DuraTime Questions and Answers

Q. Why purchase the DuraTime system?

A. The DuraTime wireless clock system is the most reliable synchronized clock system, wired or wireless, available anywhere, and the most competitively priced. You can and should expect zero system downtime from a DuraTime system.

Q. How is the DuraTime system more reliable than other systems?

A. The DuraTime system was designed for increased reliability from the ground up using redundancy throughout. Robust DuraTime systems include: dual redundant time sources (GPS and NTP), dual redundant master clocks, multi-path (mesh) communications, quad redundant battery packs, redundant time updates (86,400 times per day) and more. DuraTime uses the same method of redundant components incorporated into aircraft and spacecraft for the highest reliability.

Q. Some manufactures claim their system has no single point of failure. Is this true?

A. The answer is no. The DuraTime wireless synchronized clock system is the only system available anywhere that has no single point of failure. Systems using only a single master clock will fail to synchronize the secondary clocks when the master clock fails, or if GPS or other time source is lost. Other manufactures consider the system operating as long as the secondary clocks are running, even though they are not synchronized or not displaying accurate time. Furthermore, in most cases, they will not change between Daylight Saving and Standard time without the master clock.

Q. How long will analog clocks operate between battery changes?

A. DuraTime offers a variety of battery configurations coupled with one of the most power efficient radio controlled clock movements in the industry. Battery configurations are available to power analog clocks up to 7, 10 and even 15 years, all using commonly available AA batteries. The least expensive and most popular battery configuration uses four inexpensive Alkaline batteries to power analog clocks up to 7 years.

Q. What do you mean by "up to 15 years" when talking about battery performance?

A. DuraTime analog clocks are unique in the industry. The end user can remotely configure clocks for specific applications, some requiring extreme accuracy, which uses more battery power, while other configurations maximize battery life. In all configurations, the clocks maintain accuracy to a fraction of a second.

Q. What type of batteries do DuraTime analog clocks require?

A. DuraTime clocks use commonly available "AA" batteries, while competing products typically use one or more thick and bulky "D" cell batteries, or in some cases, expensive special custom batteries. The use of common "AA" batteries allows for a thinner clock profile compared to those using large "D" cell batteries. DuraTime clocks require no exotic or custom batteries.

Q. **Is mains power more reliable than batteries?**

A. No. Mains power is subject to power glitches, surges and outages that can disrupt the operation of the clock. This is true for most mains powered clocks. In some cases, the disruption can be so bad that the clocks will not recover without performing a complete reset.   All radio controlled clocks, and many wired clocks, use microprocessors which require a stable power source.

Q. **What if we don't want battery powered clocks and we want to use power from our old clock wiring?**

A. DuraTime clocks are available in a variety of power configurations including, battery powered, 12-24 volts AC or DC, 110 VAC, 220 volts VAC (50/60 cycles).

Q. **Why use multiple processors in analog wall clocks?**

A. Multiple processors allow the most efficient use of the battery. A high speed processor, high current processor is used for radio data processing. A medium speed processing is used for internal data communications, while a low speed processor is used to control the movement motors. A single processor with selectable oscillator speeds is a commonly used method to reduce power consumption, but it does not have the power and flexibility that the multiple processor method provides.

Q. **What is the advantage of using clocks that receive and retransmit time updates?**

A. All DuraTime clocks repeat the time updates, forming a self-healing mesh network that greatly reduces the infrastructure required to propagate the radio signals across a facility or campus. Without this important feature, expensive high power transmitters or other distribution systems would be required. While signal repeaters are available for special applications, they are rarely required. It's important to note that the DuraTime mesh network requires zero configuration.

Q. **Will the DuraTime system interfere with, or be interfered by our Wi-Fi network?**

A. DuraTime utilizes the upper portion of the Industrial, Scientific and Medical (ISM) portion of the 2.4 GHz band, while Wi-Fi uses the lower portion of the 2.4 GHz band. DuraTime is not configured to use any Wi-Fi frequencies.

Q. **Why not use our existing Wi-Fi system to distribute time updates?**

A. Wi-Fi is much too complex and ever changing to support a reliable clock system. A Wi-Fi clock requires that every IP network parameter, in every clock be configured precisely or it will not work. Furthermore, it's been our experience that computer networks are ever changing, often without warning, which may require constant clock parameter reconfiguration. The DuraTime mesh network requires zero configuration.

Q. **If Wi-Fi clocks require that all network parameters be constantly maintained, how does this compare with a DuraTime clocks?**

A. DuraTime analog wall clocks require no configuration. Simply insert the batteries and hang on the wall. The DuraTime network configuration will not change over time.

Q. **Why is AES 128 data encryption important in a clock system?**

A. Believe it or not, students have been known to hack into traditional school clock systems and change, or otherwise disrupt the system. AES 128 data encryption simply removes the possibility of hacking the system.

Q. **How does the DuraTime wireless mesh radios used in the clocks compare with other mesh clock systems?**

A. DuraTime clocks incorporate advanced digital radio technology that has 16 times the transmit power of competing clock systems, while at the same time, using much less battery power. This greatly reduces the infrastructure required to distribute the radio signal across the facility or campus. Clocks can be spaced up to ten times the distance of competing products, eliminating or greatly reducing the need for signal repeaters.

Q. **I assume the DuraTime system will automatically change all clocks between Standard and Daylight Saving time, but what if the Government changes the dates again?**

A. Unlike most competing systems that use a lookup table to determine when to switch between Standard and Daylight Saving time, the DuraTime system uses a rule based method. Simply enter the new rule, and the system immediately implements it. This DuraTime system will not become outdate or require factory maintenance of a Daylight Saving time lookup table.

Q. **We have a grade school and middle school across the street from each other. Will the DuraTime system work for both schools without interfering with one another?**

A. Absolutely.   The DuraTime system can be configured to your specific needs. You have the choice of operating two completely independent clock systems that will not interfere with one another, or DuraTime can be configured to operate as one large system, with independent bell ring schedules.

Q. **Why is IPv4 and IPv6 Ethernet compatibility important?**

A. The Ethernet network interface used by the DuraTime master clock is used for alarm schedule configuration and time acquisition. It's important that this interface be compatible with current and future Ethernet standards.

Q. **Do I need an FCC license?**

A. No. Unlike high powered wireless time systems, DuraTime radios are pre-approved by the FCC and require no additional license.

Q. **Can we use the DuraTime system at a Federal Government facility. Do we need to apply for a dedicated frequency and authorization to use the frequency?**

A. NTIA, the agency that governs the radio spectrum at government facilities is very clear about this. Off the shelf ISM devices may be used at Federal Government facilities. The devices must not interfere with other communications, and they must accept interference. DuraTime does not use the same frequencies used by Wi-Fi, so interference with Wi-Fi devices is highly unlikely. It's also highly unlikely that anything will interfere with DuraTime devices because all communications are encrypted. The FCC approved frequencies and power levels used by DuraTime fall within NTIA requirements.

Q. **What happens if the DuraTime master clock stops receive GPS and/or NTP time updates?**

A. If one time source is lost, the DuraTime master clocks will automatically use the remaining time source. In the unlikely event that both time sources are lost, the DuraTime master clocks will rely on their internal temperature compensated high precision oscillator that is accurate to a few seconds per year. DuraTime master clocks include a ten year internal battery to maintain clock accuracy during power outages.

Q. **In a DuraTime dual-redundant master clock configuration, what happens of one master clock fails to send time updates?**

A. If the DuraTime primary master clock fails to send time updates, the secondary master clock will automatically detect the loss and begin transmitting time updates. When the primary master clock resumes transmissions, the secondary master clock will switch to an idle state. All operations are automatic, requiring no operator intervention.

Q. **How does multiple time source work?**

A. DuraTime dual-redundant master clock configurations are capable of simultaneously obtaining time updates from two independent NTP time sources. In addition, a single wireless GPS receiver can be utilized to obtain additional time updates for both master clocks. All time updates will be compared for accuracy and utilized. As long as a single time source is available, the system will distribute accurate synchronized time.