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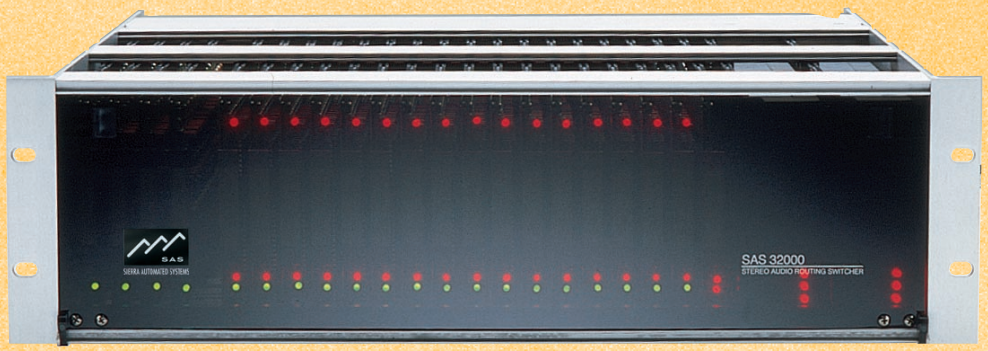
# Stereo Audio Routing & Mixing System

- Full summing capability
- Advanced multi-processor architecture
- Dual redundant power supplies
- Current mode CMOS Audio switching
- High density central matrix
- Stereo/mono easily integrated in system
- PC/terminal/modem interfaces included
- 28 dBu maximum input/output Level
- 118 dB dynamic range
- Easily field expandable




**THE SAS 32000 AUDIO ROUTING SWITCHER** is a high performance microprocessor-based audio switching and mixing system designed for use in professional broadcast installations. The system architecture, rugged design and construction techniques serve to set the SAS 32000 apart from the field. Its flexibility allows for use in a broad range of specialized and critical applications.

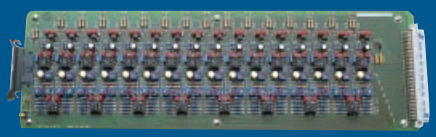
The system is modular and easily configured. The expandable architecture ensures for system growth—as the number of sources and/or destinations increase—without the possibility of obsolescence . This "building block" approach makes specifying a new system or reconfiguring an existing system easy.

The heart of the SAS 32000 is a 32 stereo input/16 stereo output switching subsystem housed in a three rack unit frame. Each frame houses all input amplifiers, crosspoint cards, output amplifiers and power supplies as required for a complete system. Available controllers range from single control panel per output to powerful LAN based pop-up "soft panels," some capable of total system access.

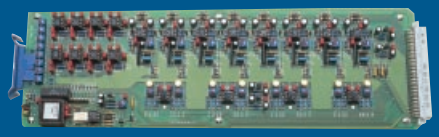
For systems requiring more than 32 stereo inputs or 16 stereo outputs, the frames are simply connected together. No additional support electronics are necessary. Two frames will allow 32 in/32 out or 64 in/16 out in stereo. Each switching frame may also be configured in mono as 64 input/16 output or 32 input/32 output. The 64 input mono configuration may be combined with the 32 input stereo configuration yielding 96 inputs with two frames, 32 stereo and 64 mono with 16 stereo outputs. With one mono and two stereo frames the yield increases to 128 inputs, 64 stereo and 64 mono with 16 stereo outputs. These configurations are useful when dealing with a significant number of mono sources. Greater economies are realized when structuring the switcher with a dedicated group of mono inputs rather than tying all mono sources to both left and right inputs of a stereo system.

The 32 x 32 mono configuration is primarily used on a stand alone basis for mix-minus conferencing, teleconferencing hubs and communication systems. With this structure each output card handles two separate outputs and a single frame handles '32 port' communication tasks with ease. The internal structure of the SAS 32000 allows full summing of any combination of inputs to any output.

SAS
SIERRA AUTOMATED SYSTEMS



SIA-8 STEREO INPUT AMPLIFIER



DCA-8 DIGITALLY CONTROLLED AMPLIFIER

SXT-32 STEREO CROSSPOINT MODULE

AXC-8 SOFT PANEL

ANC-8 SOFT PANEL

The summing of inputs may be done under local control and/or via serial control.

Full RS-232/RS-422 serial control links intra-frame signals and connects output bus controllers and panels. Individual processors are utilized on each output bus for reliability and fast access. A separate frame controller communicates with "X-Y" control panels and other frames in large systems.

## SYSTEM INTERCONNECT: THE "WIRELESS" CONCEPT

The SAS 32000 system is based on reliability and performance. To this end, a "wireless" mainframe, employs "double-redundant" power supplies. Additionally, gold-plated two-piece euroconnectors are used on all circuit cards and frame-level motherboards. Hi-rel crimp contacts are inserted into euroconnector housing and electrical connection is made directly to each individual circuit card's mating connector from the frame's rear panel. The only wiring inside the frame is for power input and distribution.

Break-out panels to customer specifications are readily available. Connector types include XLR, patch field and terminal/punch blocks.

## POWER SUPPLY MODULES

The card frame provides for two SPS-3 Switching Power Supply modules, each with its own line cord, allowing for separate AC power. Advanced-level switching regulators provide high efficiency, and reduce operating temperatures.

## INPUT AMPLIFIERS

Model SIA-8 Stereo Input Amplifier has eight independent stereo buffers. Four SIA-8 modules allow for thirty-two stereo inputs per frame.

The DCA-8 Digitally Controlled Amplifier has eight mono digitally gain-controlled amplifiers with up to 125 dB of gain range. Up to four DCA-8 modules may be used directly in 32 input mono switcher frames or up to twelve modules (96 channels) may be housed in the DAS 9600 main frame for controlling level of any audio source or destination.

## CROSSPOINT OUTPUT MODULES

The SXT-32 Stereo Crosspoint Module contains all the electronic switches, output amplifiers and control circuitry necessary for a stereo output channel.

Current mode CMOS switching is employed to ensure low distortion and noise. The current mode circuit topology provides total isolation and allows summation of any or all inputs to the output.

An on-board CMOS microprocessor controls the crosspoints and communicates directly with the output control panel over a serial link. Communication with the frame controller is only necessary to respond to requests from X-Y panels or to pass information to another frame within a large system.

## CONTROL PANELS – SINGLE OUTPUT CONTROLLERS

Single output controllers communicate directly to the SXT-32 Crosspoint/Output Module on an isolated RS-485 serial line. This allows the output to function independent of other modules. Single output controllers are available in several configurations: Alphanumeric 8 character LED displays with rotary shaft encoder input selection; Push-button input selection; Alphanumeric display with 'hot punch' pushbuttons; Single rack-unit 19" rack-mount controllers; Console-mount—very small outline—controllers

Alphanumeric panels provide bright, easy-to-read 8 character dot matrix LED displays for showing source names. The names are displayed in alphabetical order as the Input Select shaft encoder is rotated. This presents the operator with an intuitive interface for selecting sources. The LED display shows the currently Active input or the selected input (preset) as ready for a Take transition. Display mode is indicated

ANC-8 SINGLE OUTPUT ALPHA CONTROL PANEL

ANC-8D DUAL OUTPUT ALPHA CONTROL PANEL

AXC-8 ALPHANUMERIC X-Y CONTROL PANEL

PBS-16 PUSHBUTTON SELECT CONTROL PANEL

PBS-32 PUSHBUTTON SELECT CONTROL PANEL

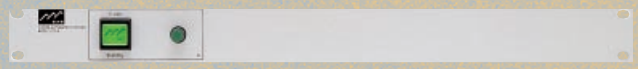
GPI-1600 AUTOMATION INTERFACE

CDS-8DT DESKTOP ALPHA CONTROL PANEL

DSS-8 SINGLE OUTPUT ALPHA CONTROL PANEL W/SPKR

APR-88 SINGLE OUTPUT ALPHA CONTROL PANEL

APR-88 DUAL OUTPUT ALPHA CONTROL PANEL



CDS-8R SINGLE OUTPUT ALPHA CONTROL PANEL

CDS-8R DUAL OUTPUT ALPHA CONTROL PANEL

CDS-8R QUAD OUTPUT ALPHA CONTROL PANEL

CDS-8 CONSOLE DUAL OUTPUT ALPHA CONTROL PANEL

CDS-8 SINGLE OUTPUT ALPHA CONTROL PANEL

CDS-8 DUAL OUTPUT ALPHA CONTROL PANEL

CRS-40 OUTPUT ORIENTED CONTROL PANEL

APC-88 SINGLE OUTPUT ALPHA CONTROL PANEL

CPI-80 SINGLE OUTPUT ALPHA CONTROL PANEL

by the display control pushbutton LEDs. As the Input Select knob is rotated, the display automatically switches to the Select mode. After a Take command, the display returns to Active mode. Preset Exchange allows rapid transitions between two sources while Dynamic Take switches cross-points directly as the Input Select knob is rotated.

Model ANC-8 is a rack mounted single output alpha control panel. The ANC-8D places two ANC-8s within a single rack unit. Model CDS-8 is the smallest alpha controller measuring 1.3" x 2.2" and mounts in consoles or turrets. Models CPI-80 (1.4" x 3.3") and APC-88 (1.4" x 5.3") are console mountable and feature full 8-character alpha capabilities and eight "hot punch" buttons.

Pushbutton input select panels are available with 16 (Model PBS-16), 32 (Model PBS-32), or 64 (Model PBS-64) programmable pushbuttons in a single rack unit chassis. They operate in interlocked or summing modes. In interlocked mode, pressing an input pushbutton selects the new input, removing the previous selection. The SUM pushbutton switches the panel to summing mode. Inputs may be freely added or deleted. Designation strips are provided with each panel for user legends.

The CRS-40 Control Room Selector panel is useful for operator controlled switching of control room to transmitter routing. The current On Air control room must preset the Next To Air. All locations receive a flashing tally but only the preset room may Take Air. A single frame SAS 32000 system is often used for transmitter routing to isolate this function from the 'house' routing system.

## CONTROL PANELS - SOFTWARE BASED

The SAS 32000 is available with pop-up 'soft' panel graphical user interfaces. These virtual control panels are Windows applications and communicate to the SAS router control software (SAS server) over the existing plant LAN. Both 'photo realistic' and conventional Windows 'pull-down' panels are included. These panels are ideal for locations already served

by a PC, and where a dedicated hardware panel is not required. Newsroom workstations, engineering offices or even the PD's office are all good candidates for soft panels. Remote off-site access is possible if the facility is equipped with a WAN.

## FULL SYSTEM ACCESS CONTROLLER

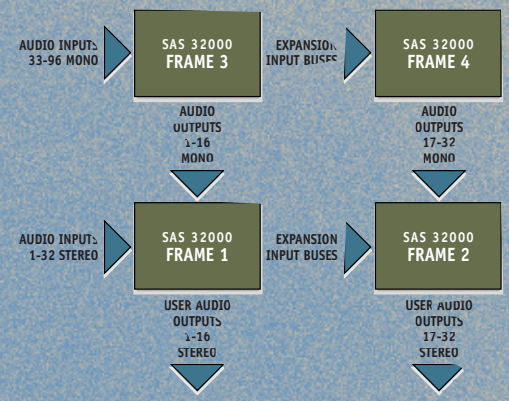
Full system access is allowed via Model AXC-8 X-Y Control Panel and from a terminal or PC. X-Y panels communicate to the MCU-3 frame controllers on a RS-485 serial bus at 76.8 kilobaud. These panels continuously monitor system status (both communication status and changes made by single output controllers) and allow changes to be made by Engineering. All X-Y panels provide two external RS-232C ports, one for connection to a terminal or PC for local control and system monitoring, and one for connection to an automation computer or modem for remote control.

Model AXC-8 Alpha Numeric X-Y Control Panel provides 2 eight-character LED displays, one for source names and one for destination names. Shaft encoders allow for input/output selection.

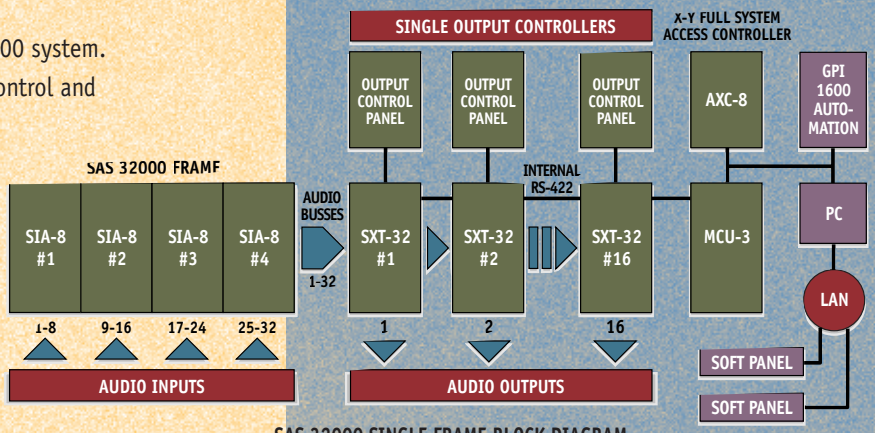
## GPI-1600 AUTOMATION INTERFACE

is a compact automation system that ties into the SAS 32000 system. It contains 16 form C relays for general purpose machine control and an option for 16 opto-isolated inputs. The automation software runs on a PC and provides a useful tool for capturing news feeds, roll recording machines and other events.

GPI-1600 AUTOMATION INTERFACE




AUDIO BLOCK DIAGRAM FOR 96 MONO/STEREO INPUTS AND 32 STEREO OUTPUTS




SAS 32000 SINGLE FRAME BLOCK DIAGRAM

## SPECIFICATIONS

### SYSTEM

| | |
|---|---|
| Gain | 0 dB, ±0.2 dB, 20-20 kHz |
| Frequency Response | ±0.1 dB, 20-15 kHz |
| | +0/-0.25 dB, 20 kHz |
| Noise | < -86 dBu, 20 kHz bandwidth |
| Dynamic Range | > 114 dB |
| THD | < 0.05%, 20-20 kHz |
| IM (SMPTE) | < 0.05% |
| Separation | < -70 dB, 20-20 kHz; -100 dB @ 1 kHz |
| Crosstalk | < -70 dB, 20-20 kHz, adjacent inputs; |
| | < -100 dB; typical @ 1 kHz |

### SERIAL INTERFACE

| | |
|---|---|
| Terminal | RS-232, 19.2 kiloBaud |
| Computer/Modem | RS-232, 9600/1200 Baud |

### AUDIO INPUTS

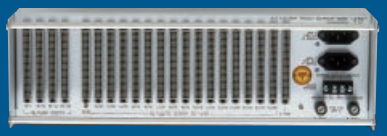
| | |
|---|---|
| Input Impedance | >50 k ohms, balanced |
| Maximum Input Level | +28 dBu |
| CMRR | Exceeds 70 dB, 20-20 kHz, |
| | -90 dB, typical 50/60 Hz |

### AUDIO OUTPUTS

| | |
|---|---|
| Source Impedance | 60 ohms |
| Maximum Output Level | +28 dBu, 10 k ohm load |
| | +25 dBm, 600 ohm load |

### GENERAL

| | |
|---|---|
| Power Requirements | 115/230 VAC, ±10%, |
| | 200 VA max. |
| Physical Size (each Frame) | 5.25"H x 19"W x 18"D (3 EIA rack units) |



SAS 32000 CHASSIS REAR VIEW


SIERRA AUTOMATED SYSTEMS
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