



## Model 203 Announcer's Console Featuring Dante® Technology

### Key Features

- Dante audio-over-Ethernet technology
- Creates a complete on-air position
- One main and one talkback output channel
- Highly-flexible 2-channel headphone output
- Integrated sidetone function
- Excellent audio quality
- Uses STcontroller for configuration
- Power-over-Ethernet (PoE) powered

### Introduction

The Model 203 Announcer's Console offers the audio resources needed to directly support a complete broadcast on-air position. Using Dante® audio-over-Ethernet technology, the unit provides main and talkback output channels, talent cue (IFB) inputs, and sidetone capabilities. Housed in a compact, desktop package, it offers users a combination of the essential buttons and controls along with a range of important operating features. The Model 203 is compatible with the Dante Domain Manager™ (DDM) software application and is AES67-compliant for integration into many contemporary networked audio applications.

Optimized for broadcast sports and live entertainment events, eSports, and streaming broadcast applications, the Model 203 allows for simple deployment while maintaining "pro" audio quality and an intuitive user experience. Needing just a Power-over-Ethernet (PoE) data connection, a dynamic or phantom-powered microphone, and a pair of headphones or an earpiece, the unit will be ready for use in just moments. The STcontroller software application is used for configuring the unit's operating parameters including microphone preamplifier gain, P48 phantom power, headphone signal routing, sidetone operation, and main and talkback button action. The Model 203's audio quality is excellent, with low distortion, low noise, and high headroom. Careful circuit design and rugged components ensure long, reliable operation.

### Applications

The Model 203 provides an "all-Dante" solution for one on-air talent location. A wide range of applications can be supported, including sports and entertainment TV and radio events, streaming broadcasts, corporate and government AV installations, and post-production facilities. The unit's small size makes it ideal



for live-sports applications, such as basketball, where physical space for personnel is very limited. Two Dante audio input channels supply the user with their talent cue (IFB) signals. Should the cue signal be "mix-minus" an integrated sidetone function can provide the user with a microphone confidence signal. Two Dante audio output channels, one designated as main (for "on-air" use) and the other talkback, are routed via the associated local-area network (LAN) to inputs on Dante-compatible devices. Two pushbutton switches, main and talkback, provide the user with direct control over audio routing. The audio switching is performed in the digital domain and is virtually "click-free."

### Setup and Operation

Set up and operation of the Model 203 is simple. An etherCON® RJ45 jack is used to interconnect with a standard twisted-pair Ethernet port associated with a PoE-enabled network switch. This connection provides both power and bidirectional digital audio. A broadcast headset or handheld ("stick") microphone can

be directly connected to the unit's 3-pin XLR microphone input connector. This input is compatible with dynamic and condenser microphones. To support the latter an integrated P48 phantom power source can be enabled if desired. Stereo headphones, the headphone connections from a stereo or monaural headset, or even a monaural earpiece are connected to the headphone output jack.

The STcontroller software application is used to configure a wide range of Model 203 operating parameters. This allows the unit's performance to be optimized to meet the needs of specific applications. The user is presented with two pushbutton switches and two push-in/push-out rotary potentiometers ("pots"). This makes it easy to control the status of the main and talkback outputs as well as adjusting the level of the talent cue audio signals as they are sent to the headphone output channels.

## **Ethernet Data and PoE**

The Model 203 connects to a local area network (LAN) by way of a standard 100 Mb/s twisted-pair Ethernet interface. The physical 100BASE-TX interconnection is made by way of a Neutrik® etherCON RJ45 jack. While compatible with standard RJ45 plugs, etherCON CAT5-compatible plugs allow a ruggedized and locking interconnection for harsh or high-reliability environments.

The Model 203's operating power is provided by way of the Ethernet interface using the 802.3af Power-over-Ethernet (PoE) standard. This allows fast and efficient interconnection with the associated data network. To support PoE power management, the Model 203's PoE interface enumerates (reports) to the power sourcing equipment (PSE) that it's a class 2 (low power) device.

## **Dante Audio-over-Ethernet**

Audio data is sent to and received from the Model 203 using the Dante audio-over-Ethernet media networking technology. The Model 203's two Dante transmitter (output) and two Dante receiver (input) audio channels can be assigned to other devices (routed) using the Dante Controller software application. The Dante transmitter (output) and receiver (input) channels are limited to supporting four Dante flows, two in each direction. The digital audio's bit depth is up to 24 with supported sample rates of 44.1, 48, 88.2, or 96 kHz. Two bi-color LEDs provide an indication of the Dante connection status.

The Model 203 is compatible with the AES67 interoperability standard. In this mode, the two transmitter (output) channels will function in multicast; unicast is not supported. In addition, the unit is compatible with the Dante Domain Manager (DDM) software application.

## **Audio Quality**

The Model 203's performance is completely "pro," making it appropriate for use in a wide range of applications. A low-noise, wide dynamic-range microphone preamplifier and associated voltage-controlled-amplifier (VCA) dynamics controller ("compressor") circuit ensures that mic input audio quality is preserved while minimizing the chance of signal overload. A configuration choice allows selection of the signal source utilized by the Dante main transmitter (output) channel. The choices are either the output of the microphone preamplifier or the output of the compressor circuit. These choices are referred to as "pre-compressor" or "post-compressor." The analog-to-digital (ADC) conversion section utilizes a high-performance integrated circuit that supports sample rates of 44.1, 48, 88.2, and 96 kHz with a bit depth of up to 24. The audio signal, now in the digital domain, routes through a 32-bit microcontroller integrated circuit and on to the Dante interface section where it is packetized and prepared for transport over Ethernet.

Audio input signals arrive via the Dante receiver (input) channels and pass into the Model 203's microprocessor. As with the Dante audio output channels, the sample rate can be 44.1, 48, 88.2, or 96 kHz with a bit depth of up to 24. Channel routing, sidetone creation, and headphone level control are performed in the digital domain. This provides flexibility, allows precise control, and keeps the two rotary controls (pots) from having to directly handle analog audio signals. The audio signals destined for the headphone output channels are sent to a high-performance digital-to-analog converter (DAC) integrated circuit and then on to robust driver circuitry. High signal levels can be provided to a variety of headsets, headphones, and earpieces.

## **Configuration Flexibility**

The Model 203 can be configured to meet the needs of specific applications and user preferences. All configuration tasks are performed using the STcontroller personal computer software application which is available free of charge on the Studio Technologies' website. (Versions of STcontroller that are compatible with the Windows® and macOS® operating systems can be downloaded.) In the Model 203 there are no mechanical switch settings or button-press sequences required to configure how the unit functions. Selectable parameters include microphone preamplifier gain, P48 phantom power on/off, headphone output performance, sidetone operation, button operation, and main output audio source.

The gain of the microphone preamplifier can be selected from among five choices. This allows the Model 203 to match the output sensitivity of a range of handheld and headset-associated microphones. A low-noise source of P48 phantom

power can be enabled if required to support condenser (capacitor) microphones. The two Dante receiver (input) audio sources and the way in which they are assigned to the headphone output channels can be configured. In addition, the operation of the two rotary controls (pots) can be selected. These unique choices allow almost any required headphone monitoring situation to be implemented. Whether for use in on-air sports, in an eSports broadcast, or as a production support tool, the Model 203 should be able to achieve the desired configuration.

The integrated sidetone function can be configured to operate from among three choices. This allows audio associated with the output of the microphone preamplifier to be sent to the headphone output as required. Sidetone can be important as some applications may provide a “mix-minus” talent cue signal that doesn’t include the user’s own voice content. A configuration selection allows the operation of the main button and its

associated function to be selected from among five choices. The talkback button can be configured from among three choices. The Dante main output channel can be selected to have its audio source be before (pre-compressor) or after (post-compressor) the dynamics control circuitry.

## Future Capabilities and Firmware Updating

The Model 203 was designed so that its capabilities and performance can be enhanced in the future. A USB receptacle, located on the unit’s main circuit board (underneath the unit’s cover), allows the application firmware (embedded software) to be updated using a standard USB flash drive. The Model 203 uses the UltimoX2™ integrated circuit from Audinate to implement its Dante interface. The firmware in this integrated circuit can be updated via the unit’s Ethernet connection, helping to ensure that its capabilities remain up to date.

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## Model 203 Specifications

### Power Source:

Power-over-Ethernet (PoE): class 2 (low power, ≤6.49 watts) per IEEE® 802.3af

### Network Audio Technology:

Type: Dante audio-over-Ethernet

AES67-2018 Support: yes, selectable on/off

Dante Domain Manager (DDM) Support: yes

Bit Depth: up to 24

Sample Rate: 44.1, 48, 88.2, and 96 kHz

Pull-Up/Down Support: no

Dante Transmitter (Output) Channels: 2 (main (pre- or post-compressor, selectable) and talkback (post-compressor))

Dante Receiver (Input) Channels: 2 (headphone channel 1 and headphone channel 2)

Dante Audio Flows: 4; 2 transmitter, 2 receiver

### Network Interface:

Type: 100BASE-TX, Fast Ethernet per IEEE 802.3u (10BASE-T and 1000BASE-T (GigE) not supported)

Data Rate: 100 Mb/s (10 Mb/s and 1000 Mb/s Ethernet not supported)

### Microphone Input:

Compatibility: dynamic or phantom-powered microphones

Type: balanced, capacitive coupled

Impedance: 2.8 k ohms, nominal

Gain: 36, 42, 48, 54, and 60 dB, selectable

Frequency Response: 30 Hz to 20 kHz, –3 dB at 30 Hz, –0.6 dB at 20 kHz

Distortion (THD+N): <0.020%, 1 kHz, 36 dB gain, –32 dBu input level

Dynamic Range: 96 dB, A-weighted

Phantom Power: P48 per IEC 61938 standard, on/off selectable with status LED

### Compressor:

Application: always used for Dante talkback audio output channel, can be used for Dante main output channel

Threshold: 1 dB above nominal level (–19 dBFS)

Slope: 2:1

Status LED: lights when compressor active

### Headphone Output:

Type: 2-channel

Compatibility: intended for connection to stereo (dual-channel) or mono (single-channel) headphones, headsets or earpieces with nominal impedance of 50 ohms or greater

Maximum Output Voltage: 3.1 Vrms, 1 kHz, 150-ohm load

Frequency Response: 20 Hz to 20 kHz, +0/–1 dB

Distortion (THD+N): 0.001%, +10 dBu output, 150 ohm load

Dynamic Range: >102 dB

### Connectors:

Microphone Input: 3-pin female XLR

Headphone Output: 3-conductor ¼-inch jack

Ethernet: Neutrik etherCON RJ45 jack (compatible with etherCON CAT5 plug)

USB: type A receptacle (located inside Model 203’s enclosure and used only for updating firmware)

**Configuration:** uses Studio Technologies’ STcontroller personal computer application

### Environmental:

Operating Temperature: 0 to 50 degrees C (32 to 122 degrees F)

Storage Temperature: –40 to 70 degrees C (–40 to 158 degrees F)

Humidity: 5 to 95%, non-condensing

Altitude: not characterized

### Dimensions (Overall):

4.3 inches wide (10.9 cm)

2.1 inches high (5.4 cm)

5.1 inches deep (13.0 cm)

**Weight:** 1.1 pounds (0.50 kg)

**Deployment:** intended for tabletop applications

Specifications and information subject to change without notice.

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