Ultimo: Network Everything.

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. High integration minimizes component count, reduces costs, and enables space-constrained networked devices. Ultimo brings Dante networking to the widest range of products.

There are currently four members of the Ultimo family:

- **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 UXT-01-004 are only available to existing licensees for existing products.

**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 master 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 master, SPI slave, or UARTs, and GPIO.

**Dante Ultimo Interfaces**
The diagram to the right 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.

**Supported Channel Configurations**

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*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
- Powered speakers
- Headphones
- Microphones
- Conference microphones
- Paging stations
- Personal monitoring systems
- AV wall plates
- Recording interfaces
- Analogue / digital break-in / break-out boxes

**SERVICES**

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**SERVICES**

**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 Master with independent select lines
- SPI Slave
- 8x GPIO pins for user controls and/or watchdog signal
- 4x bi-color LED control pins for ‘System’, ‘Sync’, ‘Control’ and ‘Error’ indicators

* 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.