SAPLING WIRELESS SYSTEM

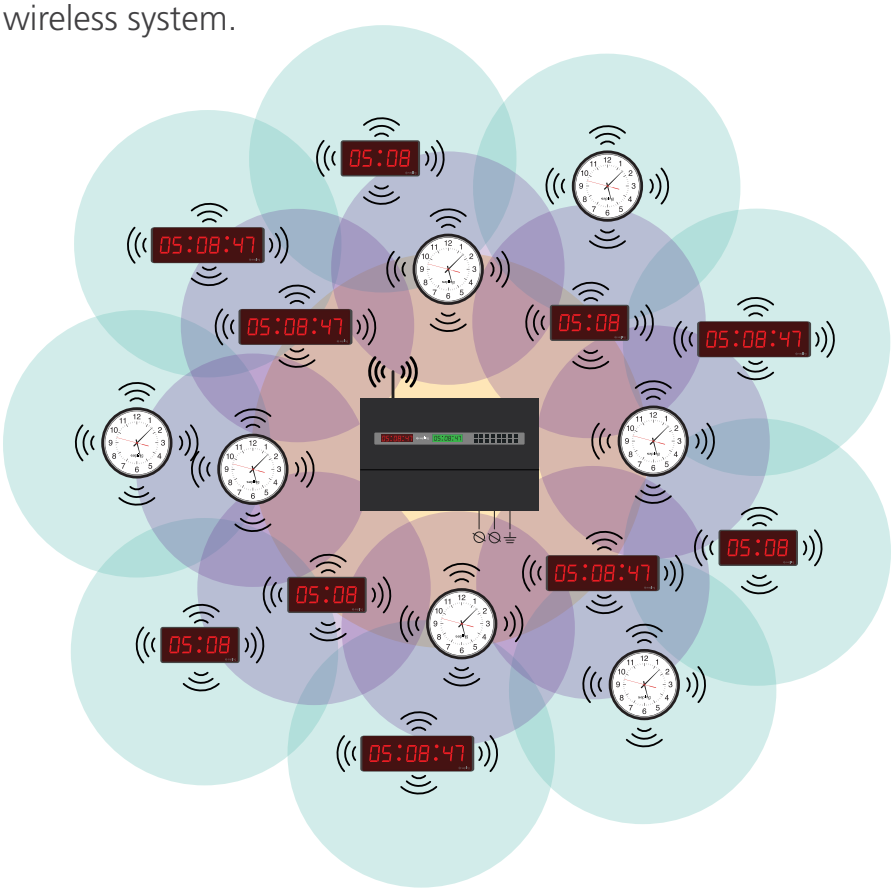
Sapling Wireless System

DESCRIPTION

A Wireless Clock System starts with a master clock with a transmitter. The master clock's transmitter transmits the time data to the secondary clocks in the system. Since the time data is transmitted wirelessly, there is no need to run wires between the clocks. The Sapling Wireless System works autonomously, meaning that it **does not** rely on existing Wi-Fi or Bluetooth infrastructure; at the same time, it coexists with other wireless systems that might be in the facility without interference.

The Sapling Wireless System is offered in either 900MHz (US and Canada) or 2.4GHz frequency range (approved to use worldwide) and utilizes frequency hopping technology which transmits and receives the accurate time on 51 or 76 different frequencies to ensure that all clocks in the system receive accurate time with no interference.

The Sapling Master Clock may interface with existing wired clock systems, allowing the facility to upgrade or transition from their existing clock system and benefit from the advantages of a wireless system.



Sapling Wireless Clocks utilizing our patented built-in repeaters to create a mesh network

Sapling Wireless System Advantages

Built-in Repeater in Each Secondary Clock - A **unique feature** of the system is that each wireless clock not only receives the accurate time, it also retransmits the time to the surrounding clocks in its area.

Superior Coverage - The Sapling Wireless System is not limited to the master clock's transmitter range since each clock has a built-in repeater. The time signal is relayed to remote clocks, allowing vast coverage within a facility without the need to purchase multiple master clocks or repeaters.

System Redundancy - Each clock can receive the time signal from multiple directions and sources, including secondary clocks nearby, clocks on the floors above and below, and from Sapling Repeaters and Master Clocks.

System Reliability - Sapling utilizes frequency hopping technology which transmits and receives the accurate time over 51 different frequencies within the 900 MHz or 76 different frequencies in the 2.4 GHz frequency range. This ensures that the clocks in the system receive accurate time with no interference.

No FCC License is Needed – Since the Sapling Wireless System operates in the license-free frequency range, no FCC license is required to operate the master clock transmitter or the secondary clock repeaters. This eliminates the application process and the cost associated with obtaining a license.

Cost Efficiency - Without the need to run wires between the secondary clocks, installation and maintenance costs are greatly reduced. Sapling's analog and digital clocks are offered in 24V, 110V and, 230V. To further simplify installation, Sapling also offers a battery powered analog clock. In this case, a secondary clock can be installed by simply inserting batteries into the clock and hanging it on the wall. Each battery operated analog clock is powered by two D-Cell alkaline batteries, such as Duracell ProCell or Duracell Ultra, which last between 5-8 years.

Safety Standard Compliance – The Sapling Master Clocks, Repeaters, and Secondary Clocks are designed to meet strict international safety standards and are (c)UL listed.

Advanced Master Clock – The Sapling Master Clock comes with a built-in web interface to allow easy access and easy setup from any computer in the facility via LAN.

SAL(G) Analog

Sapling's innovative SAL(G) Series Wireless Clocks incorporate multi-functional software, as well as a microprocessor based movement and a real-time internal clock. The clocks include automatic calibration, as well as enhanced diagnostic functionalities such as reset, sync now, find hands and more.

FEATURES

- Available in Round or Square Shape
  - Round Clocks are available in: 9", 12", and 16" dial sizes
  - Square Clocks are available in: 9" and 12" dial sizes
- Offered in a SlimLine ABS case
  - Optional Cherry Wood finish or Brushed Aluminum finish for round clocks
- Offered in 24/110VAC, 230VAC, and battery-powered models.
- Provided with mounting hardware for easy installation
- Hour, minute, and second hands
- Quick correction for time change (max. 5 minutes)
- Microprocessor based movement
- Internal Antenna
- Side molded, polycarbonate crystal
- FCC Compliant per FCC part 15 Section 15,247

HIGHLIGHTS

- Each clock acts as a repeater for the time data signal for superior coverage
- Energy efficient
- 900MHz or 2.4 GHz frequency hopping technology to ensure signal reliability
  - No FCC or special operating license required
- Receives and repeats the time data
  - Once every minute when powered locally at 24/110VAC or 230VAC
  - Once every two hours in standard mode, or once every four hours in economy mode when battery powered
- Built–in self-diagnostic mode:
  - Signal reception strength
  - Clock movement testing
  - Battery level if battery powered
- Custom Color Cases available (minimum order quantity 25)
- Designed and Produced by Sapling in Pennsylvania, United States of America

SBL(G) Digital

Sapling's SBL(G) wireless digital clocks are available with a bright red, white, green, or amber display. They incorporate microprocessor based functionality and an integrated real-time clock. All clocks feature an elegant and stylish design and are offered in different sizes with four (00:00) or six (00:00:00) digits.

FEATURES

- Receives time correction wirelessly
- Available with 2.5" (6.35 cm) digits or 4.0" (10.16 cm) digits; 4 digit display or 6 digit display
- Red display standard; Optional White, Green, or Amber displays
- Adjustable bright LED display (high, medium, low, off)
- 12 or 24 hour display
- Multiple power options
  - Offered in 24Volt, 110VAC, and 230VAC models
- Provided with mounting hardware for easy installation
- Immediate correction for time change
- Internal Antenna
- Microprocessor based clock
- Three models (3100, 3200, and 3300) with additional capabilities for higher models
- FCC Compliant per FCC part 15 Section 15,247

HIGHLIGHTS

- Each clock acts as a repeater for the time data signal for superior coverage
- 900MHz or 2.4GHz frequency hopping technology to ensure signal reliability
  - No FCC or special operating license required
- Receives and repeats the time data once every minute
- Programmable brightness levels
- Ten year battery backup for internal real-time clock and clock settings
- The clock features time loss notification by flashing the colon
- "BELL" and "FirE" messaging capabilities
- Capable of receiving pre-scheduled countdown command from the SMA Master Clock (optional SMA function)
- Alternating time/date display in U.S. format (MM:DD:YY)
- Designed and Produced by Sapling Inc. in Pennsylvania, United States of America

ADDITIONAL 3200 MODEL HIGHLIGHTS

- Includes all of the SBL(G) 3100 model's capabilities
- Capable of interfacing with:
  - Sapling's Elapsed Timer Control Panel (SBD-ELT-001-0)
  - Temperature Sensor (SBD-TEMP-000-0)
  - USB Programming Cable (D-USB485-INTF-1) for additional settings
- Alternating time/date display in international date format (DD:MM:YY)
- Brightness scheduling capabilities
- Can also receive Sapling RS485 protocol

ADDITIONAL 3300 MODEL HIGHLIGHTS

- Includes all of the SBL(G) 3100 and 3200 model's capabilities
- Easy programming with two push buttons on the front panel
- Can interface with a third party system via a contact closure (ex: nurse call system that can automatically trigger the clock's elapsed timer)
- Can interface with a Sapling Buzzer accessory (A-BUZZ-3300-1) when the Sapling Elapsed Timer reaches 00:00:00
- Can interface with 3-wire sync protocols

SMA Series Master Clock

The Sapling Wireless Clock System begins with Sapling's SMA Series Master Clock. The SMA 2000 Series is our standard master clock model with a front LED display and two push buttons for basic system programming. The SMA 3000 Series comes with a front LED and LCD display as well as a keypad to allow for advanced programming. The SMA 3000 model may also be offered with four or eight programmable relays (zones) to control third party systems via a contact closure (such as a school bell system).

All of Sapling's Master Clocks come with a built-in web interface to allow easy setup and programming from any computer in the facility via LAN. By default, the master clock receives the time data via the internet from up to ten preprogrammed (user changeable) third party NTP Servers for superior accuracy and redundancy. The master clock is also offered with an optional GPS receiver as an additional source for receiving accurate time. In addition, the master clock has a built-in real-time clock and can send an email alert when communication with the accurate time source(s) is lost.

STANDARD FEATURES

- Available in rack or wall mount housing
- LED display for a clear, accurate read out
- Backlit LCD display (3000 model only)
- Two buttons for programming (2000 model) or 2 x 8 rubber button keyboard for easy programming (3000 model only)
- Intuitive built-in web interface allows the system administrator to configure all the settings of the SMA Series Master Clock easily from the convenience of any computer on the same network
- RJ45 input for web interface access and synchronization to any (S)NTP/NTP server
- Ability to store up to 10 different NTP server IP addresses or domain names for continuous accurate time and redundancy
- Automatically switches from one accurate time source to another in case of a communication failure
- Blinking LED on master clock front panel to visually indicate a communication failure with the NTP server or GPS time source
- The master clock can be programmed to send an email alert when communication with the accurate time source has failed, when the master clock has been rebooted, when the fire alarm in the facility has been activated (if applicable), and more
- Less than 1 watt transmission output
- Control wired clock systems or wired and wireless clock systems simultaneously
- 12 or 24 hour display

- Automatic, fully customizable Daylight Saving Time updates, if applicable
- Selectable UTC/GMT offset
- Bias seconds option - offsetting the master clock to adjust the time plus or minus a few seconds or minutes to fit the application, while it is still receiving accurate time input
- DHCP Capable
- Proprietary RS485 input and output for time synchronization
- Can command digital clocks to display "Fire" when the alarm system interfaces with the master clock
- Microprocessor based
- Ten year battery backup for keeping time and master clock settings in the event of a power outage

OPTIONAL FEATURES

- GPS input for accurate time synchronization
- NTP server upgrade
- Four or eight configurable auxiliary relays which control other systems by closing a relay at predetermined times (3000 model only).
  - 255 schedule (group of events) and 800 event capabilities (such as triggering bells)
  - Two programmable closure durations per relay
- Can command digital clocks to display "Bell" at user defined times. In this case the master clock must have at least four relays
- Pre-scheduled countdown feature
  - The master clock sends a countdown command to all digital clocks at a predetermined time. When choosing this option, at least four programmable relays (zones) are required (3000 model only).

Sapling Repeaters

SAPLING NETWORK REPEATER

The Network Repeater is the perfect solution for a wireless system in a campus environment with multiple buildings. The Network Repeater receives its time data from the Sapling Master Clock via LAN and transmits the time signal to clocks once every minute. This feature allows the Network Repeater to be outside the wireless range of the main transmitter in the building or in a campus environment and still receive and transmit the accurate time signal (because the time data is received via LAN). The network repeater transmitter output is less than 1 watt (same as the master clock output).

SAPLING WIRELESS REPEATER

For facilities without LAN, Sapling also offers a Wireless Repeater that receives the time data from the Sapling Master Clock or from a secondary wireless clock and boosts (amplifies) and repeats the time signal in its area. In this case, the Wireless Repeater must be within range of a time signal in order to boost it. In addition, the wireless repeater can receive the time data from the SMA Master Clock through wires (using RS485 protocol). The transmitter output is less than 1 watt (same as the master clock output).

Accessories

Sapling offers different accessories to accommodate various project needs. These include:

- Elapsed Timer Control Panel (can interface with 3200 and 3300 models)
- Buzzer Accessory (can interface with 3300 model)
- Temperature Sensor (can interface with 3200 and 3300 models)
- Wire Guards
- Clear Protective Covers
- USB Programing Cable (can interface with 3200 and 3300 models)
- Flag Mount and Double Mount Housing

Shown left is a Sapling six-digit digital clock with an elapsed timer control panel & a buzzer accessory. Shown above is a round analog clock, flag mounted from the ceiling.

About Us

The Sapling Company is a global leader in engineering and manufacturing advanced synchronized clock systems. We have earned a reputation both in the USA and international markets for our superior technology, quality and reliability. For more information about Sapling Synchronized Clock Systems and the Time Zone Clock, please visit our website: www.sapling-inc.com

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Sapling

a global leader in engineering & manufacturing quality synchronized clock systems since 1993

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Synchronized Clock Systems