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Synchronized Clock Systems

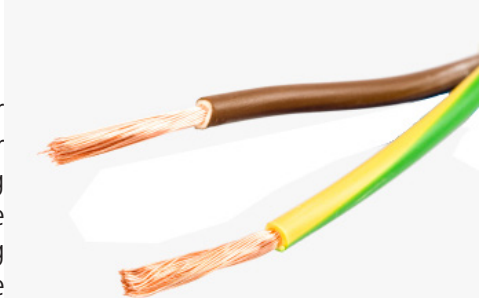
Which Wired Clock System is Right for Your Facility?

A White Paper by The Sapling Company

Choosing which clock system technology to utilize in a facility can sometimes be a confusing decision to make. Is your project a new construction or is it a renovation? Are you installing a completely new wired clock system or are you just replacing broken clocks? Is the specified system utilizing the best technologies available? We know choosing a wired system especially can be confusing, as there are multiple technologies available, but hopefully this wired clock system guide will help you make the right decision for your facility.

Sapling manufactures three different types of wired systems: Two-Wire Digital Communication, RS485 Protocol Wired, and Three-Wire Sync. Sapling's proprietary 2-Wire Digital Communication is one of the most advanced wired systems in the industry and is designed to combine technology, functionality, reliability, and is cost-effective.

Why Use a 2-Wire Digital Communication System?



The 2-Wire Digital Communication System starts with the SMA Series Master Clock which sends accurate time data to the Converter Box. The Converter Box is powered by 110 VAC and reduces the voltage to 24V while merging both the power and the time data signal onto the same pair of wires to the secondary clocks in the system, providing supreme accuracy and also helping to simplify installation. The 2-Wire Digital Communication system has multiple advantages over other wired technologies:

1. Runs off of only two wires providing both power and data saving time and money eliminating the need for extra wires.
2. Since the clocks are powered by 24V, in most places there is no need for a certified electrician to install the clocks or follow strict high voltage wiring regulations.
3. The Sapling 2-Wire Digital Communication System offers a unique automatic polarity detection feature, allowing the clock to correct itself when wiring errors occur during installation. This means that even when the wires are installed incorrectly, the clock will automatically detect the wrong polarity and reverse it, allowing the clock to function properly.
4. Sapling's 2-wire system is also designed to run in parallel and does not rely on getting power or data from any other clock. This means that if one clock were to have a problem, only that single clock would have the issue, all other clocks in the system will still continue to operate as normal.
5. The system provides correction as often as once a second, ensuring superior accuracy.

The 2-Wire Digital Communication system is perfect for a variety of different applications. Due to its sophisticated design and functionality, the 2-wire system is very easy to install and requires minimal maintenance. The system is capable of supporting both analog and digital clocks which can be used together in the same system. The simplicity of installation matched with its ingenious technology makes Sapling's 2-Wire Digital Communication system an ideal solution for your timekeeping needs.

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Why Use an RS485 System?

Sapling's RS485 Communication protocol could provide the right solution for your small clock system, recommended for 10 clocks or less. Each secondary clock is powered locally by 24V, 110V, or 220V. A separate pair of wires send time data as often as once a second.

The RS485 Communication protocol is suggested only for very small projects because the entire system is daisy-chained. This means that each secondary clock receives data from the clock preceding it in the chain. For example, if something were to cause clock number 6 in the line to malfunction, clocks 7 through 10 may no longer receive the accurate data. This is also the reason that this system should be limited to small projects as it could be very difficult and time consuming to try to troubleshoot in which order the clocks were initially installed and why clocks down the line aren't working.

Why Use a 3-Wire Sync System?

The 3-Wire Sync System utilizes a fairly old technology and is mainly used for retrofitting and replacing old clocks in existing systems. The clocks receive an hourly correction to synchronize both the minute and the second hands, however the hour hand receives time only every 12 hours.

Sapling's clocks are capable of recognizing many Sync Wire protocols such as 59 minute correction, 58 minute correction and National Time/Rauland correction. The clocks can be powered by 24V, 110V or 220V, giving you maximum flexibility to interface with other systems. Because Sapling 3-Wire Sync Systems are capable of interfacing with other existing systems, Sapling clocks are a perfect choice for retrofitting projects.

Due to the fact that the clocks synchronize only twice a day at around 6am or 6pm, in the event that power is lost, for example at 7:25am, the next time that the clocks will be fully synchronized and show the correct time will be only at around 6:00pm.

The Sapling Difference

Sapling strives to make products that are technologically advanced and offer solutions for a wide range of wired system requirements. Sapling's 2-Wire Digital Communication System is the best solution for a wired clock system installation but we also understand that project requirements can vary greatly from one project to the next. Sapling provides various wired system solutions, allowing flexibility and aiming to be the highest quality clock system provider for our customers.

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