

## PM9-AD608 Amplifier, 600W 8-channel PROMATRIX 9000



- Flexible power partitioning across all channels
- Low power consumption and heat loss
- Full supervision with integrated fail-safe redundancy
- Digital signal processing per channel
- IP-networked on OMNEO for audio and control

This is a flexible and compact multi-channel power amplifier for 100 V or 70 V loudspeaker systems in Public Address and Voice Alarm applications. It fits in centralized system topologies, but also supports decentralized system topologies because of its OMNEO IP-network connection, combined with DC-power from a multifunction power supply.

The output power of each amplifier channel adapts to the connected loudspeaker load, only limited by the total power budget of the whole amplifier. This flexibility, and the integration of a spare amplifier channel, makes it possible to utilize the available power effectively and use less amplifiers for the same loudspeaker load, compared to using traditional amplifiers.

Digital sound processing and control, adjusted to the acoustics and requirements of each zone, allow for better sound quality and speech intelligibility.

### Functions

#### Efficient 8-channel power amplifier

- Transformerless, galvanically isolated, 70/100 V outputs, with a total loudspeaker output power of 600 W.
- Flexible partitioning of the available output power across all amplifier channels to use it effectively, significantly reducing the amount of required amplifier power in a system.

- Cost and space saving, integrated, independent spare channel for fail-safe redundancy.
- High-efficiency in all operating conditions; dissipation and heat loss is minimized to save on energy and battery capacity for backup power.

#### Flexibility in loudspeaker topologies

- A/B outputs on every amplifier channel to support redundant loudspeaker wiring topologies. Both outputs are individually supervised and disabled in case of a fault.
- Class A loop wiring possible between the A and B loudspeaker outputs.
- Load independent frequency response; the amplifier channels can be used with any loudspeaker load up to the maximum, without any change in audio quality.

#### Sound quality

- Audio-over-IP, using OMNEO, the Dynacord high-quality digital audio interface, compatible with Dante and AES67; audio sample rate is 48 kHz with 24-bit sample size.
- Large signal to noise ratio, wide audio bandwidth and very low distortion and crosstalk.
- Digital signal processing on all amplifier channels, including equalization, limiting and delay, to optimize and tailor the sound in each loudspeaker zone.

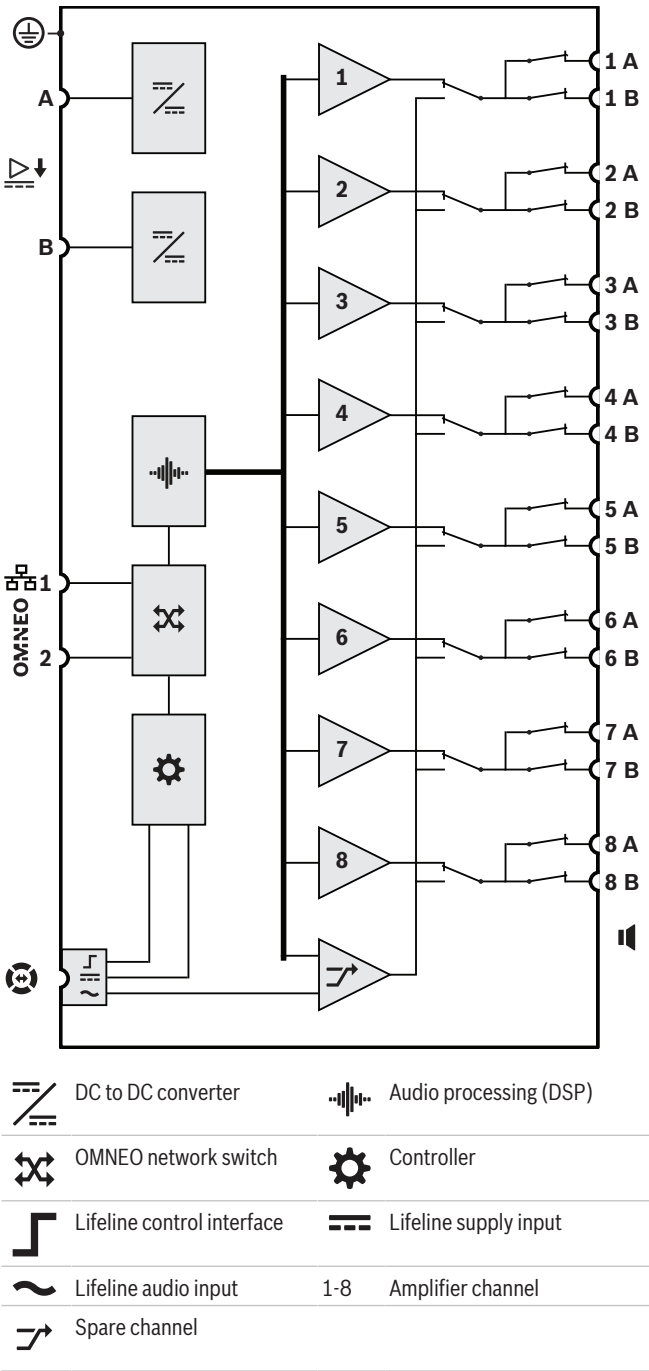
Supervision

- Supervision of amplifier operation and all of its connections; faults are reported to the system controller and logged.
- Loudspeaker line integrity supervision without interruption of audio, using end-of-line devices (separately available) for best reliability.
- Network link supervision.

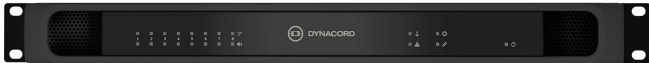
Fault tolerance

- Dual OMNEO network connections, supporting Rapid Spanning Tree Protocol (RSTP), for loop-through connections to adjacent devices.
- Dual 48 VDC inputs with polarity reversal protection, each with a full power DC/DC converter, operating in tandem for redundancy.
- Fully independent amplifier channels; the integrated spare channel automatically replaces a failing channel, with due regard of the actual sound processing settings.
- All amplifier channels support two independent loudspeaker groups, A and B, enabling redundant loudspeaker wiring topologies.
- Backup analog audio lifeline input driving the spare amplifier channel to serve all connected loudspeaker zones in case both network connections, or the amplifier network interface, would fail.

Connection and functional diagram







Front view



Front panel indicators




	Spare channel substitute 1-8	White
	Signal present 1-8	Green
	Fault present 1-8	Yellow
	Ground fault present	Yellow

	Device fault present	Yellow
	Audio lifeline substitute	White
	Network link to system controller present	Green
	Network link lost	Yellow
	Amplifier in standby mode	Blue
	Power on	Green


Rear view




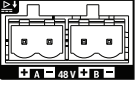

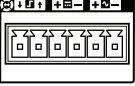

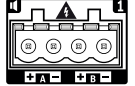

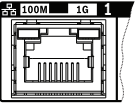


Rear panel indicators

	100 Mbps network	Yellow
	1 Gbps network	Green
	Power on	Green
	Device in identification mode	Green blinking
	Device fault present	Yellow

Rear panel controls

	Device reset (to factory default)	Button
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Rear panel connections

	48 VDC input A-B	
	Lifeline interface	
	Loudspeaker output A-B (1-8)	
	Network port 1-2	
	Safety ground	

Architects' and engineers' specifications

The IP-networked 8-channel amplifier shall be designed exclusively for use with Dynacord PROMATRIX 9000 systems. The amplifier shall adapt the maximum output power of each amplifier channel to its connected loudspeaker load, with free assignable output power per channel for a total maximum of 600 watt per amplifier, supporting 70 V or 100 V operation with direct drive capability and outputs that are galvanically insulated from ground. The amplifier shall have a

built-in independent spare amplifier channel for automatic failover. The amplifier shall provide an interface for control data and multi-channel digital audio over OMNEO using dual Ethernet ports for redundant network connection, supporting RSTP and loop-through cabling, with automatic failover to an analog lifeline input. The amplifier shall have dual power supply inputs and power supplies. All amplifier channels shall have independent A/B zone outputs with support for class-A loudspeaker loops. All amplifier channels shall supervise the integrity of connected loudspeaker lines without interruption of audio distribution. The amplifier shall provide front-panel LED status indications for the network link, ground fault, power supplies and audio channels, and provide additional software monitoring and fault reporting features. The amplifier shall be rack mountable (1U) and feature software-configurable signal processing including level control, parametric equalization, limiting and delay for each channel. The amplifier shall be certified for EN 54-16, marked for CE and be compliant with the RoHS directive. Warranty shall be three years minimum. The amplifier shall be a Dynacord PM9-AD608.

Certifications and approvals

Emergency standard certifications	
Europe	EN 54-16
Regulatory areas	
Safety	EN 62368-1
Immunity	EN 55024 EN 55103-2 (E1, E2, E3) EN 50130-4
Emissions	EN 55032 EN 61000-6-3
Environment	EN 50581
Railway applications	EN 50121-4
Maritime applications	DNV-GL Type Approval
Conformity declarations	
Europe	CE/CPR

Parts included

Quantity	Component
1	Amplifier, 600W 8-channel
1	Set of 19"-rack mounting brackets (pre-mounted)
1	Set of screw connectors and cables
1	Safety information

## Technical specifications

### Electrical

#### Loudspeaker load

Maximum loudspeaker load	
100 V mode, all channels*	600 W
70 V mode, all channels*	600 W
Minimum loudspeaker load impedance	
100 V mode, all channels*	16.7 ohm
70 V mode, all channels*	8.3 ohm
Maximum cable capacitance	
100 V mode, all channels*	2 uF
70 V mode, all channels*	2 uF

\*All channels combined.

#### Amplifier outputs

Rated output voltage	
100 V mode, 1 kHz, THD <1 %, no load	100 VRMS
70 V mode, 1 kHz, THD <1 %, no load	70 VRMS
Burst / rated power**	
All channels combined	
100 V mode, load 16.7 ohm	600 W / 150 W
70 V mode, load 8.3 ohm	600 W / 150 W
Channel 1	
100 V mode, load 16.7 ohm // 20 nF	600 W / 150 W
70 V mode, load 11.7 ohm // 20 nF	420 W / 105 W
Other channels	
100 V mode, load 33.3 ohm // 20 nF	300 W / 75 W
70 V mode, load 16.7 ohm // 20 nF	300 W / 75 W
Full to no load regulation	
20 Hz to 20 kHz	< 0.2 dB
Frequency response	
Rated power, +0.5 / -3 dB	20 Hz to 20 kHz
Total Harmonic Distortion + Noise (THD+N)	
Rated power, 20 Hz to 20 kHz	< 0.5 %
6 dB below rated power, 20 Hz to 20 kHz	< 0.1 %
Intermodulation Distortion (ID)	
6 dB below rated power, 19+20 kHz, 1:1	< 0.1 %
Signal to Noise Ratio (SNR)	
100 V mode, 20 Hz to 20 kHz	> 110 dBA
70 V mode, 20 Hz to 20 kHz	> 107 dBA
Crosstalk between channels	
100 Hz to 20 kHz	< -84 dBA
DC offset voltage	< 50 mV
Signal processing per channel	
Audio equalization	7-section parametric
Level control	0 to -60 dB, mute
Level control resolution	1 dB
Audio delay	0 to 60 s
Audio delay resolution	1 ms
RMS power limiter	Rated power

#### Amplifier outputs

Lifeline	
Sensitivity (100 V out)	0 dBV
Mute attenuation	> 80 dB
Signal to Noise Ratio (SNR)	> 90 dBA

\*\*Full voltage swing into maximum loudspeaker load for speech and music program material (crest factor > 9 dB)

#### Power transfer

Power supply input A/B	
Input voltage	48 VDC
Input voltage tolerance	44 to 60 VDC
Power consumption (48 V)	
Sleep mode, no supervision	6.0 W
Snooze mode, supervision active	8.4 W
Active mode, idle	38 W
Active mode, low power	70 W
Active mode, rated power	250 W
Per active port	0.4 W
Heat loss (including power supply)	
Active mode, idle	173 kJ/h (164 Btu/h)
Active mode, low power	317 kJ/h (300 Btu/h)
Active mode, full power	446 kJ/h (423 Btu/h)

#### Supervision

End-of-Line detection mode	Pilot tone
	25.5 kHz, 3 VRMS
Power supply input A/B	Undervoltage
Ground short detection (loudspeaker lines)	< 50 kohm
Amplifier channel redundancy switching	Internal spare channel
Amplifier channel load	Short circuit
Loudspeaker line redundancy switching	A/B group, Class-A loop
Controller continuity	Watchdog
Temperature	Overheat
Fan	Rotation speed
Network interface	Link presence

#### Network interface

Ethernet	100BASE-TX, 1000BASE-T
Protocol	TCP/IP
Redundancy	RSTP
Audio/control protocol	OMNEO
Network audio latency	10 ms
Audio data encryption	AES128
Control data security	TLS
Ports	2

#### Reliability

MTBF (calculated according to Telcordia SR-332 Issue 3)	250.000 h
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## Environmental

### Climatic conditions

Temperature	
Operating	-5 to +50 °C (23 to 122 °F)
Storage and transport	-30 to +70 °C (-22 to 158 °F)
Humidity (non condensing)	5 to 95 %
Air pressure (operating)	560 to 1070 hPa
Altitude (operating)	-500 to +5000 m (-1640 to 16404 ft)
Vibration (operating)	
Amplitude	< 0.7 mm
Acceleration	< 2 G
Bump (transport)	< 10 G

### Airflow

Fan airflow	Front to sides/rear
Fan noise	
Idle condition, 1 m distance	< 30 dBSPLA
Rated power, 1 m distance	< 53 dBSPLA

## Mechanical

### Enclosure

Dimensions (HxWxD)	
With mounting brackets	44 x 483 x 400 mm (1.75 x 19 x 15.7 in)
Rack unit	19 in, 1U
Ingress protection	IP30
Case	
Material	Steel
Color	RAL9017
Frame	
Material	Zamak
Color	RAL9022HR
Weight	8.8 kg (19.4 lb)

## Ordering information

### PM9-AD608 Amplifier, 600W 8-channel

Network-connected, DC-powered, 8-channel, 600 W power amplifier with integrated spare channel and DSP functions.

Order number **PM9-AD608 | F.01U.351.325**

#### Represented by:

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