SymNet Applications Series

Public Address

Transit Facilities • Shopping Malls • Performing Arts Centers

SymNet™ Network Audio Solutions
Engineered by Symetrix

www.SymetrixAudio.com
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Introduction

We've all been there at least once – running frantically down a corridor towards what we think is our gate when that distorted and completely unintelligible voice comes over the loudspeaker to make an announcement that only leaves you wondering if you just missed an important gate change notice. Unintelligible paging is all too common with many Public Address systems. More often than not, system designers are at the mercy of room acoustics. However; varying crowd noise and particularly in the case of transit facilities, the coming and going of machinery creates some serious acoustical obstacles.

With the power and flexibility provided by a SymNet based public address system, acoustical obstacles can be tamed and intelligibility can be a part of every page. SymNet has many specialized processing modules to choose from and you can select only what is necessary for your particular obstacles. Dynamics and filtering on microphone inputs ensure the most timid and boisterous are heard alike. Similarly, dynamics and filtering optimized for Loudspeaker Management ensure that acoustic limitations can be dealt with accordingly. Control Logic and Priority Input Selectors make even the most complex paging tasks a breeze. SymNet’s proven reliability, service and support, ensure that your system will be at the ready for years to come.

Overview

Public Address systems are often used in conjunction with, or to augment, other systems such as Audio Distribution and Room Combining systems. Many theaters, restaurants, hotels, and performing arts centers may require only minor paging capability in addition to their regular audio needs; while systems used in transit facilities may be primarily Public Address systems augmented by some audio distribution. For example, large transit facilities may be made up of multiple Public Address systems, working together or independent of each other.

Public Address systems often center around paging stations or consoles where users push buttons to select which zone, or zones, receive the page. A small paging station may only contain a few zone select buttons while larger stations may provide paging throughout an entire facility.

These zone select buttons trigger the correct audio routing in SymNet that sends audio to the appropriate area. A push-to-talk button turns on the microphone when the page is ready to be delivered. Normally, background audio (such as music) will be playing through the sound system when a page is executed. A process called Ducking reduces the volume of the background music (BGM) source during the page. A Priority assignment ensures the most important page (as set by its priority) will override less important signals (those with a lower priority).
SymNet Technologies for Public Address

Many of SymNet’s technologies are leveraged in Public Address applications, ranging from microphone processing to loudspeaker management, all working towards the desired goal: clarity.

One of the most troublesome obstacles encountered when designing a public address system is the paging logic. SymNet has a wealth of Control Logic modules from which custom scenarios can be accommodated. Additionally, SymNet provides an elegant approach to priority paging with its Priority Input Selector modules. These intelligent modules take all of the guesswork out of determining which input is loudest, which input came on first, and above all, which has the highest priority. What formerly required complex analog circuitry or a string of DSP modules, is now embodied within one easy to integrate SymNet DSP module.

Priority Input Selector Modules

This module chooses exactly one of its many inputs to route to a single output. The choice of the input is controlled dynamically by the level and priority of each input. It can be thought of as a smart input selector that routes the active input with the highest priority to the output. It is used primarily in public address applications, where higher-priority pages can override lower-priority pages and background music.

In addition to some of the standard controls such as a Threshold, which determines when a signal should be routed, and Hold Time, which prevents an input from being de-selected just because it dips below the threshold for a brief period, the real attention to detail lies under the surface. Smart features such as a dynamic cross-fade is used to ensure a smooth transition. When a higher priority input overrides a lower priority input, a fast cross-fade is used. However, when a higher priority input goes off and a lower priority input takes over, a slower cross-fade is used. This slower release cross-fade provides a smooth transition if background music is used as a low priority source.

Two control signal outputs are provided to indicate the current operation of the module and can be used to further integrate the module into other aspects of the system.
SymNet Design for Public Address

We are going to explore a Public Address design representative of a typical train station.

In this design, there are four microphone inputs via the ARC-MIC wall panels and four additional BGM (background music) sources that connect to a SymNet Express 8x8 Cobra. This design routes the BGM sources to each zone. Furthermore, in this design, a BGM source can be selected for each zone and paging will be routed into each zone as required, ducking the BGM when active.

ARC-MIC and ARC-XLR Adaptive Remote Control Wall Panels connect to an ARC-PS which connects to the Express hardware via RS-485. These wall panels control the BGM selection for a given zone and select the zones or zone groups for paging. Each wall panel also has a push to talk button with LED indicator.

This System Diagram depicts the overall layout.
Public Address Design

Using SymNet Designer, open the first example Site File. Then, double-click on the Express 8x8 Cobra in the Configuration Screen to view the Design Screen.

Audio enters the Analog Inputs feeding the initial gain stage. Proper gain staging is a must for a well-behaved system and signal levels should average around -20 dBFS on the meters.

- **Input Super-module**: This module provides digital trim and metering of the signal.
- **Main Super-module**: This module provides input and output metering and its Control Screen serves as the primary point of navigation for the other Control Screens.
- **Output Super-module**: This module provides an output gain stage, and metering.
Paging Super-module:

The Paging Super-module contains the processes for paging logic and works in conjunction with the Zone Routing Super-module which ducks the BGM for a given zone.

The Paging Super-module takes audio from each of the four Paging Stations and routes it to the eight zones. It contains the push to talk button and zone select button logic that is tied to the physical buttons on the Page Station. There are priority input selectors and paging volume controls for each station in each zone to fine tune the page audio within each zone.

In the design shown, the buttons on each Paging Station are represented by one of the four-button Control modules, labeled Station x Select. The buttons in these Control modules are linked to the Paging Station buttons by Controller Numbers assigned within SymNet Designer. Therefore, there is no graphical link (such as a wire) between them. The same is also true for other Control modules such as the Station 1 and 2 Priority Input Selectors. Consult SymNet Designer’s extensive Help file for more information on Controller Numbers.
Inside the Zone Routing Super-module:
The Zone Routing Super-module works with the Paging Super-module. It takes the paging signal and routes it through a ducker which reduces the volume of the BGM audio during a page. Page audio is mixed with the background audio to produce a Zone Out. The Zone Out is then sent to one or more physical SymNet outputs.

Public Address Control Screens
Main Control Screen:
There is a “Main” button on the Configuration and Design Screens linking to the Control Screen section. The Main Control Screen displays the I/O for the system, and acts as the primary navigation page to view the other Control Screens.
**SymNet™ Application: Public Address**

**Input Control Screen:**
The Input Control Screen sets the initial gain for the audio signals. Phantom Power can also be turned on or off. The gain buttons should be used to “rough in” the input gain as these buttons are an analog gain adjustment. Adjusting the input gain in the analog domain helps maximize the signal to noise ratio and A/D converter resolution. The faders adjust the input gain in the digital domain and can be used to “fine tune” the input gain. At the input stage, audio signals should average around -20 dBFS. The input gain should never be set so high that the system peaks or clips.

**Paging Setup Control Screen:**
The Paging Setup Control Screen allows paging into any zone from any paging station. It’s like having four paging stations inside SymNet Designer. Zones are selected while Push-to-Talk buttons execute the page. There are buttons that link to the Priority Input Selector modules that set the priority level for each station in each zone. Next to the Priority buttons, there are buttons that link to the Volume modules which allow each station to have its own zone volume. Thus, one page station can be louder in a given zone than another station. If Emergency paging is integrated into the system, its priority can be set higher and its volume louder thus making the emergency page louder than all other pages in the zone.
Zone Routing Control Screen for Zone 1:
The mix of Paging audio and the BGM audio for a given zone is mixed in the Zone Routing Control Screen for each zone. BGM selection also provides ambience when paging is not active.

Output Control Screen:
The Output Control Screen contains the Mutes, Metering and the Output Level selection (+4 dBu or -10 dBV) for each of the eight analog outputs. There are EQ buttons that open the Loudspeaker Manager modules. These modules have the Crossover filters, EQ, and Delay settings for each output channel. There is an ON button that engages the EQ for each channel. The Link button will link the fader and mute parameters.
**Express Cobra**

SymNet Express Cobra is a family of 19” rack-mountable digital signal processors (DSP) that are setup and controlled by SymNet Designer software. They are ideal for audio applications such as churches, conference rooms, courtrooms, night clubs and many others. ARC Wall panels easily integrate with Express hardware and provide simple user control of the system.

There are four analog I/O options available for the Express line: 12x4, 4x12, 8x8, and 4x4. Express devices also employ the industry-standard CobraNet® technology to share audio between devices supporting 16 inputs and 16 outputs of CobraNet audio over Ethernet in addition to the analog I/O. Express devices are intended for single device installations as well as installations with modest expansion requirements.

### Specifications

<table>
<thead>
<tr>
<th>GENERAL SPECIFICATIONS</th>
<th>AUDIO SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processors</td>
<td>2 x Analog Devices SHARC 21161N @ 100 MHz SIMD</td>
</tr>
<tr>
<td>Raw processing capacity</td>
<td>200 MIPS, 800 MFLOPS sustained</td>
</tr>
<tr>
<td>Analog control inputs</td>
<td>0-5 VDC</td>
</tr>
<tr>
<td>Recommended external control potentiometer</td>
<td>10k Ohm, linear</td>
</tr>
<tr>
<td>RS-232 host serial I/O</td>
<td>115.2 or 57.6 kbaud, 8 data bits, 1 stop bit, no parity, no flow control wired straight-through, only pins 2, 3, and 5 required</td>
</tr>
<tr>
<td>RS-232 accessory serial I/O</td>
<td>38.4 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control wired straight-through, only pins 2, 3, and 5 required</td>
</tr>
<tr>
<td>RS-485 serial I/O</td>
<td>38.4 kbaud (default) 8 data bits, 1 stop bit, no parity, no flow control wired in parallel with STP cable.</td>
</tr>
<tr>
<td>Ethernet/CobraNet Cable</td>
<td>Standard CAT5, maximum device to device length = 100 meters</td>
</tr>
<tr>
<td>ARC Cable</td>
<td>Standard CAT5, distance dependent upon load.</td>
</tr>
<tr>
<td>Maximum devices per SymLink Ring</td>
<td>1</td>
</tr>
<tr>
<td>Maximum SymLink Rings</td>
<td>31</td>
</tr>
<tr>
<td>Maximum stored presets</td>
<td>1000</td>
</tr>
<tr>
<td>Converter Type</td>
<td>24-bit Sigma Delta</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>48 kHz, +/- 100 ppm</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20-20 kHz, +/- 0.5 dB</td>
</tr>
<tr>
<td>A/D dynamic range</td>
<td>&gt; 110 dB, A-weighted</td>
</tr>
<tr>
<td>D/A dynamic range</td>
<td>&gt; 110 dB, A-weighted</td>
</tr>
<tr>
<td>Total THD+ Noise</td>
<td>&lt; 0.005% @ 1 kHz, -1 dBFS</td>
</tr>
<tr>
<td>Delay memory</td>
<td>43 mono seconds</td>
</tr>
<tr>
<td>Input impedance</td>
<td>6.67k Ohms, balanced</td>
</tr>
<tr>
<td>Output impedance</td>
<td>204 Ohms, balanced</td>
</tr>
<tr>
<td>Maximum input level</td>
<td>+29 dBu with 6 dB pad, +23 dBu w/o pad</td>
</tr>
<tr>
<td>Maximum output level</td>
<td>+24 dBu, 10k Ohms; +21 dBu, 600 Ohms</td>
</tr>
<tr>
<td>Mic preamp EIN</td>
<td>-129 dBu typical, 22-22 kHz, A-weighted</td>
</tr>
<tr>
<td>Phantom power (per input)</td>
<td>+48 VDC, 10 mA</td>
</tr>
<tr>
<td>Input CMR</td>
<td>&gt; 70 dB @ 60 Hz</td>
</tr>
<tr>
<td>Channel separation</td>
<td>&gt; 100 dB, in through out @ 1 kHz</td>
</tr>
</tbody>
</table>
1. Main Power: Accepts power from detachable IEC power cable (100-240 VAC, 50-60 Hz, 60 Watts max).
2. Aux Power: Accepts power from Symetrix model PS-7 or user-supplied auxiliary power connection (24 VDC, 2.5 Amps, 60 Watts max).
3. ARC Audio: Splits a single analog line level audio signal off of the ARC port. Can be wired to a line level analog output or output jack for remote audio over CAT5.
4. ARC: Distributes power and RS-485 data to one or more ARC devices.
5. RS-485: Connects to a Control I/O, ARC-PS, ARC or other Symetrix SymNet family RS-485 controller, wired in parallel (A to A, B to B and GND to GND) using shielded twisted pair. Port Settings: 38.4 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.
6. RS-232: Serial communications interface for SymNet Designer on the host PC or a 3rd party accessory controller. (Mode is determined by the “RS-232: Host / Acc” mode switch.) Port Settings (Host): 115 or 57.6 kbaud, 8 data bits, 1 stop bit, no parity, no flow control. Port Settings (Acc): 38.4 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.
7. Device Config: Configures the RS-232 port mode, RS-232 port host baud rate and Ring Number (device address).
8. Ethernet: 10/100 Base-T Ethernet port for SymNet Designer host control over IP. IP control must be setup from SymNet Designer via RS-232 first for security.
9. CobraNet/Ethernet: 10/100 Base-T Ethernet port for CobraNet audio, 16 send and 16 receive channels. (Future versions may support SymNet Designer host control over IP+CobraNet on the same port.)
10. Relay Out: 1 SPDT relay rated at 3 Amps, 24 VDC, resistive; 0.3 Amps, 60 VDC, resistive and can be wired normally open or normally closed. This relay can also be used for power failure detection or emergency alarm system integration.
11. O/C Out: 2 open collector outputs with a paired common ground pin. O/C outputs go low (0V) when active, and are internally pulled high (5V) when inactive and can drive external LED indicators directly.
12. Control In: 2 analog control inputs able to be used as 2 potentiometer inputs, 2 mechanical rotary encoder inputs, or as 4 switch inputs (+5 VDC reference voltage supplied).
13. Analog Outputs: 4, 8 or 12 analog line level audio inputs with individually software-selectable level of -10 dBV or +4 dBu.
14. Analog Inputs: 4, 8 or 12 analog mic / line level audio inputs with individually software-selectable phantom power and level of -50 dBu, -40 dBu, -20 dBu, -10 dBV or +4 dBu.

Mechanical Data

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space Required</td>
<td>1U (WDH: 48.3 cm x 27.4 cm x 4.37 cm / 19 in x 10.8 in x 1.72 in). Depth does not include connector allowance.</td>
<td>Allow at least 1 inch additional clearance for rear panel connections. Additional depth may be required depending upon your specific wiring and connections.</td>
</tr>
<tr>
<td>Electrical</td>
<td>100 to 240 VAC, 50-60 Hz, 60W maximum.</td>
<td>No line voltage switching required.</td>
</tr>
<tr>
<td>Ventilation</td>
<td>Maximum recommended ambient operating temperature is 30 C / 86 F.</td>
<td>Fan on equipment right pulls hot air out of device. Air intake at equipment left. Ensure that the left and right equipment sides are unobstructed (5.08 cm, 2 in minimum clearance). The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, tablecloths, curtains, etc.</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>6 kg (12 lbs.)</td>
<td></td>
</tr>
</tbody>
</table>

Architect and Engineer Specifications: SymNet Express Cobra.

The series of four DSP audio matrix devices shall include four different configurations of balanced mic / line inputs and balanced line outputs on plug-in barrier-strip connectors. These configurations shall be 12x4, 4x12, 8x8, and 4x4. Each shall be offered with CobraNet compatibility. Additionally each device shall include two analog control inputs, one open collector output, and one relay output on plug-in barrier-strip connectors. ARC interconnect on one RJ-45 connector, ARC Audio on one plug-in barrier strip connector, and 24 VDC backup power on one 4-pin male XLR connector. The devices shall include one RJ-45 connector for CobraNet network audio. Audio inputs and outputs shall be analog, with internal 24-bit A/D & D/A converters operating at a sample rate of 48 kHz. All internal processing shall be digital (DSP). Software shall be provided for creating / connecting DSP system components within each hardware device. Available system components shall include (but not be limited to) various forms of: mixers, equalizers, filters, crossovers, dynamics/gain controls, routers, delays, remote controls, meters, generators, onboard logic, and diagnostics. Ethernet or serial communications shall be utilized for software control and configuration. After initial programming, processors may be controlled via dedicated software screens, third-party RS-232 control systems, and/or optional analog or RS-485 remote control devices. A designer software application shall operate on a Windows computer, with network card installed, running Windows® 98/2000/XP. The DSP series shall be CE marked, CSA tested to UL 60954. The DSP series shall be SymNet Express Cobra.
The ARC-XLR is a modular remote control for Symetrix DSPs that combines an XLR audio connection and push-to-talk button with the ARC-SW4’s four momentary pushbutton switches that provide the client with simple control over zone selection plus paging and more. Each of the five pushbuttons have corresponding tri-color LEDs which can provide user feedback in a number of ways. LEDs may follow buttons or LEDs and buttons may be programmed independently. The XLR audio connection may be used to provide a remote input or output for the system to create a paging station or remote monitoring device. There is an onboard microphone preamp. All control assignments, including button and LED functionality, parameter limits and firmware version upgrades are handled by the software included with Symetrix DSP hardware. Power, control, and a single channel of ARC Audio (for the onboard mic) are connected via RJ-45 inputs or screw-type barrier strips. The ARC-MIC also supports “sleep” mode for light-sensitive environments like theaters. Hardware lockout pins are provided to accommodate an installer-supplied key switch. The ARC-XLR is splash-resistant and mounts into a single gang electrical box (US), finished with a standard Decora® faceplate (supplied in white).

The ARC-MIC is a modular remote control for Symetrix DSPs that combines an onboard electret condenser microphone and push-to-talk button with the ARC-SW4’s four momentary pushbutton switches that provide the client with simple control over zone selection plus paging and more. Each of the five pushbuttons have corresponding tri-color LEDs which can provide user feedback in a number of ways. LEDs may follow buttons or LEDs and buttons may be programmed independently. The onboard mic may be used not only for an integrated paging station but also as a sense mic for an SPL Computer DSP module. All control assignments, including button and LED functionality, parameter limits and firmware version upgrades are handled by the software included with Symetrix DSP hardware. Power, control, and a single channel of ARC Audio (for the onboard mic) are connected via RJ-45 inputs or screw-type barrier strips. The ARC-MIC also supports “sleep” mode for light-sensitive environments like theaters. Hardware lockout pins are provided to accommodate an installer-supplied key switch. The ARC-MIC is splash-resistant and mounts into a single gang electrical box (US), finished with a standard Decora® faceplate (supplied in white).

The series of remote control wall panels shall be designated in two groups – Menu ARC, and Modular ARC. The Menu ARC (ARC-2) shall include one 8-character backlit alpha-numeric display, one momentary button for menu selection, and two momentary buttons for value increment/decrement. The Menu ARC shall mount in a standard U.S. single-gang backbox. Power and control shall be connected via two RJ-45 connectors, or screw-type barrier-strip. Modular ARC wall panels shall consist of multiple models that mount in standard U.S. single- or dual-gang backboxes, and shall be compatible with standard Decora® faceplates. ARC-K1 shall include one push-button rotary encoder, one eight-segment LED stack, and two status LED indicators; ARC-SW4 shall include four momentary buttons with four corresponding status LED indicators; ARC-EXK shall include one push-button rotary encoder, one eight-segment LED stack, and two status LED indicators, ARC-EX4 shall include four momentary buttons with four corresponding status LED indicators; ARC-SW4 shall consist of one ARC-K1 tied to one ARC-EX4, ARC-Mic shall include one onboard electret condenser microphone and one momentary push-to-talk button, tied to one ARC-EX4; ARC-XLR shall include one 3-pin female XLR connector and one momentary push-to-talk button, tied to one ARC-EX4. Adaptive Remote Controls shall function as external user controllers for Symetrix DSP systems. A designer software application shall be provided for assigning control within DSP system components. RS-485 communications shall be utilized for software control and configuration. The series of wall panels shall be CE marked, CSA tested to UL 60065. The series of wall panels shall be Adaptive Remote Control (ARC).
ARC-PS

Rack Mount Wall Panel Power Supply

The ARC-PS is a nineteen (19) inch rack-mountable power supply capable of supplying power and control over CAT5 cable to a maximum of ten ARC Wall Panels. Panels can be connected in a “star” configuration, “daisy-chain”, or a hybrid of the two. RS-485 from a DSP device is connected to the ARC-PS Euroblock connector. The device includes eight (8) RJ-45 connectors for CAT5 cable, and corresponding Euroblock connectors for eight (8) discrete channels of ARC Audio.

Specifications

<table>
<thead>
<tr>
<th>GENERAL SPECIFICATIONS</th>
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</tr>
</thead>
<tbody>
<tr>
<td>RS-485 serial I/O</td>
<td>Data pass-through wired in parallel with STP cable.</td>
</tr>
<tr>
<td>ARC Cable</td>
<td>Standard CAT5, distance dependent upon load.</td>
</tr>
<tr>
<td>ARC output voltage</td>
<td>15 VDC (dependent upon power supply)</td>
</tr>
<tr>
<td>ARC maximum output current</td>
<td>1.3 A per port, 1.3 A total</td>
</tr>
</tbody>
</table>

Mechanical Data

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space Required</td>
<td>1U (WDH: 48.3 cm x 10.2 cm x 4.37 cm / 19 in x 4.0 in x 1.72 in). Depth does not include connector allowance.</td>
<td>Allow at least 1 inch additional clearance for rear panel connections. Additional depth may be required depending upon your specific wiring and connections.</td>
</tr>
<tr>
<td>Electrical</td>
<td>100–240 VAC, 50–60 Hz, 15 VDC output, 20 Watts maximum.</td>
<td>No line voltage switching required.</td>
</tr>
<tr>
<td>Ventilation</td>
<td>Maximum recommended ambient operating temperature is 30 C / 86 F.</td>
<td>The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, tablecloths, curtains, etc.</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>2.0 kg (4.4 lbs.)</td>
<td></td>
</tr>
</tbody>
</table>

Architect and Engineer Specifications: SymNet ARC-PS.

The nineteen inch rack-mount wall panel power supply shall provide eight ARC ports on RJ-45 connectors, eight ARC Audio ports on plug-in barrier-strip connectors, and RS-485 interface on one plug-in barrier-strip connector. The device shall function as a power supply and RS-485 data router for SymNet ARC wall panels. The rack-mount wall panel power supply shall be CE marked, CSA tested to UL 60065. The rack-mount wall panel power supply shall be ARC-PS.
SymNet™ Application: Public Address

Public Address System Diagram

SymNet Equipment List:
- 1 x Express 8x8 Cobra
- 1 x ARC-PS
- 4 x ARC-XLR

Express 8x8 Cobra in Amp/SymNet Rack
BGM Sources in Amp/SymNet Rack

Mic/Line Inputs 5-8
Mic/Line Inputs 1-4 From PA Mics

CAT 5

To Line Outputs 1-8

Station Mics 1&2
Station Mics 3&4
Zone 1 Speakers
Zone 2 Speakers
Zone 3 Speakers
Zone 4 Speakers
Zone 5 Speakers
Zone 6 Speakers
Zone 7 Speakers
Zone 8 Speakers

Amplifier Inputs 1-4
Amplifier Outputs 1-4
Amplifier Inputs 5-8
Amplifier Outputs 5-8

Mic Outputs 1-4

164 ARTN

SymNet Application: Public Address
SymNet Equipment List:

- 1 x Express 8x8 Cobra
- 1 x ARC-PS
- 4 x ARC-XLR

OK

POWER

SIGNAL

MP3 PLAYER

MENU

1

2

3

5

4

6

7

8

ARC-PS in Amp/SymNet Rack

Express 8x8 Cobra in Amp/SymNet Rack

Mono Power Amplifiers 1-4 in Amp/SymNet Rack

Mono Power Amplifiers 5-8 in Amp/SymNet Rack

Station Mics 1&2

Station Mics 3&4

Mic/Line Inputs 1-4 From PA Mics
to Line Outputs 1-8

Mic/Line Inputs 5-8

Mic Outputs 1-4

ARC Outputs 1-4

Zone 1 Speakers

Zone 2 Speakers

Zone 3 Speakers

Zone 4 Speakers

Zone 5 Speakers

Zone 6 Speakers

Zone 7 Speakers

Zone 8 Speakers

BGM Sources in Amp/SymNet Rack

CAT 5

Amplifier Inputs 1-4

Amplifier Outputs 1-4

Amplifier Inputs 5-8

Amplifier Outputs 5-8

ARC-XLR #1

ARC-XLR #2

ARC-XLR #3

ARC-XLR #4

RS-485 Data

Equipment Racks

Station Mics 3&4

Zone 1 Speakers

Zone 2 Speakers

Zone 3 Speakers

Zone 4 Speakers

Zone 5 Speakers

Zone 6 Speakers

Zone 7 Speakers

Zone 8 Speakers

Complete SymNet 4.2.2 Panel Wiring

www.SymetrixAudio.com
Public Address Signal Flow
SymNet Puts The Finishing Touch On The Southern Alberta Jubilee Auditorium Audio Renovation

CALGARY, ALBERTA: Several months after it marked its 50th anniversary with an extensive renovation that included new acoustics and sound system, the Southern Alberta Jubilee Auditorium in Calgary added a new state-of-the-art paging system based on the powerful digital signal mixing, routing and processing capabilities of the SymNet Network Audio Solution from Symetrix.

Essential to ensuring the safety of patrons and the ability to relay audio content from announcements to music to emergency evacuations, the new paging system is a vital piece of the auditorium upgrade, according to Craig Spallin, the facility’s house audio technician. It was one worth waiting for, he says.

“When the bulk of the renovation was complete in September 2005 the funds weren’t available to upgrade the ten year-old digital paging system,” Spallin says. “So we had to reopen this beautiful Alberta Provincial Government-owned entertainment facility with the old paging system in place.”

When the paging system became unreliable following the reopening, the auditorium’s decision makers looked to SymNet as the technology to build a highly capable method of handling the complex signal processing and routing needed for the 196,000 square-foot facility with a 2,500-seat theatre and over twelve ancillary spaces.

“As a professional theatre and government facility our requirement for a reliable, flexible, yet simple-to-use, paging system was of the highest importance,” Spallin says. “There were quite a few specific demands that we needed to place on the paging system. Although the new system emulates many of the functions of the old one,
SymNet™ Application: Public Address

SymNet allowed us to improve it quite a bit in terms of paging priority capabilities, discrete zoning and the flexibility to move freely between all of the zones.

Built around five SymNet 8x8 DSP units, three of which were redeployed from the main sound system in the theatre, the facility's paging system consists of sixteen separate zones and eight paging panels and one audio matrix panel that incorporate a total of 33 SymNet Adaptive Remote Control (ARC) units. Currently configured to handle 38 inputs and 24 outputs spanning all of the zones, which utilize ceiling-mounted, 70-volt speakers powered by various QSC CX-series amplifiers, and eight dynamic gooseneck microphones at each paging station, the system allows messages and other audio to be easily relayed to the proper areas.

“We needed a system that had very specific zone control - when we’re running a show the front-of-house manager needs to be able to page lobby announcements to the public, but without the same announcements being heard in the backstage area, where they need their own set of announcements,” Spallin says. “The nice thing about the SymNet system is that each zone has a Super-module built in. One of those functions is a paging priority selector. The system also ties into the fire alarm system, and two microphones are provided (add), one at the main door and one at the stage door, to allow for fire department evacuation of the building.”

The audio matrix control panel, housed in the central equipment room, allows for the routing of background music into both the various lobby areas and several conference rooms. While six of the paging panels are set up to access only eight zones, two master panels are configured to allow access at the push of a button to all zones.

Another feature of the system is the deployment of ambient noise microphones in the public paging zones. The microphones monitor the noise level in its zone and relay the data to the system, enabling the volume level to be adjusted up or down as needed to maintain full intelligibility.

Such capabilities are a big part of the reason the Southern Alberta Jubilee Auditorium opted to utilize SymNet for the paging system. The system’s user-friendliness, paired with its technological superiority and flexibility, make it the ideal solution for an entertainment facility that needs a dependable solution for a sometimes mundane, yet clearly vital task.

“From an end-user’s vantage point, SymNet is easy to use and simple to work on as needed,” Spallin says. “It’s very clear in the software application what the audio path is, how it’s working, and what needs to be done to make changes that might be required.”
SymNet™ Application: Public Address

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