



ADX-60

DANTE INTERFACE UNIT

Installation and Operation Manual

Firmware Version 1.0

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WARRANTY STATEMENT

This equipment is warranted to be free of defects in materials and workmanship for a period of two years from date of delivery. Any necessary repairs resulting from defects in materials or in manufacture will be made free of charge provided that the equipment has not been subjected to mechanical or electrical abuse, or modification, as determined by Lance Design, and also that the equipment is returned to Lance Design with prior authorization.

No liability whatsoever is assumed for consequential damages resulting from the use or failure of this equipment. This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty of fitness for purpose.

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ADX-60 Dante Interface – Front Panel



ADX-60 Rear Panel



DESCRIPTION

The **ADX-60** Dante Interface is a compact, flexible unit designed to provide both analog and AES inputs and outputs to and from a Dante network.

It is self-powered (wide-range AC input) and has a flexible network interface which includes both copper and fiber ports, both of which may be operated in the switched or redundant modes.

The analog inputs and outputs are electronically-balanced line level signals, with +4dBv corresponding to -20dBfs in the Dante and AES digital domains (industry standard levels).

The AES inputs and outputs feature sample rate converters (ASRC's) so that the AES circuits may be completely asynchronous with the Dante network clocks. If there is a valid AES input the AES outputs will be frequency locked to this input. If there is no AES input, the AES outputs will be locked to the Dante clocks.

There are two high-quality low-distortion internal tone generators, which may be routed (via Dante Controller) to any or all of the outputs for testing. They may also of course be used via the Dante network for any other testing or alignment purpose.

FEATURES

The ADX-60 provides the following features:

- Two Analog Inputs
- Six Analog Outputs
- One AES input (2 channels)
- Three AES Outputs (2 channels each)
- ASRC's on all AES circuits. AES timing independent of Dante timing.
- Two Copper Network Ports (Gigabit Ethernet)
- Two Bi-directional Fiber Network Ports (Gigabit Ethernet)
- Two Internal Tone Generators for Testing
- Internal AC Power Supply
- Bi-color Power Indicator LED
- 'Brooklyn II' Dante Interface for Maximum Routing Flexibility
- Fully Configurable Audio Routing via Dante Controller Software
- No Operator Controls – Simple Operation

OPERATION

Connect analog and AES inputs and outputs as required. These are all completely independent, and may be used in any combination.

The AES inputs and outputs are standard 75-ohm circuits, with standard P-P voltage levels of approximately 1 volt (standard BNC-based AES signals).

The Analog circuits are all line-level (+4) balanced circuits. There are no microphone preamps in the ADX-60.

Connect Dante Network connections as required. Either copper or fiber connections may be used. Note that the network ports must be configured in 'Redundant' mode to use a redundant network connection.

Once AC power is applied to the ADX-60, it will start the boot-up sequence. It takes about 12 seconds for the Dante interface to initialize. During this boot-up interval the Power LED will be blinking yellow. When the boot-up is complete, the Power LED will turn solid green. The unit is now ready for operation.

Note: If the Power LED is steadily lit yellow, this indicates an over-temperature condition.

There should be a green link/activity LED lit on the network port(s) in use.

Note that it may take another few seconds for audio continuity. This depends on the Dante network initializing, but it should not be more than 5 seconds or so.

When the units are shipped from Lance Design there is no Dante routing configured. The desired routing of the signals on the Dante network must be done using Dante Controller software, which is supplied by Audinate/Dante, and available for Windows or Mac platforms.

Dante Controller is available here:

<https://www.audinate.com/products/software/dante-controller>

Each input and output channel, as well as the two tone generators appear in Dante Controller separately, and may be routed as desired.

Note that the ADX-60 transmit channels (outputs to the network) may be routed back to its own receive channels. This allows, for example, the test tone generators to be looped back to the analog outputs to test external patching, etc.

It would also allow the ADX-60 to be used as an analog-to-AES converter, or an AES-to-analog converter.

The screen captures below illustrate the ADX-60 inputs and outputs as they appear in Dante Controller.

ADX-60 Inputs transmitted to the Dante Network

Transmit Channels		
Channel	Signal	Channel Label
ANLG IN 1		
ANLG IN 2		
AES IN 1		
AES IN 2		
TONE 1		
TONE 2		

ADX-60 Outputs received from the Dante Network

Receive Channels			
Channel	Signal	Connected to	Status
ANLG OUT 1			
ANLG OUT 2			
ANLG OUT 3			
ANLG OUT 4			
ANLG OUT 5			
ANLG OUT 6			
AES OUT 1			
AES OUT 2			
AES OUT 3			
AES OUT 4			
AES OUT 5			
AES OUT 6			

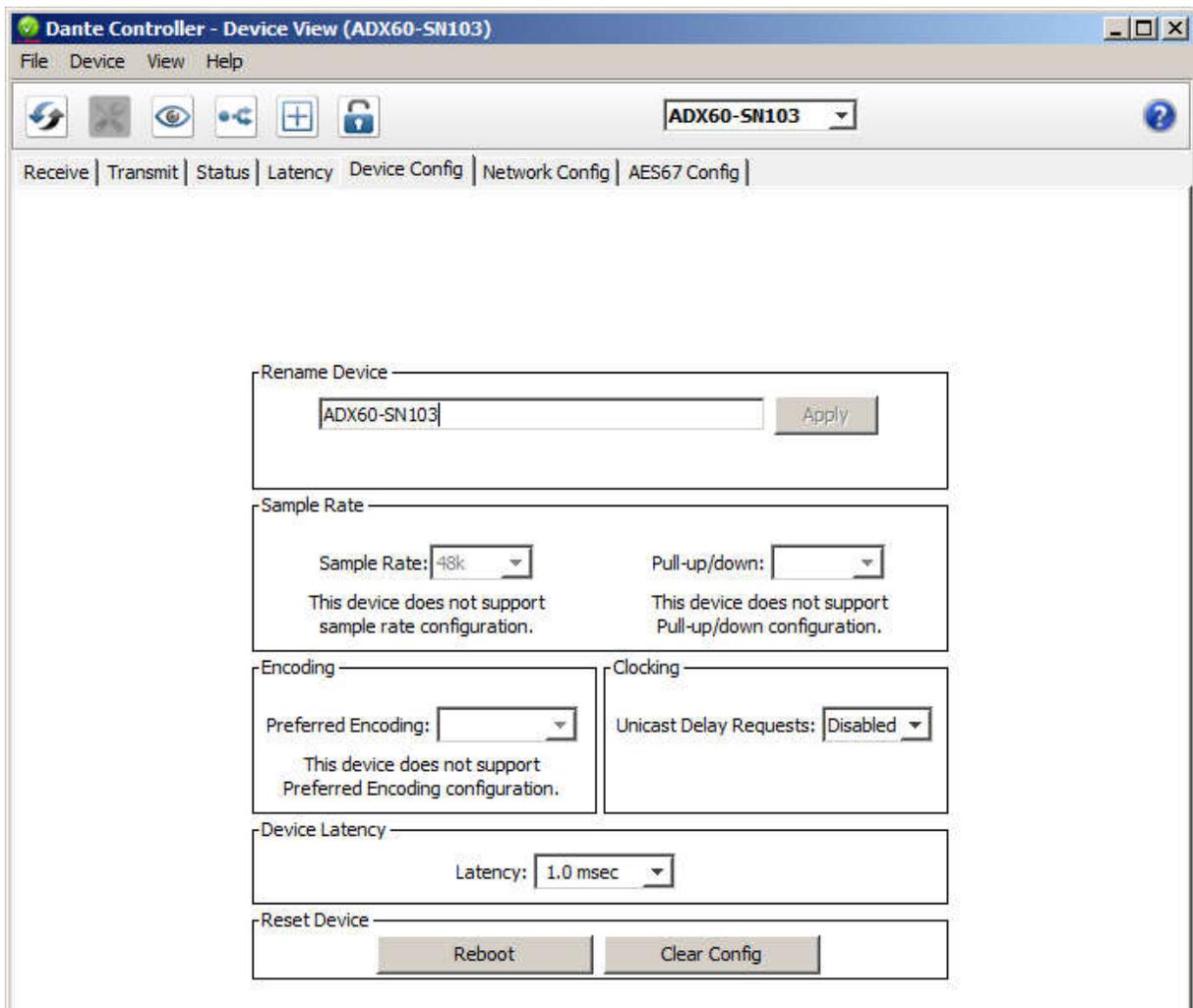
Naming the ADX-60 (User-friendly Dante Name)

The Dante Name is a user-friendly name which appears in the Dante Controller application. This name may be entered for each device using the Device View of the Dante Controller application.

Note that audio routing is defined based on these names. If you change names, you may have to re-route some of your signal paths using the new name. It's best to set all names first, then do routing.

To enter user-friendly names from Dante Controller, select 'Device View' in Dante Controller, then select the Device Config tab and the desired device.

You can then enter a new name in the box provided.



The screenshot shows the 'Dante Controller - Device View (ADX60-SN103)' window. The window title bar includes the application name and standard window controls. Below the title bar is a menu bar with 'File', 'Device', 'View', and 'Help'. A toolbar contains several icons: a refresh icon, a map icon, an eye icon, a double-headed arrow icon, a plus icon, and a lock icon. To the right of the toolbar is a dropdown menu showing 'ADX60-SN103' and a help icon. Below the toolbar is a tabbed interface with tabs for 'Receive', 'Transmit', 'Status', 'Latency', 'Device Config', 'Network Config', and 'AES67 Config'. The 'Device Config' tab is selected. The main content area contains several configuration sections:

- Rename Device:** A text input field containing 'ADX60-SN103' and an 'Apply' button.
- Sample Rate:** A 'Sample Rate' dropdown menu set to '48k' and a 'Pull-up/down' dropdown menu. Below each dropdown is a message: 'This device does not support sample rate configuration.' and 'This device does not support Pull-up/down configuration.'
- Encoding:** A 'Preferred Encoding' dropdown menu with a message below it: 'This device does not support Preferred Encoding configuration.'
- Clocking:** A 'Unicast Delay Requests' dropdown menu set to 'Disabled'.
- Device Latency:** A 'Latency' dropdown menu set to '1.0 msec'.
- Reset Device:** Two buttons: 'Reboot' and 'Clear Config'.

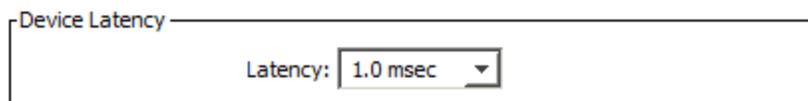
Latency Considerations

Also available in the 'Device Config' menu in Dante Controller is a 'Latency' setting. This determines the audio delay through the Dante network that the systems will attempt to maintain.

The actual measured latency may be displayed by selecting the 'Latency' tab in Device View.

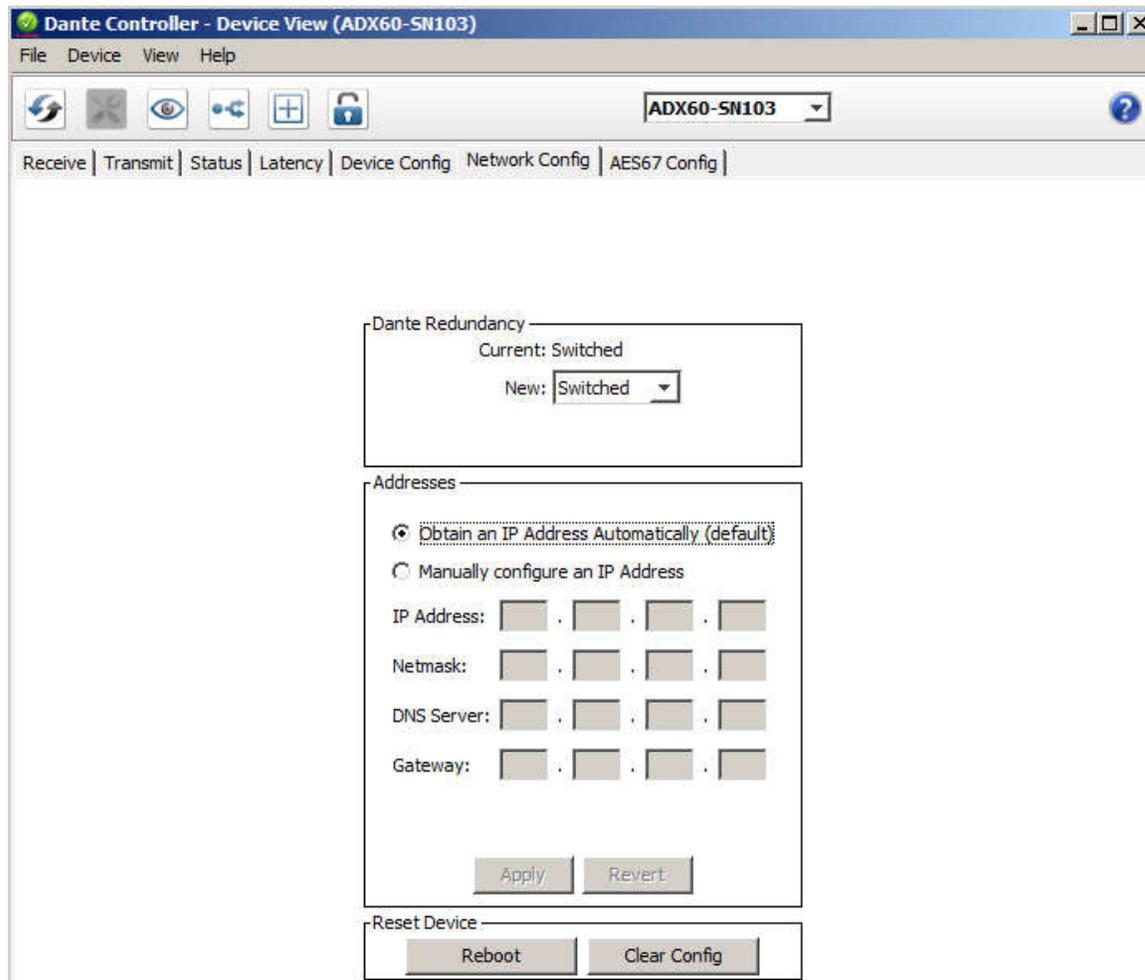
The Brooklyn II module used in the ADX-60 is very high performance, and is capable of handling low latency transmission. The default setting for the ADX-60 is 1 millisecond. With a typical network with gigabit switches and high-performance nodes the latency usually runs around 350 microseconds (0.35 milliseconds), so it's well within the 1 millisecond time frame.

Some lower-performance Dante interfaces may have trouble meeting the 1 millisecond latency window. If this is the case, a higher latency setting may be selected (2 or 5 milliseconds) to reduce the throughput demands of the lower-performance nodes.



NETWORK CONNECTIONS

The network ports on the ADX-60 are fully-configurable using Dante Controller, using the 'Network Config' in 'Device View', as shown below.



When the 'Redundancy' mode is set to 'Switched', the four ports on the ADX-60 are essentially four ports on an internal Ethernet switch, and operate as such.

If the 'Redundancy' mode is set to 'Redundant', then the two ports labeled 'PRI' on the ADX-60 are on the primary Dante network and the two ports labeled 'SEC' on the ADX-60 are on the secondary or backup Dante network. See the Audinate/Dante documentation on their website for more information.

The IP address is, by default, in the automatic mode, and the ADX-60 will automatically determine a usable IP address. A static address may be entered if desired by selecting the 'Manually configured' option and re-booting the unit.

FIBER PORTS

The ADX-60 fiber ports are single-mode, bi-directional ports, which are derived from standard SFP modules internal to the unit.

The ports appear on standard ST connectors on the rear of the ADX-60.

As shipped from Lance Design, the modules fitted are:

- 1000-Base-BX
- Transmit Wavelength: 1550 nm
- Receive Wavelength: 1310 nm
- 20 Kilometer Rated

The SFP modules are coded with a YELLOW handle, and should be connected to an SFP module with a BLUE handle, which uses complementary wavelengths.

ADX-60 Specifications

Analog Inputs	Two, balanced line level (+4dBv = -20dBfs) XLR Female
Analog Outputs	Six, balanced line level (+4dBv = -20dBfs) XLR Male
Freq Response	20-20KHz, +/- 0.2 dB ref 1000Hz
Analog THD+N	<0.02% at nominal level
AES Input	One, 75-Ohm BNC (two AES channels)
AES Outputs	Three, 75-Ohm BNC (six AES channels) 1 volt p-p
Dante Network I/O	Two Copper (RJ45) Gigabit, Two ST fiber single-mode bidirex
A-D and D-A Conversion	24-bit
Digital Processing	32-bit fixed-point DSP
Dante Transmission	24-bit uncompressed
Sample Frequency	48 kHz
ASRCs	Sample Rate Converters on all AES inputs/outputs
Dimensions	9.8" W x 8.375" D x 1.7" H
Weight	Approx. 3 lbs
Power	100-240 volts AC, 50-60 Hz. <8 Watts
Indicators	Power LED, Link/Activity LEDs for Network Ports