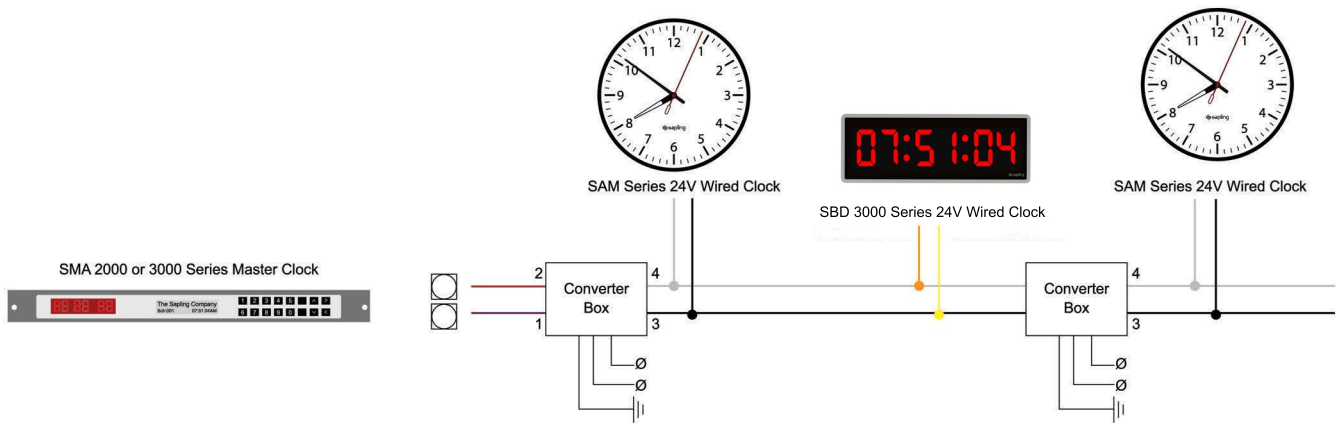


# Sapling **Wired** System



# 2-Wire Digital Communication



## Description

Sapling's 2-wire digital communication is one of the most advanced wired systems in the industry. The system works on only two wires and provides correction to the clocks as often as once per second, ensuring superior accuracy. It starts with the SMA Series Master Clock sending data to the Converter Box. The Converter Box acts as both a power supply and an amplifier of the data signal so it can send both 24VDC and the data on the same pair of wires to the slave clocks in the field, providing supreme 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 24 volt clocks which can be used together in the same system. The simplicity of installation matched with the ingenious technology makes Sapling's 2-wire digital communication system an ideal solution for your timekeeping needs.

## The Sapling Advantage



**POWER/DATA ON THE SAME LINE** - The system integrates the power and data on the same line, eliminating the need for a third wire.

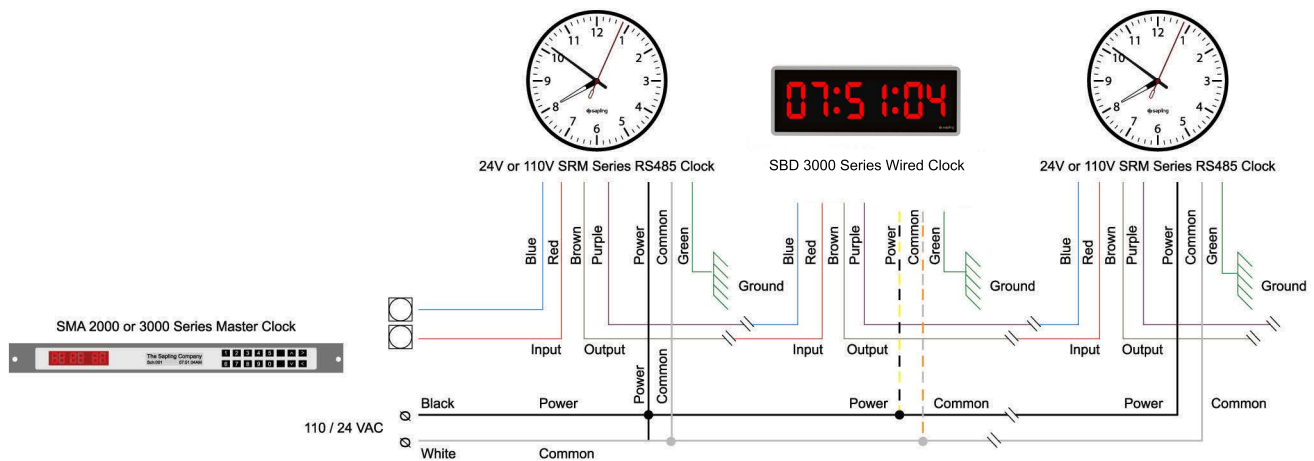


**INSTANT CORRECTION** - Up to the second correction ensures that the 2-Wire Digital Communication system is always on time.



**SIMPLE INSTALLATION** - The 2-Wire system installation is effortless, and with features like automatic polarity detection, setup is even easier.

# RS485 Communication



## Description

With Sapling's RS485 Communication, maximum flexibility coupled with advanced technology provides the right solution for your clock system. Each slave clock is powered locally, while a pair of wires is daisy chained from clock to clock, sending digital correction as often as once per second, preventing deviation. Using advanced optocoupler technology, Sapling's RS485 system keeps the communication lines isolated which prohibits damage from lightning strikes or power surges. Cost effective and accurate, the RS485 Communication system is an optimal choice for small wired clock systems.

## The Sapling Advantage



**NO NEED FOR AN EXPENSIVE MASTER CLOCK** - The RS485 System runs off of any Sapling Master Clock, including the cost-effective SBD 3300 Digital Clock.

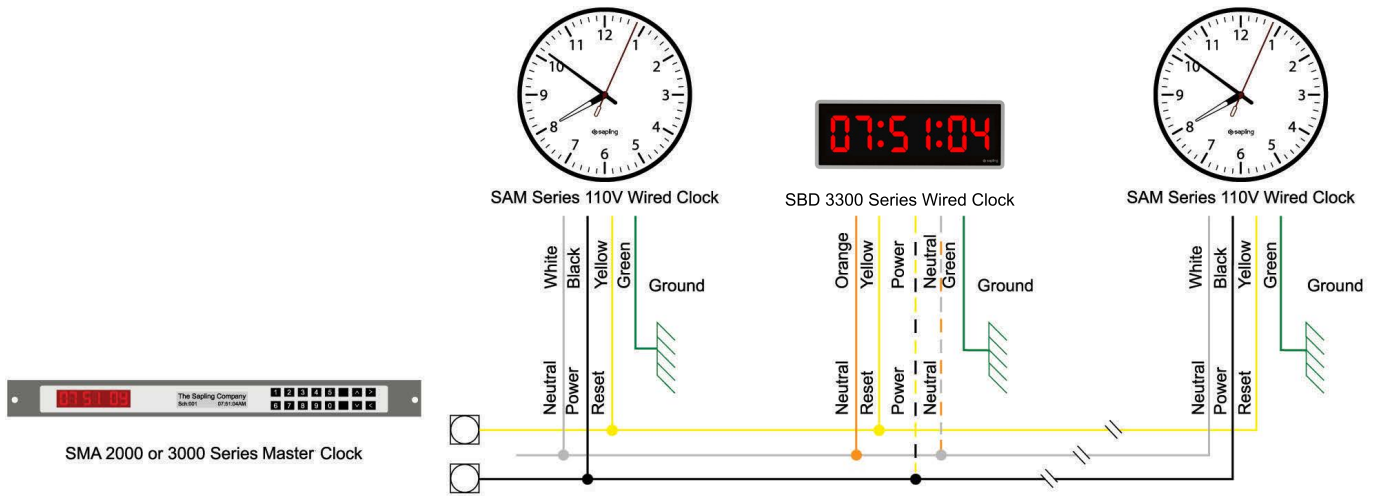


**INSTANT CORRECTION** - Each clock receives the digital signal as often as once per second, ensuring that the clocks are always getting the correct time.



**WORKS ON A WIDE VARIETY OF VOLTAGES** - Since the RS485 clocks are powered locally, they are capable of running off of 24 VAC/ VDC 110 VAC or 20 VAC.

# Sync-Wire Communication



## Description

The Sync-Wire system is the most popular system in the United States. The clocks receive an hourly correction which synchronizes both the minute and the second hand. The daily correction synchronizes the entire clock system every 12 hours for accurate timekeeping. Providing maximum adaptability, Sapling's clocks are capable of recognizing many protocols and can be powered using either 24V, 110V or 230V.

## The Sapling Advantage



**AUTOMATIC PROTOCOL DETECTION** - The analog clocks are capable of recognizing 59 minute correction, 58 minute correction and even National Time/Rauland correction.



**WORKS ON A WIDE VARIETY OF VOLTAGES** - Sync-Wire clocks can run on 24V, 110V or 230V, giving you maximum flexibility.



**INTERFACES WITH OTHER SYSTEMS** - Sapling Sync-Wire systems are capable of interfacing with other existing systems, making Sapling clocks a perfect choice for retrofitting or new installations.

We put in another manufacturer's wired clock system throughout our facilities and it was difficult and costly to get replacements when they began to fail. We used Sapling's clocks as replacements and have had no problems since. The clocks are working flawlessly. Great product and great company to work with.

Scott Mallicoat, District Maintenance Supervisor, Farmington School CUSD #265



# SMA Series Master Clock

Series comes fully 3000 version. The 3000 and 2000 Sapling's new SMA Series Master Clock is available in both a 800 with up to 3000 equipped with a crisp LED readout and a backlit two line LCD display. Programming the SMA Series features a bright LED display with two 2000 rubber tactile keypad. The SMA 2x8 events is easy, thanks to the .push buttons for simple programming

The SMA Series comes standard with NTP capability for synchronization to any NTP time server or an optional GPS can be added for UTC synchronization. The master clock can be purchased with a built-in transmitter for sending out the .signal to Sapling wireless analog and digital clocks



## Standard Features

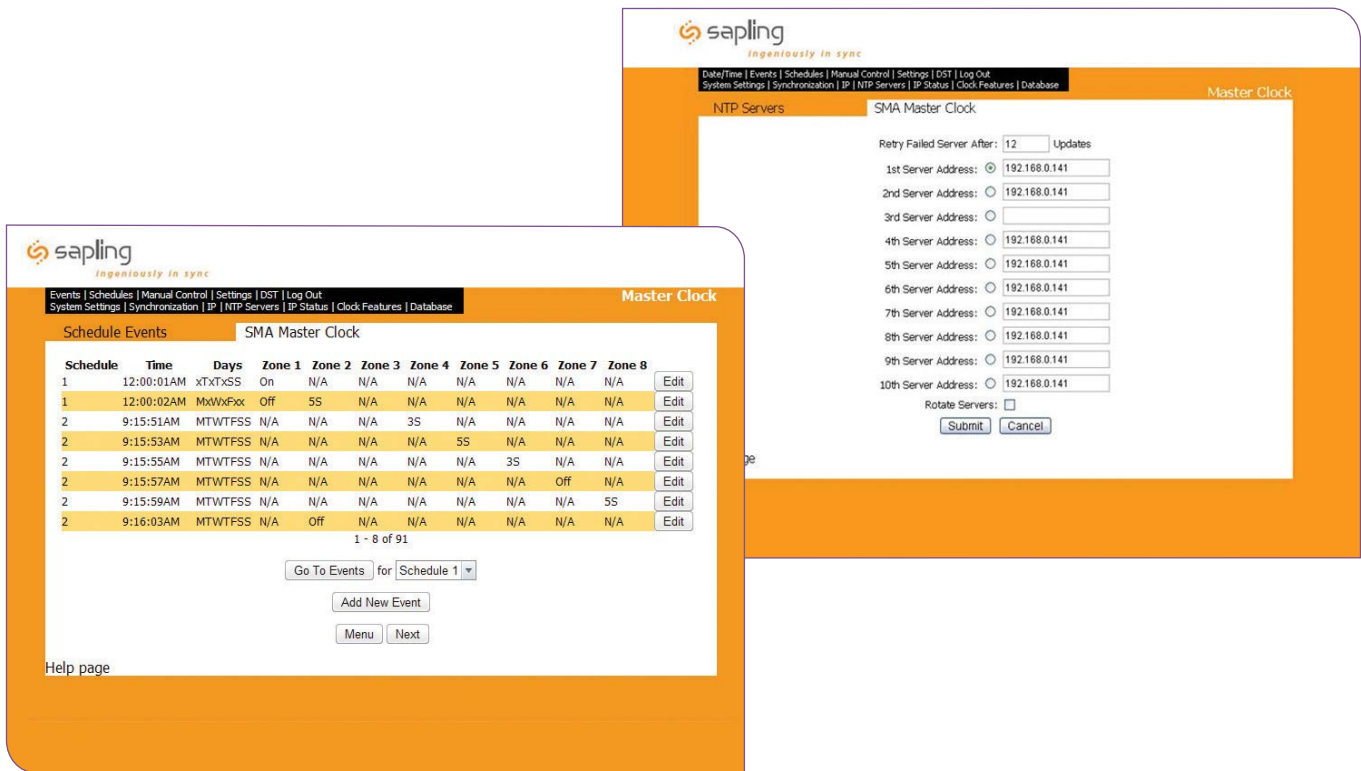
- LED display for a clear, accurate readout
- Two line, backlit LCD display with 20 characters per line with 2x8 rubber tactile keypad (SMA 3000 only)
- RJ45 input for synchronization to any (S)NTP server
- Interfaces with other systems
- 12 or 24 hour mode
- Automatic biannual Daylight Saving Time changes
- Bias seconds option for adjusting the time to fit your application, while still receiving an input
- RS485 input and output for time synchronization
- Two relays for simultaneous correction of two synchronous wired clock systems

## SMA Series Options

- GPS input for UTC synchronization
- Wireless transmitter/repeater for correction of the Sapling wireless clocks
- Four or eight configurable auxiliary relays with 800 event capability (SMA 3000 only)
- Web interface software upgrade
  - Extremely intuitive graphical user interface that allows the user to configure all of the settings of the SMA Series Master Clock
  - Control all of the IP settings
  - View the complete list of pre-programmed events and schedules
- NTP Server can be used as a time source for other networked devices
- Countdown feature (SMA 3000 feature)
  - Digital clocks will count down a preset amount of time when the relay is activated

# SMA Series Web Interface

The SMA Series has an easy-to-use web interface for programming any setting or feature located on the SMA Series Master Clock. By having the interface available on the web, you can conveniently access any of the master clock's settings and features from anywhere, at any time. Two levels of password security ensure that the master clock's information is protected from unwanted sources.



- Works with almost all internet browsers including Microsoft Internet Explorer, Mozilla Firefox or Apple Safari
- Easily program schedules and events through the web interface
- Configure IP settings through an easy-to-use interface
- Activate any device off of the master clock's relays immediately through the Manual Control option
- Program digital clocks to count down during breaks or between classes (optional feature)
- Set features like 12/24 hour mode or Daylight Saving Time right from your computer
- Set the time and date right from the home screen

# SAM/SRM Series Analog **Wired** Clock

Sapling's SAM Series analog clock is the most flexible analog clock in the field today. Its fully plug and play functionality makes installation effortless. Boasting a flexible software set, the SAM Series is capable of adhering to a multitude of protocols in the clock field.



Sapling's SRM Series analog clocks are an exceptional, cost-effective choice that works with our RS485 system. The RS485 clocks use optocoupler technology which isolates the communication preventing damaging lightning strikes or power surges. The RS485 system is a perfect solution for small systems that require enhanced accuracy (as often as once a second).

## Standard Features

- Analog and digital clocks can be run on the same communication line
- Does not require an expensive master; it can be run off the SBD 2000 Digital Clock as well as a SMA 2000 or 3000 Series Master Clock
- Built-in self-test function
- Quick correction for time change (max. 5 minutes)
- Automatic frequency detection
- Microprocessor based movement
- Clocks will not deviate from each other
- Built-in self-test function
- UL, cUL listed



Good Design Award 2011 Winner of the

## SAM Series Features

- Automatic communication protocol identification including:
  - 2-wire digital communication
  - Sync-wire 59 minute correction
  - Sync-wire 58 minute correction
  - Sync-wire National Time and Rauland
- Fully automatic plug and play; No settings required
- Diagnostic LEDs for ease of maintenance
- Automatic polarity detection

## SRM Series Features

- Uses local power plus 2 wires for communication
- Diagnostic LEDs for ease of maintenance
- Data LEDs for verifying the transmission and receipt of data
- Unlimited clocks can be run on the same communication line when daisy chained



# SBD 3100/3200 Series Digital Wired Clock

Sapling's SBD 3100/3200 Series is the perfect digital clock solution for virtually any application where wired digital clocks are utilized. With our extensive selection of sizes from 2.5" or 4.0" characters to 4 or 6 digit displays, Sapling's digital clocks offer exceptional visibility. The clocks will be corrected instantly using Sapling's 2-wire digital communication or Sapling's RS485 communication.

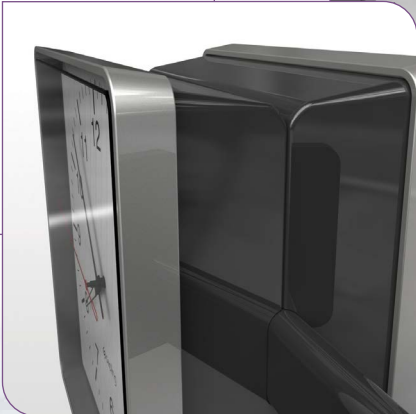
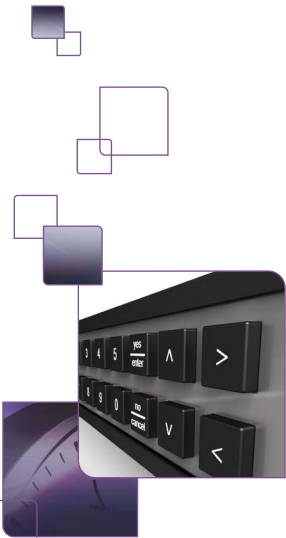
- No waiting for time change - Corrects time instantaneously
- Eliminate deviation by using Sapling's 2-wire digital communication or Sapling's RS485 communication
- Two programmable settings for brightness
- Wide variety of sizes from 2.5" or 4.0" characters to 4 or 6 digit displays
- Viewable in 12 or 24 hour format
- Loss of communication indicator
- Integrates with Sapling's Elapsed Timer (3200 Series)
- Fully compliant - UL, cUL listed



# SBD 3300 Series Digital Wired Master Clock

Sapling's SBD 3300 Series digital clock can be used as a master clock to other wired clock systems, making it an extremely flexible solution. Not only does the SBD 3300 include its own time base, but it also contains an impressive feature-set including automatic Daylight Saving Time, 12 or 24 hour mode, alternating time/date display and interfacing with other systems.

- Extremely versatile - Master, slave and independent clock with chronograph capabilities
- Interface capabilities to most master clock/intercom systems
- 12 or 24 hour display
- "BELL", "FirE" and addressable messaging capabilities
- Various input selection - 58 minute, 59 minute, National Time/Rauland sync wire inputs, Midnight Reset input, RS485 input and output and 2-wire digital communication
- Alternating time/date display in both American and European formats
- Versatile power input – can be powered using 24V, 110V or 230V (optional)
- UL, cUL listed



# Accessories

## Converter Box

- Converts RS485 signal to a 24 volt, 2-wire digital communication signal
- Ideal for renovation projects when a limited number of wires are available
- Protects against overloading and shorts, as well as high temperature damage
- Provides a powerful 5.5 amp, 24 volt output
- Can drive both analog and digital clocks on the same run
- Slim design, making the Converter Box versatile for mounting
- Quiet operation
- Simple installation
- UL and cUL listed



## Elapsed Timer

- Interfaces with the digital clock for elapsed timer capabilities
- Count up functionality
  - Counts up from 00:00:00 to 99:59:59
  - Countdown feature
  - Start point programmable from maximum of 99:59:59
- Customizable buttons for setting up the Elapsed Timer specifically for your facility
- Backlit buttons for greater visibility
- Controls all the functions of the digital clock





The Sapling Company, Inc.  
1633 Republic Road  
Huntingdon Valley, PA  
19006  
USA

P: + 1.215.322.6063  
F: + 1.215.322.8498  
[www.sapling-inc.com](http://www.sapling-inc.com)