Model 203
Announcer's Console

User Guide

Issue 1, April 2022

This User Guide is applicable for serial numbers
M203-00151 and later with Application Firmware 1.00 and later
and STcontroller application version 3.08.00 and later.

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Revision History

Issue 1, April 2022:

- Initial release.

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.

Figure 1. Model 203 Announcer's Console front and rear views

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.

Getting Started

What's Included

Included in the shipping carton will be a Model 203 Announcer's Console and instructions on how to obtain an electronic copy of this guide. As a device that is Power-over-Ethernet (PoE) powered, no external power source is provided.

Connections

In this section, signal interconnections will be made using the three connectors located on the back of the Model 203's enclosure. An Ethernet data connection with Power-over-Ethernet (PoE) capability will be made using either a standard RJ45 patch cable or an etherCON protected RJ45 plug. A microphone will be connected using a cable-mounted 3-pin male XLR connector. A set of headphones or an earpiece will be connected by way of a 2- or 3-conductor ¼-inch plug.

Ethernet Connection with PoE

A 100BASE-TX Ethernet connection that supports Power-over-Ethernet (PoE) is required for Model 203 operation. This one connection will provide both the Ethernet data interface and power for the Model 203's circuitry. A 10BASE-T connection is not sufficient as Dante does not support this Ethernet protocol. A 1000BASE-T (GigE) connection is not supported by the Model 203 unless it can automatically "fall back" to 100BASE-TX operation. The Model 203 supports Ethernet PoE switch power management, enumerating itself as a PoE class 2 device.

The Ethernet connection is made by way of a Neutrik etherCON protected RJ45 jack that is located on the back of the Model 203's enclosure. This allows connection by way of a cable-mounted etherCON connector or a standard RJ45 plug. The Model 203's Ethernet interface supports auto MDI/MDI-X so that a "crossover" or "reversing" cable will never be required.

Microphone Input

The Model 203 provides a 3-pin female XLR connector which allows a balanced dynamic or phantom-powered condenser microphone to be connected. The microphone can be a standalone handheld ("stick") type or can be part of a broadcast-style headset. The Model 203's microphone input is directly compatible with balanced dynamic or P48 phantom powered microphones. A microphone should be connected

such that its common is on connector pin 1, its signal high (+) is on connector pin 2, and its sign low (–) is on connector pin 3. An STcontroller software application configuration setting allows the P48 microphone power source to be enabled or disabled as desired. Details on configuring the unit will be described later in this guide.

Headphone Output

The Model 203 provides a 2-channel ("stereo") headphone output by way of a 3-conductor ¼-inch phone jack. Devices such as stereo headphones or "dual-ear" broadcast-style headsets can be directly connected using a 3-conductor ¼-inch plug. Following the usual convention, the left channel should be terminated on the tip lead, the right channel on the ring lead, and common on the sleeve lead.

It's also possible to use a monaural ("single-ear") headset or broadcast-type single earbud as long as sufficient care is taken. If a 3-conductor ¼-inch plug is used by the device it should be wired such that the tip lead is connected to the positive terminal of the transducer and the sleeve lead is connected to the negative or common lead of the transducer; the plug's ring should be left unconnected. It's also possible that a monaural device will be terminated on a 2-conductor (tip and sleeve) ¼-inch plug. When a plug of this type is inserted into the Model 203's headphone output connector (phone jack) the Model 203's right headphone output channel will be shorted. (This would occur since the ring lead of the connector would be directly shorted to the sleeve lead.) This can lead to stress on the Model 203's right channel headphone output circuitry as well as drawing extra current from the output stage. To prevent this condition the Headphone Output – Controls (A/B) mode configuration choice should be set for Single-Channel Mono. This disables the right headphone output channel and sends the listen audio source or sources only to the left headphone output channel. Refer to a later section in this guide for details on configuring the headphone output.

Dante Configuration

For audio to pass to and from the Model 203 requires that several Dante-related parameters be configured. These configuration settings will be stored in non-volatile memory within the Model 203's circuitry. Configuration of the Model 203 will typically be made using the Dante Controller software application which is available for download free of charge at audinate.com. Versions of Dante Controller are available to support the Windows and macOS personal computer operating systems. The Model 203 uses the UltimoX2 2-input/2-output integrated circuit to implement its Dante interface. The Model 203 is also compatible with the Dante Domain Manager (DDM) software application.

Audio Routing

The two Dante receiver (input) channels associated with the Model 203 must be routed (connected) to Dante transmitter (output) channels on associated equipment. Configuration settings allow these two audio sources to ultimately be sent to the Model 203's 2-channel headphone output. The Model 203's two Dante transmitter (output) channels must be assigned to Dante receiver (input) channels on associated equipment. This achieves routing the Model 203's main and talkback output audio channels to the device (or devices) that will be "listening" to them.

Within Dante Controller a "subscription" is the term used for routing a transmitter (output) channel or flow (a group of up to four output channels) to a receiver (input) channel or flow (a group of up to four input channels). The number of transmitter flows associated with an UltimoX2 integrated circuit is limited to two. These can either be unicast, multicast, or a combination of the two. If the Model 203's transmitter (output) channels need to be routed using more than two flows it's possible that an intermediary device, such as the Studio Technologies' Model 5422A Dante Intercom Audio Engine, can be used to "repeat" the signals.

Unit and Channel Names

The Model 203 has a default Dante device name of **ST-M203-** followed by a unique suffix. The suffix identifies the specific Model 203 that is being configured. The suffix's actual alpha and/or numeric characters relate to the MAC address of the unit's UltimoX2 integrated circuit. The two Dante receiver (input) channels have default names of **Headphone Ch1** and **Headphone Ch2**. The two Dante transmitter (output) channels have default names of **Main** and **Talkback**. Using Dante Controller, the default device name and channel names can be revised as appropriate for the specific application.

Device Configuration

The Model 203 supports digital audio sample rates of 44.1, 48, 88.2, and 96 kHz. A setting in Dante Controller is used to configured the desired sample rate. No sample rate pull-up/down values are available and the audio encoding is fixed for PCM 24. The Model 203 can serve as the Leader clock for a Dante network but, in most cases, it will be configured to "sync" to another device. No clock configuration settings within Dante Controller will typically require revision.

Network Configuration – IP Address

By default, the Model 203's Dante IP address and related network parameters will be determined automatically using DHCP or, if not available, the link-local network protocol. If desired, Dante Controller allows the IP address and related network parameters to be manually set to a fixed (static) configuration. While this is a more-involved process than simply letting DHCP or link-local "do their thing," if fixed addressing is necessary then this capability is available. But in this case, it's highly recommended that a unit be physically marked, e.g., directly using a permanent marker or "console tape," with its specific static IP address. If knowledge of a Model 203's IP address has been misplaced there is no reset button or other method to easily restore the unit to a default IP setting.

AES67 Configuration – AES67 Mode

The Model 203 can be configured for AES67 operation. This requires that the AES67 Mode within Dante Controller be set for Enabled. By default, AES67 mode is set for Disabled. Note that in the AES67 mode the Dante transmitter (output) channels will function in multicast; unicast is not supported.

Model 203 Clocking Source

While technically the Model 203 can serve as a Leader clock for a Dante network (as can all Dante-enabled devices) in virtually all cases the unit will be configured to receive "sync" from another device. As such, the check box for Preferred Leader associated with the Model 203 would not be enabled.

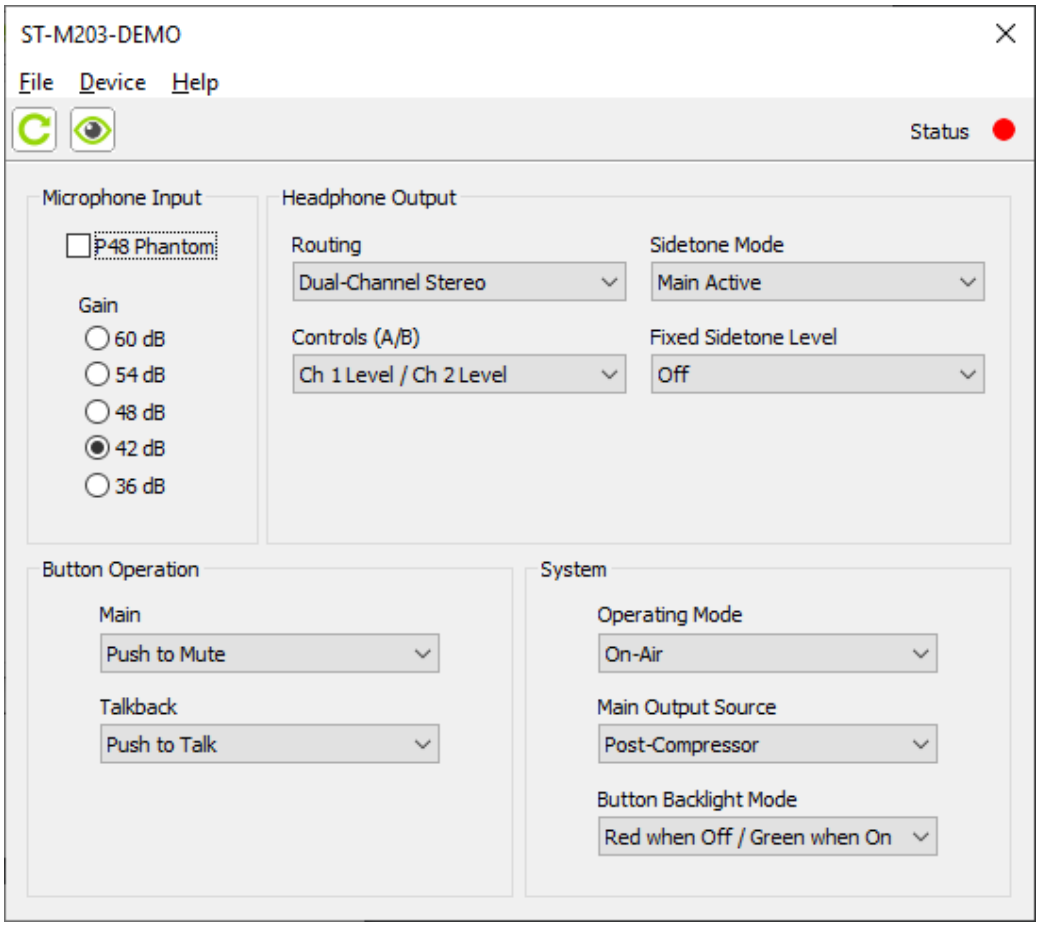
Model 203 Configuration

The STcontroller software application is used to configure the way in which the Model 203 functions. No DIP switch settings or other local actions are used to configure the unit. This makes it imperative that STcontroller be available for convenient use in a personal computer that's connected to the related LAN.

Installing STcontroller

STcontroller is available free of charge on the Studio Technologies' website (studio-tech.com). Versions are available that are compatible with personal computers running selected versions of the Windows and macOS operating systems. If required, download and install STcontroller onto a designated personal computer. This personal computer must be on the same local area network (LAN) and subnet as the Model 203 units that are to be configured. Immediately after starting STcontroller the application will locate all the Studio Technologies' devices that it can control. The one or more Model 203 units to be configured will appear in the device list. Use the Identify command to allow easy recognition of a specific Model 203 unit. Double-clicking on a device name will cause the associated configuration menu to appear. Review the current configuration and make any changes that are desired.

Changes made using STcontroller will be immediately reflected in the unit's operation; no Model 203 reboot is required. Each time a change is made the main and talkback buttons on the Model 203's top panel will flash orange in two rapid sequences to indicate that a command from STcontroller has been received



Microphone Input – P48 Phantom Power

STcontroller allows selection of the on/off status of the microphone input's P48 phantom power source. The on/off status is displayed by way of an LED, red in color, located on the back panel adjacent to the microphone input connector. Select the status of the P48 source to meet the needs of the connected microphone.

Microphone Input – Gain

Choices are *36 dB*, *42 dB*, *48 dB*, *54 dB*, and *60 dB*.

The gain of the Model 203's microphone preamplifier can be selected from among five choices. The compressor active LED, orange in color and visible on the back panel adjacent to the microphone input connector, can act as a guide when setting the preamp gain. When a voice signal at a normal level is present on the microphone input the compressor active LED should light intermittently. If, for example, it rarely lights and the gain is set to 42 dB, it might be a good idea to change the setting to 48 dB. If the LED is lit fully while speaking at a normal level into the microphone and the gain is set for 54 dB or 60 dB, changing the gain to one of the lower values might be warranted. There's no "hard and fast" rule about which gain setting is appropriate. Unless otherwise indicated, 42 dB is typically a good initial choice.

Headphone Output – Routing

Choices are *Dual-Channel Stereo*, *Dual-Channel Mono*, and *Single-Channel Mono*.

STcontroller allows selection from among three headphone output modes. Each mode is distinct and careful selection will help optimize the Model 203's operation for a range of applications.

Dual-Channel Stereo: The Dual-Channel Stereo mode is provided for on-air applications where two independent audio sources need to be routed to the two headphone output channels. Dante receiver (input) channel 1 will be routed to the left headphone output channel and Dante receiver (input) channel 2 will be routed to the right headphone output channel. Note that in this mode the sidetone audio signal will be routed to both the left and right headphone output channels.

Dual-Channel Mono: The Dual-Channel Mono mode can be useful in applications where the same audio signals need to be provided to a user in both the left and right headphone output channels. In this mode, Dante receiver (input) channels 1 and 2 are combined (mixed together or "summed") and routed to both the left and right channels of the headphone output. Note that in this mode the sidetone audio signal will be routed to both the left and right headphone output channels.

Single-Channel Mono: The Single-Channel Mono mode is specifically provided for applications where a 2-conductor ¼-inch plug is being used with the connected headphones, headset, or a broadcast-style earpiece. In this mode, Dante receiver (input) channels 1 and 2 are combined to monaural and routed to only the left channel of the headphone output; no audio signal is routed to the right channel of the headphone output. Note that in this mode the sidetone audio signal will be routed to only the left headphone output channel.

Headphone Output – Controls (A/B)

Choices are *Ch 1 Level/Ch 2 Level*, *Ch 1 & 2 Level/Balance*, and *Ch 1 & 2 Level/Sidetone Level*.

Three configuration choices in STcontroller allow selection of the manner in which the two rotary controls (pots), labeled A and B, will function.

Ch 1 Level/Ch 2 Level: This mode is provided for on-air applications where independent control of the two Dante receiver (input) channels is required. The control on the left, labeled A, allows adjustment of Dante receiver (input) channel 1. The control on the right, labeled B, allows adjustment of Dante receiver (input) channel 2. Note that in this mode the level of the sidetone audio signal will be determined by the configuration of the Fixed Sidetone Level setting.

Ch 1 & 2 Level/Balance: This mode is provided for use in "stereo" applications such as live music events or radio broadcasts. In these applications it's typical to want the user to have a single control to simultaneously adjust the overall level of both Dante receiver (input) channels, while a separate control is used to adjust the left/right level balance.

When the Headphone Output – Routing configuration is set for Dual-Channel Stereo the control on the left, labeled A, will be used to adjust the level of both

Dante receiver (input) channels. The control on the right, labeled B, will be used to adjust the balance of the two channels.

If the Headphone Output – Routing configuration is set to either of the mono choices the action of the balance control, on the right and labeled B, will simply change the level ratio of Dante receiver (input) channel 1 versus Dante receiver (input) channel 2.

Ch 1 & 2 Level/Sidetone Level: This mode is provided for applications where the user needs to independently adjust the level of the Dante receiver (input) channels and the sidetone signal as they are sent to the headphone output channel or channels. The control on the left, labeled A, will be used to adjust the level of both Dante receiver (input) channels. The control on the right, labeled B, will be used to adjust the level of the sidetone signal.

Note that in this mode the STcontroller configuration choice for Fixed Sidetone Level will be "grayed" out (become inactive) as it will not be utilized.

Headphone Output – Sidetone Mode

Choices are *Main Active*, *Talkback Active*, and *Main and Talkback Active*.

The overall mode of the Model 203's sidetone function can be configured from among three choices. Sidetone is audio from the microphone input that is sent to the headphone output channel or channels. This can be important, allowing the user to "hear" themselves for performance confirmation and comfort. Making a specific selection from among the three available modes will depend on the needs of the application. If a "full mix" is being provided to the user by way of the Model 203's two Dante receiver (input) channels then locally provided sidetone won't be needed when "on-air," i.e., the main Dante output, is enabled. The user will hear themselves by way of the audio signals that are being routed to the Dante audio input channels. But if a "mix-minus" is being supplied to the Model 203 then having one of the sidetone modes enabled can be an important means of establishing user confidence. There are also cases where a "full mix" is provided but the user desires to hear themselves when the talkback function is active.

Note that the actual level of sidetone audio as it is sent the headphone output will be determined by the configuration of the Headphone Output – Controls (A/B) selection. It will either follow the Fixed Sidetone Level configuration or the position of the level control that is located on the right and labeled B.

Main Active: In this mode, the sidetone function will be active whenever the main output is active, i.e., an audio signal associated with the microphone input is present on the main Dante transmitter (output) channel.

Talkback Active: In this mode, the sidetone function will be active whenever the talkback function is active and microphone audio is present on the talkback Dante transmitter (output) channel.

Main and Talkback Active: In this mode, the sidetone function will always be active and sidetone audio will be continuously routed to the headphone output.

Headphone Output – Fixed Sidetone Level

Choices are *Off*, *Low*, *Medium Low*, *Medium*, *Medium High*, and *High*.

When the configuration for the Headphone Output – Controls (A/B) is set for either of the dual-channel modes the level of the sidetone audio will follow the Fixed Sidetone Level setting. This level can be selected from among five values as well as being off. The correct value is simply the one that makes the user most comfortable. Sidetone audio can be disabled by selecting the Off choice. Selecting Off is useful for applications where user microphone audio is being sent to the Model 203's Dante receiver (input) channels as part of the listen audio signals. (This would be considered as a "full mix" signal.)

As previously discussed, the Fixed Sidetone Level choice will be "grayed" out and inaccessible if the Headphone Output – Controls (A/B) configuration is selected for Ch 1 & 2/Sidetone. In this case, the rotary control on the right, labeled B, will be used to adjust the sidetone level.

Button Operation – Main

Choices are *Push to Mute*, *Push to Talk*, *Latching*, *Push to Talk/Tap to Latch*, and *Push to Mute/Tap to Latch*.

STcontroller allows the operating configuration of the main button to be selected from among five choices.

Push to Mute: If this mode is selected the main button function will normally be active. The audio signal associated with the microphone preamplifier's output will be routed to the Dante main output channel. Whenever the main button is pressed the audio signal will mute on the Dante main output channel.

Push to Talk: If this mode is selected the main button function will normally be inactive. The audio signal associated with the output of the microphone preamplifier will be muted on the Dante main output channel. Whenever the main button is pressed the audio signal will become active on the Dante main output channel.

Latching: If this mode is selected the main button's function will alternate between its active and inactive states whenever the main button is pressed. Upon power up the function will be in its inactive state.

Push to Talk/Tap to Latch: This mode is a combination of the Push to Talk and Latching modes. It's similar to the way in which pushbutton switches may function on user stations associated with broadcast or production intercom systems. If the main button is pressed and held the main button's function will be active. It will stay active until the main button is released. If the main button is momentarily "tapped" the main button's status will change, either from inactive-to-active or from active-to-inactive. Upon Model 203 power up the main button function will be in its inactive state.

Push to Mute/Tap to Latch: This mode is a combination of the Push to Mute and Latching modes. Whenever the main button is momentarily "tapped" the main button's status will change, either from active-to-inactive or inactive-to-active. The audio signal associated with the microphone preamplifier's output will be routed to the Dante main output channel. Whenever the main button is pressed and held the audio signal will mute on the Dante main output channel. It will stay in this condition until the main button is released. Upon Model 203 power up the main button function will be in its inactive state.

Button Operation – Talkback

Choices are *Push to Talk*, *Latching*, and *Push to Talk/Tap to Latch*.

STcontroller allows the operating configuration of the talkback button to be selected from among three choices.

Push to Talk: If this mode is selected the talkback function will normally be inactive. When the talkback button is pressed the talkback function will become active.

Latching: If this mode is selected the talkback function will alternate between its active and inactive states whenever the talkback button is pressed. Upon power up the talkback function will be in its inactive state.

Push to Talk/Tap to Latch: This mode is a combination of the Push to Talk and Latching modes. It's similar to the way pushbutton switches function in user stations associated with broadcast or production intercom systems. If the talkback button is pressed and held the talkback function will be active. It will stay active until the talkback button is released. If the talkback button is momentarily "tapped" the status of the talkback function will change, either from inactive-to-active or from active-to-inactive. Upon Model 203 power up the talkback button will be in its inactive state.

System – Operating Mode

Choices are *On-Air* and *Production*.

The system mode configures the overall manner in which the Model 203 operates. Specifically, it determines how the Dante main output channel will operate vis-à-vis the talkback function. There are two system modes available. Understanding how each impacts Model 203 operation will help to ensure that the desired operation is obtained and that maximum usability will occur.

On-Air: When this mode is selected audio on the Dante main output channel will mute whenever the talkback function is active. The on-air mode should be selected for all on-air broadcast applications when it's imperative that the "on-air" audio signal be muted whenever on-air talent uses the talkback function to communicate with production personnel.

Production: When the system mode is set for Production, the audio signal on the Dante main output channel is never muted in response to talkback function activity. The main output function will operate independently of the talkback function. This mode allows the Dante main output channel to be used, for example, as an additional talkback output. In this way, the Dante main transmitter (output) channel and the Dante talkback transmitter (output) channel can be

used separately and not impact each other. This also allows both the main and talkback pushbuttons to be used simultaneously. When selected for the correct application, the production mode can prove to be very useful. But it's not appropriate for on-air use!

System – Main Output Source

Choices are *Pre-Compressor* and *Post-Compressor.*

This STcontroller selection allows the audio source for the Dante main transmitter (output) channel to be selected. There are two choices available. In most cases, the post-compressor selection will be appropriate. In all cases, the output of the compressor circuitry will be used by the Dante talkback transmitter (output) channel.

Pre-Compressor: When selected for Pre-Compressor the audio source for the Dante main transmitter (output) channel will be the output of the microphone preamplifier. No dynamic range control is performed on the signal that is provided to the main output. This selection can be appropriate when the most accurate representation of the microphone input signal is desired. This would allow maximum "downstream" control of a signal that is to be used for "on-air" or other primary purposes. Any processing of audio coming from the Dante main transmitter (output) channel would need to be performed in equipment that's "post" (after) the Model 203 in the audio chain. The downside of selecting pre-compressor is an increased risk of signal overload.

Post-Compressor: When this setting is selected the audio source for the Dante main transmitter (output) channel will be the output of the dynamics control (compressor) circuit. This can help prevent an excessive signal level from being sent out the Dante main transmitter (output) channel and on to the next audio device in the signal "chain." With a threshold of just above the nominal digital output level and a "gentle" compression ratio of just 2 to 1 (and assuming that the microphone preamplifier gain has been set correctly) in most cases, the impact of the compressor on voice audio signals will be minimal while helping to prevent audio overloads.

System – Button Backlight Mode

Choices are *Red when Off/Green when On* and *Unlit when Off/Green when On*.

The action of the red and green LED indicators associated with the main and talkback pushbutton switches can be configured. (There are two red and two green LEDs in each pushbutton switch.)

Red when Off/Green when On: The LEDs in the main and talkback pushbutton switches will light red when their associated functions are not active (off). The LEDs in each pushbutton switch will light green when their associated functions are active (on).

Unlit when Off/Green when On: The LEDs in the main and talkback pushbutton switches will not light when their associated functions are not active (off). The LEDs in the pushbutton switches will light green when their associated functions are active (on). This configuration choice was specifically provided to support users who have limitations in their ability to discern between two colors ("color blindness"). This choice should ensure that those persons will not have difficulty perceiving the state of the main and talkback functions.

Operation

At this point, everything should be ready such that Model 203 operation can commence. An Ethernet connection with Power-over-Ethernet (PoE) capability should have been made. A microphone and headphones or an earbud should have been connected. Alternately, a broadcast-style headset may be utilized.

The Model 203's Dante configuration settings should have been selected using the Dante Controller software application. In this way, the unit's two Dante transmitter (output) channels and two Dante receiver (input) channels could be routed (subscribed) to the Dante receiver (input) and Dante transmitter (output) channels on associated equipment. The Model 203's operating configuration should have been established using the STcontroller application. This will ensure that the unit will meet the needs of the specific application.

Initial Operation

The Model 203 will start to function as soon as a Power-over-Ethernet (PoE) power source is connected. However, it may take 20 to 30 seconds for

full operation to commence. Upon initial power up the three status LEDs, located on the back panel below the etherCON RJ45 jack, will begin to light as the network and Dante connections are established. The COMP LED, adjacent to the microphone input connector, may or may not flash momentarily. The P48 LED, also located adjacent to the microphone input connector, will light for a few seconds to indicate that it is functioning. The green and orange LED indicators within the main and talkback pushbutton switches will each light once to indicate that the main operating firmware (embedded software) has started functioning. Once the power-up sequence has completed and the Dante connection has been established full operation will begin. The unit's various LEDs will become operational, displaying the status of their designated functions.

How to Identify a Specific Model 203

Functions within the Dante Controller and STcontroller software applications allow a specific Model 203 unit to be identified. Each application provides an "eyeball" icon that when selected ("clicked") will activate the Identify function. When Identify is selected it will send a command to the designated Model 203 unit. On that unit the red LEDs associated with the main and talkback pushbutton switches will flash on and off approximately five times. (Of course, the Identify command will not change the on/off status of the buttons.) In addition, the SYS and SYNC status LEDs, located directly below the etherCON RJ45 jack on the back panel, will slowly flash green. After a few seconds the LED identification patterns will cease and normal Model 203 operation will resume.

Ethernet and Dante Status LEDs

As previously mentioned, there are three status LEDs located below the etherCON RJ45 jack on the Model 203's back panel. The LINK/ACT LED will light green whenever an active connection to a 100 Mb/s Ethernet network has been established. It will flash green in response to Ethernet data packet activity. The SYS and SYNC LEDs will display the operating status of the Dante interface and associated network connection. The SYS LED will light red upon Model 203 power up to indicate that the Dante interface is not ready. After a short interval it will light green to indicate that it is ready to pass data with another Dante device. The SYNC LED will light red when the Model 203 is not synchronized with a Dante network. It will light green when the Model 203 is synchronized with a Dante network and an external clock source (timing reference) is being received. It will slowly flash green when the Model 203 is part of a Dante network and this specific unit is serving as the Leader clock. (This will not be the normal situation for most applications but is technically possible.) Note that it's possible that up to 30 seconds may be required for the SYNC LED to reach its final state.

P48 Status LED

A red LED indicator is located on the back panel adjacent to the microphone input connector. It is labeled P48 and will light whenever the P48 phantom power source is active and providing power to the microphone input.

Compressor Active LED and Mic Preamp Gain

An orange LED indicator is located on the back panel, also adjacent to the microphone input connector. It is labeled COMP and displays the status of the microphone audio compressor function. This function controls the dynamic range of the audio signal that is sent to the talkback output channel as well as being used by the sidetone function. This signal may also, depending on a configuration setting, be routed to the Dante main output channel. The compressor LED will light whenever the input signal from the microphone, along with the configured mic preamp gain, is of sufficient level such that the dynamic range of the microphone signal is being actively controlled. It's perfectly acceptable for the COMP LED to light intermittently whenever a user is talking at a normal voice level into an associated microphone. But if the COMP LED lights solid orange while a user is talking at a normal voice level this will typically indicate that the mic gain should be reduced. Conversely, if the COMP LED almost never lights when normal talking is taking place, it's likely that changing the gain to a higher value would be beneficial. Note that due to the design of the circuitry the compressor active LED will function whether or not the main, talkback, or sidetone functions are active. (It's part of the analog circuitry that is electrically prior to the digital audio output routing and sidetone functions.)

Main and Talkback Buttons

Two pushbutton switches are used to select how the microphone signal is routed to the two Dante transmitter (output) channels. The button labeled MAIN controls if the audio signal associated with the microphone input will be present on the Dante main output channel. When the function associated with the main button is active (on) audio will be present on the Dante main output channel. When the function is inactive (off) audio will not be present on the Dante main output channel.

How the main button specifically functions and what LED color and action is associated with it depend on the configuration choice that has been made using the STcontroller application. When the main output function is inactive (off) the main pushbutton switch's LED can be lit red or not lit at all. When the main output function is active (on) the main pushbutton switch's LED will be lit green.

The talkback function allows the audio associated with the microphone input to be routed to the Dante talkback output channel. How the talkback button specifically functions, the pushbutton's LED color, and whether the talkback function impacts the main button's function depend on the Model 203's system configuration. When the talkback function is inactive (off) its pushbutton switch will either be lit red or not lit at all. When the talkback function is active (on) the talkback pushbutton switch's LED will be lit green.

Main Button Modes

There are five ways that the main pushbutton switch can function. The way in which it specifically operates will depend on its selected configuration.

Push to Mute: If this mode is selected the audio signal associated with the microphone input will normally be present on the Dante main output channel. This audio signal will mute whenever the main pushbutton is pressed and held.

Push to Talk: If this mode is selected the audio signal associated with the Dante main output channel will be normally muted. The audio signal will become active whenever the main pushbutton is pressed and held.

Latching: If this mode is selected the audio signal associated with the Dante main output channel will alternate between the active and muted states whenever the main pushbutton is pressed. Upon Model 203 power up the audio signal will be in its muted state.

Push to Talk/Tap to Latch: This mode is a combination of the Push to Talk and Latching actions. It's similar to the way in which pushbuttons function on user stations associated with broadcast or production intercom systems. If the main pushbutton is pressed and held the audio signal associated with the Dante main output channel will become active and remain active until the pushbutton is released. If the main pushbutton is momentarily "tapped" the audio signal will change state. Upon Model 203 power up the audio signal on the Dante main output channel will be in its muted state.

Push to Mute/Tap to Latch: This mode is a combination of the Push to Mute and Latching modes. Whenever the main button is momentarily "tapped" its state will alternate between active and muted. When the main button's function is active and the main button is pressed and held the audio signal on the Dante main output channel will mute. It will stay in this condition until the main button is released. Upon Model 203 power up the audio signal will be in its muted state.

Talkback Button Modes

Depending on the selected configuration, the talkback pushbutton will function in one of three possible modes:

Push to Talk: If this mode is selected the audio signal associated with the Dante talkback output channel is normally muted. The audio signal will become active whenever the talkback pushbutton is pressed and held.

Latching: If this mode is selected the audio signal associated with the Dante talkback output channel will alternate between its active and muted states whenever the talkback pushbutton is pressed. Upon Model 203 power up the Dante talkback output channel will be in its muted state.

Push to Talk/Tap to Latch: This mode is a combination of the Push to Talk and Latching actions. If the talkback pushbutton is pressed and held the audio signal associated with the Dante talkback output channel will become active until the pushbutton is released. If the talkback pushbutton is momentarily "tapped" the audio signal on the Dante talkback output channel will change state. Upon Model 203 power up the audio

signal on the Dante talkback output channel will be in its muted state.

Headphone Output – General

Users should find the headphone output audio quality to be excellent, with ample maximum output level and low distortion. Two rotary controls (potentiometers or pots) are located on the front panel and are "push-in/push-out" type. This allows their associated knobs to be in the "out" position when the level needs to be adjusted and in their "in" position when protection from an unwanted change is desired. Analog audio signals do not pass directly through the two controls. The position of the controls is recognized by the Model 203's processor which then adjusts the actual signal level within the digital domain.

Headphone Output – Routing and Controls (A/B)

How the two rotary controls will function depends on two configuration settings as made using the STcontroller application. The selection for the Headphone Output – Routing mode configures how the two Dante audio inputs, Ch 1 and Ch 2, are assigned to the two headphone output channels. The selection for the Headphone Output – Controls (A/B) configuration determines the exact way in which the two controls function. Since the two configurations each offers three choices, this provides selection from among nine unique operating scenarios.

When Headphone Output – Routing is configured to the Dual-Channel Stereo mode:

- If Controls (A/B) is configured for Ch 1 Level/Ch 2 Level the control on the left, labeled A, is used to adjust the level of the channel 1 input audio signal as it is being sent to the left channel of the headphone output. The control on the right, labeled B, is used control the level of the channel 2 input audio signal as it is sent to the right headphone output. Sidetone audio will be sent to both the left and right headphone output channels and its level will follow the Fixed Sidetone Level configuration.
- If Controls (A/B) is configured for Ch 1 & 2 Level/Balance the control on the left, labeled A, adjusts the level of the channel 1 input audio signal as it is being sent to the left headphone output and the channel 2 input audio signal as it is being sent to the right headphone output. The control on the right, labeled B, will adjust the level balance of both channel 1 input audio and channel 2 input audio as they are sent to the two headphone output channels. Sidetone audio will be sent to both the left and right headphone output channels and its level will follow the Fixed Sidetone Level configuration.
- If Controls (A/B) is configured for Ch 1 & 2 Level/Sidetone Level the control on the left, labeled A, adjusts the level of the channel 1 input audio signal as it is being sent to the left headphone output and the channel 2 input audio signal as it is being sent to the right headphone output. The control on the right, labeled B, adjusts the level of the sidetone audio as it is being sent to both the left and right channels of the headphone output. In this mode, the Fixed Sidetone Level configuration will not be utilized and the selection box "grayed" out.

When Headphone Output – Routing is configured to the Dual-Channel Mono mode:

- If Controls (A/B) is configured for Ch 1 Level/Ch 2 Level the control on the left, labeled A, is used to adjust the level of the channel 1 input audio signal as it is being sent to both the left and right headphone output channels. The control on the right, labeled B, controls the level of the channel 2 input audio signal as it is sent to both the left and right headphone output channels. Sidetone audio, whose level will follow the Fixed Sidetone Level configuration, will be sent to both the left and right headphone output channels.
- If Controls (A/B) is configured for Ch 1 & 2 Level/Balance the control on the left, labeled A, adjusts the level of both the channel 1 and channel 2 input audio signals as they are sent to both the left and right headphone output channels. The control on the right, labeled B, will adjust the level balance of channel 1 input audio and channel 2 input audio. The level of the sidetone audio will follow the Fixed Sidetone Level configuration and will be sent to both the left and right headphone output channels.
- If Controls (A/B) is configured for Ch 1 & 2 Level/Sidetone Level the control on the left, labeled A, adjusts the level of both the channel 1 and channel 2 input audio signals as they are sent to both the left and right headphone output channels. The control on the right, labeled B, adjusts the level of the sidetone audio as it is being sent to both the left

and right channels of the headphone output. In this mode, the Fixed Sidetone Level configuration will not be utilized and the selection box "grayed" out.

When Headphone Output – Routing is configured to the Single-Channel Mono mode:

- If Controls (A/B) is configured for Ch 1 Level/ Ch 2 Level the control on the left, labeled A, is used to adjust the level of the channel 1 input audio signal as it is being sent to the left headphone output channel. The control on the right, labeled B, controls the level of the channel 2 input audio signal as it is sent to the left headphone output channel. Sidetone audio, whose level will follow the Fixed Sidetone Level configuration, will be sent to the left headphone output channel.
- If Controls (A/B) is configured for Ch 1 & 2 Level/ Balance the control on the left, labeled A, adjusts the level of both the channel 1 and channel 2 input audio signals as they are sent to the left headphone output channel. The control on the right, labeled B, will adjust the level balance of channel 1 input audio and channel 2 input audio. The level of the sidetone audio will follow the Fixed Sidetone Level configuration and will be sent to the left headphone output channel.
- If Controls (A/B) is configured for Ch 1 & 2 Level/ Sidetone Level the control on the left, labeled A, adjusts the level of both the channel 1 and channel 2 input audio signals as they are sent to the left headphone output channel. The control on the right, labeled B, adjusts the level of the sidetone audio as it is being sent to the left headphone output channel. In this mode, the Fixed Sidetone Level configuration will not be utilized and the selection box "grayed" out.

Sidetone Function Activity

The Model 203's sidetone function is used to send post-compressor microphone audio to the headphone output as a user confirmation signal. When sidetone audio will be actively sent to the headphone output will depend on the configuration of the Headphone Output – Sidetone Mode in the STcontroller application. The Sidetone Mode can be configured such that sidetone audio will be active when the Dante main output is active, is active when the Dante talkback output is active, or is active at all times.

Whether sidetone audio will be sent to the left and right headphone output channels or only the left headphone output channel will depend on the configuration of the Headphone Output – Routing configuration in STcontroller. When the Headphone Output – Routing mode is configured for Dual-Channel Stereo or Dual-Channel Mono sidetone audio will be sent to both the left and right headphone output channels. When configured for Single-Channel Mono sidetone audio will be sent only to the left headphone output channel.

Depending on the configuration of the Headphone Output – Controls selection in STcontroller, the level of the sidetone audio will be determined either by the value selected in the Fixed Sidetone Level configuration or by adjustment of the right control, labeled B, that is located on the front panel. Typically, providing a precise sidetone level is not important and most users will not be concerned about setting it to a specific value. However, ensuring that the level of the sidetone audio is reasonable is important. Setting the level too low will encourage a user to speak too loudly; setting it too high and the user will be tempted to speak hesitantly.

System Operating Mode

The system operating mode configuration is used to select the overall operating mode of the Model 203. Specifically, the system operating mode determines how the main function will operate vis-à-vis the talkback function. Understanding how the two modes impact overall system operation will ensure correct operation and maximum usability.

On-Air: When the system operating mode has been selected to On-Air the main button will be forced to be inactive whenever the talkback function is active. The on-air mode will be appropriate for all on-air broadcast applications where it's imperative that the audio signal on the Dante main output channel be muted whenever on-air talent uses the talkback function to communicate with production personnel.

Production: When set for the Production operating mode the status of the main button will never be impacted by the status of the talkback function. This mode allows the Dante main output channel to be used, for example, as an additional talkback output. In this way, the Dante main and talkback output channels

can be used independently, with activation of either of them not impacting the other. This also allows both pushbutton switches to be used simultaneously. When selected for the appropriate application, the production operating mode can prove to be very useful. But it's not appropriate for on-air use!

Technical Notes

IP Address Assignment

By default, the Model 203's Ethernet interface will attempt to automatically obtain an IP address and associated settings using DHCP (Dynamic Host Configuration Protocol). If a DHCP server is not detected an IP address will automatically be assigned using the link-local protocol. This protocol is known in the Microsoft® world as Automatic Private IP Addressing (APIPA). It is also sometimes referred to as auto-IP (PIPPA). Link-local will randomly assign a unique IP address in the IPv4 range of 169.254.0.1 to 169.254.255.254. In this way, multiple Dante-enabled devices can be connected together and automatically function, whether or not a DHCP server is active on the LAN. Even two Dante-enabled devices that are directly interconnected using an RJ45 patch cord should, in most cases, correctly acquire IP addresses and be able to communicate with each other.

An exception does arise when trying to directly interconnect two Dante-enabled devices that use Ultimo integrated circuits to implement Dante. The Model 203 uses the UltimoX2 "chip" and, as such, a direct one-to-one interconnection with another Ultimo-based product is not supported. An Ethernet switch that links Ultimo-based units is required to successfully interconnect them. The technical reason that a switch is required relates to the need for a slight latency (delay) in the data flow and utilizing an Ethernet switch in the application deployment will provide this.

Using the Dante Controller software application, the Model 203's IP address and related network parameters can be set for a fixed (static) configuration. While this is a more-involved process than simply letting DHCP or link-local "do their thing," if fixed addressing is necessary then this capability is available. But in this case, it's highly recommended that every unit be physically marked, e.g., directly using a permanent marker or "console tape," with its specific static IP address. If knowledge of a Model 203's IP address has been misplaced there is no reset button or other method to easily restore the unit to a default IP setting.

In the unfortunate event that a device's IP address is "lost," the Address Resolution Protocol (ARP) networking command can be used to "probe" devices on a network for this information. For example, in Windows operating systems the **arp –a** command can be used to display a list of LAN information that includes MAC addresses and corresponding IP addresses. The simplest means of identifying an unknown IP address is to create a "mini" LAN with a small PoE-enabled Ethernet switch connecting a personal computer to the Model 203. Then by using the appropriate ARP command the required "clues" can be obtained.

Optimizing Network Performance

For best Dante audio-over-Ethernet performance a network that supports VoIP QoS capability is recommended. In applications that utilize multicast Ethernet traffic enabling IGMP snooping can be valuable (as long as PTP v1 is also supported). This protocol can be implemented on virtually all contemporary managed Ethernet switches. There are even specialized switches that are optimized for entertainment-associated applications. Refer to the Audinate website (audinate.com) for details on optimizing networks for Dante applications.

Application Firmware Version Display

A selection in the STcontroller software application allows the Model 203's application firmware version to be identified. This can be useful when working with factory personnel on application support and troubleshooting. To identify the firmware version, begin by connecting the Model 203 unit to the local area network (via Ethernet with PoE) and wait until the unit starts to function. Then, using STcontroller, review the list of identified devices and select the specific Model 203 for which you want to determine its application firmware version. Then within STcontroller select **Version and Information** under the **Device** tab. A page will display that will provide lots of useful information. This includes the application firmware version as well as details on the Dante interface firmware.

Application Firmware Update Procedure

It's possible that updated versions of the application firmware (embedded software) that is utilized by the Model 203's microcontroller (MCU) integrated circuit will be released to add features or correct issues. Refer to the Studio Technologies' website for the latest application firmware file. The unit has the ability to load a revised file into its MCU's non-volatile memory by way of a USB interface. The Model 203 implements a USB host function that directly supports connection of a USB flash drive. The Model 203's MCU updates its application firmware using a file named **M203vXrXX.stm** where the Xs are decimal digits that represent the version number.

The update process begins by preparing a USB flash drive. The flash drive doesn't have to be empty (blank) but must be in the personal-computer-standard FAT32 format. The USB interface in the Model 203 is compatible with USB 2.0-, USB 3.0-, and USB 3.1-compliant flash drives. Save the new application firmware file in the root directory of the flash drive with a name of **M203vXrXX.stm** where the XrXX is the actual version number. Studio Technologies will supply the application firmware file inside of a .zip archive file. The name of the zip file will reflect the application file's version number and will contain two files. One file will be the actual application file and the other a readme (.txt) text file. It's recommended that the readme (.txt) file be reviewed as it will contain details about the associated application firmware. The application firmware file inside of the zip file will adhere to the required naming convention.

Once the USB flash drive is inserted into the USB interface, located on the main circuit board under the Model 203's cover, the unit must be powered off and again powered on. At this point, the file will automatically be loaded into the MCU. The precise steps required will be highlighted in the next paragraphs.

To install the application firmware file, follow these steps:

1. Disconnect power from the Model 203. This will entail removing the Ethernet connection that is providing PoE power.
2. Remove the cover from the Model 203. Begin by using a Philips-head screw driver with a #1 tip to remove six machine screws, two on the top edge of the back panel, one on each side of the unit, and two on the front edge of the bottom surface. Be certain to save the screws so that re-assembly will be fast and painless. Then carefully slide the cover forward, rotating it forward 180 degrees once it has cleared away from the two rotary level controls. Be very careful not to kink or damage the small ribbon interconnecting cable.
3. Locate the USB receptacle on the main circuit board. It's near the front of the unit, directly between the two rotary level controls. Insert the prepared USB flash drive into it.
4. Apply power to the Model 203 by reconnecting the Power-over-Ethernet (PoE) Ethernet source.
5. After a few seconds the Model 203 will run a "boot loader" program that will automatically load the new application firmware file (**M203vXrXX.stm**). This loading process will take only a few seconds. During this time period the USB status LED, located adjacent to the USB receptacle on the circuit board, will flash green. Once the entire loading process is over, taking approximately 10 seconds, the Model 203 will restart using the newly loaded application firmware.
6. At this time the Model 203 is functioning with the newly loaded application firmware and the USB flash drive can be removed. But to be conservative, remove PoE power first and then remove the USB flash drive.
7. Using the STcontroller software application, confirm that the desired Model 203 application firmware version has been correctly loaded.

Note that upon power being applied to the Model 203, if a connected USB flash drive doesn't have the correct file (**M203vXrXX.stm**) in its root folder no harm will occur. Upon Model 203 power up the green USB status LED, located adjacent to the USB receptacle, will rapidly flash for a few seconds to indicate this error condition and then normal operation using the unit's existing application firmware will begin.

Ultimo Firmware Update

As previously discussed, the Model 203 implements its Dante connectivity using the UltimoX2 integrated circuit from Audinate. The Dante Controller software application can be used to determine the version of the firmware (embedded software) that resides in this integrated circuit. This firmware can be updated by way of the Model 203's Ethernet port. Performing the update process is easily accomplished using an automated method called Dante Updater that's included as part of the Dante Controller application. This application is available, free of charge, from the Audinate website (audinate.com). The latest Model 203 firmware file, with a name in the form of **M203vXrXrX.dnt**, will be available on the Studio Technologies' website as well as being part of Audinate's product library database. (Note that XrXrX will be the actual version number.) Studio Technologies' including the latest file in Audinate's database allows the Dante Updater software application to automatically query both the Model 203's Dante interface and the database. If a newer file is found in the database the Model 203's Dante interface can then be easily updated.

Restoring Factory Defaults

A command in the STcontroller software application allows the Model 203's defaults to be reset to the factory values. From STcontroller select the Model 203 for which you want to restore its defaults. Select the **Device** tab and then the **Defaults** tab. Select the **Factory Defaults** feature. Then click on the **OK** box. Refer to Appendix A for a list of the Model 203's factory defaults.

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 contained in this User Guide subject to change without notice.

Appendix A–STcontroller Default Configuration Values

Microphone Input – P48 Phantom Power: Off (select box not checked)

Microphone Input – Gain: 42 dB

Headphone Output – Routing: Dual-Channel Stereo

Headphone Output – Controls (A/B): Ch 1 Level/Ch 2 Level

Headphone Output – Sidetone Mode: Main Active

Headphone Output – Fixed Sidetone Level: Off

Button Operation – Main: Push to Mute

Button Operation – Talkback: Push to Talk

System – Operating Mode: On-Air

System – Main Output Source: Post-Compressor

System – Button Backlight Mode: Red when Off/Green when On