

Bose® FreeSpace® System Controller

Installer's Guide

Installationsvejledning

Installateur-Anleitung

Guía de Instalación

Notice d'installation

Guida all'installazione

Handleiding voor de installateur

Monteringsanvisninga

BOSE®



May 7, 2002
AM177675-2_04_V.pdf
Bose Corporation



FreeSpace®
BUSINESS MUSIC SYSTEMS

WARNING

To reduce the risk of fire or electric shock, do not expose this system to rain or moisture.

CAUTION

To reduce the risk of electrical shock, do not remove the cover of the FreeSpace® system controller (Model 8/32). There are no user-serviceable parts inside. Refer servicing to qualified personnel. The CAUTION marks described here appear on the top of the controller.



The lightning flash with arrowhead symbol, within an equilateral triangle, alerts the user to the presence of uninsulated “dangerous voltage” within the system enclosure. This voltage may be sufficient to constitute a risk of electrical shock.



The exclamation point, within an equilateral triangle, alerts the user to the presence of important operating instructions in this guide.

WARNING

The Bose® FreeSpace system controller (Model 8/32) is an electrical appliance. There are no user-serviceable parts inside. As with all electrical appliances, dangerous electrical shock may result if repair is attempted by unqualified personnel. Service and the installation of any optional electronics should always be performed by Bose-authorized personnel.

CAUTION

RISK OF ELECTRICAL SHOCK—DO NOT OPEN

TO PREVENT ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

Please read this safety information before installing, connecting, or operating the Bose® FreeSpace® system controller (Model 8/32).

- 1.1 Read the instructions** – Read and keep all safety and operating instructions.
- 1.2 Follow cautions** – For safety, follow all cautions and warnings in this guide and on the system controller.
- 1.3 Avoid moisture** – Do not install the controller near water or excessive humidity. Do not install near swimming pools, spas, dish washing or laundry equipment, or in other excessively humid environments.
- 1.4 Avoid heat** – Do not install the controller near excessive heat sources, such as radiators, ranges, grills, fryers, stoves, or other appliances.
- 1.5 Protect cables** – Put cables where they won't be pinched or cut by heavy or sharp objects.
- 1.6 Connect the power cord properly** – Make sure the controller is properly grounded. If the power cord includes a ground pin, it should be connected to the ground on the power outlet.
- 1.7 Disconnect for service** – To reduce the risk of electric shock, disconnect the power cord before replacing the fuse or when changing the voltage selection. The power cord must remain disconnected until the fuse holder/voltage selector assembly is replaced.
- 1.8 Ventilate equipment racks** – If mounting the controller in a rack with heat-producing electronic equipment, vent the rear of the rack to prevent overheating the controller.
- 1.9 If damage occurs** – Obtain service from qualified service personnel under the following conditions:
 - A.** Water or other liquid spills into the controller;
 - B.** If the controller is exposed to rain or water;
 - C.** If the controller does not operate normally, even though you have followed the instructions in this guide;
 - D.** If the controller exhibits a distinct change in performance.
- 1.10 Safety check** – After service or repairs, ask the service technician to perform safety checks. This includes properly connecting the safety ground wire to the power mains connector.

1.0 Safety Information 2

2.0 Introduction 5

 2.1 Unpacking the controller 5

 2.2 Controller features 6

3.0 Configurations 7

 3.1 Sample configuration 7

 3.2 Signal processing 8

4.0 Installation 9

 4.1 Electrical connections 9

 4.2 Mechanical installation 11

Appendix A: Controller Specifications 12

 A.1 Electrical specifications and controls 12

 A.2 Mechanical specifications 13

Appendix B: Safety Requirements 14

 B.1 Safety agency listings 14

 B.2 Fire protective signaling 14

Appendix C: Warranty And Service 15

 C.1 Warranty period 15

 C.2 Service 15

 C.3 Contacting Bose® inside back cover

The Bose® FreeSpace® system controller (Model 8/32) works with Bose FreeSpace Model 8, Model 25, Model 32, and the Bose 102® loudspeakers to provide a highly flexible, multi-zone music and paging system. It features three source channels (two music, one paging) with Bose active equalization. Bose Opti-voice® circuitry gradually mutes music before paging, then returns music volume to the previous level. Both output channels provide equalized and unequalized output to simultaneously power the FreeSpace Model 8 and Model 32, Model 25, or Bose 102 loudspeakers, or another system, like the Bose FreeSpace® business music system.

All Bose FreeSpace Model 8, Model 32, Model 25, and Bose 102 loudspeakers, except the 4Ω Model 32 and the 4Ω Model 25, require a Bose approved equalizer, such as this controller. Using the loudspeakers without an approved equalizer causes inferior acoustic performance and may damage the loudspeakers. This controller is the only equalizer approved for use with the FreeSpace Model 8 or Model 32 loudspeakers in fire protective signaling and warning systems (see Section B.2, “Fire protective signaling”).

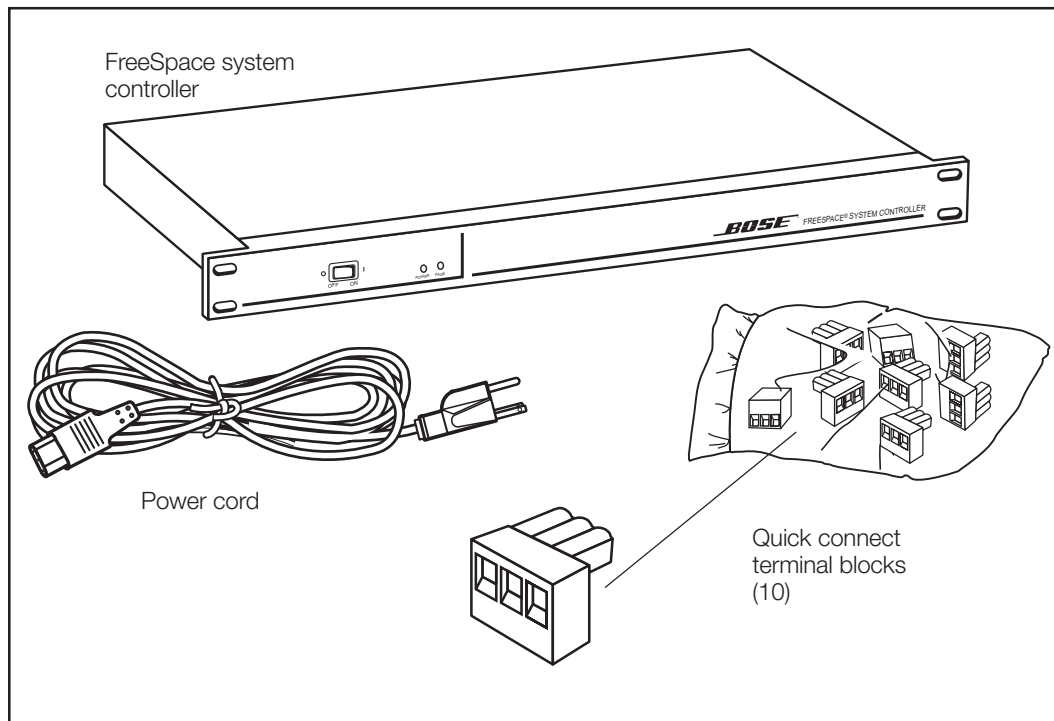


Figure 1

Unpack the FreeSpace system controller.

2.1 Unpacking the controller

Carefully unpack the controller (Figure 1). Save the carton and packaging. If the controller appears damaged, do not try to use it. Return it to its original carton and immediately notify the Bose Service Department or your authorized Bose Professional Products dealer.

2.2 Controller features

The Bose® FreeSpace® system controller, combined with the FreeSpace Model 8, Model 25, or Model 32 loudspeakers, provides a flexible sound system for single, multiple, or combination zone installations. Figures 2 and 3 describe the controller's features.

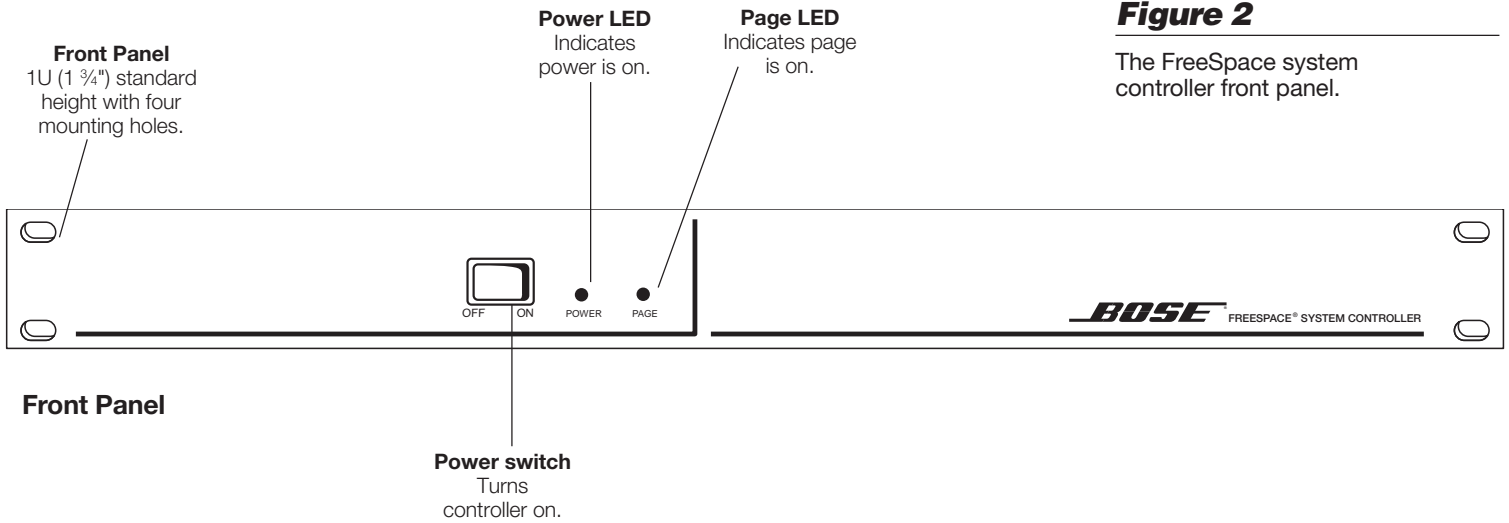


Figure 2

The FreeSpace system controller front panel.

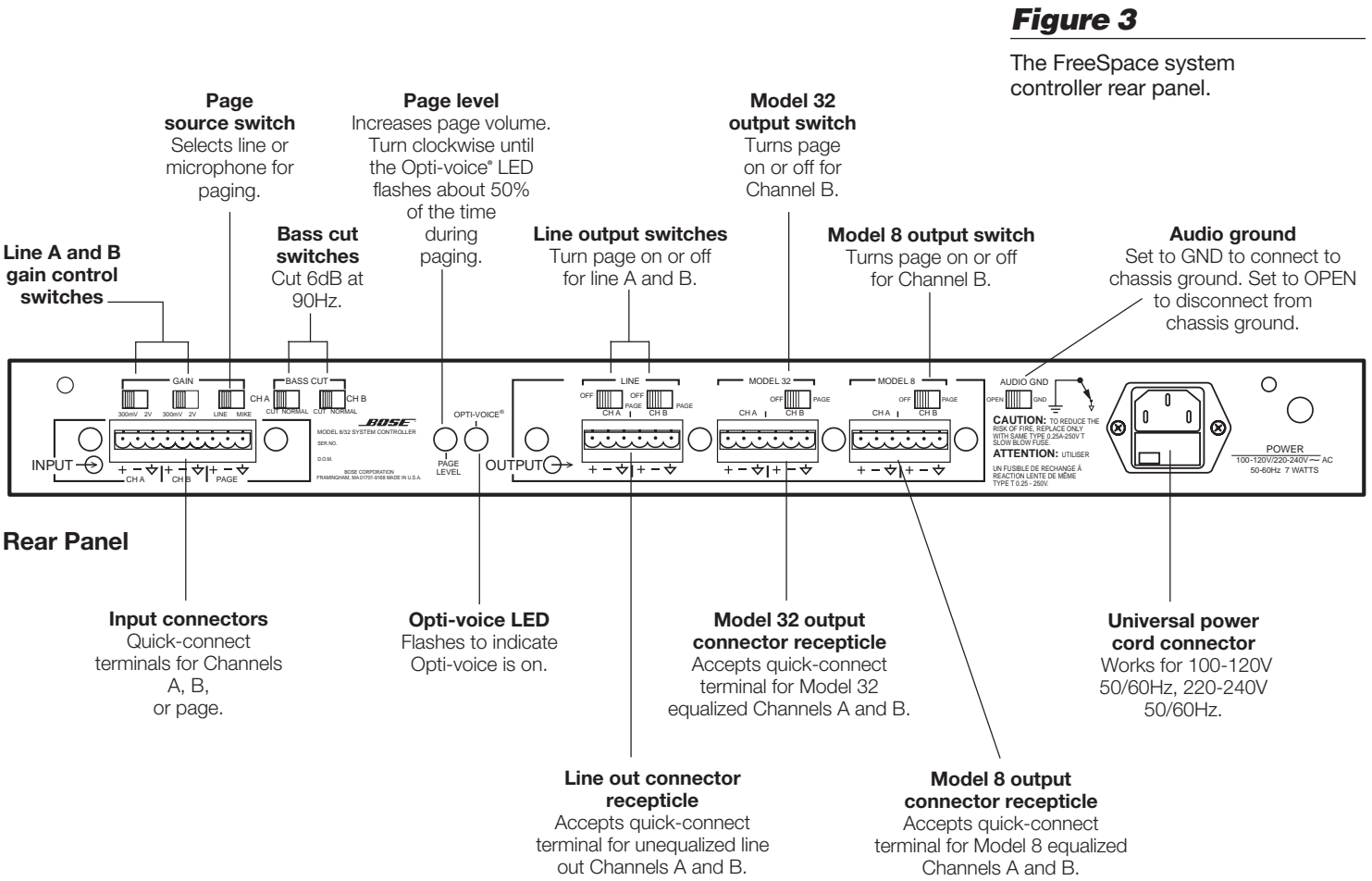


Figure 3

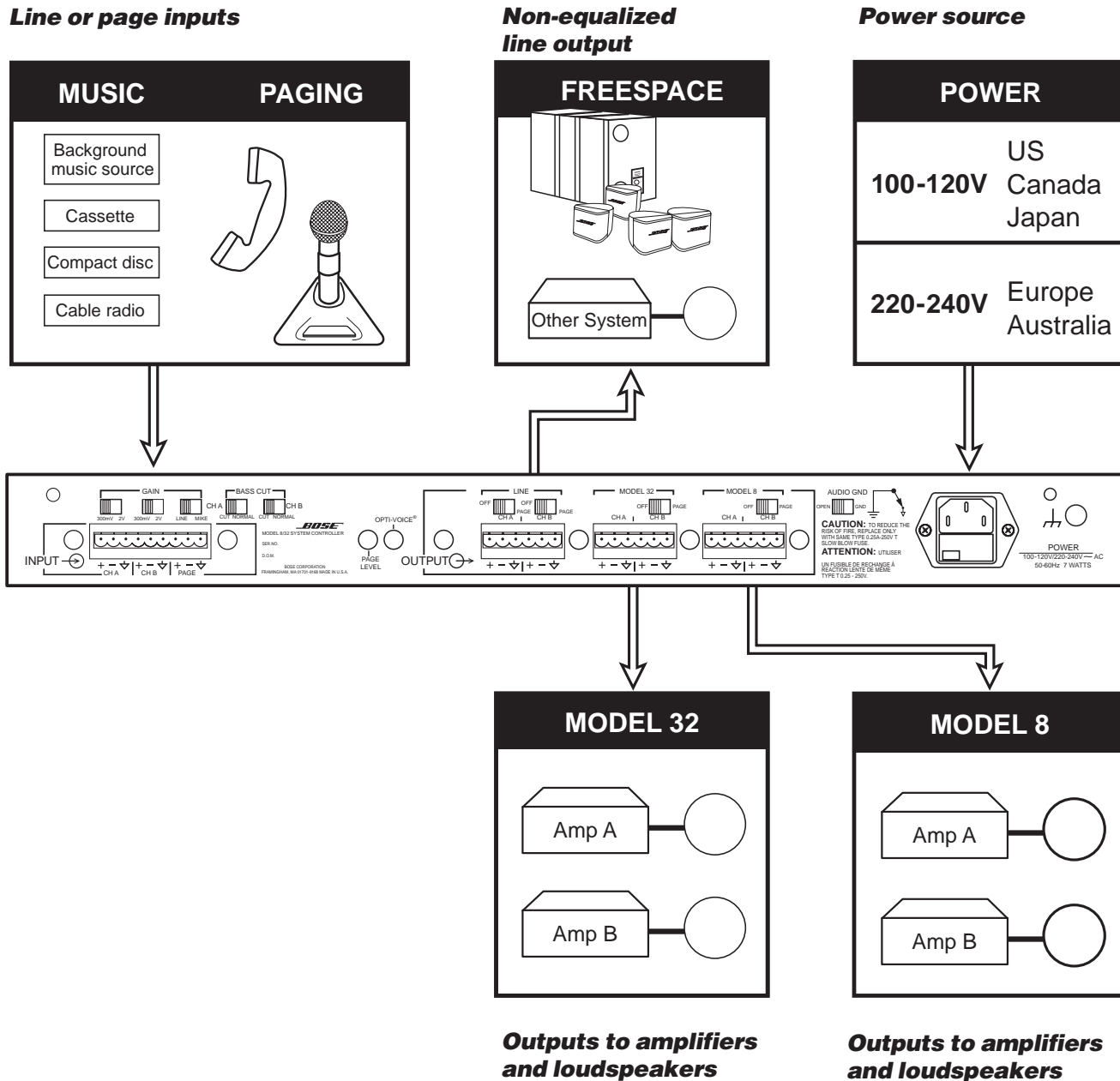
The FreeSpace system controller rear panel.

3.1 Sample configuration

The sample configuration in Figure 4 represents possible solutions for your sound system requirements. You may adapt this configuration to meet your needs.

Figure 4

FreeSpace® system controller configurations.

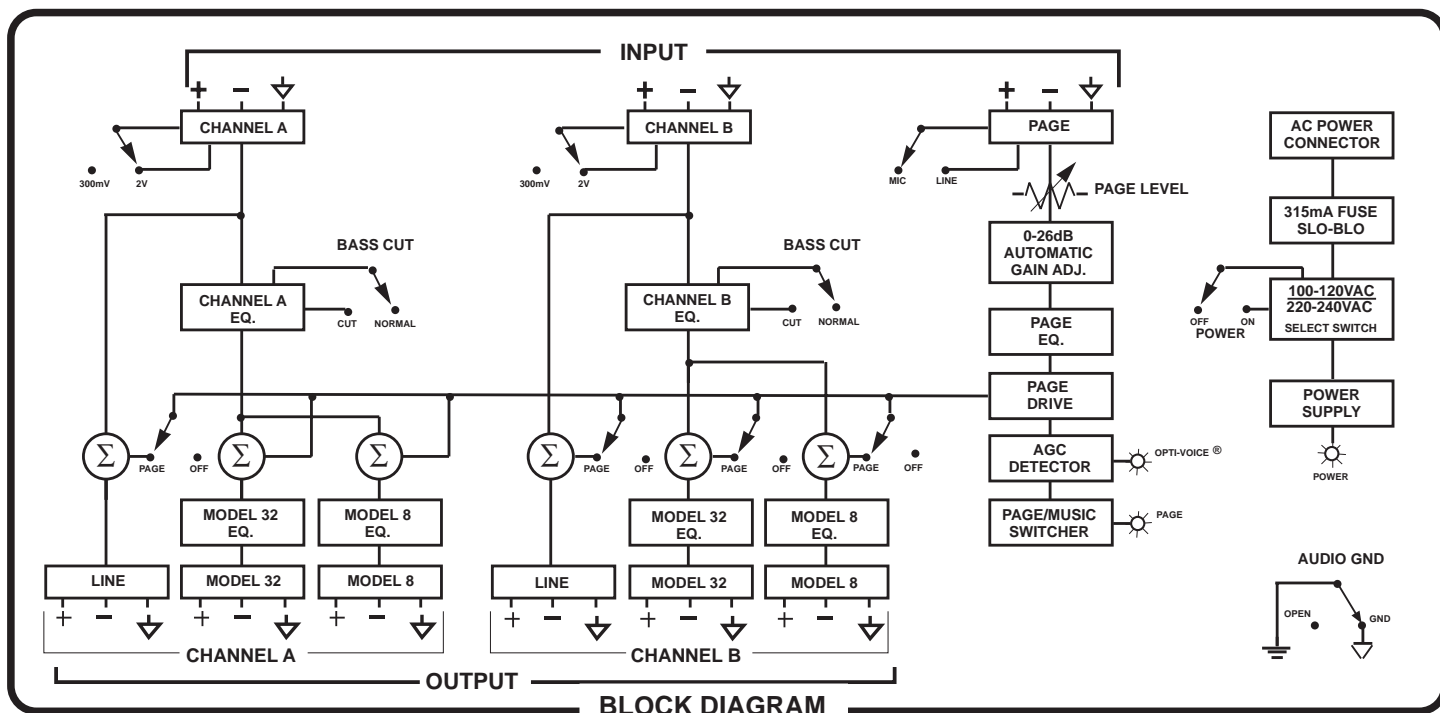


3.2 Signal processing

The block diagram in Figure 5 is on the top of the system controller. It illustrates the audio signal's path through the controller.

Figure 5

Block diagram.



4.1 Electrical connections

Although the FreeSpace® system controller accepts balanced and unbalanced sources, balanced sources provide better audio performance. Observe proper polarity when making connections:

- The positive terminal is usually the high, tip, or plus (+) terminal, or pin 2.
- The negative terminal is usually the low, ring, or minus (-) terminal, or pin 3.
- The ground terminal is usually the shield, sleeve, or ground (⚡) terminal, or pin 1.

Note: The ground terminals are NOT safety grounds. They are for audio signals only. Do not use these terminals as a substitute for a proper safety (earth) ground for this equipment or other equipment connected to it.

From microphone or paging source (Figure 6):

1. Connect the positive and negative terminals to the positive and negative terminals on the controller.
- 2a. If the source has balanced outputs, connect the ground terminal to the ground terminal on the controller.
- 2b. If the source has unbalanced outputs, connect the ground terminal on the controller to the negative terminal on the controller. This will help prevent unwanted noise.

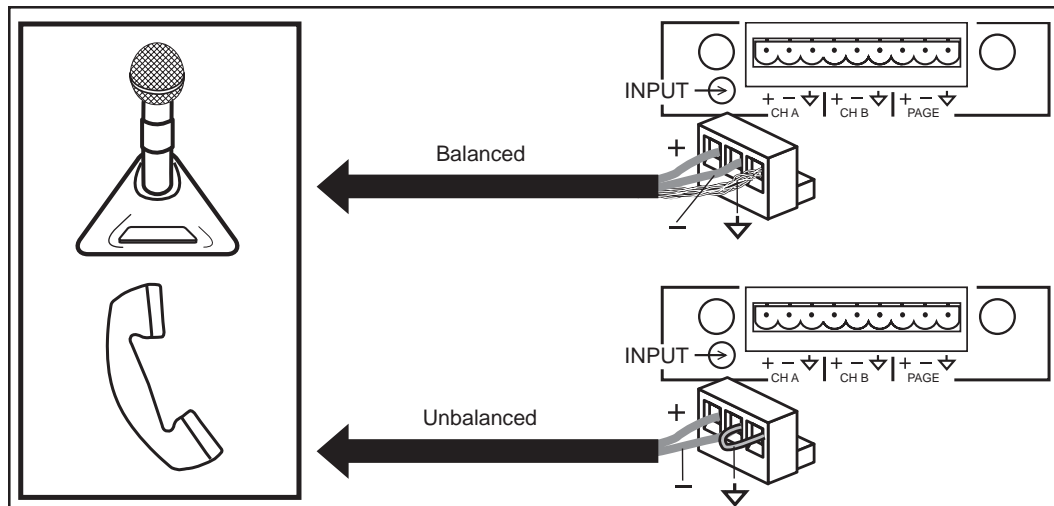


Figure 6

Connections from microphone or paging source.

4.0 Installation

From music source:

1. Connect the positive and negative terminals to the positive and negative terminals on the controller.
- 2a. If the source has balanced outputs (Figure 7), connect the ground terminal to the ground terminal on the controller.
- 2b. If the source has unbalanced outputs (Figure 8), connect the ground terminal on the controller to the negative terminal on the controller. This will help prevent unwanted noise.

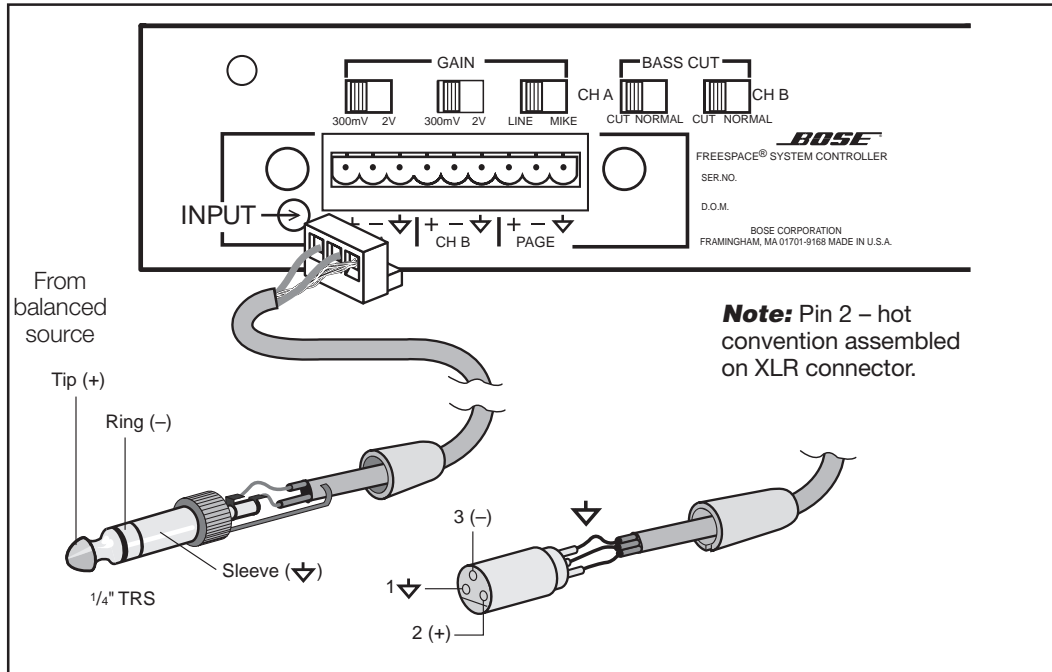


Figure 7

Connectors used with balanced audio inputs.

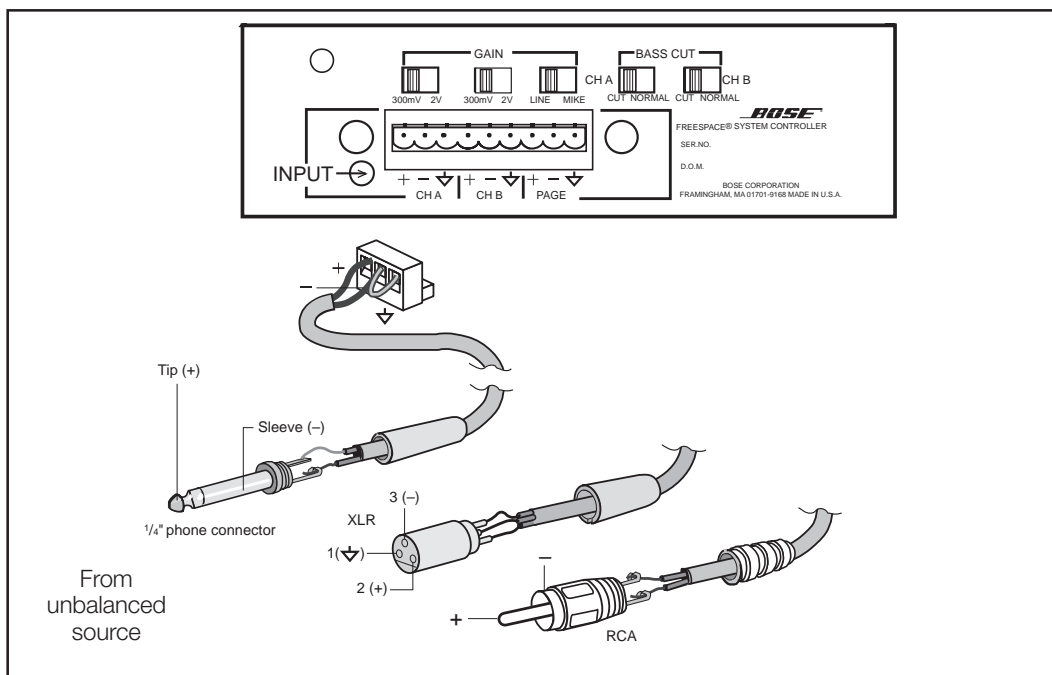
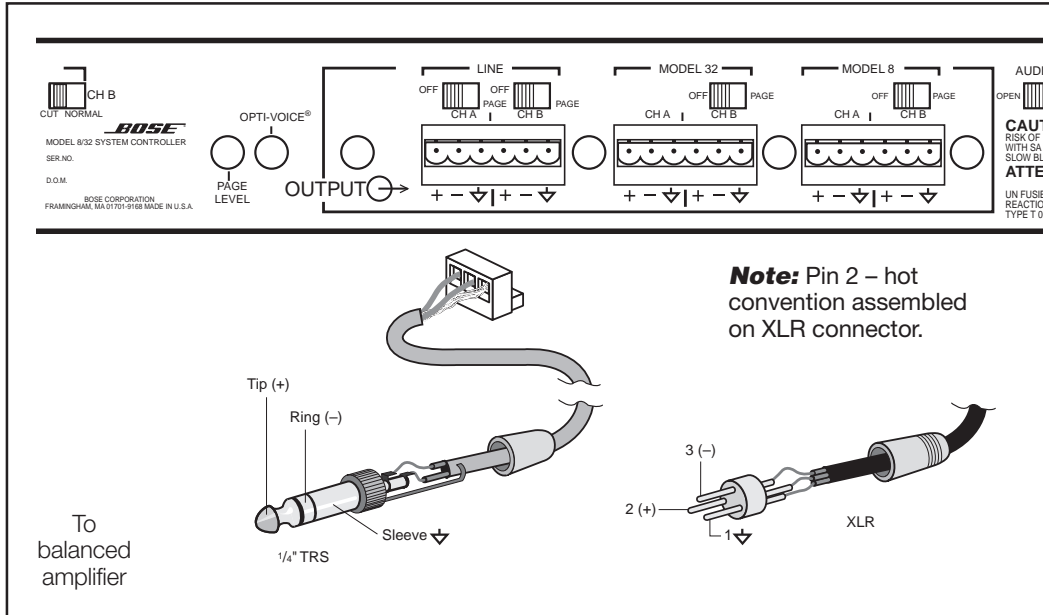
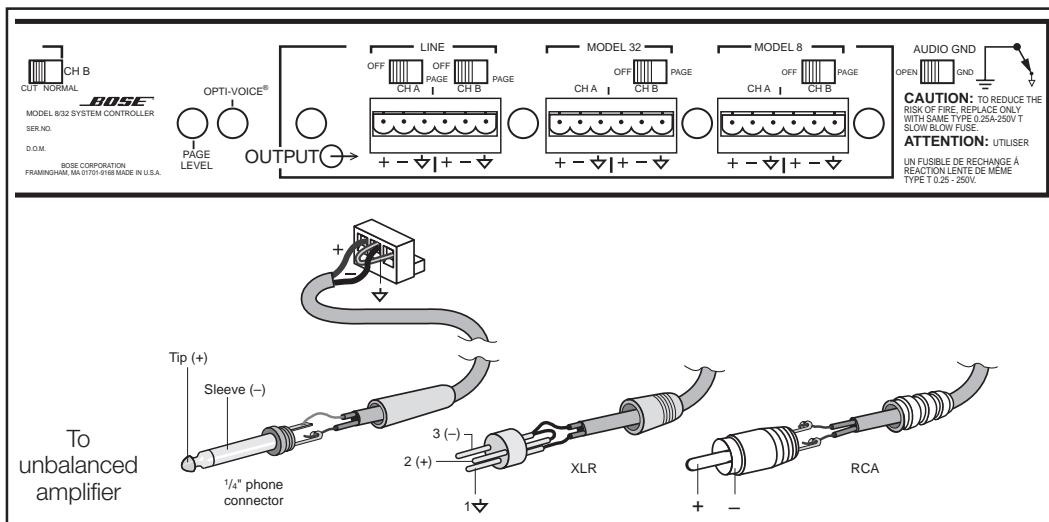


Figure 8

Connectors used with unbalanced audio inputs.

**Figure 9**

Connections to balanced amplifier.

**Figure 10**

Connections to unbalanced amplifier.

To balanced amplifier (Figure 9):

1. Connect the positive and negative terminals to the positive and negative terminals on the controller.
2. Connect the ground terminal to the ground terminal on the controller.

To unbalanced amplifier (Figure 10):

1. Connect the positive and negative terminals to the positive and negative terminals on the controller.

4.2 Mechanical installation

When mounting the controller in a rack, place the heaviest units near the bottom of the rack. A top-heavy rack can topple if bumped or shaken. For added safety, secure the rack to a wall or ceiling.

Note: Air temperature around the controller should not exceed 120°F (50°C) when the controller is on. If the controller is placed on a shelf with other heat-producing equipment, ventilate the rack to prevent overheating.

A.1 Electrical specifications and controls

The FreeSpace® system controller (Model 8/32) accepts AC supply voltages from 80 to 265, 50Hz or 60Hz.

A.1.1 Balanced input terminals

Balanced inputs with gain switches, protection diodes, and RFI/EMI noise suppression.

A.1.2 Page input

Gain is switchable for either microphone or line level inputs.

- Page trigger sensitivity 275 μ V minimum
- Mic input sensitivity 5mV nominal, 250mV maximum
- Line input sensitivity 100mV nominal, 1V maximum
- Page input impedance 3k Ω (Mic), 200k Ω (Line), balanced

A.1.3 Channel A and Channel B input

Balanced Channel A and Channel B inputs with gain switches.

- Line input sensitivity at 300mV 200mV nominal, 300mV maximum
- Line input sensitivity at 2V 1V nominal, 2V maximum
- Line input impedance 2k Ω (300mV), 7.7k Ω (2V), balanced

A.1.4 Input common mode ripple rejection

- 40dB or greater

A.1.5 Opti-voice® system circuitry

The system automatically switches from music to page during paging.

A.1.6 Automatic gain control with LED indication

Adjusts paging volume. LED flickers at optimum volume.

A.1.7 Outputs

All balanced outputs with protection diodes, and RFI/EMI noise suppression.

- Line output level 6V RMS maximum
- Line output frequency response 40Hz – 20kHz flat
- Line output impedance 600Ω, balanced
- Line output paging Channels A and B paging individually switchable
- Model 25, Model 32, or Bose® 102 output level 6V RMS maximum
- Model 25, Model 32, or Bose 102 output impedance 600Ω, balanced
- Model 25, Model 32, or Bose 102 frequency response Flat power response with Model 25 or Model 32 loudspeakers
- Model 25, Model 32, or Bose 102 paging Channel A – On
Channel B – Switch selectable
- Model 8 output level 6V RMS maximum
- Model 8 output impedance 600Ω, balanced
- Model 8 frequency response Flat power response with Model 8 loudspeakers
- Model 8 paging Channel A – On
Channel B – Switch selectable

A.1.8 Power requirements

- Determined by power cord supplied 100V, 120V, 220-240V ~ 50/60Hz

A.1.9 Power consumption

- 7 Watts

A.2 Mechanical specifications

- Dimensions: 1 5/8" (H) x 19" (W) x 10" (D)
(4.13 cm (H) x 48.26 cm (W) x 25.4 cm (D))
- Weight: 5.5 lb (2.5 kg)

B.1 Safety agency listings

B.1.1 UL

The Bose® FreeSpace® system controller (Model 8/32) is UL listed:

- Commercial audio equipment - UL 813
- Fire protective signaling - UL 1711 Control number 42S9, File number E63079

B.1.2 Other agencies

The controller is also listed with the following safety agencies:

- TÜV Rheinland
- CSA
- Dentori

B.2 Fire protective signaling

B.2.1 Signal processing equipment

Bose offers 70V fire safety models of both FreeSpace Model 8 and Model 32 loudspeakers listed under UL 1480, category UUMW, as fire protective signaling devices. The Bose FreeSpace system controller (Model 8/32) is the only equalizer listed for use with these loudspeakers in fire protective signaling and warning systems. These loudspeakers will not perform as specified for this application if used with another controller.

B.2.2 Gain adjustment

In order to achieve the UL listed SPL output of the FreeSpace Model 8 and Model 32 loudspeakers when used as a fire protective signaling and warning system, the warning signal must be bandwidth limited to approximately the range of 400Hz – 4kHz. This signal should be tested to confirm that a full 70 Volt signal is achieved at the amplifier output. This signal must be directed through the system controller, with the input signal to the controller properly adjusted to achieve the amplifier output specified.

Warning

Do not use this gain adjustment for full bandwidth audio material or speech. Amplifier and/or loudspeaker distortion may result.

C.1 Warranty period

Bose covers the FreeSpace system controller (Model 8/32) with a 5-year, transferable, limited warranty. For more information, please read the warranty card.

C.2 Service

If you have problems with your FreeSpace system controller, contact your authorized Bose Professional Products dealer. The dealer will verify any defects and arrange for service.

C.3 Contacting Bose

For information or service, contact Bose:

USA

Bose Corporation, The Mountain
Framingham, MA 01701-9168
1-800-367-4008

Weekdays 9 a.m. to 8 p.m.

Saturdays 9 a.m. to 3 p.m. ET (eastern time)

Canada

Bose Ltd., 8-35 East Beaver Creek Road
Richmond Hill, Ontario L4B 1B3
1-800-444-BOSE (444-2673)
Weekdays 9 a.m. to 5 p.m. ET (eastern time)

European headquarters

Bose B.V., Nijverheidstraat 8
1135 GE Edam, Nederland
TEL 0299-371055 FAX 0299-368163

Australia

Bose Australia, Inc., 1 Sorrell Street
Parramatta, N.S.W. 2150
TEL 02 204-6111 FAX 02 204-6122

Belgique/België

Bose N.V., Limesweg 2
B-3700 Tongeren
TEL 012-390800 FAX 012-390840

Danmark

Bose A/S, Industrivej 7, 2605 Brøndby
TEL 043437777 FAX 043437818

Deutschland

Bose GmbH, Max-Planck-Straße 36d
D-61381 Friedrichsdorf
TEL 06172-71040 FAX 06172-710419

France

Bose S.A., 6, rue Saint Vincent
78100 Saint Germain en Laye
TEL 01-30616363 FAX 01-30614105

India

PO Box 9301
New Delhi 110 092
TEL (011) 648 4462 FAX (011) 648 4463

Ireland

Bose Corporation
Carrickmacross, Co Monaghan
TEL 042-61988 FAX 042-61998

Italia

Bose S.p.A., Via Luigi Capucci 12
00147 Roma
TEL 06-5127641 FAX 06-5115438

Japan

Bose K.K., Shibuya YT Building, 28-3
Maruyama-cho, Shibuya-ku, Tokyo 150
TEL 03-5489-1054 FAX 03-5489-0591

Nederland

Bose B.V., Nijverheidstraat 8,
1135 GE Edam
TEL 0299-366661 FAX 0299-368166

Norge

Bose A/S, Solheimsgate 11
N-2001, Lillestrøm
TEL 63-817380 FAX 63-810819

Österreich

Bose Ges.m.b.H.
Vienna Business Park
Wienerbergstrasse 7 (10.OG)
A-1100 Vienna
TEL 01-6040434 FAX 01-604043423

Schweiz

Bose AG, Rünenbergerstrasse 13
4460-Gelterkinden
TEL 061-9815544 FAX 061-9815502

Sverige

Bose A/S, Blandsädsgratan 2D
S-43146 Mölndal
TEL 031-878850 FAX 031-274891

United Kingdom

Bose Limited, Unit G2
Trinity Trading Estate
Sittingbourne, Kent ME10 2PD
TEL 01795-475341 FAX 01795-427227

Other locations

Bose Service, 1 New York Avenue
Framingham, MA 01701-9168 USA
TEL (508) 229-8484 FAX (508) 229-3891

