ControlSpace™ ESP-88 Engineered Sound Systems

What are ControlSpace™ ESP-88 engineered sound systems?

ControlSpace™ ESP-88 engineered sound systems are signal processing and control solutions for applications such as churches, large retail stores, large restaurants and similar venues. Each system consists of at least one ControlSpace ESP-88 engineered sound processor which is programmed using the ControlSpace Designer software (included in the box). Typically, one or more CC-64 control centers or CC-16 zone controllers are also part of the system, providing end users with easy access and control of their system. The ControlSpace ESP-88 processor expansion cards can increase DSP processing power, dynamic range and can customize the number of inputs and outputs.

What are the important features of ControlSpace ESP-88 systems?

Simple yet powerful end-user controls

The ControlSpace CC-16 zone controllers and CC-64 control centers provide simple, straightforward operation of ControlSpace ESP-88 systems. Although easy to use, they are capable of controlling all the complexity of the system and hiding this complexity from the user. Jargon and unintelligible audio parameters are replaced with descriptive modes of operation like "Sunday Sermon" and "Choir Practice".

Flexible, configurable, expandable signal processing

The ESP-88 processor includes an open frame architecture that allows it to be configured to match the needs of the project. Analog or digital input and output channels can be added up to a maximum of 32 analog or 64 digital channels per processor. General purpose control input and output channels can be added to a maximum of 16 inputs and 16 outputs. And, a DSP expansion card can be added to increase processing power fourfold. Enhanced Dynamic Range cards can also be used when the best audio quality is required.

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Simple to use software with Smart Simulation

The ControlSpace™ Designer software included with the ESP-88 uses industry standard drag-and-drop programming methods familiar to most system designers. The Smart Simulation, featured throughout the program, allows you to see the results of all programming instantly, saving time when you get to the job site. For example, you can use the Smart Simulators for the user controls to review the screens and the resulting actions with your customers.

What are typical applications for ControlSpace™ ESP-88 systems?

ControlSpace ESP-88 systems are well-suited for typical engineered sound where medium to high complexity signal processing is required and simplified user control is a benefit. These include hotel ballrooms with air walls, school facilities, houses of worship, conference centers, auditoria, arenas, gymnasiums, large retail, hospitality and others.

What is included with a ControlSpace ESP-88 engineered sound processor?

The ControlSpace ESP-88 engineered sound processor ships with ControlSpace Designer software (CD-ROM), installation guide, cross-over Cat-5 cable (for connecting directly to a PC) and line cord.

How do the ControlSpace ESP-88 systems differ from other signal processing and control systems on the market?

The ControlSpace ESP-88 stands out because it simplifies and enhances the end-user's experience with the audio system.

We created our user controls (the CC-16 zone controller and the CC-64 control center) to better meet the needs of the end customer. The way you build scenes and parameters within the software and program the user controls is flexible. The way you name operating modes instills confidence with the customer and allows them to access all the benefits of the complete system.

The ESP-88 also offers a flexible signal path, with expansion slots, at a price lower than other "8x8" fixed architecture boxes.

Lastly, we have simplified the programming of the control portion of the project and included Smart Simulation throughout the program – to allow you to verify the results of all programming while off-line.

What audio processing algorithms are included in the ESP-88 software toolbox?

Supported algorithms include: Crossovers, graphic and parametric EQ, tone control EQ, Bose® speaker EQ, Bose speaker EQ plus crossovers, Bose speaker EQ plus bass array delay modules, routers, gain, delays, standard mixers, matrix mixers, room combining module, signal generators, meters, compressor/limiters, duckers, automatic gain controls, noise gates, and source selectors.

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What expansion cards are available for the ControlSpace™ ESP-88 engineered sound processor?

- **ControlSpace™ 4x4 mic/line input card**
  Four input channels (software selectable between mic and line level) and four line-level output channels. 104dB DNR (typical) suitable for most applications.
- **ControlSpace GPIO card**
  Eight control/logic inputs and eight control/logic outputs. Inputs have full A/D converters allowing potentiometers to be attached for simple volume control.
- **ControlSpace DSP expansion card**
  Features three 200MHz TI 320C6713 DSP ICs to increase processing power fourfold.
- **ControlSpace EDR line-input & EDR line output cards**
  Four input or four output analog audio channels. 111dB dynamic range (typical) for projects where the highest level of system performance is a requirement.
- **ControlSpace AES3 input & AES3 output cards**
  Eight input or eight output digital audio channels.

The ESP-88 can be configured for different input and output requirements. The standard ESP-88 ships with eight mic/line audio inputs, eight audio outputs, eight general purpose control inputs, and eight general purpose control outputs.

What are the limitations as to how many of each expansion card I can add or use in an ESP- 88?

There are physical limitations for adding expansion cards. The maximum number of GPIO expansion cards that can be added to two.

For the audio cards, almost any configuration is possible except for ones that would exceed the ESP-88's power supply capacity. For example, the EDR input card uses the most power and a 4-channel EDR output card with seven 4-channel EDR inputs cards is not possible.
A spreadsheet which calculates all possible combinations is available on our web site.

What are the differences between the 4x4 mic/line card and the EDR cards?

- 4x4 mic/line card has four inputs plus four outputs. EDR input has only four inputs and the EDR output has only four outputs.
- 4x4 mic/line card has mic/line level inputs (software selectable), EDR input card is line level only.
- 4x4 mic/line card is two slots wide, EDR cards are one slot wide.
- Dynamic range of 4x4 is 104dB typical and for EDR cards it is 111dB typical.
- 4x4 mic/line card has seven gain “pads” (14dB, 24 dB, 42 dB, 48 dB, 54 dB, and 64dB). The EDR input card has none.

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Do you always need to have a CC-64 in the system or can you use a CC-16 instead?

The ControlSpace™ CC-16 zone controller is designed to control a single audio zone. The ControlSpace CC-64 control center is a comprehensive, system-wide control center that operates systems of varying complexity by switching audio sources, selecting scenes and changing complex system configurations.

The CC-64 is not required in every system. The number of user controls is completely flexible and the only restriction is the maximum number per system. Sixteen is the maximum number of CC-64's per ESP-88 system. Fifteen is the maximum number of CC-16s per system.

What is ControlSpace™ Designer software?

The Bose® ControlSpace Designer software is a graphical user interface tool for designing and configuring a ControlSpace ESP-88 system. Designer software uses a familiar CAD layout where devices (signal processing, user controls, amplifiers, etc.) are dragged onto a Project View. For each ESP-88 in the system, an ESP View window is created. Within the ESP View, CAD layout is used to drag, drop and wire audio modules to create any signal path and audio processing function necessary.

Groups, presets and parameter sets can be created to control multiple signal processing factors. These high-level constructs and other discrete signal processing controls are dragged onto user controls or timers for implementing the controls of the installation. Once a control or group or parameter set is dragged onto a user control or general purpose input, it can be immediately “used” (pressing the on-screen button) and the operation of the user control can be verified due to Designer's Smart Simulation feature. Since all this can be done off-line, hours of user control debugging can be saved by verifying the interactions before ever going to the job site or connecting the hardware.

What are the key features of the ControlSpace™ Designer software?

- Smart Simulation enables designers to observe, verify, iterate and document the programming of all the ControlSpace™ ESP-88 sound processors, control centers, zone con trollers and general purpose inputs – on screen – whether connected to the system hard ware 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.
- Flexible signal path, drag-and-drop signal processing design allows designers to create the audio configuration of their choice.

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- Copy/Paste blocks (with settings) and wires; Copy/Paste parameters (to one or more) blocks; Drag-and-drop control programming.
- Only one cursor mode, no need to right click and change between various cursor modes.
- Visual cues let designers clearly see muting, inverted signals and other information to easily verify and troubleshoot system functions – before arriving at the site.
- Parameter sets to make selective parameter changes and presets to make global changes are supported.
- Uses standard Ethernet and protocols allowing for high-speed and industry-standard PC control and configuration.
- Includes EQs and crossovers for all Bose® professional speakers

What kind of computer do I need to run ControlSpace designer software?

Minimum requirements:

Microsoft® Windows® 2000 or XP

850MHz Pentium® III (1.50 GHz Pentium® M or Pentium® 4 recommended)

512MB RAM (1GB recommended)

100MB available hard-disk space

15.0" XGA (1024 x 768) display (1280 x 1024 recommended)

10Mbit Ethernet

Can I use a modem or internet to monitor or control the ControlSpace™ ESP-88 engineered sound processor?

You can not use a modem as the system does not support a telephone connection. The system uses a limited number of fixed IP addresses which are not generally suitable for remote access over a WAN or Internet.

Can ESP-88 systems integrate with AMX/Crestron controls?

In a limited fashion. The ESP-88 includes a serial port and a GPIO port designed for limited interfacing to other equipment. These can be used for limited control of, or control from, an AMX or Crestron system.

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Is the ControlSpace ESP-88 engineered sound processor used for voice over-ride for emergency applications?

No. ControlSpace ESP-88components are not approved for life-safety applications. Ducking signal processing modules are available and they can be used for paging applications, however, they generally require some non-audio user input (such as a push-to-talk control signal) in order to override currently selected sources.

Can I email program files of the ControlSpace Designer software?

Yes. When zipped, the files are very small.

Do the CC-16 or CC-64 controllers track changes in the room combing module?

No.

What is the warranty of the ControlSpace ESP-88 engineered sound processor?

Five-year transferable warranty.