



# FreeSpace® DXA 2120 Digital Mixer/Amplifier

## Product Overview

The Bose® FreeSpace® DXA 2120 digital mixer/amplifier provides signal processing, mixing, routing, paging and two-channel amplification for commercial applications such as conference spaces, retail stores, hotels and restaurants.

It offers three versatile operating modes and is easily configured using the controls on the front panel. No external computer is required.

## Product Information

The DXA 2120 digital mixer/amplifier can be used in both low- and high-impedance systems. Each of the two output channels delivers 120 watts at 4 ohms or 100 watts for 70/100-volt applications. An auxiliary output provides a line-level signal for system expansion.

The DXA 2120 digital mixer/amplifier has six inputs – four mic/line inputs, one page input and one direct input that overrides all other sources when a signal is detected. The four mic/line inputs connect to sources via 3-pin Euroblock connectors or dual RCA jacks.

The DXA 2120 digital mixer/amplifier offers three operating modes for flexibility with commercial music or speech applications:

**Mixer Mode** – Each input can be routed to every output simultaneously. Volume for each input can be controlled independently, or a master volume can control both outputs simultaneously.

**Dual Mono Select Mode** – Two input sources are available for each output channel. Volume control and source selection are available in each zone.

**Stereo Select Mode** – Two selectable stereo sources can be played in stereo in a single output zone. Volume control and source selection are available in the zone.

The auxiliary output can be used with all three modes of operation.

Two user interfaces, volume control and volume control with A/B select, are available for operation from remote locations.

An integrated 24-volt DC backup power connection allows for added reliability and emergency paging.



## Key Features

- Six inputs: four mic/line inputs with choice of balanced Euroblock or unbalanced RCA connectors, one page input and one direct input
- Two powered outputs that can operate at high or low impedance: 2 x 120W at 4Ω or 2 x 100W at 70/100V
- Three operating modes for greater flexibility in commercial music or speech applications: Mixer Mode, Dual Mono Select Mode, Stereo Select Mode
- Easy setup and control via onboard controls – no computer needed
- DSP includes loudspeaker EQs and dynamic EQ functions engineered specifically for Bose loudspeakers
- Opti-voice® paging provides a smooth transition between music and announcements
- Two-year transferable limited warranty

## Applications

The FreeSpace DXA 2120 digital mixer/amplifier is ideal for commercial applications, such as:

- Conference centers
- Retail stores
- Restaurants
- Hotels
- Meeting spaces

# FreeSpace® DXA 2120

## Digital Mixer/Amplifier



### Detailed Product Specifications

#### AUDIO INPUTS

##### Mic/Line Inputs (4 – Balanced)

Connectors	3-pin Euroblock
Input range	20 Hz – 20 kHz
Input impedance	Mic 2 k $\Omega$ /Line 25 k $\Omega$
Maximum input level	Mic -20 dBu/Line 10 dBu
Equivalent input noise	-122 dB (A-weighted/20 Hz – 20 kHz)

##### Line Inputs (4 – Unbalanced)

Connectors	Dual RCA (summed to mono)
Input range	20 Hz – 20 kHz
Input impedance	10 k $\Omega$
Maximum input level	+10 dBu

##### Page Input (1 – Balanced)

Connector	4-pin Euroblock
Input range	20 Hz – 20 kHz
Input impedance	400 $\Omega$
Maximum input level	-30 dBu
Equivalent input noise	-122 dB (A-weighted/20 Hz – 20 kHz)

##### Direct Input (1 – Balanced)

Connector	3-pin Euroblock
Input range	20 Hz – 20 kHz
Input impedance	18 k $\Omega$
Maximum input level	+8 dBu

#### AUDIO OUTPUTS

##### Amplifier Outputs (2)

Connectors	5-terminal inverted Euroblock
Nominal load (70/100V)	50 $\Omega$ @ 70V, 100 $\Omega$ @ 100V
Output impedance	4 $\Omega$

##### Auxiliary Output (1)

Connector	3-pin Euroblock
Output impedance	400 $\Omega$
Maximum output level	2.2 dBV

#### PERFORMANCE

Amplifier power	2 x 120W @ 4 $\Omega$ , 2 x 100W @ 70/100V
THD (at full rated power)	$\leq$ 0.5%
Crosstalk (below rated power, 1 kHz)	$\leq$ -60 dBV
Signal-to-Noise ratio (below rated power, A-weighted)	75 dB
Dynamic range	80 dB
Frequency response	40 Hz – 16 kHz (+0/-3 dB)
Sampling rate	44.1 kHz
A/D and D/A converters	24-bit
Communication port	RS-232 serial port
LED status indicators	Power – blue; Signal present – green; Clip – red

#### POWER

Mains voltage	100V version: 100V AC; 50/60 Hz 120V/220-240V version: 120V/220-240V AC; 50/60 Hz
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#### AC Power Consumption

Idle	39W
Active	350W
Peak inrush current	23.2A @ 230V ~ 50 Hz 33.2A @ 120V ~ 60 Hz
Fuse type	T6.3AL/250V (100V and 120V) or T3.15AL/250V (220-240V)

#### DC backup power

	+24V ( $\pm$ 1%)
Connector	2-terminal barrier strip
Input voltage level	+24V
Minimum input power	50W
Maximum input power	150W

#### MECHANICAL SPECIFICATIONS

Dimensions	13.8"D x 16.5"W x 3.5"H (349mm x 420mm x 90mm)
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#### Weight

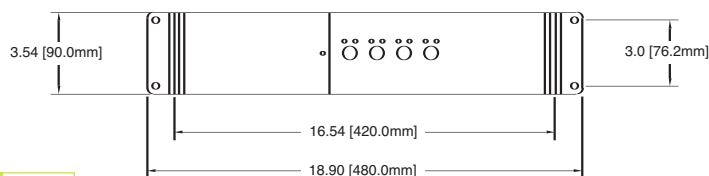
Product	32lb (14.4kg)
Shipping	40lb (18.1kg)

#### ENVIRONMENTAL

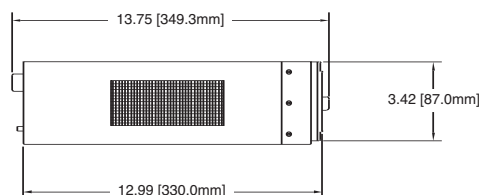
Operating temperature	32° – 104°F (0° – 40°C)
Storage temperature	-40° – 158°F (-40° – 70°C)
Humidity	40% – 90% relative humidity

### TECHNICAL DATA SHEET

### Mechanical Diagrams



Front View



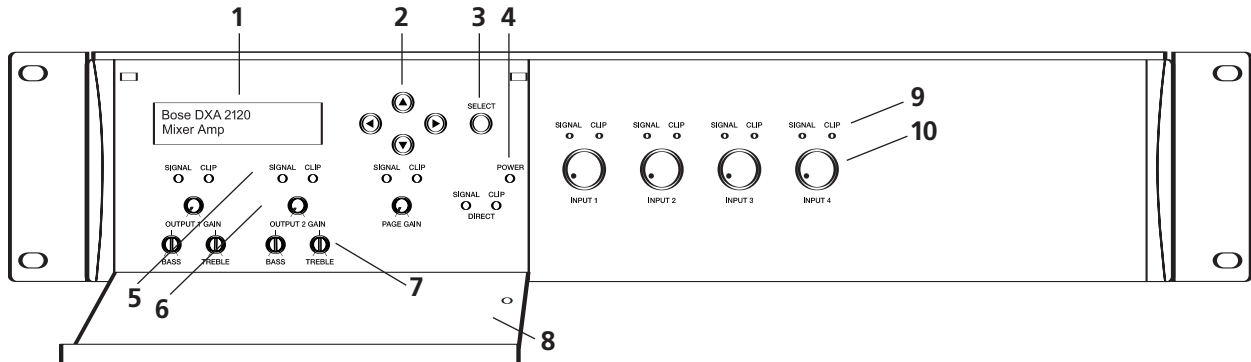
Side View

# FreeSpace® DXA 2120

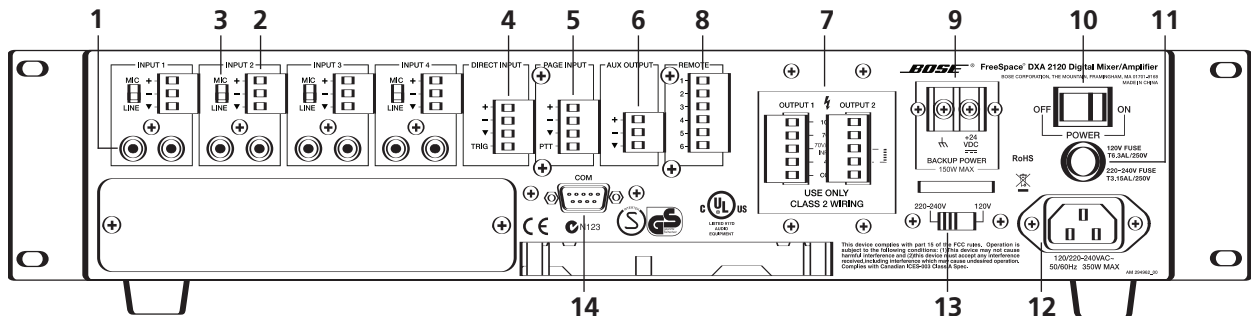
## Digital Mixer/Amplifier



### Front and Rear Panel Diagrams



- 1 **LCD panel** – Displays menu selections for configuring and viewing system settings.
- 2 **Directional buttons** – Navigates system menus and setting options shown on the LCD.
- 3 **SELECT button** – Confirms selections and settings in the system menus.
- 4 **POWER LED** – Blue light indicates the system is on. No light when unit is off.
- 5 **SIGNAL and CLIP LEDs** – Shows signal states for OUTPUT 1, OUTPUT 2, PAGE and DIRECT.  
Signal Unlit = No signal      Clip Unlit = No clipping  
Signal Green = Signal present      Clip Red = Clipping
- 6 **GAIN knobs** – Adjusts gain for OUTPUT 1, OUTPUT 2 and PAGE.
- 7 **BASS and TREBLE knobs** – Adjusts tonal balance for OUTPUT 1 and OUTPUT 2.
- 8 **Enclosure door** – Conceals system controls.
- 9 **SIGNAL and CLIP LEDs** – Shows signal states for Inputs 1 – 4.  
Signal Unlit = No signal      Clip Unlit = No clipping  
Signal Green = Signal present      Clip Red = Clipping
- 10 **Gain knobs** – Adjusts gain for INPUT 1 – INPUT 4.



- 1 **LINE INPUTS** – Two unbalanced RCA audio jacks per input (summed to mono).
- 2 **MIC/LINE INPUTS** – Balanced Euroblock input jacks. One per input.
- 3 **MIC/LINE switch** – Adjusts for the proper signal level being used with the four Euroblock input connectors. (Mic connections require use of the Euroblock input jacks.)
- 4 **DIRECT INPUT** – Balanced override input jack.
- 5 **PAGE INPUT** – Balanced audio input jack.
- 6 **AUX OUTPUT** – Fixed line-level signal output for other amplified equipment.
- 7 **OUTPUTS 1 and 2** – Speaker connections for two powered outputs (70V, 100V or 4-ohm operation).
- 8 **REMOTE** – Input jack for volume-only control and volume control with A/B select user interfaces.
- 9 **BACKUP POWER** – For connection to backup power source.
- 10 **POWER OFF/ON** – AC power switch.
- 11 **FUSE** – T6.3AL/250V (100V and 120V) or T3.15AL/250V (220-240V).
- 12 **AC mains line cord jack** – AC line voltage input.
- 13 **120V/220-240V switch** – Switches between 120V and 220-240V AC input voltage. This switch is not provided on 100V AC input voltage models.
- 14 **COM** – RS-232 serial port is reserved for system updates.

# FreeSpace® DXA 2120

## Digital Mixer/Amplifier

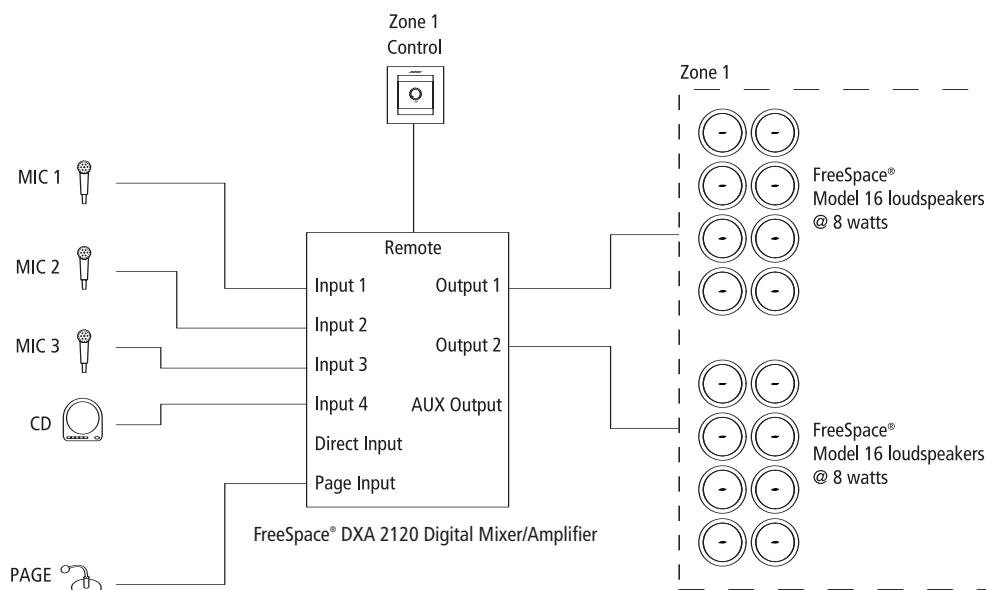


### Example Configurations

#### Mixer Mode: Conference Room

In Mixer Mode, four sources can be mixed to either or both of the two powered outputs and one auxiliary output.

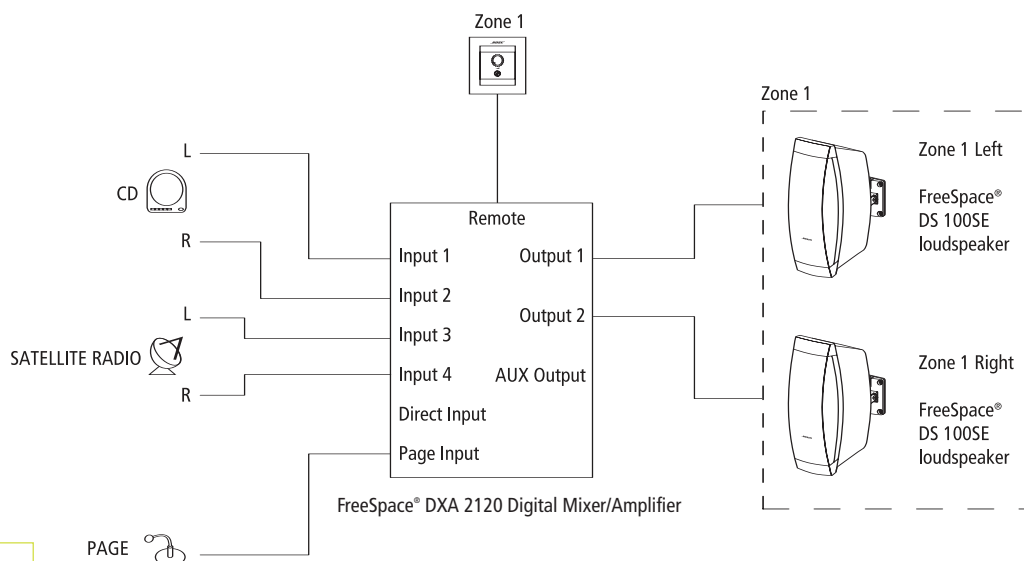
In this example, the large conference room is comprised of two areas where loudspeakers are installed. Both areas require the same mix of three microphones and a music source. The overall volume level of both outputs can be controlled with a single master volume control or independently with two separate user interface volume controls.



#### Stereo Select Mode: Retail Store

In Stereo Select Mode, two selectable stereo sources can be played in stereo in a single output zone.

In this example, the store is comprised of a single zone requiring paging and the ability to switch between stereo music sources. Using a user interface, store employees will have the ability to switch between two different stereo sources, such as a CD player and a satellite radio receiver. The system's Opti-voice® paging allows for smooth transitions between music and announcements.



# FreeSpace® DXA 2120

## Digital Mixer/Amplifier

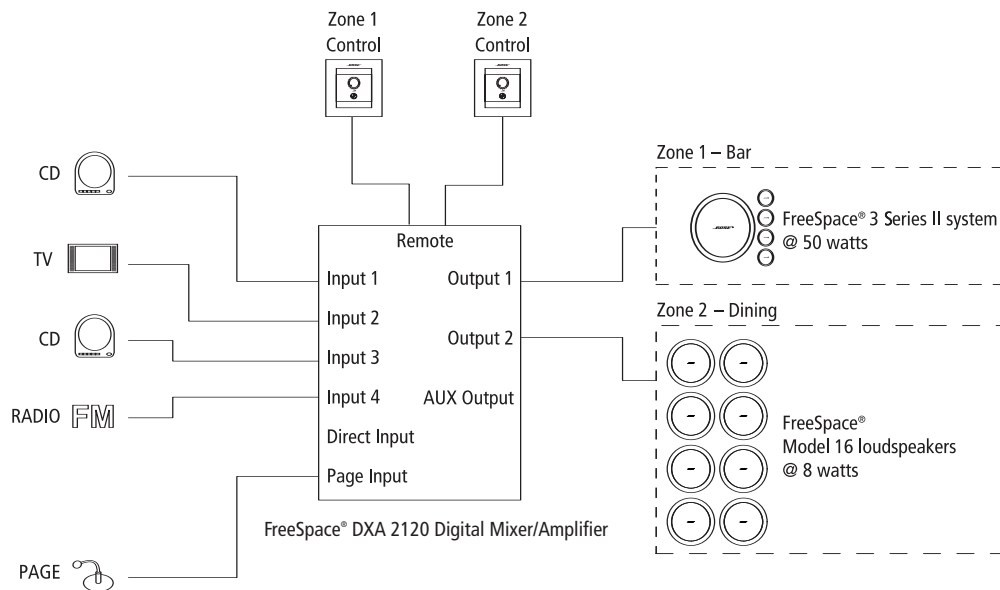


### Example Configurations

#### Dual Mono Select Mode: Restaurant

In Dual Mono Select Mode, Inputs 1 and 2 are routed to Output 1, and Inputs 3 and 4 are routed to Output 2. This allows two different sources to play in two different zones.

In this example, the restaurant is comprised of a dining area and a bar area. The dining area requires background music from a CD player and radio. The bar area requires audio from a television or music from a CD player. The bar also needs to have paging capability, which cannot interrupt the music playing in the dining area. Each room is an independent zone with its own audio sources and user interfaces.



### Accessories

The following accessories are available for the FreeSpace® DXA 2120 digital mixer/amplifier:



Volume control user interface

PC 041966



Volume control with  
A/B select user interface

PC 041967

# FreeSpace® DXA 2120

## Digital Mixer/Amplifier



### Engineers' and Architects' Specifications

The unit shall be a digital mixer/amplifier. The unit shall use a digital signal processing architecture running at 44.1 kHz sample rate. The frequency response shall be from 40 Hz to 16 kHz (+0/-3 dB). The dynamic range shall be 80 dB (typical) 40 Hz to 16 kHz. The signal-to-noise ratio shall be 75 dB or greater (A-weighted).

The unit shall have mixing and routing capabilities as well as amplification. The unit's DSP shall feature selectable Bose® loudspeaker EQs as well as dynamic equalization.

The input section shall have four mic/line inputs, one direct input and one page input. The mic/line inputs shall have both 3-pin Euroblock connectors for balanced mic/line inputs and dual RCA jacks (summed to mono) for unbalanced line inputs. The direct and page inputs shall have 4-pin Euroblock connectors for balanced inputs.

The page input shall be operated in PTT (push to talk) or Auto mode and provide automatic ducking for announcements.

The direct input shall automatically override all other inputs when a signal is detected for emergency signaling purposes.

The output section shall feature two powered loudspeaker outputs with 5-terminal inverted Euroblock connectors. The unit will have an auxiliary output with a 3-pin Euroblock connector.

The amplifier section shall contain two powered outputs for high or low impedance: 2 x 120W at 4Ω or 2 x 100W at 70/100V. The THD shall be less than 0.5% @ full rated power.

The unit shall feature three different modes of operation: Mixer Mode, Stereo Select Mode and Dual Mono Select Mode.

The 100V variant will operate at 100V AC. A second variant will be able to operate at 120V/220-240V AC; there will be an AC input voltage switch on the unit. The unit shall consume AC power of 40W or less at idle, 350W at maximum continuous rated power and also will have a 2-terminal barrier strip for connecting a 24V DC backup power supply.

The unit will have a remote input with a 6-pin Euroblock connector for using one or

two volume controls and/or volume control with A/B select user interfaces.

The unit shall be configurable via the onboard controls and feature a "lockout" feature to prevent unwanted system changes. An RS-232 COM port will be available for system updates.

The unit shall be the Bose® FreeSpace® DXA 2120 digital mixer/amplifier.

### Safety and Regulatory Compliance

The 120V/220-240V AC variant (PC 040753, PC 040754, PC 040755, PC 040756) of the FreeSpace DXA 2120 digital mixer/amplifier complies with CE requirements, is UL 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; GS approved, according to EN60065 (7th edition). It also complies with FCC Part 15B Class A (2003), EN55103-1 (1997), EN55103-2 (1996), and CISPR13 (2003) requirements.

The 100V variant (PC 040742) of the DXA 2120 digital mixer/amplifier is PSE compliant.

### Limited Warranty

The FreeSpace DXA 2120 digital mixer/amplifier is covered by a two-year transferable limited warranty.

### How our Products are Measured

#### 1. Amplifier power

A single channel is driven to full power with the nominal load impedance (120W/4Ω, 100W/70V/49Ω, 100W/100V/98Ω). Output power is measured using a 1 kHz sine wave with a THD of less than 0.5%, as measured at the amplifier output.

#### 2. Dynamic range

The output of the amplifier is connected to the rated load impedance, and the input and output gains are set to maximum. A dB-calibrated voltmeter is connected to the amplifier's output through an A-weighting filter (in accordance with IEC 60651). A 1 kHz signal is connected to one of the line inputs, and the level is adjusted to achieve the amplifier's rated output power. The voltmeter is then zero-referenced. The signal source is removed, and the line input is shorted. The dB-calibrated voltmeter now reads the absolute dynamic range of the system.



# FreeSpace® DXA 2120

## Digital Mixer/Amplifier



### Product Codes

FreeSpace® DXA 2120 digital mixer/amplifier

120V – US	PC 040753
230V – EU	PC 040754
230V – UK	PC 040755
240V – AU	PC 040756
100V – Japan	PC 040742

### Accessories

Volume control user interface	PC 041966
Volume control with A/B switch user interface	PC 041967

### Replacement Parts

Mating connector kit – includes (4) mic/line connectors, (2) direct/page input connectors, (1) remote input connector, (1) Aux output connector, (2) amplifier outputs	PN 298704
Rubber feet (4)	PN 298707
Rack ears with mounting hardware (2)	PN 298706
AC power cord, 120V US	PN 298165
AC power cord, 230V EU	PN 298166
AC power cord, 100V JPN	PN 298167
AC power cord, 230V UK	PN 298168
AC power cord, 240V AU	PN 298169

