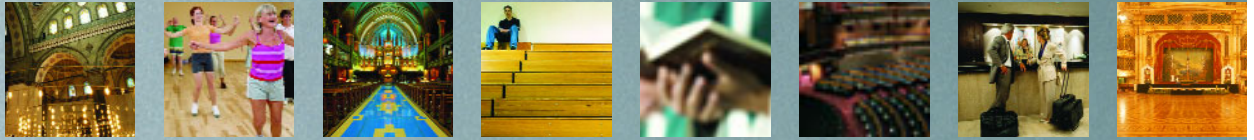


ControlSpace™ Engineered Sound Systems



BOSE®



Advanced processing and controls. Simple operation for your customers.

ControlSpace™ engineered sound systems represent a new approach to meeting the needs of sound contractors and system users. ControlSpace systems deliver a powerful, flexible, sophisticated DSP solution for nearly any installation – large or small, simple or complex. Just as importantly, a ControlSpace system offers simple, elegant controls that customers can access and operate with confidence.



ESP-88 engineered sound processor.

More power at a lower cost.

The system includes the ControlSpace ESP-88 engineered sound processor. At the heart of the ESP-88 is a single powerful DSP processor. Its innovative design delivers greater flexibility, higher reliability and lower latency than many

other processors in its class. Adding the optional DSP expansion card increases signal processing power 300%.

Sound contractors now have a comprehensive DSP solution with significant flexibility for configuring system inputs, outputs, audio quality and controls – all at a lower system cost than many other products.

Flexibility to meet many needs.

No two jobs are the same. ControlSpace systems let you configure the hardware to match the job. Many systems have asymmetric audio inputs and outputs – often requiring another “8x8” box when only one or two more inputs or outputs are needed.

Each ESP-88 provides 16 channels of audio expansion, in any combination of inputs and outputs. ControlSpace systems enable you to choose the number of inputs, outputs and audio quality (standard or enhanced).

Four audio slots allow the addition of up to 16 more analog audio channels (inputs, outputs or combination) or up to 32 digital audio channels (AES3) as inputs, outputs or a combination. You can better match hardware to the job – saving more money for your customers and providing more assurance for you.

Simple operation. Happier customers.

The ControlSpace CC-64 control center and CC-16 zone controller provide the easy operation that is key to customer satisfaction. These two controllers are the result of significant research in industrial design, ergonomics and usability. They incorporate large, easy-to-read LCDs, simple buttons or knobs, and styling that fits most any décor. Even highly complex installations can be operated with the touch of a button, so nearly anyone can feel at ease about running the system.

More ControlSpace system advantages.

Easy-to-use design software.

ControlSpace Designer™ software makes it simple to configure and operate ControlSpace systems. Easily drag/drop, copy/paste, paste-to-all and undo inputs, outputs, EQ settings, speaker settings and connections. No need to figure out or remember various programming methods.

Smart Simulation engine.

Reduce on-site programming time. The design software lets you observe, verify, iterate and document the programming of all the ControlSpace ESP-88 sound processors, control centers, zone controllers and general-purpose inputs – on screen – whether connected to the system hardware or not.

Smart Simulation also allows you to work more interactively with your customers. You can easily demonstrate system operation and let your customers see the actual screen text and display of all controls – before they are installed.

Scheduling.

A built-in, real-time clock allows automatic system changes for regularly scheduled events.

Flexible audio path.

Drag, drop and wire in any order or pattern to suit the installation.

On-site design storage.

The system's Flash memory stores the complete design, including user control programming, for easy retrieval – even without the original design file.

Three-color front panel LED input/output meters.

Individual LEDs let you easily monitor audio signal level for each input and output. A labeling area next to each LED helps you clearly identify audio signals to aid in troubleshooting.

10Base-T Ethernet control.

The ControlSpace ESP-88 and CC-64 use standard Ethernet for simplified installation and wiring. ControlSpace Designer software also uses standard Ethernet protocols, allowing for high-speed and industry-standard PC control and configuration.



CC-16 zone controller and CC-64 control center.

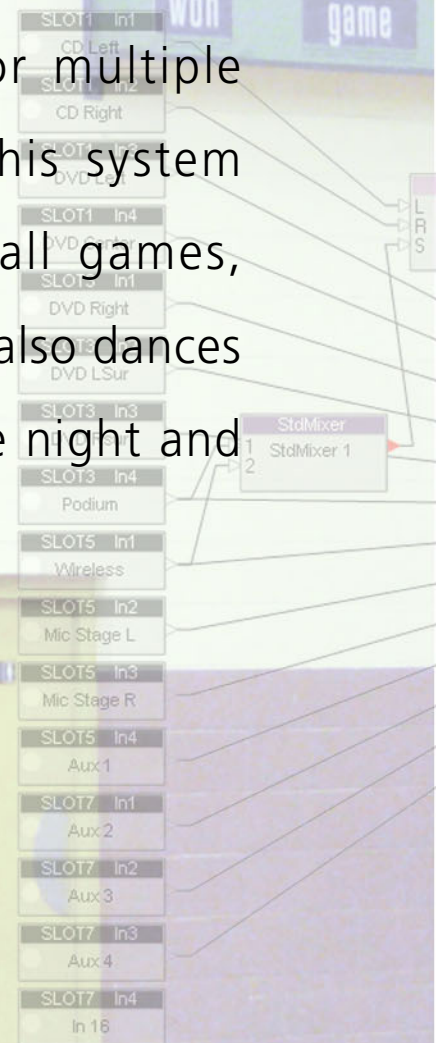




The power to connect. The simplicity to control.

Multi-purpose auditorium or gymnasium

To help amortize the building cost, many gymnasiums and cafeterias are designed for multiple functions. Audio systems for these facilities must also be designed for multiple functions while still being easy to use. In this system example, the gymnasium is host to basketball games, general assemblies and band practice. There are also dances and graduation ceremonies, Bingo night, movie night and school plays.



System Profile

Inputs:

DVD (5)
CD (2)
Podium mic (1)
Wireless mic (1)
Patch bay (4)

Outputs:

Left, center, right (3)
LT 9403 loudspeakers
Left/right rear (2)
LT 9403 loudspeakers
Left/right fill (2)
LT 9403 loudspeakers
Record (2)
Backstage (1)
FreeSpace® M16
loudspeaker
Outside (2)
402®-III loudspeakers

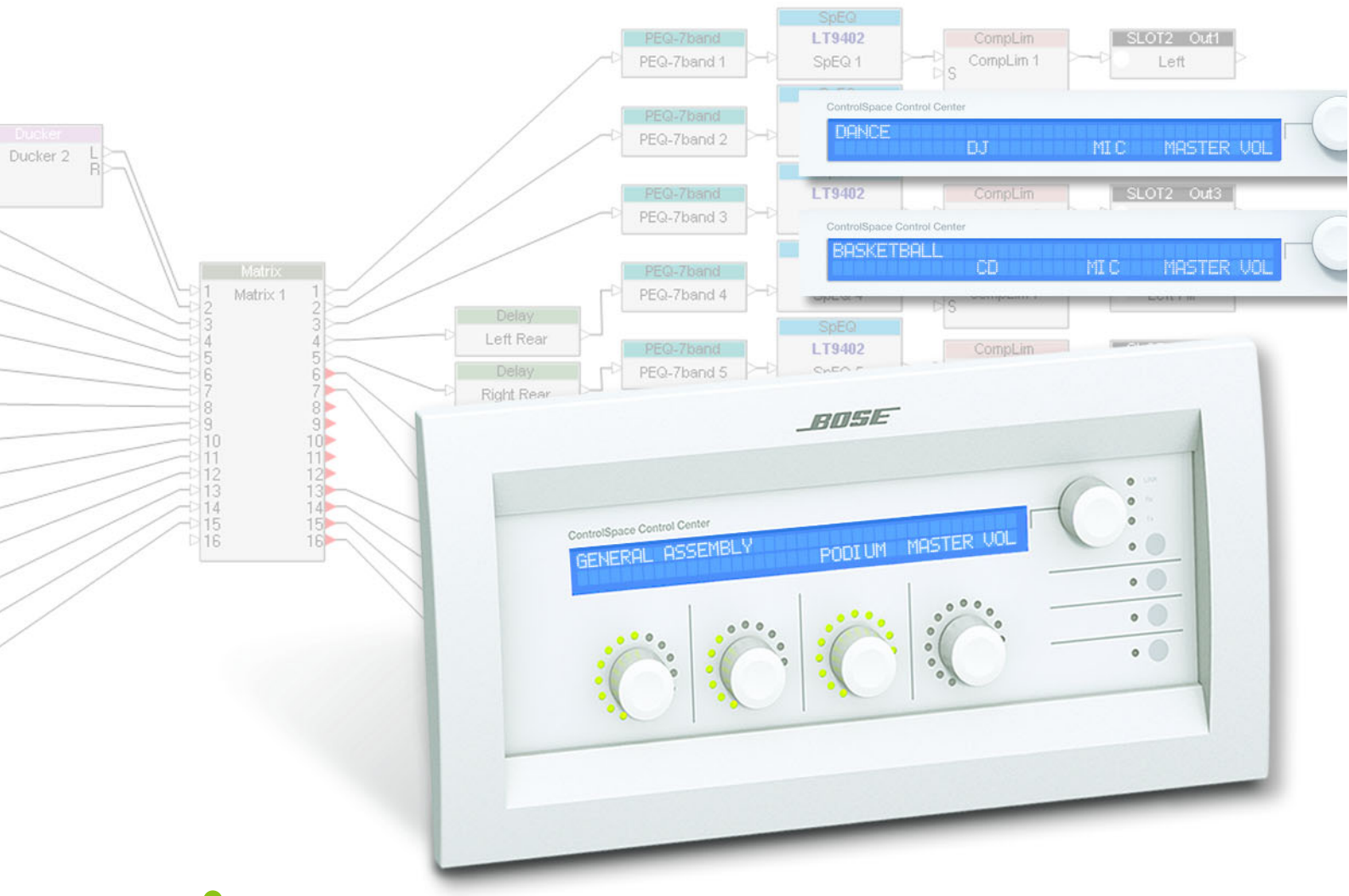


ControlSpace™ Engineered Sound Systems

Using the ControlSpace™ ESP-88 engineered sound processor and CC-64 control center, the processing and control needs necessary for these events can easily be met. Parameter sets – “snapshots” of the state of some processing objects – can be created to change the audio

system to select, route and modify the audio signals to accommodate the different input, output and processing used in each performance scenario. These potentially complex scenarios can then be named and dragged into the CC-64.

The end user then needs only to select the event type on the CC-64 control center. All source selection and system control functions happen automatically.



Operating Modes:

Movie night

Speakers: surround
(LCR, RR, LR)
Sources: DVD,
wireless mic

Basketball

Speakers: L/R Rear, L/R Fill
Sources: CD, wireless mic,
patch bay (extra mic)

School plays

Speakers: mono (LCR,
rears on delay, fills on
different delay)
Sources: (2) drop-down
stage mics

General assembly

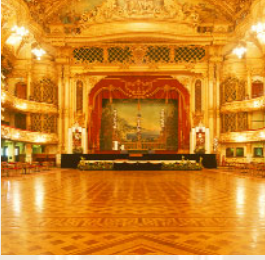
Speakers: mono/
center only
Source: podium mic

Bingo

Speakers: LCR
Source: wireless mic

Dance night (DJ)

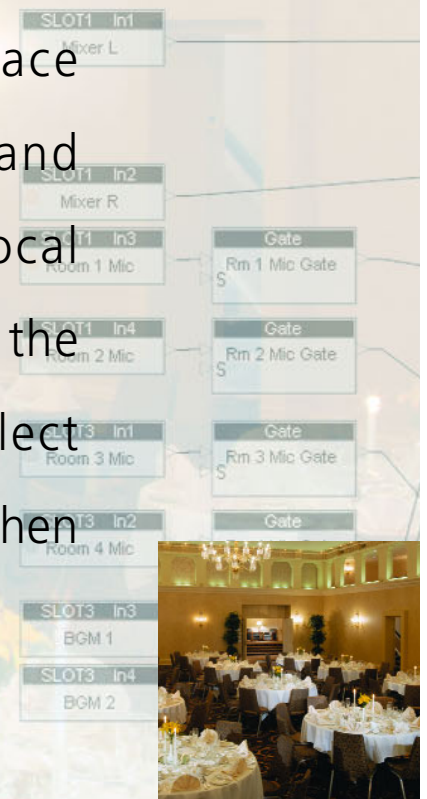
Speakers: stereo + fill
(RR, LR, L/fill, R/fill)
Sources: patch bay – L/R
out of DJ's portable mixer



The power to connect. The simplicity to control.

Hotel ballroom

Hotels often have different end users with different needs. Hotel staff requires access to room configuration, source selection and level controls. Hotel guests often need some type of limited access to the audio system in their meeting room. Each meeting space typically needs independent volume control and source selection for background music or local sources. In addition, the banquet manager needs the flexibility to combine the spaces as needed, select appropriate sources, lock out unused controllers (when rooms are combined) and other tasks.



System Profile

Inputs:

Mixer (2)
Local mics (4)
Background music (2)

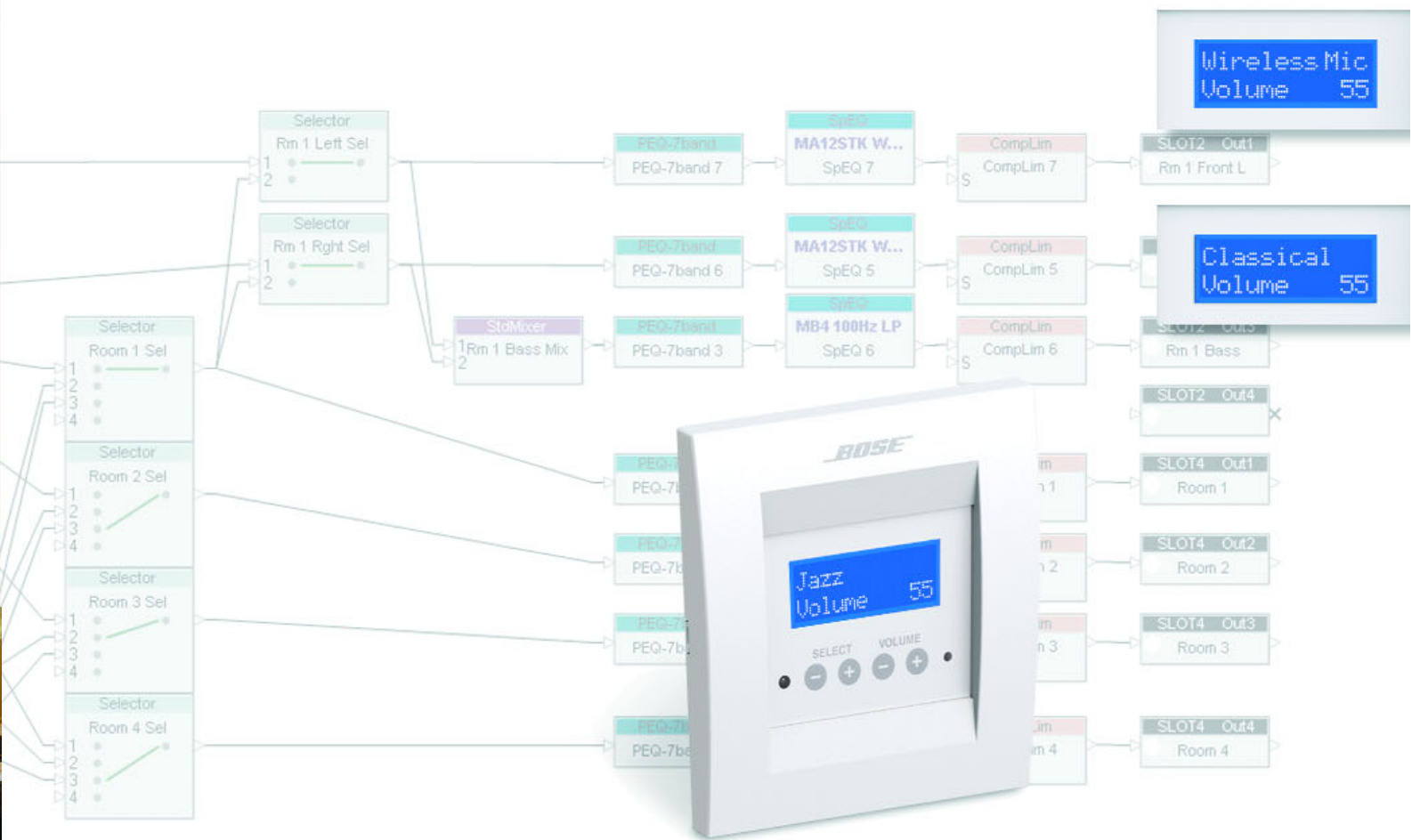
Outputs:

Room 1 LR (2)
MA12 loudspeakers
Room 1 Bass (1)
MB4 loudspeaker
Room 1-4 (4)
M16 loudspeakers



The ControlSpace™ ESP-88 sound processor lets you easily configure the audio system to meet the source and volume control requirements for each room – along with the master override. Using the room combining function, the system can adjust system performance to match the configuration of the air walls.

ControlSpace CC-16 zone controllers in each function room allow guests to easily select sources and adjust volume. A ControlSpace CC-64 control center installed in the office enables the banquet manager to easily configure and control each function room from a single location.



Operating Modes:

Large wedding

Speakers: room 1 L/R +
bass (all walls open)
Sources: mixer L/R

4-Room

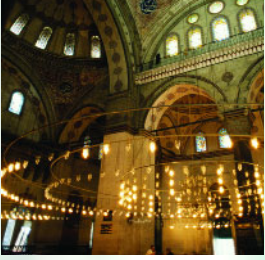
Speakers: room 1-4
Sources: individual
room select

2-Room

Speakers: rooms 1/2
combined, rooms 3/4
combined
Sources: individual room
select, 2nd controller per
room locked

2-Room alternate

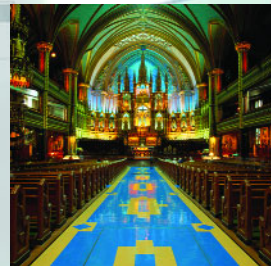
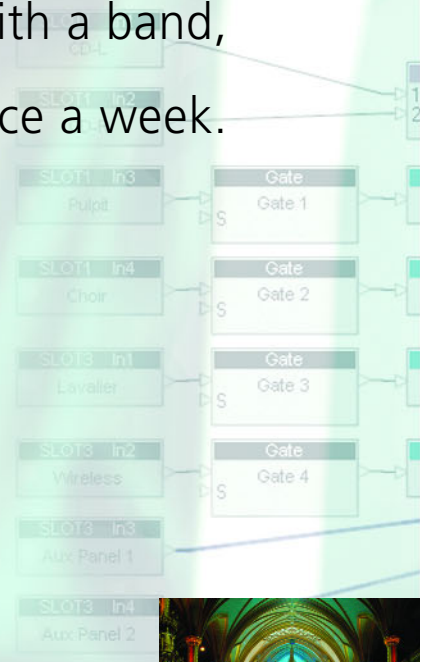
Speakers: room 1 L/R +
bass (walls 1 and 2 open),
room 4 enabled
Sources: mixer L/R, inde-
pendent select in room 4



The power to connect. The simplicity to control.

House of worship

Many houses of worship have several rooms that are used for multiple purposes. Some of the events in these rooms occur regularly on a daily, weekly or monthly schedule. For example, there may be a weekly worship service with a band, a voice-only daily worship and a choir practice twice a week.



System Profile

Inputs:

CD (2)
Pulpit mic (1)
Choir mic (1)
Lavalier mic (1)
Wireless mic (1)
Patch panel (2)

Outputs:

L/R (1)
Stacked MA12
loudspeakers
Front bass array (2)
MB4 loudspeakers
L/R fill (1)
Stacked MA12
loudspeakers
Fill bass array (2)
MB4 loudspeakers
Choir monitor (1)
Entry (1)



The ControlSpace™ ESP-88 sound processor lets you easily configure the rooms for different events. It also lets you schedule each configuration for a specific time and day of the week.

End users never have to touch the system for pre-scheduled events. For the other events that do not happen on a weekly schedule, the ControlSpace CC-64 control center provides easy access to any number of pre-programmed configurations, all with easy-to-read user-definable "names." All sources, EQ profiles and settings changes happen automatically.

GPI	GPO	SerialInput	SerialOutput
GPI 1	GPO 1	SerialInput 1	SerialOutput 1



Choir Practice

Only Once ☐ Daily ☐ Weekly ☒

Week Day: Sun. ☐ Mon. ☒ Tue. ☒ Wed. ☒ Thu. ☒ Fri. ☒ Sat. ☐

Time: 7 : 45 PM

Daily Worship

Only Once ☐ Daily ☐ Weekly ☒

Week Day: Sun. ☐ Mon. ☒ Tue. ☒ Wed. ☒ Thu. ☒ Fri. ☒ Sat. ☐

Time: 10 : 00 AM

Sunday Worship

Only Once ☐ Daily ☐ Weekly ☒

Week Day: Sun. ☒ Mon. ☐ Tue. ☐ Wed. ☐ Thu. ☐ Fri. ☐ Sat. ☐

Time: 9 : 45 AM

Date: Thursday, April 07, 2005

Operating Modes:

Sunday Worship

Speakers: all active
Sources: pulpit, lavalier, choir and wireless mics

Choir Practice

Speakers: all active
Sources: choir and wireless mics

Daily Worship

Speakers: front L/R only
Source: pulpit mic





Product Details

ControlSpace™ ESP-88 engineered sound processor

- Supports these audio-processing algorithms: compressor/limiter, crossover, delay, filters, gain/mute, graphic EQ, matrix mixer, meters, mixer, noise/tone generators, noise gate, parametric EQ, router.
- Flexible and configurable: 32 analog audio channels can be used to meet project specs. Many different I/O configurations can be created from a 4 x 28 to a 28 x 4.
- Includes RS485 serial interface for connecting to ControlSpace CC-16 zone controllers and an Ethernet port for connecting ControlSpace CC-64 control centers.
- Tricolor LEDs and flip-down front panel provide clearer system status information. This can make it easier to monitor system performance and diagnose and troubleshoot problems.
- Includes ControlSpace Designer software.

ControlSpace Designer™ software

- On-screen buttons/knobs allow designers to build, operate and adjust the controls while working with a customer to create intuitive user controls.
- Available screen views include Project and ESP-88 sound processor view.
- Includes EQs and crossovers for all Bose® professional loudspeakers.

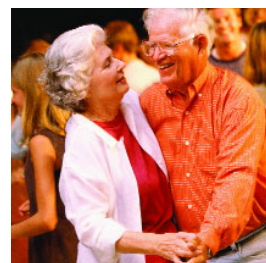
- Presets, parameter sets and groups provide the ability to program and recall systems changes ranging from an individual parameter to a complete system setup.

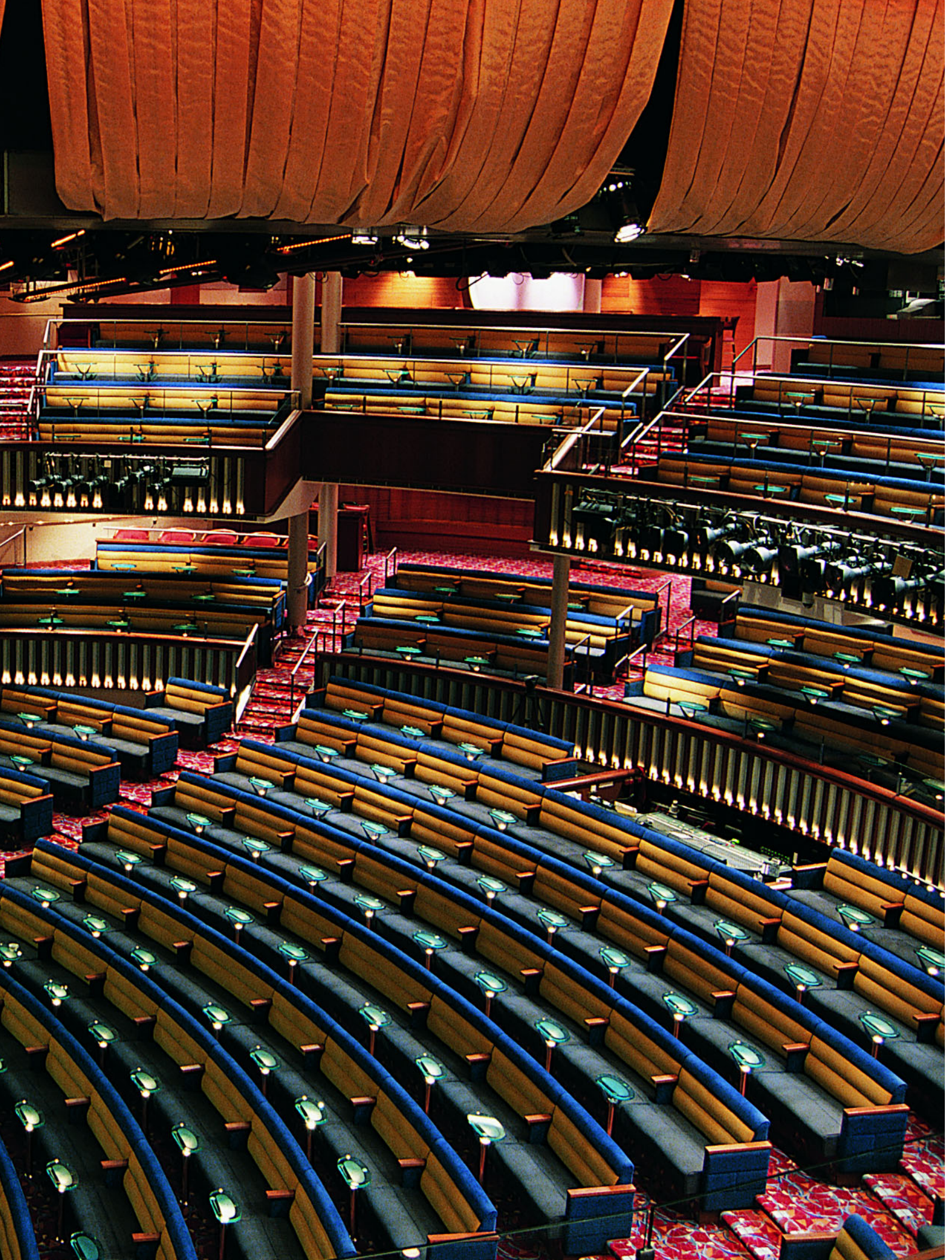
ControlSpace CC-64 control center

- A 40-character by 2-line backlit blue liquid crystal display (LCD) for displaying user-definable names of controlled parameters.
- Four rotary knobs for controlling gain or source/scene selections. Circular LED arrays indicate current audio levels.
- Custom mode allows for system adjustments on-site without a PC.
- Four “bank” buttons that can quickly change the four volume controls to another set of controls. Allows up to 16 volume controls to be quickly accessed and controlled.
- Tactile controls facilitate many “small mixer” applications.
- Up to 16 ControlSpace CC-64 control centers can be used in a ControlSpace system.
- Can be powered using unused wires in the Cat-5 cabling. Mounts in a 5-gang electrical wall box.

ControlSpace CC-16 zone controller

- A 122- x 32-pixel backlit blue LCD for displaying volume level and selected scene or source.
- Volume up/down and Scene/Source up/down buttons.
- Up to 15 CC-16 zone controllers can be connected to each ESP-88 sound processor for individual zone control.
- Features Cat-5 wiring, power and control in a single Cat-5 cable. Universal mounting plate allows mounting in most 2-gang wall boxes.





Product Specifications

ControlSpace™ ESP-88 Engineered Sound Processor

Inputs:

8 analog, electronically balanced, microphone/line-level (software selectable)

Nominal input level:

+4dBu /-10dBu /-20dBu /-38dBu /
-44dBu /-50dBu /-60dBu

Input impedance:

2.4K ohm @ 1kHz (with or without phantom power active)

Maximum input level:

+24dBu at +4dBu nominal input level

Equivalent input noise:

-115dB at -60dBu nominal input level
(A-weighted/20Hz-20kHz)

Dynamic range:

104dB (typical) at +4dBu nominal input level (A-weighted/20Hz-20kHz)
(111dB typical with optional Enhanced Dynamic Range audio card)

Phantom power:

+15V nominal, selectable per input

Outputs:

8 analog, electronically balanced

Nominal output level:

+4dBu

Output impedance:

200 ohm (600 ohm load expected)

Frequency response:

20Hz to 20kHz (+0.5dB/-2.0dB) at +4dBu nominal output level

Maximum output level:

+24dBu

SNR:

80dB at +4dBu nominal output level
(A-weighted/20Hz-20kHz)

Residual output noise:

-110dBu at output muted
(A-weighted/20Hz-20kHz)

THD+N:

0.01% at +4dBu nominal input and output level (A-weighted/20Hz-20kHz)

Cross talk:

< -90dB at +4dBu nominal input and output level 1kHz

Signal processing:

32-bit floating-point digital signal processor(s), 200MHz

Maximum calculation:

1600 MIPS/1200MFLOPS (6400MIPS/
4800MFLOPS with DSP option card)

Delay memory:

16MByte/72s
(64MByte/288s with optional DSP expansion card)

Audio latency:

610μs analog in to analog out
(860μs with DSP option card)

Sampling rate:

48kHz

A/D and D/A converters:

24-bit

Control inputs:

8 analog or digital inputs, 5.1k ohm internal pull-up resistor to 5V

Control outputs:

8 digital outputs, 10k ohm internal pull-up resistor to 5V
Output voltage: 0 to 5V open collector
Output current: 0.5mA(Source)/
10mA max (sink)

Communication ports:

10Base-T (RJ-45), RS-232C (D-Sub 9-pin, male, DTE), RS-485 (Phoenix/Euro block 2-piece, 3-pin)

Audio indicators:

Signal (Present/Normal/Clip) for each audio input and output

Expansion slots:

8 Audio (4 occupied), 2 control
(1 occupied), 1 DSP

Audio channels:

32 maximum analog or 64 maximum digital (AES-3)

Power consumption:

< 35VA typical. <70VA max at <35°C ambient

Dimensions:

3.5"H x 18.9"W x 13"D
88mm x 482mm x 332mm

Weight:

11.6 lbs. (5.3 kg)

For more information:
pro.bose.com/sales

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Better sound through research[®]