Model 5401A vs Model 5401 – What's the Difference?

July 2021 — The Model 5401A builds on the strengths of the popular Model 5401 and offers some significant changes and improvements. The Model 5401A will meet or exceed the performance of the Model 5401, suitable for all applications originally slated for Model 5401 use.

- **Product Name**

Model 5401A Dante Leader Clock Front and Rear Panel Views

In keeping with changes made in the naming convention used by Audinate in their Dante® audio-over-Ethernet technology the Model 5401A uses the title Dante Leader Clock. (The reference to a "Master Clock" function in the Model 5401's title and web pages has been eliminated to better reflect evolving societal conventions.) This is consistent with the naming used in the latest versions of the Dante Controller software application.

- **Ethernet Ports and Network Configurations**

The Model 5401A has three Gigabit ("GigE") Ethernet ports versus the two provided by the Model 5401. This allows installations to utilize independent network connections for Redundant Dante audio paths and management webpage access. The two Ethernet connections required for supporting Redundant Dante can now be fully independent from the Ethernet connection used to access the Model 5401A's monitoring and configuration webpages. This increased capability won't impact users that may share one or two networks for the Dante audio transport and device management functions. However, larger or more sophisticated installations may benefit from being able to maintain separate Dante audio and management networks.

In addition to the Model 5401A's three GigE ports, an expanded set of network configuration choices are available in the Dante Controller application. Using this capability the operation of the Model 5401A's three Ethernet ports can be selected from among four unique configurations. The choices are Switched, Redundant, Switched+Mgmt, and Redundant+Mgmt. In this way, full flexibility can be achieved when connecting the Model 5401A into virtually any network configuration.

- **Firmware Updating**

The Model 5401A allows updating of its main and programmable logic (FPGA) firmware using a standard USB flash drive. This method is not better than what's utilized in the Model 5401, but is more compatible with contemporary installations where LAN (local area network) connections are typically "locked out" from FTP (file transfer protocol) capability as part of security practices. And, looking ahead, it's not expected that this will change.

In theory, there's nothing wrong with the Model 5401 using FTP to allow direct updating of the unit's main and FPGA firmware files. However, this does require an "open" internet connection. Upon invoking a firmware update request on one of the Model 5401's management webpages, a connection is automatically established between the Model 5401 and the Studio Technologies' FTP server. Then the requested firmware file will be downloaded into the Model 5401's memory. While this technically works very well, changes to network security norms have made the use of FTP problematic. In many cases, network security implementations prevent an FTP session from being established. While there are ways of working around this

issue, such as “opening” a port to FTP traffic or installing and running a local FTP server, it’s proven to be a common problem for technical personnel. (Maybe a “common headache” is a better way of stating the situation!) The Model 5401A’s method of firmware updating, using a USB flash drive instead of FTP, better meets the requirements of modern installations. A USB type A receptacle, located on the Model 5401A’s back panel, allows firmware updating using a standard USB flash drive. The latest Model 5401A’s main and FPGA firmware files are available for download on the Studio Technologies’ website. Those files can then be transferred to a USB flash drive. Once that flash drive is plugged into the USB receptacle on the Model 5401A’s back panel, it just takes seconds for the files to be updated. And, as with both the Models 5401A and 5401, all firmware files are stored in non-volatile memory.

- **Support for 176.4 and 192 kHz Sample Rates**

  The Model 5401A adds compatibility for digital audio sample rates of 176.4 and 192 kHz. This results in the six most-common sample rates, 44.1, 48, 88.2, 96, 176.4, and 192 kHz, being supported by the Model 5401A. This is in contrast to the Model 5401 which supports four sample rates: 44.1, 48, 88.2, and 96 kHz.

- **Management Webpage Design**

  The design of the monitoring and configuration webpages associated with the Model 5401A’s web server have been updated. This should provide an improved user experience, displaying additional operating characteristics and offering enhanced configuration choices.

- **Status LEDs and Front-Panel Display**

  The Model 5401A includes two additional LED indicators on its front panel. These provide status indications of the external sync input function and the new management Ethernet port. The backlit display offers a number of additional pages to allow direct observation of the Model 5401A’s configuration and operating status.

What Hasn’t Changed?

The actual clock performance of the Model 5401 has been maintained in the Model 5401A. Any application that could utilize a Model 5401 will find that a Model 5401A can serve as an exact substitute. The two units are identical in size and weight, both mounting in one space (1U) of a standard 19-inch rack enclosure. The same connections are provided with the exception that the Model 5401A has one additional RJ45 jack associated with its third Gigabit Ethernet port.