SymNet Applications Series

Room Combining

Convention Centers • Hotels • Training Facilities

SymNet™ Network Audio Solutions
Engineered by Symetrix

www.SymetrixAudio.com
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**Introduction**

Space is a good thing. For the exhibition and hospitality industries, more space is better. However, space planning is not always easy, and underutilized space is money lost. Meeting spaces too small or too large can lead to lost opportunities. So the more flexible a meeting space can be, the more accommodating it can be to both large and small groups at any given time.

To solve this problem, convention centers, hotels, training facilities and educational facilities will build a large room that can be partitioned using retractable soft walls or curtains into several smaller rooms. This allows for the most efficient use of their meeting areas. Each separate space (a division of the largest configuration of the room) will typically have its own sound system consisting of a few microphones and line level sources. Each of these smaller meeting areas can also select from one of several “global” Background Music (BGM) sources. The sound system can be configured via wall panel remotes. However, as the partitions are removed, these spaces combine to make a larger space. When this happens, the sound systems must also be as flexible as the space it serves.

**SymNet based Room Combining** systems have no problem rising to this challenge. The very foundation of SymNet is flexibility. Options for Input and Output counts, DSP capacity, control interfaces and bussing architecture allow you to deliver a system perfectly matched for your dynamic environment.

**Overview**

SymNet offers many unique and time saving features for Room Combining systems. When the rooms are partitioned, the wall panel remotes automatically switch to only control the sources and outputs of the room in which they are mounted. As the partitions are removed, SymNet cleverly unites the functions and displays of the wall panel remote controls to cover the new configuration of sources and outputs in the larger room. Additionally, this mirroring logic expands to 3rd-party control systems saving considerable time and money when interfacing is required.

The SymNet Designer Software utilizes a series of DSP based modules such as Automixers, Room Combiners, microphone processing, Loudspeaker Managers that can be configured to meet the demands of these ever changing situations. Each module offers unique and time-saving features, perfect for the fast-paced and ever-changing hospitality and education markets.
SymNet Technologies for Room Combining

As with most applications, many of SymNet’s technologies are leveraged in Room Combining applications from microphone processing to Automixing to Loudspeaker Management.

One of the most time consuming obstacles encountered when designing a room combining system is the room combining logic. When multiple rooms are not combined, they function as independent spaces, each with their own sound and control systems. However, when they combine, their sound and control systems must also combine to function as one large system. The logic behind this can be infinitely complex and become exponentially complex as more spaces are added to the combining possibilities.

SymNet provides an entire class of DSP modules dedicated to Room Combining. These intelligent modules take all of the guesswork out of determining what needs to happen based upon a spaces combine status.

Room Combiner Modules

SymNet offers several versions of Room Combiner modules, each for certain situations. Standard Room Combiners are the simplest, offering only room combining functionality. BGM Combiners integrate background music sources, which are shared amongst the rooms. Automixer versions of both Standard and BGM Combiners are provided to integrate with an Automixer module in each room. BGM Automixer Combiners are probably the most commonly used as well as the most fully featured.

The SymNet BGM (Automixer) Room Combiner modules are available in 2-16 room configurations. Each includes four BGM (background music) inputs that are shared amongst the four rooms. Each room or “zone” then has controls for volume (both microphone and line signals are ganged together and controlled with this one volume control) and BGM volume. These controls link with ARC Wall Panel Remotes and/or 3rd-party control systems that follow the room combination selections.
SymNet Design for Room Combining

We are going to explore a Room Combining design representative of a typical ballroom divisible into four rooms.

In this design, there are six microphones inputs (two each in three rooms), three line inputs (for rooms 1-3), and three BGM (background music) sources (shared amongst the rooms) all connected to a SymNet Express 12x4 Cobra. This design routes the BGM as selected in each zone. The microphones are local to their designated zones until the zones are combined, at which point the zones function as one.

ARC-SWK and ARC-2 Adaptive Remote Control Wall Panels connect to an ARC-PS which connects to the Express hardware via RS-485 shown in the above hookup diagram. 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.

A System Diagram depicts the overall layout.
Room Combining Design

Using SymNet Designer, open the first example Site File. Then, double-click on the Express 12x4 Cobra in the Configuration Screen to view the Design Screen. Audio enters the Analog Ins 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.

Next, each room or “zone” has a dedicated Super-module that contains the processing modules. Two microphones and one line level input are routed to each of the four Super-modules. The microphones are mixed together with an Automixer module. These Automixers link with the Room Combining module. When zones are combined, the Automixers also combine to control overall gain as one large Automixer. The Room Combine module has an input for the audio and another for the Chain Input, fed from the Automixer. Connecting the Chain out from the Automixer and the Chain in on the Room Combine module sends logic to the Room Combiner. Logic is sent back to the Automixer using the Master output, which links the Automixer and Room Combining modules.

Inside the Zone Super-module:

The output of the Automixer feeds a Highpass filter to roll off the low end of the microphone signals. The line level signal is then mixed with the Automixer output before it is sent to the Room Combiner module.
SymNet™ Application: Room Combining

BGM Automixer Combiner Module:
The BGM Automixer (Room) Combiner module outputs two audio signals for each zone or room; one microphone output and a one BGM output. These outputs are mixed together for each zone using a Summing module. The audio is then routed to the Output Processing Super-module.

It is also worth noting the wiring for the Mix and Chain inputs and outputs. The Mix output from each Zone Super-module provides mixed audio to the Room Combiner module. The Chain output provides the link which allows each Automixer to act as one large Automixer when the rooms are combined.

Combining Zones and Wall Panels/Touch Panels:
In the Room Combiner module, there are buttons which combine the zones. The zone numbers can be changed so that any pair of rooms can be combined. Presets can be created to combine sets of rooms simultaneously. These presets can also be automatically recalled from SymNet’s Event Scheduler. As rooms are combined and uncombined, all controls and Automixing functions in each zone will link and unlink as well.

Controls also link on ARC Wall Panel Remote Controls and touch screen control systems. Thus when zones are combined, the wall panel remotes located in each zone will mirror each other. The BGM selection and volume can then be adjusted from any wall panel that is part of the combined rooms.

Because the combine logic is handled completely by SymNet, an immense amount of time and money is saved when integrating with control systems.
Inside the Output Super-module:
The Output Processing Super-module consists of a Matrix that allows any audio from the BGM Combiner to be routed to any output. A Gain module immediately follows the Matrix module which controls the output level. Following the Gain module are the Loudspeaker Management modules. The Loudspeaker Management modules wrap all the processing for a speaker into a single DSP module. There are Highpass and Lowpass filters, an 8 Band parametric EQ and up to 340 milliseconds of delay. These modules are also compatible with Smaart™, an industry standard software system with measurement tools used to calculate system settings for EQ and Delay.
Room Combining 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 from left to right and acts as the primary navigation page to view the other Control Screens.

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 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.

Zone Control Screen:
The Zone Control Screen (one for each zone) controls the microphone and line level BGM inputs for each zone. Automixer controls and microphone EQ are accessed by clicking on the corresponding buttons.
BGM Control Screen:
The BGM Control Screen controls the volume and processing for each BGM source. EQ and AGC processing for each source is controlled by clicking on the corresponding buttons.

Room Combine Control Screen:
The room combine Control Screen uses a graphic to mimic the floor plan. The Combine buttons, BGM Source Select and Volume faders have also been copied to the Control Screen.
Tip: A useful demonstration is to combine and uncombine zones while watching the BGM source selects and volumes for those zones link and unlink.

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 four analog outputs. Also found here is a small 4x4 Matrix that allows routing of any zone to any output. Zones and Outputs are separate and easily confused. Zone signals contain all the audio that is to feed a specific area. Any given area may require one or more outputs from SymNet hardware. This is common if two or three-way speaker systems are required for a single Zone. In this design, there are four zones and four outputs with each zone feeding one output.
There are also buttons that link to the Loudspeaker Manager processing modules, plus an “On” button to engage the Loudspeaker Manager module.
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>
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<tr>
<td>Maximum stored presets</td>
<td>1000</td>
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<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>
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<tr>
<td>Phantom power (per input)</td>
<td>+48 VDC, 10 mA</td>
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<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>
SymNet™ Application: Room Combining

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 input 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 software versions may support SymNet Designer host control over IP+CobraNet on this 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, -30 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>
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</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 60945. The DSP series shall be SymNet Express Cobra.
The ARC-2 is a menu-driven remote control for Symetrix DSPs. Tap into the full power of your system with twenty-four (24) menus with up to sixteen (16) items each that can be used to address multiple basic functions or initiate complex logic-based control events: gain, preset triggering, source selection, room combining and more. The 8-character backlit display supports up to thirty-one (31) scrolling characters, providing instant user feedback for control assignments, default settings, and actions. The three buttons help you navigate menus, raise or lower values, and enable or disable the remote control. All control assignments, including item labeling, parameter limits and firmware version upgrades are handled by software included with Symetrix DSP hardware. Power, control, and a single channel of ARC Audio are connected via RJ-45 inputs or screw-type barrier strips. Intuitive Navigation: Pressing the menu button navigates through the menu names. The menu button also acts as a preset trigger when a preset list is scrolled. The up/down arrow buttons adjust parameter settings and scroll through preset lists. Holding the menu button and using the up/down arrow keys moves you forward or backward through the menus. Programmable Setup: The wall panel’s behavior is programmable as well. Menu brightness in “active” and “inactive” states can be set independently, so the display will “sleep” in light-sensitive environments like theaters. If the ARC-2 goes idle, it can scroll a message and return to the top of its menu tree. Upper and lower parameter limits help contain the range of adjustment and a button press lockout will prevent tampering by curious but unauthorized fingers. Available with an aluminum faceplate, ARC-2 mounts into a single gang electrical box (US).

The ARC-SWK is a modular remote control for Symetrix DSPs that combines the functional attributes of the ARC-K1 and ARC-SW4, into a single product featuring a push-button rotary encoder and four momentary pushbutton switches that provide the client with simple control over source selection with volume, room combining and more. In addition to the programming modes supported by the ARC-K1 and ARC-SW4, the ARC-SWK integrates directly with the BGM Room Combiner modules in SymNet providing an elegant room combining solution where all wall panels update according to the room combine status. The ARC-SWK also supports a “Select and Set” mode that allows the buttons to select a parameter after which the knob can adjust the selected parameter. 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 are connected via RJ-45 inputs or screw-type barrier strips. The ARC-SWK also supports “sleep” mode for light-sensitive environments like theaters. Hardware lockout pins are provided to accommodate an installer-supplied key switch and software and hardware lockout functions can be independently programmed. Upper and lower parameter limits help contain the range of adjustment. The ARC-SWK is splash-resistant and mounts into a single gang electrical box (US), finished with a standard Decora® faceplate (supplied in white).

Architect and Engineer Specifications: Adaptive Remote Control (ARC).

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 alphanumeric 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-EXK 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

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 (WxD:H: 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.
Room Combining Signal Flow
**SymNet Equipment List:**

- 1 x Express 12x4 Cobra
- 4 x ARC-SWK
- 1 x ARC-PS
SymNet Equipment List:
- 1 x Express 12x4 Cobra
- 4 x ARC-SWK
- 1 x ARC-PS

SymNet Rack Room:
- Amplifier Inputs 1-2
- Amplifier Inputs 3-4
- Stereo Power Amplifiers in Amp/SymNet Rack

ARC-SWK Zones:
1. Zone 1
2. Zone 2
3. Zone 3
4. Zone 4

Inputs and Outputs:
- Mic/Line Inputs 1-3
- Mic/Line Inputs 4-6
- Mic/Line Inputs 7-9
- Line Outputs 1-4
- Amplifier Outputs 1-2
- Amplifier Outputs 3-4

Connections:
- CAT 5
- Daisy-chained Connection

Room Features:
- Mics 1&2 Line 3
- Mics 7&8 Line 9
- Ceiling Spkr #1
- Ceiling Spkr #2
- Ceiling Spkr #3
- Ceiling Spkr #4

Host Computer running SymNet Designer

BGM Sources in Amp/SymNet Rack
SymNet™ Application: Room Combining

SymNet Proves To Be A Classic

ATHENS, GEORGIA: A recent renovation of the Classic Center in Athens, Georgia afforded an opportunity to Technical Services Audio Visual (TSAV) to update several room combining systems, dating back as much as ten years, into a single integrated solution incorporating the latest technology. TSAV installed a SymNet Network Audio Solution that integrates Symetrix DSP products with proprietary technology, and combines flexible routing with wireless control of signal processing in the Classic Center, a convention facility, in Athens, Georgia.

Pete Dugas, president of Athens-based TSAV, a professional audio-visual systems consulting, contracting and integration company established in 1991, describes the Symetrix setup. The system is based around a SymNet 8x8 DSP unit and a series of SymNet BreakIn12 and BreakOut12 expansion devices to handle flexible routing and wireless control of signal processing in the Classic Center, a convention facility, in Athens, Georgia.

A major feature of TSAV’s value-added proprietary technology is the ability for event organizers to take a laptop computer with a Wi-Fi connection anywhere in the complex and control the audio on a virtual mixing console. “The Symetrix equipment was key to that,” explains Dugas, whose company created a browser-based GUI that...
provides channel-by-channel control of parametric EQ and input and output gains via the SymNet 8x8 DSP unit’s processing functionality.

“It’s really convenient for the operators,” he says. “Rather than dragging a mixing board into one of these breakout rooms, they can plug the microphones in and sit at the back of the room with a laptop and control the sound from there wirelessly.”

Dugas offers the annual Georgia Power training sessions as an example of the ways in which the room combining system is expected to operate. “Twenty or so different breakout spaces get content from one another at different times. One room might be able to listen in on another, or there might be a public address that goes to any and all combinations of these spaces.” Furthermore, he notes, “There is background music that comes from everything from a CD player to a laptop, an iPod to a satellite radio feed.”

According to Dugas, the recent major renovations added nine new breakout spaces in the Grand Hall, complicating the design brief to integrate existing audio and visual systems in the new construction with the historic portions of the facility. “Renovations over the last ten years have integrated room combining systems into the ballrooms that had some effect and worked pretty well,” he reports. “The large Athena Ballroom was the original installation. Then the standards that we put in place in the Foundry Ballrooms over the last five years were expanded to these new rooms.”

The Athena Ballroom, a 14-way space, and the later Foundry Ballroom construction, which added four two-way divisible spaces, could have remained as two separate room-combining systems with a third added for the new Grand Ballroom. “But,” he says, “this was an opportunity for us to create a fully-integrated routing system that would take advantage of some newer technologies that didn’t exist back in the late 1990s.”

The 59,000 square-foot Classic Center is a flexible exhibit and meeting facility that offers seating for 3,000 people or banquet facilities for 2,200. The complex also includes a performing arts theater.
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