



BOSE®

PANARAY® System Digital Controller

General Description

The Bose® PANARAY system digital controller utilizes digital signal processing (DSP) architecture to provide smooth, accurate spectral response for any Bose professional loudspeaker product requiring active equalization (EQ) or additional processing.

Any Bose professional loudspeaker EQ can be accessed by simply selecting the appropriate preset and configuration. No programming is required.

The controller has two balanced XLR analog inputs and four balanced XLR outputs. It can be configured to run two mono Bose EQ presets or a single stereo Bose EQ preset (including preset crossover settings).

In addition to providing Bose speaker EQ presets, the controller also has the following easy-to-use programmable features:

- Four independent signal delays (200 ms per output) which can be used for decentralized or distributed speaker alignment and for creating custom bass arrays.
- Four independent output limiters that can be set to protect speakers from unpredictable spikes in program material.
- A programmable signal router which allows each output to select full-range and high- or low-pass combinations of input signals.

Technical Information (cont.)

Control interface:

Finish

Black anodized aluminum front-plated and painted steel chassis

Mains voltage

100 to 240VAC, 50Hz to 60Hz (auto switching)

Power consumption

< 15W

Technical Information

Sample Rate

44.1kHz

Analog Inputs:

Connectors

(2) XLR balanced

Impedance balanced

21kΩ

Input level

Maximum: +18dBu

Minimum: 0dBu

Sensitivity

@9dB headroom: -12dBu to +9dBu

A to D conversion

24 bit, 128 x oversampling bitstream

Dynamic range

95dB typ, 20Hz - 20kHz

THD

Typ < 92dB (0.0025%) @ 1kHz

Frequency response

20Hz to 20kHz, +0/-0.1dB

Crosstalk

< -100dB, 20Hz to 20kHz

Analog Outputs:

Connectors

(4) XLR balanced

Impedance balanced

40Ω

Maximum output level

+18dBu (balanced)

Output ranges

Balanced 20/14/8/2dBu

D to A conversion

24 bit, 128 x oversampling bitstream

D to A Delay

0.63ms @ 44.1kHz

Dynamic range

100dB typ 20Hz - 20kHz

THD

Typ < 94dB (0.002%) @ 1kHz +20dBu output

Frequency response

20Hz to 20kHz: +0/-0.5dB

Crosstalk

< -95dB, 20Hz to 20kHz

Front Panel Attributes:

Standby button

Standby on/off

Channel 1 and 2 input meters

Displays the individual input levels of Channels 1 and 2. The meter range is: 0 (overload red LED), 0, -6, -12, -18, -24 and, -40dB (green LEDs).

Display

2 x 16 backlit LCD display

Arrow up/arrow down

Press to navigate up or down through the user interface

Preset key (green LED)

Press to enter preset mode

Delay key (green LED)

Press to edit the delay parameters

Utility key (green LED)

Press to edit routing, level, and system parameters

Limiter key (green LED)

Press to edit the limiter parameters

Rotary encoder

Selects presets and edits values

Environment:

Operating temperature

32°F to 122°F (0°C to 50°C)

Storage temperature

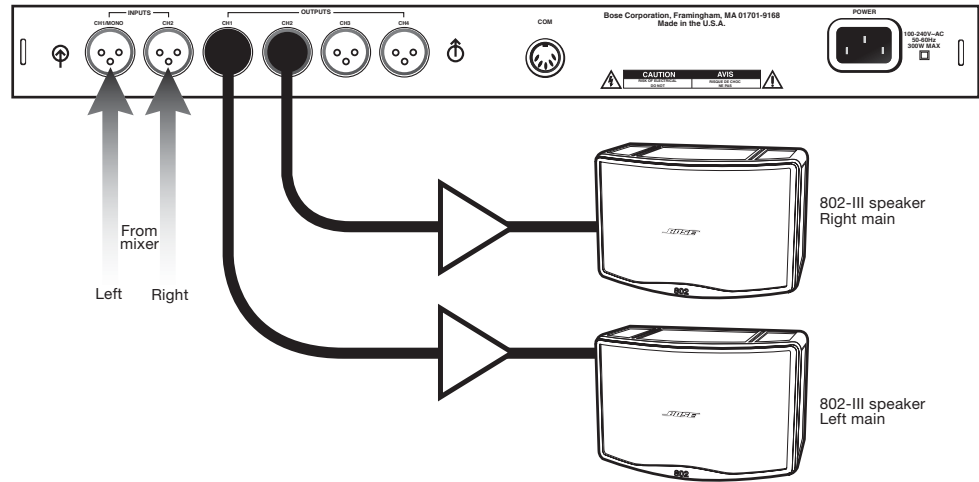
-22°F to 167°F (-30°C to 70°C)

Humidity

Maximum 90% non-condensing

Figure 1: Portable System: Stereo Configuration

PANARAY® system digital controller configuration: Stereo operation using PANARAY 802-III speakers:



Controller Configuration

802-III full range speaker

Controller Inputs

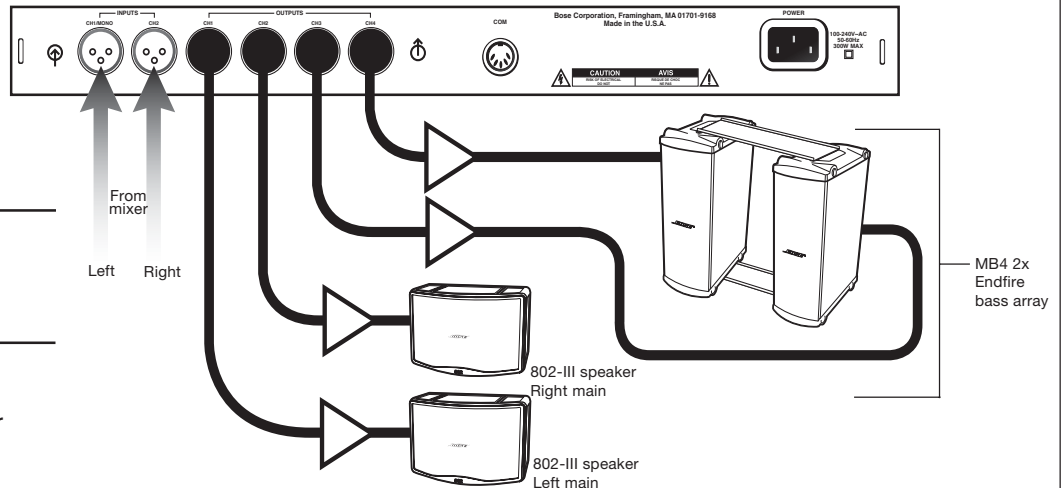
Ch1	Left from mixer
Ch2	Right from mixer

Controller Outputs

	Ch1	Ch2	Ch3	Ch4
Routing	802-III speaker Left main	802-III speaker Right main	N/A	N/A
Limiter	On	On	N/A	N/A
Delay	Off	Off	N/A	N/A

Figure 2: Portable System: Stereo with Endfire Bass Array

PANARAY system digital controller configuration: Stereo operation using PANARAY 802-III speakers and an MB4 2x Endfire bass array:



Controller Configuration

802-III speaker with MB4 2x Endfire bass array

Controller Inputs

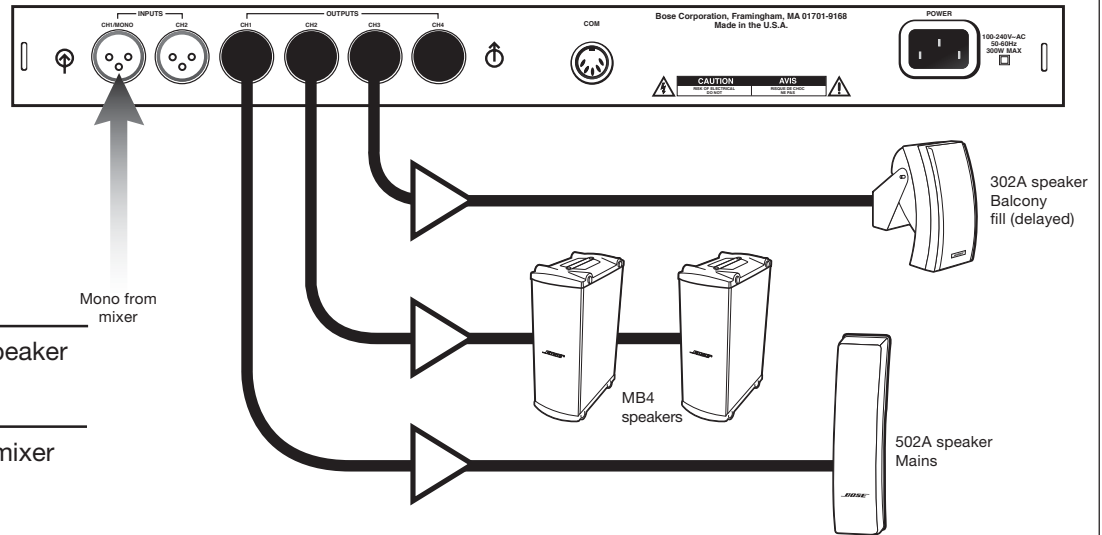
Ch1	Left from mixer
Ch2	Right from mixer

Controller Outputs

	Ch1	Ch2	Ch3	Ch4
Routing	802-III speaker Left main	802-III speaker Right main	MB4 speaker (mono)	MB4 speaker (mono)
Limiter	On	On	On	On
Delay	Off	Off	Off	On

Figure 3: Engineered System Configuration (Medium Church)

PANARAY® system digital controller configuration: Mono operation using PANARAY 502®A, 302®A, and MB4 speakers:



Controller Configuration

502A speaker with MB4 speaker

Controller Inputs

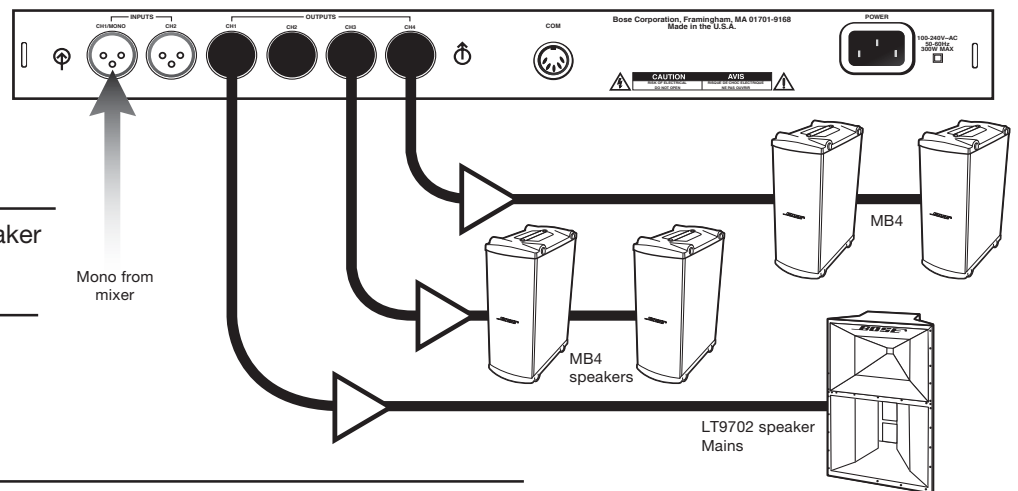
Ch1	Mono from mixer
Ch2	No input

Controller Outputs

	Ch1	Ch2	Ch3	Ch4
Routing	502A speaker Mains	MB4	302A speaker Balcony (no EQ)	N/A
Limiter	On	On	On	N/A
Delay	Off	Off	30ms	N/A

Figure 4: Engineered System Configuration (Small Church)

PANARAY system digital controller configuration: Mono operation using PANARAY LT 9702® speaker with MB4 speakers:



Controller Configuration

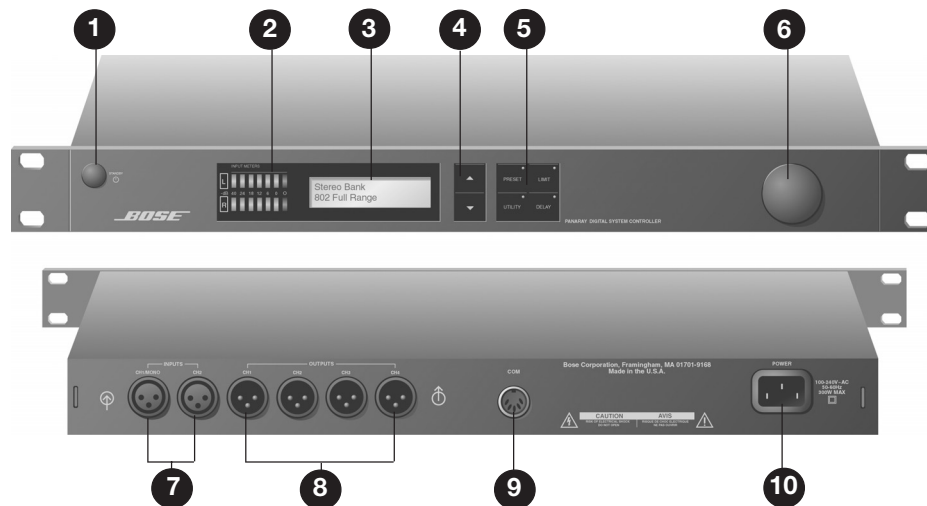
LT 9702 speaker with MB4 speaker

Controller Inputs

Ch1	Mono from mixer
Ch2	No input

Controller Outputs

	Ch1	Ch2	Ch3	Ch4
Routing	LT 9702 speaker Mains	N/A	MB4	MB4
Limiter	On	N/A	On	On
Delay	Off	N/A	Off	Off



- | | | |
|-------------------------|--|-------------------|
| 1 Standby button | 5 Preset, Utility, Limiter, Delay buttons | 9 COM port |
| 2 Input meters | 6 Rotary encoder | 10 Power |
| 3 LCD display | 7 Inputs CH1 and CH2 | |
| 4 Arrow up/down | 8 Outputs CH1, CH2, CH3, CH4 | |

Installation

The Bose® PANARAY® system digital controller installer's guide is included in the product packaging.

Engineers' and Architects' Specifications

The controller shall use a digital signal processing architecture running at a 44.1kHz sample rate. The frequency response shall be from 20Hz to 20kHz (+0/-0.1dB). The dynamic range shall be 95dB typical 20Hz to 20kHz.

The controller shall include a single analog XLR balanced input connector for each of the two input channels. It shall have a single analog XLR balanced output for each of its four outputs. The Maximum Input Level shall be +18dBu (balanced). The Maximum Output Level shall be +18dBu (balanced). The input impedance shall be 21k ohms for balanced operation. The throughput delay time through the controller shall be 0.63ms.

Crosstalk shall be <-95dB, 20Hz to 20kHz. The THD shall be <92dB typical at 1kHz.

A 5-pin din connector COM port shall be used for software updates.

The power supply shall be auto switching from 100 to 240 VAC, 50 to 60 Hz. Power consumption shall be <15W.

Safety and Regulatory Compliance

All versions of the Bose PANARAY system digital controller comply with EN-55103 and 55103-2, FCC part 15, Class B, CISPR 22, Class B.

IEC 6065, EN 60065, UL6500, and CSA E65.

Warranty Information

All versions of the Bose PANARAY system digital controller are covered by a 1-year, transferable limited warranty.

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