mode required. The desired mode can be set through the front-panel interface on the amplifier or using ControlSpace Designer software. Refer to the PowerMatch Installation and Operating Guide for more information.



The Common Amplifier Format

Visit www.cafgroup.org where additional measurement data is available for the PM8500 using the Common Amplifier Format (CAF). CAF is a test methodology developed specifically to present a common set of measurements and documentation for the selection, deployment and comparison of professional power amplifiers.

EFFICIENCY

Bose PeakBank power supply provides high efficiency

The proprietary PeakBank power supply features a combination of technologies, enabling efficiency, high power density and reliability.

It starts at the AC outlet

The design goal was to bring efficiency and performance together. Bose engineers knew that in order to accomplish this, they had to start at the source of power — the wall outlet. They focused on building a power amplifier that was optimized to draw power from nearly any worldwide power source and deliver it efficiently to the loudspeaker. From 100 to 240 V, PowerMatch amplifiers have been designed to safely pull the maximum available power on demand, up to 4,000 instantaneous watts, from a standard AC wall outlet.



PeakBank power supply

RELIABILITY

Reliability is designed in from the beginning

Leveraging over 20 years experience in the development and production of Class-D amplifiers, Bose applied design techniques and a rigorous test suite to ensure long-term reliability of PowerMatch amplifiers in the field.

PowerMatch amplifiers are covered by the Bose Limited Warranty, which lasts 5 years from the date of purchase.



FAST-TRACKING POWER FACTOR CORRECTION (PFC)

The fast-tracking PFC circuit operates beyond conventional approaches. Bose engineers designed a unique control circuit that allows the PeakBank power supply to predict, and quickly react to, demanding bass transients.

This results in stable power to the amplifier circuits, unlike conventional approaches that sometimes exhibit a condition known as “rail sag,” where the – voltage supply drops and recovers too late to respond to amplifier output stage demands.

Comparison of Power Factor Correction (PFC) performance at rated power with 100 Hz sine transient

4-QUADRANT OPERATION

With program material using demanding content (bass, live music), the power rails of many conventional amplifiers cannot fully deliver consistent output. With Bose 4-Quadrant operation, the power supply is able to instantaneously source and sink energy from either supply rail. This approach returns normally wasted energy from the loudspeaker and amplifier back into the power supply. The result: better efficiency and more stable power to the amplifier during peak power demands.

Recycled and balanced power with Bose 4-Quadrant operation

PLANAR MAGNETICS TRANSFORMER

The high-powered yet lightweight planar magnetic transformer offers increased precision and significantly higher reliability. Unlike bulky conventional transformers with wire windings, the Bose transformer uses a ferrite core mounted to a dense 24-layer circuit board where each layer holds an exact winding pattern of copper.

ADVANCED THERMAL DESIGN

Providing adequate cooling for a high-power multichannel amplifier is key to providing a highly reliable product.

PowerMatch amplifiers are designed with filterless cooling pathways and processor-controlled fans that prevent damage to critical amplifier circuits — even in the unlikely event that one fan fails.

Thermal simulation IR imaging

The use of thermodynamic modeling and infrared imaging tools in the design phase allowed Bose engineers to fine-tune this effective cooling design.

LIFE TESTING

During the product-testing cycle, PowerMatch amplifiers are subjected to extremes of temperature, humidity, air quality and vibration.

Air quality/dust testing

Thermal/humidity testing

Shock and vibration testing

FAULT DETECTION AND ALERT SYSTEM

The PowerMatch amplifier continuously monitors for external events (AC mains or loudspeaker issues) as well as internal operating temperature, power supply status and amplifier status for potentially adverse issues.

Critical faults are detected, stored, then broadcast as alarms to users:

Front-panel fault LED and LCD notification

Rear-panel contact closure

Serial-over-Ethernet broadcast (network version only)

ControlSpace Designer software online notification

PowerMatch amplifier specification summary

	PM8500N	PM4500N	PM8250N
Amplifier Performance			
Output Channels, Total Power¹	8 channels, 4000 W configurable Supports 2/4/8 Ω and 70/100 V loads	4 channels, 2000 W configurable Supports 2/4/8 Ω and 70/100 V loads	8 channels, 2000 W configurable Supports 2/4/8 Ω and 70/100 V loads
Mono Mode Output Power	500 W (4 Ω), 300 W (8 Ω)		250 W (4 Ω, 8 Ω)
V-Bridge Mode Output Power	1000 W (4 Ω, 8 Ω, 100 V), 800 W (70 V)		500 W (4 Ω, 8 Ω, 100 V), 400 W (70 V)
I-Share Mode Output Power	1000 W (2 Ω)		500 W (2 Ω)
Quad Mode Output Power	2000 W (4 Ω, 100 V), 1600 W (70 V)		1000 W (4 Ω, 100 V), 800 W (70 V)
Audio Performance			
Frequency Response (±0.5 dB)	20 Hz – 20 kHz		
Signal-to-Noise Ratio, Analog (Below Rated Power)	> 102 dBA		> 99 dBA
THD for Power Rating, Typical (at 1 W, 20 Hz – 20 kHz)	< 0.4%		
Input Channels	(8) Balanced line-level, Euroblock, Digital expansion card slot	(4) Balanced line-level, Euroblock, Digital expansion card slot	(8) Balanced line-level, Euroblock, Digital expansion card slot
Control	Fault-notification output, Ethernet control, and Serial-over-Ethernet		
Physical			
Dimensions (H x W x D), in (mm)	20.7" × 19.0" × 3.5" (525 × 483 × 88 mm)		
Net Weight	28.4 lbs (12.9 kg)	24.4 lbs (11.1 kg)	28.3 lbs (12.8 kg)
General			
AC Mains Requirement	100 to 240 VAC (50/60 Hz), 20A (120 V) or 16A (230 V)	100 to 240 VAC (50/60 Hz), 15A (120 V) or 10A (230 V)	
Efficiency, ⅓ Rated Power (Pink Noise Input Signal)	> 75%	> 73%	> 68%
Accessories	PowerMatch Dante™ network card PowerMatch AmpLink digital input card ControlSpace CC-64 control center		

Notes:
1. Output power is measured per channel, all channels driven, using test signals at 1 kHz.

All information subject to change without notice.
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About Bose Corporation

Bose Corporation was founded in 1964 by Dr. Amar G. Bose, then a professor of electrical engineering at the Massachusetts Institute of Technology. Today, the company is driven by its founding principles, investing in long-term research with one fundamental goal: to develop new technologies with real customer benefits. Bose innovations have spanned decades and industries, creating and transforming categories in audio and beyond. Bose products for the home, in the car, on the go and in public spaces have become iconic, changing the way people listen to music.