Model 5401A vs Model 5402 – What's the Difference?

Studio Technologies offers both the **Model 5401A Dante Leader Clock** and the **Model 5402 Dante Leader Clock with GNSS Synchronization**. They are intended for essentially the same applications – to serve as a Leader Clock for Dante® digital audio applications. Everything that can be done with the Model 5401A can be done by the Model 5402. But the latter includes an integrated satellite receiver which is capable of deriving a precise time signal from the major GNSS (Global Navigation Satellite System) constellations. The Model 5402 supports these constellations: GPS (US), Galileo (Europe), BeiDou (China), and GLONASS (Russia). In addition, the QZSS augmentation system from Japan can be enabled (it can add precision to GPS for certain locations in Asia).

The following lists some common questions and associated answers:

Q: Can I use a Model 5402 where a Model 5401A might be appropriate?
A: Certainly. But unless the Model 5402's GNSS timing resource is utilized it would be an inefficient use of the unit's resources and a waste of funds. The Model 5401A can perform very well using its internal temperature-stabilized oscillator or an externally provided timing reference. (Both units support connection of an external source of word clock, video sync, or 10 MHz sine wave.)

Q: Is the Precision Time Protocol performance the same for both the Model 5401A and the Model 5402?
A: Yes, the same excellent PTP v1 and v2 performance is provided. The exception is that the Model 5402's timing accuracy can be based on a super-precise reference provided by a GNSS (satellite) constellation.

Q: Are the user controls and webpages the same on the Model 5401A and the Model 5402?
A: They are very similar except that the Model 5402 has a number of additional configurable parameters related to the GNSS receiver capability.

Q: Do the Model 5401A and the Model 5402 require different interconnecting schemes, e.g., powering, network connections, etc.?
A: Installing the units is quite similar. Connecting power and interconnecting with Ethernet LAN ports is the same. However, to enable the Model 5402's GNSS timing support requires that an antenna be connected to the SMA receptacle that's located on the unit's back panel.

Q: Are the units the same size and weight?
A: The physical size (one space in a standard 19" rack) is identical. The weight of the Model 5402 is just a few ounces (tens of grams) greater due to the additional GNSS circuitry.

Q: What's an example of a "perfect" application for the Model 5402?
A: Networked audio applications that have multiple, geographically separated locations can benefit from using Model 5402 units. Each site would use a Model 5402 as its timing reference, and each Model 5402 would be "locked" to the highly accurate reference provided by the selected GNSS constellation(s). This will ensure all sites are precisely "in sync" (within a few nanoseconds) with each other, no matter where on the planet they are located.

Q: Since the Model 5402 can be "locked" to a timing reference provided by a satellite system, why doesn't it just say it supports GPS?
A: GPS (Global Positioning System) is just one of many groups of satellites (constellations) that can provide timing and global position information. GNSS (Global Navigation Satellite System) is the generic term for the various systems that are currently deployed. The Model 5402 supports the four major GNSS constellations: GPS (US), Galileo (Europe), BeiDou (China), and GLONASS (Russia). In addition, it supports the regional GPS augmentation system called QZSS (Japan). Configuration choices in the Model 5402's menu system allow selection of the one or more of the satellite constellations that are to be utilized.

Q: The Model 5402 includes a satellite antenna – do I have to use it?
A: Included with each Model 5402 is a compact, active, multi-band GNSS antenna that features an integrated 5-meter (16.4-foot) cord that's terminated on an SMA plug. This antenna allows a Model 5402 to be easily tested and deployed. It's suitable for use in applications where an unobstructed "view" of the sky is available at a location that is relatively close to the Model 5402. However, there's no reason why an installation can't use an alternate GNSS antenna if warranted. A number of compatible antennas are available on the market that may provide superior characteristics in terms of environmental protection, mounting method, cable length, or satellite reception performance.