PowerMatch PM8500N
configurable power amplifier

BOSE

PROFESSIONAL

Dante®

Product Description

The PowerMatch PM8500N configurable professional power amplifier provides concert-quality sound with a high level of scalability and configurability. The PM8500N offers multiple channel and power options, an integrated audio DSP, front panel interface, USB connection, and Ethernet-based network configuration, control and monitoring.
An expansion slot supports inputs from optional digital accessory cards. PowerMatch amplifiers utilize numerous Bose Professional technologies to deliver an unprecedented combination of performance, efficiency, and ease of installation—all in a reliable, proprietary design. The PM8500N USB connection provides single-unit setup and control using Bose Professional ControlSpace Designer software. Ethernet connectivity is also provided for configuration, network control, and monitoring of multiple amplifiers.

Applications

Designed for a wide range of applications, including:

Auditoriums

Performing arts venues

Theaters

Places of worship

Arenas

Hospitality venues

Key Features

QuadBridge Technology – Allows each 4-channel loudspeaker block to be configured as Mono, V-Bridge, I-Share or Quad modes, allowing the total available power of the amplifier block to be allocated to one or more output channels. The amplifier is capable of driving both low impedance and 70/100V loudspeaker loads directly.

Bose Professional ControlSpace Designer software – PowerMatch amplifiers can be fully configured using ControlSpace Designer software via the onboard front panel USB connection, or the rear panel Ethernet connection. Using ControlSpace Designer software you can access additional features including: Parametric EQ stages, load sweep of each output channel and auto standby. ControlSpace Designer software is also used to integrate network model PowerMatch amplifiers into larger control and monitoring systems comprised of Bose Professional ESP processors and CC control centers.

Auto-Standby/Auto-Wake function – When enabled, this function automatically enters/exits Standby Mode, allowing the system to consume less power.

Dual voltage and current feedback loop – Proprietary design combines Class-D efficiency with a unique current and voltage feedback loop circuit that continuously monitors and controls both the current and voltage delivered to the loudspeaker load. Independent of power level and load impedance, the amplifier consistently delivers the widest possible dynamic range, frequency response and lowest possible distortion.

PeakBank power supply – Regenerative 4-quadrant power supply enables higher power density while allowing the re-use of energy from reactive loads that is normally wasted in conventional Class-D designs. This highly efficient amplifier design delivers sustainable and repeatable low frequency response.

Fast-tracking power factor correction (PFC) – Efficiently manages the current drawn from the AC mains, allowing the amplifier to drive loudspeakers to maximum output longer without power fluctuation. PFC provides superior transient response and functions at peak burst power much longer than conventional Class-D amplifier designs to satisfy the requirements of even the most demanding program material.

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Technical Specifications

PowerRating	2 Ω	4 Ω	8 Ω	70 V	100 V
THD for Power Rating	< 0.1 %	< 0.1 %	< 0.1 %	1 %	1 %
Mono Mode	450 W	500 W	300 W	See footnote 3	See footnote 3
V-Bridge Mode	450 W^2	1000 W	1000 W	800 W	1000 W
I-Share Mode	1000 W	500 W^2	300 W^2	Not available	Not available
Quad Mode	1000 W^2	2000 W	1000 W^2	1600 W	2000 W
Maximum Rated Power	4000 W (500 W x 8 channels at 4 ohms)				
Peak Output Voltage	71 / 142 V (Mono / V-Bridge, I-Share, and Quad modes)				
Voltage Gain	36 / 42 / 36 / 42 dB (Mono / V-Bridge / I-Share / Quad modes)				
Audio Performance					
Frequency Response	20 Hz - 20 kHz (at 1 W and +/- 0.5 dB)				
Signal-to-Noise Ratio, Analog Input	> 102 dB (1 dB below rated power, A-weighted)				
THD	< 0.4 % (at 1 W, 20 Hz to 20 kHz)				
Intermod Distortion - SMPTE	< 0.4 % (60 Hz, 7 kHz)				
Channel Separation (Crosstalk)	> 65 dB (adjacent channels, at 1 kHz)				
Damping Factor	> 1000 (10-1000 Hz, 4 ohms, at amplifier output)				
Integrated DSP					
A/D and D/A Converters	48 kHz / 24-bit				
Total Latency (Analog In - Amp Out)	< 0.95 ms				
Input to Output Signal Routing	8 x 8 matrix				
Loudspeaker Presets	Bose Professional				
Input EQ	5-band PEQ (+/- 20 dB), notch, shelving, high pass, low pass				
Bandpass Filters (Crossover)	Butterworth, Bessel, or Linkwitz-Riley, up to 48 dB/octave				
Loudspeaker EQ	9-band PEQ (+/- 20 dB), shelving, high pass, low pass, 2-band RoomMatch array EQ				
Maximum Output Delay	3 s				
Output Limiter	Peak and RMS voltage				

Audio Inputs	Analog	Digital (Optional Card)
Input Channels	8 (balanced line level)	8
Input Impedance	> 100 kΩ	N/A
Sensitivity	0, +4, +12, +24 dBu, selectable	Digital: 0, -12, -20, -24 dBFS, selectable
Maximum Input Level	+24 dBu (at 24 dBu sensitivity setting)	N/A
Connectors, Input	3-pin Phoenix Contact® (green color; part # 1776168)	Card Dependent
Audio Outputs		
Outputs	2 to 8 (configurable)	
Connectors, Output	8-pin Phoenix Contact connectors (part # 1778120), supports 10-24 AWG wire	
Indicators and Controls		
LED Status Indicators	Signal, limit, clip, fault	
User Interface Controls	Mute, input sensitivity, output configuration, output attenuation, EQ on/off, preset select. 240 x 64 LCD. Additional controls available w/ ControlSpace Designer software	

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Electrical	
Mains Voltage	100-240 V (50/60 Hz)
Mains Circuit Recommendation	20A (120 V) or 16A (230 V)
Mains Connector	IEC 60320-C20 (Inlet)
Minimum AC Line Voltage	80 V (reduced output power)
Maximum Inrush Current	15.4 A (230 VAC, 50 Hz)
Maximum RMS Current Draw	15 A
Efficiency, 1/3 Rated Power	> 75 % (pink noise input signal)
Output Stage Topology	Class-D
Overload Protection	High temperature, DC, HF, short, voltage limiter, current limiter, inrush current, mains circuit breaker protection
Physical	
Dimensions (H x W x D)	88 mm × 483 mm × 525 mm (3.5" × 19" × 20.7") - 2 rack space
Net Weight	12.9 kg (28.4 lb) Shipping Weight: 15.7 kg (34.5 lb)
Mounting Depth	533 mm (21")
Operating Temperature	0 °C - 40 °C (32 °F - 104 °F)
Cooling System	Microprocessor-controlled, variable-speed fans, front to rear airflow
General	
Setup and Configuration Software	ControlSpace Designer software V3.2 or greater
PC Interface Connection	USB (type B), Ethernet (RJ-45, 100Mb)
Fault Notification Output	NC/NO Relay Contact (1 A, 30 VDC), 3-pin Phoenix Contact connector (orange color; part # 1976010)
Product Codes	
PowerMatch PM8500N	
PowerMatch PM8500N - US	343546-1110
PowerMatch PM8500N - AU	343546-2110
PowerMatch PM8500N - JPN	343546-3110
PowerMatch PM8500N - EU	343546-4110
PowerMatch PM8500N - UK	343546-5110
Expansion Cards	
PowerMatch Dante network card	359844-0020
PowerMatch AmpLink network card	772238-0110

Footnotes
(1) Output power is measured per channel, all channels driven, using test signals at 1 kHz.
(2) Configuration not recommended / not optimal.
(3) Limited use available. Tap 70V loudspeakers 2x the desired power. Tap 100V loudspeakers 4x the desired power.
(4) Measured at +24 dBu sensitivity unless otherwise specified.

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① **LED INDICATORS –** Fault, Clip, Limit and Signal indication

② **LCD DISPLAY –** Detailed graphical backlit display

③ **NAVIGATION SOFT KEY –** Front panel interface navigation key

④ **ROTARY ENCODER –** Scroll to move LCD display cursor, push to select option

⑤ **MENU SOFT KEYS (1 – 5) –** Five pushbuttons mapping to onscreen selections

⑥ **USB CONNECTOR –** Type B USB port for use with a PC running ControlSpace® Designer™ software

⑦ **FRONT AIRFLOW VENTS –** Filterless intake cooling for the amplifier

⑧ **FRONT RACK-MOUNT EARS –** For use when securing into rack-mount enclosures
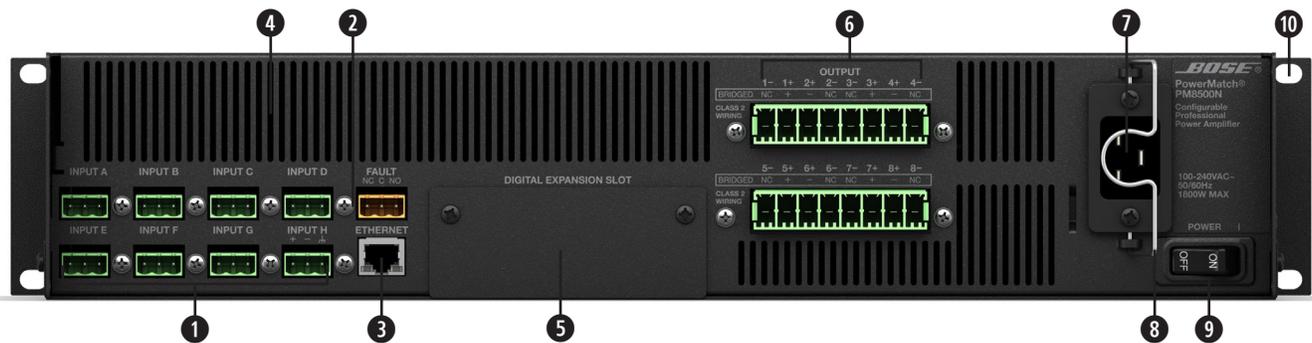
① **ANALOG INPUT CONNECTORS –** Line-level balanced input connectors (+24 dBu max)

② **FAULT-NOTIFICATION OUTPUT –** 3-pin normally open or normally closed contact closure fault connection (1A, 30 VDC max)

③ **ETHERNET NETWORK CONNECTOR –** RJ-45 connection supporting ControlSpace Designer software and Serial over Ethernet communications

④ **REAR AIRFLOW VENTS –** Exhaust venting

⑤ **DIGITAL EXPANSION SLOT COVER –** Supports optional digital audio network cards

⑥ **OUTPUT CONNECTOR –** Loudspeaker connections (10 - 24 AWG)

⑦ **AC MAINS RECEPTACLE -** Power cord connection (IEC 60320-C20 Inlet)

⑧ **AC MAINS RETENTION CLIP –** Secures the power cord to the amplifier

⑨ **POWER SWITCH –** ON/OFF AC power switch. Also serves as resettable circuit breaker

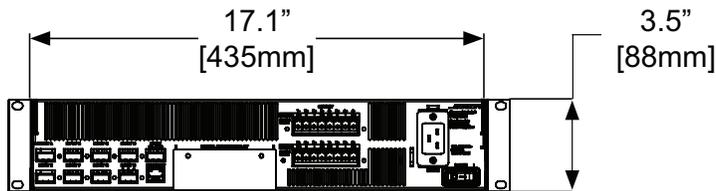⑩ **REAR RACK-MOUNT SUPPORT TABS –** Accommodates rear brackets for rear rail mounting
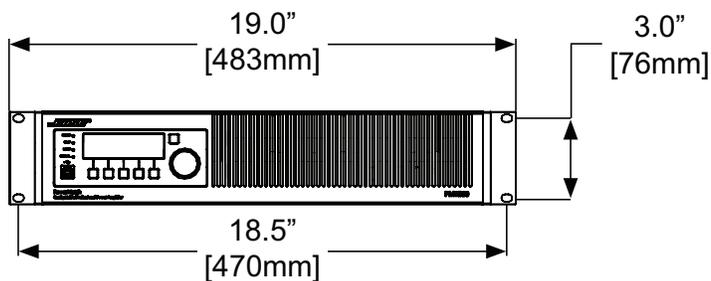
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AC Current Draw and Thermal Dissipation Information

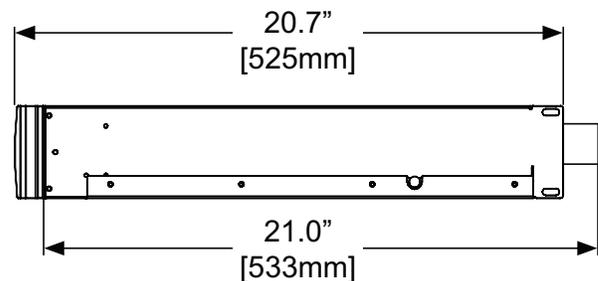| Test Signal & Power Level	Load Configuration (All channels driven)	Total Audio Output, W	120VAC 60Hz. Typical Line Current, A	230VAC 550Hz. Typical Line Current, A	Thermal Dissipation, Typical		
					Watts	BTU/hr	kCal/hr
Idle (Standby, Networked)	N/A	0	0	0	31	106	27
Idle (Awake)	N/A	0	1	1	153	522	132
1/8th Rated Power IEC65 Bandlimited Pink Noise, 6dB Crest Factor	8 Ω/Ch Mono 16 Ω/Ch V-Bridge 8 Ω/Ch Quad	300	4	2	205	699	176
	4 Ω/Ch Mono 2 Ω/Ch I-Share 8 Ω/Ch V-Bridge 4 Ω/Ch Quad	500	6	3	272	928	234
1/3rd Rated Power IEC65 Bandlimited Pink Noise, 6dB Crest Factor	8 Ω/Ch Mono 16 Ω/Ch V-Bridge 8 Ω/Ch Quad	800	9	5	275	938	236
	4 Ω/Ch Mono 2 Ω/Ch I-Share 8 Ω/Ch V-Bridge 4 Ω/Ch Quad	1,333	15	8	455	1,553	391

Mechanical Diagrams

17.1" [435mm]   3.5" [88mm]

Back View

19.0" [483mm]   3.0" [76mm]

18.5" [470mm]

Front View

20.7" [525mm]

21.0" [533mm]

Right View

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Safety and Regulatory Compliance

PowerMatch configurable professional power amplifiers comply with CE requirements, are cUL listed according to UL60065 (7th edition) and CAN/CSA C22.2 No. 60065-03; CB approved, according to IEC60065 (7th edition), including group and national differences. These models also comply with FCC Part 15B Class A, Canadian ICES-003 Class A, EN55103-1, EN55103-2, and CISPR13 requirements.