

Digital Clock Systems: A Total Cost of Ownership Comparison

Large facilities, such as schools and universities, manufacturing plants, hospitals and corporate locations, generally have three options when it comes to timekeeping: serial, wireless and Power over Ethernet (PoE) digital clocks. The time savings a synchronized clock system provides are exponential, but there are many considerations for deploying a facility-wide digital clock system, whether it be serial, wireless or PoE. This paper will explore the key monetary and non-monetary considerations and compare the total cost of ownership (TCO) for each digital clock system.

Serial Digital Clock Systems

Serial digital clock systems have been around for many years. These clocks require a **110V outlet and a serial plug** for power. Another power option is an **extra pair of wires for 24V DC power** in case of a power outage. The wiring these digital clocks require makes serial clock systems an expensive solution, compared to PoE digital clocks.

Key monetary cost considerations for a serial digital clock include the purchase price, the cost of syncing the time to the network, installation of a 110V outlet and serial plug to power the clock, and, if power backup is required, additional wiring costs to provide backup power in the event of a power outage.

Monetary Cost Considerations (per digital clock)	Average Price (in US\$)
Purchase price	\$200-\$400
Time sync	\$275
Power	\$125 (installation of 110V outlet and serial plug)
Power backup	Additional wiring in case of power outage, optional
Total monetary cost	\$825 + optional power backup

Wireless Digital Clock Systems

Wireless digital clocks are essentially the second generation of clock systems. These clocks receive time from a **transmitter that must be located in the building**. The transmitter sends a low-wattage signal with the time to each digital clock. Digital clocks require the **installation of expensive AC outlets**.

Key monetary cost considerations for a wireless digital clock include the purchase price, the antenna system which syncs the time to the network, and installation of an AC power drop to power the clock.

Monetary Cost Considerations (per digital clock)	Average Price (in US\$)
Purchase price	\$350
Time sync: antenna system	\$500-\$625
Power	\$125 (installation of AC power drop)
Power backup	\$0
Total monetary cost	\$1,100

Power over Ethernet Digital Clock Systems

PoE is an exciting and relatively new technology that **simplifies implementation and maintenance** of a clock system. There is **no need for AC outlets**, battery replacements, daylight saving time adjustments, or additional software. A network administrator can easily **control one or hundreds of clocks** from any PC on the network with a simple Telnet session. The option of centralized uninterruptible power supply (UPS) backup allows PoE devices to **continue running even in the event of a power failure**.

Key monetary cost considerations for a PoE digital clock system include the purchase price and, if an Ethernet jack doesn't already exist, installation of an Ethernet port. It's worth noting, however, that Ethernet port installation can usually be done by IT staff to save on installation costs. Another option for power is to use an endpoint PoE injector, which plugs into an AC outlet to power a PoE clock. Two of the unique cost benefits to PoE clocks are **energy efficiency and no additional required costs** for time syncing or power backup.

Monetary Cost Considerations (per digital clock)	Average Price (in US\$)
Purchase price	\$295
Time sync	\$0
Power	\$100 (installation of Ethernet jack) OR \$27.50 (PoE injector)
Power backup	\$0 (with network power backup)
Total monetary cost	\$395

Non-monetary Cost Considerations

No matter which digital clock system you're considering, there are several factors that can affect the success of your implementation even though they don't directly impact the final cost. These include:

- Failure rate: Downtime can be costly, especially when clocks are mission-critical. Inova OnTime® digital clocks have a failure rate of less than 1%.
- Accuracy: Accurate time is essential, especially in hospitals and other facilities where time is mission-critical. OnTime clocks are accurate within approximately +/- 200 milliseconds.
- Viewing distance and angle: The viewing distance and angle will directly impact the number of clocks you'll need to purchase to keep everyone in the facility aware of the time. OnTime digital clocks can be seen from a distance of 150+ feet and a 140° angle.
- Automatic time updates: OnTime clocks automatically update for daylight saving time, providing valuable time savings twice every year. Not all clock systems automatically update, so consider the time spent manually updating each clock.

The time and cost savings that PoE clocks provide make a huge impact on clock deployments of any size. Just one PoE digital clock is less than half the cost of one serial digital clock and roughly one-third the cost of one wireless digital clock. Energy-efficient, PoE technology is clearly the answer.

For more information on ordering PoE clocks contact sales@invasolutions.com or call 866.686.8774.

Order a trial clock at <http://store.invasolutions.com>.