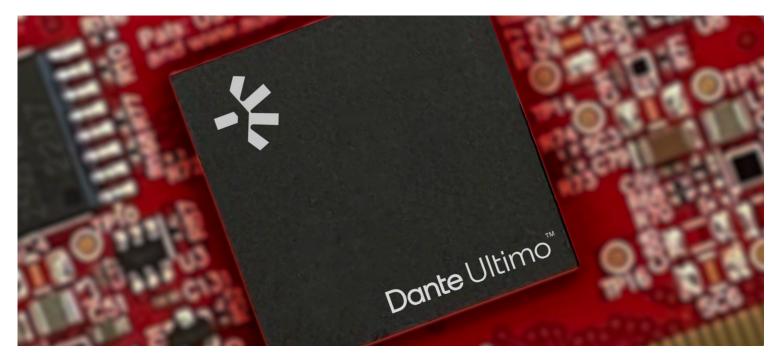# Dante Ultimo™

Digital Media Networking Perfected

- Cost-effective Dante interface with 2in+2out or 4in+4out options

- High performance low latency transport of uncompressed audio over IP networks

- Broad interoperability of networked audio with thousands of Dante-enabled AV products

- Firmware updatable: Software updates with new features and fixes can be loaded via the network

- Real-time device status monitoring of signal, latency and clock stability via Dante Controller and/or other applications

- Support for AES67 RTP audio transport

Audinate's patented Dante™ networking solution is the product of years of networking expertise, innovation, and technological creativity. Audinate knows what it takes to deliver great products, and has built that experience into the Ultimo™ family of products. Now you can build your products with the Dante advantage more quickly and cost-effectively than ever before, with the most highly-integrated Dante interface to date. The members of the Ultimo family are fully-featured chips providing a complete, ready-to-use Dante interface for networked audio products requiring low channel-count support.

UXT-01-002 provides a Dante interface for networked audio products requiring up to 2x2 channels at 44.1 kHz, 48kHz, 88.2kHz and 96kHz sample rates.

UXT-01-004 provides a Dante interface for networked audio products requiring up to 4x4 channels at a sample rates of 44.1 and 48kHz, and up to 2x2, 4x0 or 0x4 channels at sample rates of 88.2 and 96kHz.

ULT-01-002 provides a Dante interface for networked audio products requiring up to 2x2 channels at 44.1 kHz, 48kHz, 88.2kHz and 96kHz sample rates.

ULT-01-004 provides a Dante interface for networked audio products requiring up to 4x4 channels at a sample rates of 44.1 and 48kHz, and up to 2x2, 4x0 or 0x4 channels at sample rates of 88.2 and 96kHz.

The UXT-01-002 chip is fully pin and feature backwards-compatible with the ULT-01-002, and the UXT-01-004 chip is fully pin and feature backwards-compatible with ULT-01-004.
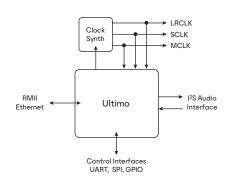
UXT-01-002 and UXT-01-004 are recommended for new designs.

Note: ULT-01-002 and ULT-01-004 are only available to existing licensees for existing products.

Tx/Rx	0	1	2	3	4
0	-	0x1	0x2	0x3	0x4
1	1x0	1x1	1x2	1x3	1x4
2	2x0	2x1	2x2	2x3	2x4
3	3x0	3x1	3x2	3x3	3x4
4	4x0	4x1	4x2	4x3	4x4

Green: All chips @ all sample rates
Blue: ULT-01-004 & UXT-01-004 @ all sample rates
Red: ULT-01-004 & UXT-01-004 only @ 44.1 / 48 kHz
Channel configuration is specified via capability file.

Applications

Amplifiers

Microphones

AV wall plates

Powered speakers

Paging stations

Dante Ultimo Interfaces

The diagram to the left shows network, audio and control interfaces supported by the Ultimo chip family.

A separate clock synthesis component is used to generate high quality, low jitter audio clocks.

Easy to use

Get Dante's legendary flexibility and easy setup into your products, and set your customers' imaginations aflame. The Dante Ultimo family supports all the features that have driven widespread adoption of Dante technology: Auto-discovery of devices, label-based routing of signals, true plug-and-play operation, and of course superb audio performance over standard networks that can freely share all types of data. Dante Controller software provides simple point-and-click network setup between Ultimo devices and any other Dante-enabled products.

Tiny chip, big toolbox

The Audinate Ultimo Family includes a complete toolkit that allows you to fully integrate Dante into your designs, with simple audio interfacing, and a rich set

of control interfaces supporting even the most sophisticated networked audio products. Dante Ultimo may have a tiny footprint, but it offers a comprehensive set of tools, options and possibilities.

Serial audio interfacing with I2S allows direct connection to a wide variety of audio components (e.g. powered speakers, microphones, ADC, DAC, DSP, Class-D amps, etc). In combination with the recommended clock synthesis circuitry, an Ultimo design can meet the most stringent requirements for audio quality, and can operate as a leader clock for a network of Dante devices. The built-in RMII Ethernet interface supports the most cost-effective Ethernet PHY solutions available today, and Power Over Ethernet (POE) designs.

In addition to audio and network interfaces, Ultimo offers a variety of control ports supporting packet bridging control between the network and internal components, via the Dante Control and Monitoring channel, or independently via UDP. Streams of control data (e.g. serial) and control messages can be passed between the network and internal host processors, or DSP chips supporting custom network control protocols. Supported ports include SPI leader, SPI follower, or UARTs, and GPIO.

Specifications

Hardware
144 pin MAPBGA package (13 mm x 13 mm)
3.3VDC @ 0.7W Max

High quality, low jitter clock generation via external Silabs chip

Network Interface
Standard 100Mbps Ethernet

RMII Ethernet interface with MDIO

Hardware time-stamping, supporting sample-accurate playback

Transmit flows: 2 (unicast or multicast)

Receive flows: 2 (unicast or multicast)

Latency from 1ms

Audio Interface
2x2 or 4x4* audio channels

I2S digital audio format

16, 24 or 32-bit audio samples (per device or per channel)

44.1 kHz, 48kHz, 88.2kHz** and 96kHz** sample rates

Sample rate pull-up/down (+4.1667, +0.1, -0.1, and - 4.0 %)

Provides LRCLK, SCLK, MCLK (256x FS)

Control Interfaces
2x UARTs: A and B, console on UART-A

SPI Leader with independent select lines

SPI Follower

8x GPIO pins for user controls and/or watchdog signal

4x bi-color LED control pins for 'System', 'Sync', 'Control' and 'Error' indicators

italic * ULT-01-004 & UXT-01-004 only
** 2x2, 0x4 or 4x0 channels only
Note: All information within this document is subject to change without notice.

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