SECTION 27 41 16

INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

GUIDE SPECIFICATION

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Specifier: Please see PART 4 for a listing of products specified in this Guide Specification.

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# GENERAL

NOT USED in this Guide Specification. Specifier shall Specify PART 1 administrative and procedural requirements as needed.

# PRODUCTS

## AoIP Amplifier

Specifier Note:

*The Crestron DM‑NAX‑8ZSA is a next generation Audio‑over‑IP (AoIP) amplifier that puts Crestron multiroom audio distribution on the network. It provides eight amplified stereo zone (16-channel) outputs. Four stereo line-level outputs mirror speaker zone outputs 1-4. A dedicated streaming service player for each of the eight zones enables complete freedom to stream different content in every zone.*

### Basis of Design

#### Crestron DM-NAX-8ZSA

Specifier Note:

DM-NAX-8ZSA
https://www.crestron.com/Products/Audio/Multiroom-Audio/Multiroom-Audio-Systems/DM-NAX-8ZSA

### Device Definition

#### 2 RU (8)-zone AoIP Amplifier that interfaces with the following network types:

##### Proprietary (communicating with devices from same manufacturer)

##### AES67

##### Dante

#### Network AV encoder / decoder functionality

##### Media streams, line level and digital SPDIF input sources can be sent to other proprietary AoIP or AES67 compatible endpoint on a given network.

##### Connect to other proprietary AoIP endpoints on network

#### Provide streaming service to each of (8) supported speaker zones

#### Includes 4 stereo unbalanced analog RCA and 4 SPDIF (2 TOSLINK® and 2 Coaxial) audio inputs

#### Four stereo line-level outputs mirror speaker zone outputs 1-4

#### Full DSP capabilities

##### Treble boost and cut

##### Loudness

##### Adjustable delay

##### Speaker protection and limiting

##### Tone profiles

##### 10-band EQ per output

##### Fixed or variable line level output with or without DSP applied

#### 150 Watts/Ch. @ 8 Ohms or 300 Watts/Ch. @ 4 Ohms, with zones bridgeable up to 500 Watts/Ch.

#### Permanent or Dynamic Zone bussing (4 buses available per unit, all 8 zones can join a given bus)

#### Individual zone power control and global standby

#### Chime support for each speaker zone

##### Audio ducking or pause when chime is triggered

#### Web interface for setup and adjustment

#### Integrates with Control System devices from the same manufacturer when configured with proprietary control and programming software

#### Voice control support when paired with proprietary control software for residential use

### Device Architecture

#### Construction

##### Chassis: Metal, black and silver finish, vented sides

##### Mounting: 2 RU rack-mountable

#### Dimensions

##### Height: 3.50 in. (89 mm)

##### Width: 19 in. (482 mm); 17.28 in. (439 mm) without rack ears

##### Depth: 14.52 in. (369 mm)

#### Weight: 28 lb. (12.70 kg)

#### Environmental Operating Conditions

##### Temperature: 32° to 104° F (0° to 40° C)

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

##### Heat Dissipation: 450 BTU/hr

### Functions

#### Audio

##### Input Signal Types

###### (4) stereo analog (RCA)

###### (4) digital S/PDIF (2 TOSLINK and 2 Coaxial)

##### Output Signal Types

###### (4) stereo analog outputs (mirrors speaker zone outputs 1-4)

###### Outputs 1 and 2 have a balanced 5-pin stereo Phoenix connection and an unbalanced RCA connection

##### Source Compensation: ± 10.0 dB per input

##### Input Monitoring: Source Signal Detect

##### Output Power

###### 150 Watts per channel at 8 Ω

###### 300 Watts per channel at 4 Ω

###### 500 Watts per channel at 8 Ω bridged

##### Amplifier Monitoring

###### Over Current

###### Over/Under Voltage

###### Over Temperature

###### DC Offset

###### Clipping

##### Frequency Response: 20 Hz to 20 kHz ± 0.6 dB

##### THD: 0.006%

##### S/N Ratio

###### 110 dB digital in

###### 108 dB analog in

##### Stereo Separation

###### 85 dB @ 1 kHz, 8 Ω

###### 80 dB @ 1 kHz, 4 Ω

##### Zone Separation

###### 100 dB @ 1 kHz, 8 Ω

###### 95 dB @ 1 kHz, 4 Ω

##### 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: Off/Low/Medium/High

##### Balance Control: Left/right adjustable

##### Zone Configuration

###### Stereo Single Ended

###### Mono Single Ended

###### Stereo Bridged

###### Mono Bridged

###### Bridged 2.1

###### Bridged 2.1 with Bridged Sub

##### Power Limiting

###### Configurable 5 to 150 W @ 8 Ω

###### 5 to 300 W @ 4 Ω

###### 5 to 500 W @ 8 Ω bridged

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

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

##### EQ Center Frequency: 10 to 20,000 Hz per band

##### EQ Gain: +20/-40 dB per band

##### EQ Bandwidth: 0.1 to 4.0 octaves per band

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

### Communications

#### Ethernet communications shall support the following:

##### AES67-based AoIP standard that supports:

###### Device control and configuration via proprietary programming software, C# and / or RESTful API

###### Interoperability with HDBaseT-based AVoIP systems via AES67 communication

###### Interoperability with Dante systems via Dante Controller software

###### Delivery of streaming services to each speaker zone as configured on speaker-level outputs

##### 10/1000 Mbps

##### Auto-switching

##### Auto-negotiating

##### Auto-discovery

##### Full/half duplex

##### DHCP

#### USB for configuration management

### Connectors

#### SPDIF SOURCES 1-2: (2) JIS F05 female (TOSLINK) optical fiber connector; S/PDIF optical digital audio input

#### SPDIF SOURCES 3-4: (2) RCA female; S/PDIF coaxial digital audio inputs

##### Input Impedance: 75 Ω

#### ANALOG SOURCES L/R 5-8: (8) RCA female comprising (4) unbalanced stereo line-level audio inputs

##### Input Impedance: 10 kΩ

##### Maximum Input Level: 2 Vrms

#### ANALOG OUT L/R 1-4: (8) RCA connectors, female; Comprises (4) unbalanced line-level stereo audio outputs (mirror corresponding amplified output pairs 1-4)

##### Output Impedance: 100 Ω

##### Maximum Output Level: 4 Vrms

#### ANALOG OUT L/R 1-2: (2) 5-pin 3.5 mm detachable terminal blocks; Balanced stereo line-level audio outputs (mirror corresponding unbalanced output pairs 1-2)

##### Output Impedance: 150 Ω

##### Maximum Output Level: 4 Vrms

#### Ethernet 1: (1) 8-wire RJ45 female; 100Base-T/1000Base-TX Ethernet Port

#### Ethernet 2: (1) 8-wire RJ45 female; 100Base-T/1000Base-TX Ethernet Port

#### USB: (1) USB Type B connector; female; USB computer console port; For setup only

#### 100-240V ~50/60 Hz Universal AC: (1) IEC 60320 C14 main power inlet, mates with removable power cord

#### G: 6-32 screw, chassis ground lug

#### SPEAKER OUTPUTS L/R 1-8: (16) 2-pin 7.62 mm 15 A detachable terminal blocks; Power amplifier outputs

##### Wire Size: Terminals accept up to 12 AWG

### Controls and Indicators

#### PWR: (1) LED. Amber indicates that the device is booting. White indicates that the device is switched on with audio passing. Red indicates that the device is in standby mode. Off indicates that there is no power from the power supply.

#### LAN: (1) LED. White indicates that the device is switched on and has a valid IP address. Off indicates that the device is not connected to a network, or the IP address is invalid.

#### NAX: (1) LED. White indicates that any audio-over-IP traffic is passing in or out of the device (if any audio-over-IP streams are transmitting out of, or being received by the unit, then the NAX LED will illuminate white). Off indicates that no audio-over-IP traffic is passing in or out of the device.

#### SOURCE 1-8: (8) LEDs. White indicates signal presence on the specified input/source. Red indicates there is a clipping on an analog input or a bitstream issue on a digital input. Off indicates that there is no signal detected on the specified input/source.

#### ZONE 1-8: (8) LEDs. White indicates there is audio output on the indicated zone. Red indicates a fault due to clipping, over current, over temperature, or low voltage.

#### SETUP: (1) LED. Blinking red indicates that a network reset, or factory restore has been initiated via the adjacent SETUP button.

### Power

#### Power Consumption: 240 W (All channels driven at 1/8th power, 8 Ω)

### Compliance

#### FCC Part 15 Class B digital device, IC Class B, CE

#### Regulatory Model M1845004

# EXECUTION

NOT USED in this Guide Specification. Specifier shall Specify PART 3 On-Site work as needed.

# APPENDICES

## SPECIFIED PRODUCTS

Specifier Note: This Article includes Crestron products specified in this Guide Specification document. This Article is for reference only and should not be required in actual project manual unless included in an overall system equipment list.

### Crestron DM-NAX-8ZSA