

Sonnex® Multiroom Audio System

- > Advanced multiroom audio distribution for homes and businesses
- > Robust, high-efficiency audiophile grade amplification built in
- > 140 Watts/Ch. @ 8 Ohms, 400 Watts/Ch. bridged
- > Provides eight amplified stereo zone outputs
- > Provides two additional SPDIF stereo zone outputs
- > Additional line-level, SPDIF, and "CH" CAT5 balanced outputs available^[2]
- > 70/100 Volt "constant-voltage" output options available
- > Output Bussing — enables linked operation of multiple adjacent zones
- > Bridgeable outputs — Affords extra power for pools and other large areas
- > Sonnex® Link — Provides a one-wire, plug-and-play interface to eight SWAMPE expanders up to 200 feet (61 meters) away^[1,3]
- > Sonnex Link over Fiber option enables distances up to 2000 feet (610 meters)
- > Includes 12 unbalanced, 4 balanced/unbalanced, and 8 SPDIF inputs
- > Allows audio return channel capability and extension of line-level and SPDIF signals using AUD-EXT Audio over CAT5 Extenders
- > User adjustable volume, bass, treble, loudness, and selectable "tone profiles"
- > Installer adjustable 5-band graphic or parametric EQ per zone
- > Dynamic Range Control — Maintains even listening levels in both quiet and loud ambient environments
- > Speaker Profiles — Allows easy upload of custom preset speaker settings
- > Sonnex Speaker Protect™—Affords extra headroom while preventing component damage
- > Individual zone power control and global standby
- > Streamlined setup and adjustment via front panel or Sonnex Tools software
- > Remote fault monitoring
- > Seamless Crestron system integration
- > Heavy duty detachable terminal blocks ease speaker wire termination
- > Low power consumption, cool-running operation
- > Four-space 19" rack-mountable



Employing a whole new system topology, Sonnex minimizes speaker wiring distances by allowing expansion units to be placed central to the rooms they serve. Twenty-four stereo channels of uncompressed digital audio and control are routed to each expander over a single inexpensive shielded CAT5e cable^[1]. Gone is all the clutter of amplifier interconnects and input loop-thru cables, meticulously integrating 8 zones of high-performance power amplification and signal processing, plus input switching for a generous 24 analog and digital sources, all in one compact 4-space rack-mountable package.

Integrated Audiophile Amplifier

With Sonnex, you get more power to the speakers—without compromising the electric bill or hogging precious space in your equipment rack. The SWAMP-24X8 boasts a custom hybrid amplifier design that achieves the warmth and neutrality of a fine Class AB amplifier with all the efficiency benefits of modern Class D. Designed to appease the most demanding listener, Sonnex possesses the sonic integrity of a world-class stereo amplifier eight times over to deliver faithful, eminently satisfying audio reproduction in every room from all your music sources.

Each of its 16 channels (configured as 8 stereo zones) delivers an unprecedented 140 Watts into 8 Ohms, or 240 Watts into 4 Ohms. And, for those large, noisy areas around the pool or patio, or in a game room or gym, any two adjacent outputs can be bridged to produce a gratifying 400 Watts per channel at 8 Ohms. As impressive as that is, you'll be equally pleased to know that Sonnex accomplishes its class-leading performance in a mere four rack spaces while maintaining highly effective cooling with no need for extra clearance above or below. Each zone is individually controllable, saving further energy by turning off any unused channels.

24x8 Matrix Switcher

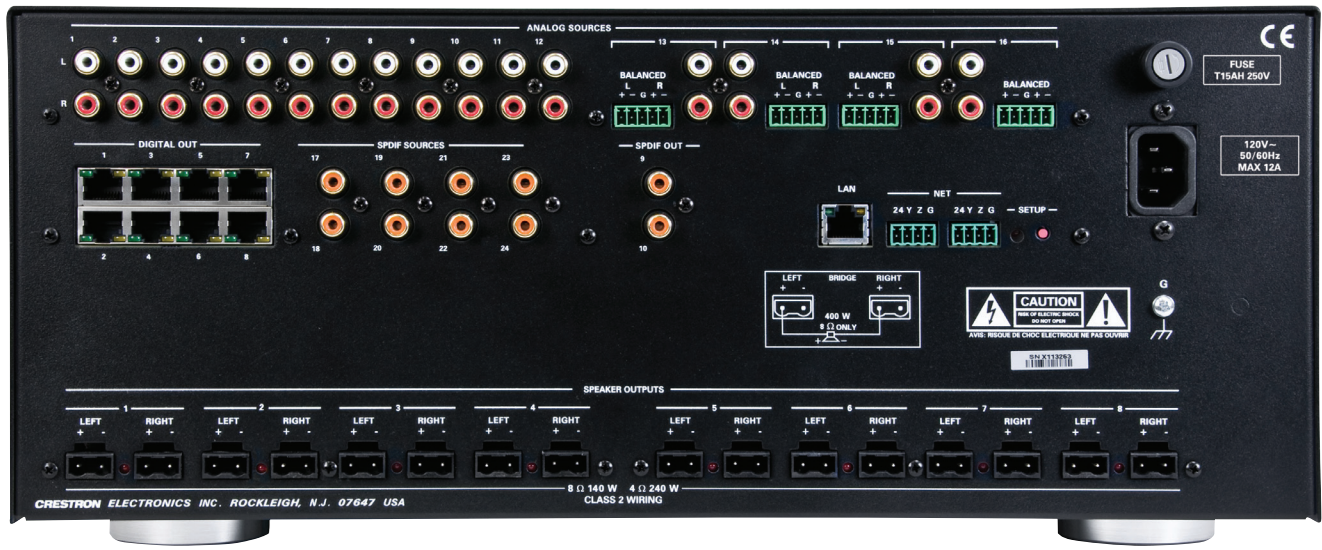
Designed with flexibility and expansion in mind, the Sonnex Multiroom Audio System provides numerous inputs to manage all your stereo audio sources, both analog and digital.

- A total of 24 discrete inputs are spread across an array of connectors, including unbalanced RCA, balanced terminal blocks, and SPDIF coaxial. Sonnex easily handles the multi-zone outputs from a TunerRack Modular Multi-Tuner ([CEN-TRACK](#)) or multiple Network

"Sonnex® redefines what multiroom audio can be. Engineered by Crestron® — the pioneer in audio distribution control systems."

Finally—a fully-scalable audio distribution system that delivers high-output audiophile sound quality to every room with significantly reduced cabling, low power consumption, advanced DSP, and integrator-friendly setup. The **Sonnex®** Multiroom Audio System takes audio distribution to a higher level, facilitating massive systems with up to 74 zones and over 30,000 Watts of power!

SWAMP-24X8 Sonnex® Multiroom Audio System



SWAMP-24X8 – Rear View

Stream Players ([CEN-NSP-1](#)), plus all your digital television receivers and other devices.

- Audio return channels are easily added using Crestron [AUD-EXT](#) Audio over CAT5 Extenders to receive signals from remote AV receivers located up to 2000 feet (610 m) away.

For ease of use, descriptive names for every source input and zone output can be displayed on the front panel LCD and pushbuttons. Via the front panel controls, or from a Crestron touch screen or remote, any input can be selected for listening in any zone or group. Additional features include mono summing for distribution to non-stereo zones, scaling factor settings for defining minimum and maximum volume levels, source signal detection, and source gain compensation to assure a consistent level when switching between disparate sources.

Bonus Zones

In addition to its eight amplified zone outputs, the SWAMP-24X8 provides two additional SPDIF digital outputs for sharing stereo sources with centralized audio processors and AV receivers.^[2] These outputs can even be extended to feed remote AV receivers anywhere in the house using [AUD-EXT](#) Audio over CAT5 Extenders.

Sonnex Digital Audio Transport

Among the many exceptional features that set Sonnex apart from all other multiroom systems is the remarkable Sonnex Audio Transport. On the rear of the SWAMP-24X8 are eight Sonnex Link ports, enabling the connection of up to eight Sonnex Multiroom Audio Expanders ([SWAMPE-4](#) or [SWAMPE-8](#))^[3]. Each link transports professional-quality 24-bit, 48 kHz digital audio from all 24 inputs simultaneously to each expander, supporting wiring distances up to 200 ft (61 m) over a single CAT5e shielded twisted-pair (STP) cable^[1].

While the expanders can be installed centrally with the SWAMP-24X8, the ease of running just one tiny wire instead of 16 heavy speaker cables clearly affords a much better decentralized system approach. Installing each expander local to the rooms it serves, whether on a different floor, another wing, or a completely separate building, significantly reduces the

amount of speaker wiring you'll need to install. The benefits of reducing speaker wiring include faster, easier, and less expensive installation, as well as overall higher performance and efficiency by minimizing the signal loss inherent in long speaker runs.

Plug and Play Expansion

Control for each expander is also embedded in the Sonnex Link, dramatically simplifying installation and setup through a true one-wire interface. There's no need to set addresses or write any special programming. Simply connect each expander to the SWAMP-24X8 and instantly control the complete system from the SWAMP-24X8's front panel or Sonnex Tools software.

Advanced DSP

To truly deliver an ultimate listening experience in every room, Sonnex includes built-in digital signal processing providing a virtual arsenal of controls and adjustments, intelligently deployed to streamline both the installer setup procedure and day-to-day user operation. Key setup functions are accessible via the front panel, while more advanced settings are provided via Sonnex Tools software. Naturally, the essential user controls can be made available on any Crestron touch screen, keypad, handheld remote, or mobile device as part of a complete Crestron system.

Sonnex DSP features include:

- **User Controls** – From a Crestron touch screen or other user interface, Sonnex provides the essential controls for day-to-day listening. Controls include room volume, bass, treble, balance, loudness, mute, zone on/off, and five selectable tone profiles. Through the control system program, many advanced user functions are possible including priority modes (who can control which sources), zone grouping (source sharing), paging, do-not-disturb, alarm clock, sleep timer, and much more.
- **Tone Profiles** – With one touch, users can select from five preset EQ curves including Classical, Jazz, Pop, Rock, or Spoken Word, each tailored for a different type of material or listening preference.

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- **Dynamic Range Control** - When you listen to music or watch TV, you want to enjoy it at a volume level that lets you hear everything clearly — which can be difficult to do if there are competing background noises or someone resting in the next room. Not only that, but the level from one song to the next, and between TV programs and commercials, can fluctuate wildly. Sonnex provides user-selectable DRC to help keep everything at a consistent level, whether in a quiet bedroom, a loud swimming pool, or an outdoor patio, facilitating a more cohesive listening experience without disturbing the neighbors.
- **Sonnex Speaker Protect™** – When the occasion calls for cranking the volume^[4], exclusive SSP[®] output limiting assures maximum headroom while preventing damage to the amplifier or speakers. More sophisticated than conventional limiting, SSP lets the installer set the protection to match the speakers' power handling capability, achieving a transparent effect right up to the limits of the speaker device.
- **5-Band Equalizer** – To tailor the sound of your speakers to the unique acoustical environment of each room or space, Sonnex provides the choice of graphic or parametric 5-band EQ. Using Sonnex Tools software and a wireless laptop, the installer can easily move from room to room, sculpting the sound for optimal audio clarity and impact.

Speaker Profiles

The Speaker Profiles feature in Sonnex Tools alleviates many repetitive adjustments from room-to-room, and project-to-project, by allowing installers to save a complete set of EQ and SSP settings for each type of speaker, room, and customer. Tuning a complete project can be as simple as loading the appropriate Speaker Profile for each zone, effectively “pre-tuning” the whole system before a single note of music or test signal is even played.

Output Bussing

The spacious, open floor plans typical of today's homes and businesses commonly present multiple adjacent listening zones with no sonic boundary between them - e.g., a kitchen and dinette, a living room and dining room, or an outdoor pool and terrace. One click in Sonnex Tools instantly busses adjacent zones together to function as one group while preserving the individual speaker profile settings for each. Volume Offset adjustments easily allow for balancing the levels of each bussed zone for smooth, even coverage of the complete space.

Passive Subwoofer Support

Sonnex lets you enjoy extended low frequency performance in any room, providing high-performance bi-amplification capability to support a passive in-wall, in-floor, or freestanding subwoofer. Configuring Sonnex to handle a 2.1 speaker system is both simple and powerful, offering the choice of 2nd or 4th order active crossover filters for each sub and satellite output, plus up to four parametric EQ filters for room correction and tonal enhancement. With 400 Watts available in bridged mode, there's plenty of power on hand to fill any room with deep, gratifying bass.^[5]

Active (powered) subwoofers are supported using the [SWE-8](#) Sonnex Multiroom Audio Unamplified Expander.

Unamplified Outputs

For applications requiring line level zone outputs, Crestron offers the [SWE-8](#) Sonnex Multiroom Audio Unamplified Expander. Each SWE-8 provides an assortment of analog line-level, SPDIF digital, and Crestron Home[®] (CH) CAT5 balanced audio outputs, offering a solution for routing audio to AV receivers, powered subwoofers, headphone amplifiers, phone systems (for music-on-hold), and other audio equipment.

70/100V Option

Any amplified zone output can be converted to 70 or 100 Volt using one or more Sonnex Output Transformers ([SAT-70V/100V-2](#) or [SAT-70V/100V-4](#)). Also known as “constant-voltage”, 70 Volt and 100 Volt speaker systems allow for long wire runs using small-gauge wire, with the potential for connecting numerous speakers per circuit. Typical applications include outdoor speaker zones, commercial retail spaces, hallways, and common areas.

Intelligent Monitoring and Protection

To help ensure the most seamless user experience and long-lived operation, Sonnex includes several ways to keep tabs of its operating status and health. On its own, Sonnex possesses the intelligence to protect itself from many types of faults including over temperature, over current, over voltage, under voltage, and DC offset on any channel. In the event of a fault, the front panel LCD provides clear fault indication to speed the troubleshooting of incorrect wiring, poor rack ventilation, and other unforeseen issues. Fault alerts may also be broadcast to a system touch screen or mobile device, and integrators can even monitor and track the data remotely through Crestron [Fusion RV[®]](#) software to ensure a rapid service response.

Ultimate Integration

Without question, Sonnex delivers unprecedented intelligence from source to speaker. Via high-speed Ethernet or Cresnet^{®[3]}, Sonnex affords incredible integration potential as part of a complete Crestron system, enabling seamless control of every room and source through a wide selection of touch screens, keypads, wireless remotes, computers, and mobile devices. Complete setup is afforded via USB or Ethernet using Sonnex Tools software, part of the [Crestron Toolbox™](#) installer toolkit.

SPECIFICATIONS

Audio

Features: 24x10 stereo matrix switcher, 8-channel stereo DSP, 8-channel stereo power amplifier, Sonnex[®] Digital Audio Transport, speaker profiles, Sonnex Speaker Protect™, 5-band graphic or parametric EQ, Dynamic Range Control (DRC), tone profiles, source gain compensation, amp bridging, output bussing, individual zone power control, global standby, source signal detection, amplifier temperature and fault monitoring, priority modes^[6], paging^[6], do-not-disturb^[6], alarm clock and sleep timer^[6]

Input Signal Types: stereo analog line (unbalanced and balanced), S/PDIF coaxial (2-channel PCM only)

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Output Signal Types: Stereo speaker level, S/PDIF coaxial (2-channel PCM only), Sonnex Link

Typical of 24 stereo inputs:

Analog-To-Digital Conversion: 24-bit 48 kHz

Source Compensation: ± 10.0 dB per input

Input Monitoring: Source Signal Detect

Typical of up to 8 amplified stereo zone outputs:

Digital-To-Analog Conversion: 24-bit 48 kHz

Output Power: 140 Watts per channel at 8 Ohms;

240 Watts per channel at 4 Ohms;

400 Watts per channel at 8 Ohms bridged

Damping Factor: >200 @ 20 Hz

Amplifier Monitoring: Over Current, Over/Under Voltage, Over Temperature, DC Offset, Clipping

Frequency Response: 20 Hz to 20 kHz ± 0.5 dB

THD: 0.02%

S/N Ratio: >105 dB SPDIF in, >100 dB balanced or unbalanced analog in, A-weighted

Stereo Separation: >90 dB

Zone Separation: >95 dB

Zone Volume Level Control: -80.0 to $+20.0$ dB, adjustable from 0% to 100% plus mute

Bass Control: ± 12.0 dB

Treble Control: ± 12.0 dB

Loudness Compensation: On/Off

Dynamic Range Control: On/Off

Balance Control: Left/right adjustable

Mono Summing: Selectable

Power Limiting: Sonnex Speaker Protect (SSP®) output limiting; configurable 40 to 140 Watts @ 8 Ohms, 40 to 240 Watts @ 4 Ohms, 40 to 400 Watts @ 8 Ohms bridged

Tone Profiles: Flat, Classical, Jazz, Pop, Rock, Spoken Word

EQ Modes: 5-band graphic or 5-band parametric EQ

GEQ Center Frequencies: 63, 250, 1k, 4k, 16k Hz

GEQ Gain: ± 12.0 dB per band

PEQ Filter Types: EQ, High Pass, Low Pass, Treble Shelf, Bass Shelf, Notch

PEQ Center Frequency: 10 to 20,000 Hz per band

PEQ Gain: ± 12.0 dB per band

PEQ Bandwidth: 0.1 to 3.5 octaves per band

Speaker Profiles: Comprises 5-band GEQ and SSP settings

Bus Volume Offset: ± 12.0 dB per zone for output bussing

Typical of 2 digital stereo zone outputs:

Resolution/Bitrate: 24-bit 48 kHz

Communications

Ethernet: For control and console, 10/100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP

Cresnet: For control and console, Cresnet slave^[3]

Sonnex Link: 64-channel (48 utilized) digital audio w/embedded control, auto-discovery, auto-negotiating

Connectors

ANALOG SOURCES L/R 1 – 16: (32) RCA female comprising (16) unbalanced stereo line-level audio inputs;

Input Impedance: 10k Ohms;

Maximum Input Level: 2 Vrms

ANALOG SOURCES BALANCED 13 – 16: (4) 5-pin 3.5mm detachable terminal blocks;

Balanced stereo line-level audio inputs (mutually exclusive of corresponding unbalanced inputs);

Input Impedance: 20k Ohms;

Maximum Input Level: 4 Vrms

DIGITAL OUT 1 – 8: (8) 8-wire RJ45 female;

Sonnex expansion link outputs;

Connect to Sonnex Multiroom Audio Expanders^[1,3]

SPDIF SOURCES 17 – 24: (8) RCA female;

S/PDIF coaxial digital audio inputs;

Input Impedance: 75 Ohms

SPDIF OUT 9 – 10: (2) RCA female;

S/PDIF coaxial digital audio outputs;

Output Impedance: 75 Ohms

LAN: (1) 8-wire RJ45 female;

10Base-T/100Base-TX Ethernet port

NET: (2) 4-pin 3.5mm detachable terminal blocks;

Cresnet slave ports, paralleled^[3]

FUSE (US/North America): Main fuse, T15AH;

(1/4" x 1-1/4", 250V, 15A, time-lag, high-rupture rated)

FUSE (International): Main fuse, T8AH;

(1/4" x 1-1/4", 250V, 8A, time-lag, high-rupture rated)

120V~50/60Hz MAX 12A (US/North America): (1) IEC 60320 C14 main

power inlet, mates with removable power cord (included);

A dedicated 15 Amp circuit is strongly recommended

220-240V~50/60Hz MAX 6A (International): (1) IEC 60320 C14 main

power inlet, mates with removable power cord (included);

A dedicated 10 Amp circuit is strongly recommended

G: 6-32 screw, chassis ground lug

SPEAKER OUTPUTS LEFT/RIGHT 1 – 8: (16) 2-pin 7.62mm 15A detachable terminal blocks;

Power amplifier outputs;

Wire Size: Terminals accept up to 14 AWG

COMPUTER (front): (1) USB Type B female;

USB computer console port (6 ft cable included)

LCD Display

Green LCD alphanumeric, adjustable backlight, 2 lines x 20 characters per line;

Displays source & zone setup, amplifier and expander status, network & control configuration, volume levels, and other parameters

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Controls & Indicators

SOFTKEYS: (4) pushbuttons for execution of LCD driven functions

MENU: (1) pushbutton, steps menu back one level

▲, ▼: (2) pushbuttons, scroll up or down through menu and adjust menu parameters

ENTER: (1) pushbutton, executes highlighted menu item or value

VOLUME: (1) continuous turn rotary encoder, adjusts menu parameters, defaults to audio volume

On/Off: (1) Rocker switch, turns unit on and off

SOURCE 1 – 24: (24) pushbuttons and green LEDs, select input source for routing and adjustment

ZONE 1 – 10: (10) pushbuttons and green LEDs, select output zone for routing and adjustment

DIGITAL OUT 1 – 8 (rear): (8) green and (8) amber LEDs, green indicates link status and amber indicates data communication on the corresponding output

LAN (rear): (1) green and (1) amber LEDs, green indicates Ethernet link status, amber indicates Ethernet activity

SETUP (rear): (1) recessed miniature pushbutton and (1) red LED, used for touch-settable ID (TSID) in conjunction with Crestron Toolbox™ software

Bridging: (8) red LEDs, indicate adjacent outputs are configured for bridged operation

Power Requirements

Main Power (US/North America): 12 Amps @ 120 Volts AC, 50/60 Hz (a dedicated 15 Amp circuit is strongly recommended)

Main Power (International): 6 Amps @ 220-240 Volts AC, 50/60 Hz (a dedicated 10 Amp circuit is strongly recommended)

Cresnet Power Usage: none

Environmental

Temperature: 41° to 104°F (5° to 40°C)

Humidity: 10% to 90% RH (non-condensing)

Heat Dissipation: 475 BTU/Hr (140W@8Ω), 750 BTU/Hr (240W@4Ω)

Enclosure

Chassis: Metal with black finish, vented sides, variable-speed fan-cooled

Front Panel: Metal, black finish with polycarbonate label overlay

Mounting: Freestanding or 4U 19-inch rack-mountable (feet and rack ears included)

Dimensions

Height: 7.51 in (191 mm);
6.97 in (178 mm) without feet

Width: 19.0 in (483 mm);
17.29 in (439 mm) without rack ears

Depth: 18.47 in (470 mm)

Weight

60.0 lb (27.3 kg)

MODELS & ACCESSORIES

Available Models

SWAMP-24X8: Sonnex® Multiroom Audio System

SWAMPI-24X8: Sonnex® Multiroom Audio System - International Version, 220-240V

Available Accessories

SWAMPE-4: Sonnex® Multiroom Audio Expander, 4-Zone

SWAMPE-8: Sonnex® Multiroom Audio Expander, 8-Zone

SWAMPIE-4: Sonnex® Multiroom Audio Expander - International Version, 4-Zone

SWAMPIE-8: Sonnex® Multiroom Audio Expander - International Version, 8-Zone

SWE-8: Sonnex® Multiroom Audio Unamplified Expander, 8-Zone

DM-CBL-8G-NP: High-Performance CAT5e Shielded Twisted-Pair Cable, non-plenum

DM-CBL-8G-P: High-Performance CAT5e Shielded Twisted-Pair Cable, plenum

DM-8G-CONN: Cable Connector for DM-CBL-8G

DM-8G-CRIMP: Crimping Tool for DM-8G-CONN

DM-8G-CONN-WG: Cable Connector with Wire Guide for DM-CBL-8G

DM-8G-CRIMP-WG: Crimping Tool for DM-8G-CONN-WG

S-EXT1-S: Sonnex® Link over Fiber Extender

SAT-70V/100V-2: 2-Channel Sonnex® Output Transformer

SAT-70V/100V-4: 4-Channel Sonnex® Output Transformer

AUD-EXT: Audio over CAT5 Extenders

CBL Series: Crestron® Certified Interface Cables

EXCITE Series: Excite® In-Ceiling & In-Wall Speakers

ASPIRE Series: Aspire® In-Ceiling & In-Wall Speakers

ESSENCE Series: Essence® In-Ceiling & In-Wall Speakers

AIR Series: AIR® Surface Mount Outdoor Speakers

SAROS Series: Saros® Commercial Speakers

Notes:

1. For connection of the Sonnex Link between the SWAMP-24X8 and each expander, use Crestron **DM-CBL-8G** or high-quality CAT5e shielded twisted-pair cable. The maximum cable length using DM-CBL-8G or CAT5e is 200 ft (61 m) per run. For longer distances, use the **S-EXT1-S** Sonnex Link over Fiber Extender.
2. Additional SPDIF and analog line outputs may be added using the **SWE-8** Sonnex Multiroom Audio Unamplified Expander.
3. If using Cresnet as the control system interface, system expansion is limited to one expander. Support for more than one expander requires Ethernet as the control system interface.
4. Excessive audio volume may damage your hearing. Crestron advocates enjoying your music at a safe listening level.
5. Passive subwoofer support requires one zone output to drive the main left and right (i.e., satellite) speakers, plus one additional zone output to drive a subwoofer with 140W @ 8 Ohms, or two additional zone outputs bridged to drive a subwoofer with 400W @ 8 Ohms.
6. Feature enabled via control system program.

SWAMP-24X8 Sonnex[®] Multiroom Audio System

This product may be purchased from an authorized Crestron dealer. To find a dealer, please contact the Crestron sales representative for your area. A list of sales representatives is available online at www.crestron.com/salesreps or by calling 800-237-2041.

The specific patents that cover Crestron products are listed online at: patents.crestron.com.

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