

CSI MasterFormat™ Specification

SiteSync IQ®

SiteSync IQ® Wireless System



american  time®

Integrated Solutions

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This product specification is written according to the Construction Specifications Institute (CSI), *MasterFormat*™, *SectionFormat*, and *PageFormat*™, contained in the *CSI Manual of Practice*. Reference 16735, Master Format 2004 section 27 53 13.

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Table of Contents

Part 1 – General

1.1	Section Includes	3
1.2	Related Sections.....	3
1.3	References	3
1.4	Definitions.....	4
1.5	System Description.....	4
1.6	Regulatory Requirements.....	5
1.7	Submittals.....	6
1.8	Substitutions	6
1.9	Quality Assurance.....	6
1.10	Delivery, Storage and Handling	6
1.11	Project Site Conditions.....	6

Part 2 – Products

2.1	Manufacturer.....	7
2.2	System Operation and Startup Sequence.....	7
2.3	Equipment.....	8

Part 3 – Installation

3.1	Site Examination.....	11
3.2	System Installation	11
3.3	Inspection	11
3.4	Cleaning.....	11
3.5	Delivery.....	11

Specifier Note: Edit the following list as required for the project.

Section 27 53 13 or 16735

Clock Systems

Part 1 - General

1.1 Section Includes

- A. Transmission System
 - 1. System Controller with CDMA Receiver, GPS receiving antenna or Ethernet connection
 - 2. Primary Internal Transmitter
 - 3. Primary External Transmitter
 - 4. Magnetic mount or Campus transmitting antenna
- B. Wireless Synchronized Devices
 - 1. Analog Clock
 - 2. Digital Clock
 - 3. Master Clock Synchronizer Module
 - 4. Wireless Relay Module
 - 5. Signal Indicator SiteSync IQ
- C. Wired Synchronized Devices
 - 1. Analog Clock
 - 2. Digital Clock
 - 3. Direct wired electrical devices with on/off capability or momentary signaling

Specifier Note: Edit the following list as required for the project. List other sections with work directly related to this section.

1.2 Related Sections

- A. Division 16 or 27 – Electrical 120vac 60Hz grounded outlet required for SiteSync IQ System Controller. Ex: Minimum 10 amp circuit
- B. Division 16 or 27 - Electrical 120vac 60Hz grounded outlet required for external transmitter. Ex: Minimum 10 amp circuit

Specifier Note: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a list of those used.

- C. Division 16 or 27 – Electrical 120vac 60Hz grounded outlet for each AC powered clock, Master Clock Synchronizer and Wireless Relay.

1.3 References

- A. This Technical Specification and Associated Drawings.
- B. National Fire Protection Agency (NFPA) – 70, National Electric Code 2005.
- C. American Time SiteSync IQ Wireless Clock System User Manual.
- D. American Time Master Clock Synchronizer User Manual.
- E. American Time Wireless Relay User Manual

1.4 Definitions

- A. **CDMA:** Use of Code Division Multiple Access (CDMA) to provide time synchronization. This is often used in the mobile telephone industry. This mode of synchronization eliminates the need to mount an outside data receiving antenna. No wiring hookup is needed for this option as the CDMA receiver is installed inside the system controller. Simply attach the hinged antenna to the system controller to initiate time synchronization. The CDMA sets the time zone information from the cell tower (no service contract required).
- B. **GPS:** Global Positioning System, a worldwide system that employs a constellation of satellites in an integrated network to determine geographic location anywhere in the world, and which employs and transmits atomic time, the most accurate and reliable time. GPS antenna should be mounted outside with a clear view of the sky.
- C. **Ethernet:** Time synchronization via SNTP (Simple Network Time Protocol) or Daytime Protocol. The system controller receives the same time via an Ethernet connection, which is then transmitted to your clocks. This requires a TCP/IP Network with Internet access or connection to a Network Time Server.
- D. **Ethernet option with CDMA or GPS:** To provide system redundancy and to sync with GPS or CDMA time with the ability to control remote circuits via Remote Connect.

Specifier Note: American Time promotes the use of one transmitter to cover an entire facility with a time signal. The following is a guide for signal coverage. Radio signal coverage can never be guaranteed via a simple matrix or chart. This is the best information available from numerous installations, a wide variety of facility types, plus hours of testing at sites. Used only for reference. Specify the appropriate transmitter size for installation based on the following chart.

1.5 System Description

5 watt magnetic	10 watt magnetic	10 watt campus	25 watt campus	45 watt campus
1-2 stories	3-5 stories	3-6 stories	6-8 stories	8-12 stories
200k sq ft per floor	100k sq ft per floor	small campus	1 city block	1-2 city blocks
5-10 acres	10-30 acres	30-100 acres	125 acre campus	285 acre campus

Call American Time for more information: 800-328-8996

- A. SiteSync IQ Wireless Timekeeping system shall be capable of synchronizing clocks, intercom, server, computers and other equipment throughout a facility.
- B. The system shall synchronize all clocks to each other. The system shall utilize CDMA, GPS, or Ethernet technology to provide atomic time to all its components. The system shall not require any hard wiring for operation (besides AC power for specified components) except for an Ethernet patch cable for Ethernet connection or GPS antenna cable to pick up GPS signal. Analog clocks could be battery operated for full portability if required. Clocks shall automatically adjust for Daylight Saving Time per the settings in the SiteSync IQ System Controller.
- C. Clocks shall synchronize to ± 1 second of the time displayed on the system controller.
- D. The system shall include an internal real time clock reference so that failure of the CDMA, GPS or Ethernet signal shall not cause the clocks to fail to indicate the correct time.
- E. The system shall incorporate a “fail-proof” design so that a temporary power interruption shall not cause failure of the system. Upon restoration of power, the system shall resume normal operation.

1.5 System Description (continued)

- F. **Optional:** The system shall include a signal indicator to notify local supervisor or maintenance personnel when the SiteSync IQ System Controller transmits to verify signal reception.
- G. Analog clocks to be battery operated for complete portability and relocation freedom, or AC powered for many years of maintenance free operation. Batteries included.
- H. Site survey instruction manual and equipment to be available for building site transmitter signal reception diagnosis.
- I. **Optional:** System controller equipped with wired clock system run and correction output circuits and correction protocols for select wired clock systems. System controller can simultaneously operate a wired clock system and provide wireless clock signal to maintain synchronization of the wired and wireless clock systems throughout a facility. Specify wired clock correction protocol at time of order. Contact American Time at 1-800-328-8996 to obtain list of standard clock codes or to obtain a custom clock code.
- J. **Optional:** System Controller with 6 integrated signal relay circuits available for operating bells, tone generators, lighting circuits, intercom and other electrical equipment. This can be done via a direct wired connection or wirelessly via one or more wireless relay modules. System controller capable of programming and storing 99 schedules with 9999 events. Events may be programmed for momentary 1-9 second activation or toggled on and off.
- K. **Optional:** System Controller (with Ethernet option) capable of Remote Connect Web Interface which allows for event and circuit programming as well as manual circuit activation from a remote location via a web browser. No software required.
- L. **Optional:** Wireless Relay Module (P/N H004296, H004296-2): A remote relay that receives a wireless signal and supplies a contact closure based on the schedule in the system controller that is assigned to that circuit.
- M. **Optional:** Wireless Controller
(P/N SSQWCA-2C4T - Clock relays and 4 tones)

The Wireless Controller receives the time and activation instructions via a wireless signal from the SiteSync IQ System Controller. The Wireless Controller is capable of running and correcting a wired clock system that is directly attached to the appropriate terminal strip inside it. The wired clock system attached to the the Wireless Controller must use the eight second hour correction and 14 second 12 hour correction protocol.

1.6 Regulatory Requirements

- A. Equipment and components furnished shall be of manufacturer's latest model.
- B. System Controller, Transmitter and Receiver shall comply with Part 90 of FCC rules, as follows:
 1. This device may not cause harmful interference.
 2. Transmitter frequency shall be governed by FCC Part 90.35.
 3. Transmitter output power shall be governed by FCC Parts 90 and 74.
- C. System shall be installed in compliance with local and state authorities having jurisdiction.

1.7 Submittals

Specifier Note: FCC Regulations - American Time offers the use of a shared nationwide FCC license, call sign WQFW336. In the U.S. and its territories, this allows nationwide wireless system operation on the following 5 frequencies up to 100 watts of power, except near the Canadian border, which has specific requirements (5 watts maximum):

464.600 MHz 464.625 MHz 464.650 MHz 464.675 MHz 464.700 MHz

For additional information on licensing, contact American Time: 800-328-8996

- A. **Product Data:** Submit complete catalog data for each component, describing physical characteristics and method of installation. Submit brochure showing available colors and finishes of clocks.
- B. **Operating License:** A copy of the shared nationwide FCC license can be obtained from American Time if desired. No special licensing is required for installation or operation.
- C. **Samples:** Submit one clock for approval. Approved sample shall be tagged and shall be installed in the work at location directed. End user logo, mascot or custom artwork on dials is available at no charge. American Time requires approval of custom dial design by end user prior to volume dial printing.
- D. **Manufacturer's Instructions:** Submit complete installation, set-up and maintenance instructions.

1.8 Substitutions

- A. Proposed substitutions to be considered, shall be manufactured of equivalent materials that meet or exceed specified requirements of this Section.
- B. Proposed substitutions shall be identified not less than 10 days prior to bid date.
- C. Other systems requiring wiring and/or conduit between system controller and clocks will not be acceptable.

1.9 Quality Assurance

- A. **Permits:** American Time offers the use of a shared nationwide FCC license.
- B. **Qualifications:**
 1. **Manufacturer:** Company specializing in manufacturing commercial timekeeping systems with a minimum of 10 continuous years of documented experience.
 2. **Installer:** End user technicians or contractor with documented experience in the installation of commercial timekeeping systems.
- C. **Warranty:** Two year warranty on all SiteSync IQ products excluding batteries.

1.10 Delivery, Storage and Handling

- A. Deliver all components to the site in the manufacturer's original packaging. Packaging shall contain manufacturer's name and address, product identification number, and other related information.
- B. Store equipment in finished building, unopened containers until ready for installation.

1.11 Project Site Conditions

- A. Clocks shall not be installed until painting and other finish work in each room is complete.
- B. Verify reception of CDMA signal via the use of a CDMA cell phone in the area the system Controller will be installed. No external wiring or antennas required.
- C. Coordinate installation of the GPS external signal receiving antenna for access to the roof or exterior side wall so the bracket and related fasteners are securely mounted.
- D. Cat 5 or above patch cable with Internet access or connection to a Network Time Server must be available plus; Static IP address from Network Administrator, Gateway IP address, Subnet Mask, Firewall Port, and SNTP Server Address.

Specifier Note: Select from the following product list all the products and options that fit your system design. Consult American Time for additional information regarding product features and options.

Part 2 - Products

2.1 Manufacturer

- A. SiteSync IQ wireless timekeeping system and its components shall be manufactured by American Time, Dassel, MN 55325.

2.2 System Operation and Startup Sequence

The SiteSync IQ system receives atomic time information from the CDMA cell towers, GPS satellite system or the Ethernet. The system controller is a powerful multitasking device that is capable of sending precise time information to synchronize all the system wireless clocks and accessories. The system can be monitored and programmed from the SiteSync IQ system controller keypad or via your PC web browser if you have the Remote Connect capability. It's important to follow steps in this order: Install system controller, confirm signal reception and then install clocks.

A. **Wireless System Controller Operation:**

When power is first applied to the SiteSync IQ system controller, the user shall complete the Startup Wizard to initiate system operation and signal transmission. The SiteSync IQ system controller looks for the time signal every hour from the time source your system is designed to synchronize with. Once the system controller has received the time synchronization it sets its internal clock to that time. The system controller then starts to transmit the internal time. The system controller features an on-demand CDMA, GPS or Ethernet sync capability which is initiated by the user/installer to sync the time.

B. **Analog Clock Operation:**

For battery clocks, connect the barrel jack plug of the battery pack to the wireless receiver. For AC powered clocks, connect to AC power with cord kit or Molex kit and confirm green LED is lit. There is no need for any additional adjustment (the clock movement adjustment is fully automatic).

The LED on the back of the clock will turn red for one second then briefly flash orange (1-15 flashes) indicating the receive frequency on power up. Within 30 seconds of power up the LED will flash red or green. Red indicates the receiver is looking for the signal and green indicates the signal has been received. On battery clocks, when the movement starts to correct, the LED will turn off. On electric clocks the LED will turn green. Correction will begin within 3-5 minutes after activation/power up. The clock will automatically look for valid time signals 4 times each day, and will adjust to the correct time if needed.

C. **Digital Clock Operation:**

Connect the digital clock to the 120vac power source. After several seconds of initial startup, the clock receiver will look for a valid signal transmission and synchronize to the correct time as soon as it receives a valid time from the system controller.

Note: Refer to system installation and operation manual for wiring instructions and mounting.

D. **Wired System Analog Clock Operation:**

The wired system clocks come with a molex connector that is used to connect the clock to the power supply. One half of the molex is connected to the 120vac in the wall and the other half is connected to the clock. Simply plug the molex halves together, hang the clock up and it will receive the run power and time synchronization signals from the master. Wired clock systems run off power fed from the Sitesync IQ system controller to all the clocks in a "daisy chain pattern". Wiring typically consists of four wires, a black for power to run the motor on the clock, a white neutral wire, a red correction wire that sends the correction signal to the clock and a green ground wire. Contractors need to check their local wiring codes for the appropriate wire size to operate the clocks.

2.3 Equipment

Specifier Note: Select the right system controller to provide full coverage facility wide:
The internal transmitter for single buildings
An external, more powerful, transmitter for larger facilities

- A. **General:** A basic clock system shall include a system controller, internal or external transmitter, CDMA antenna, GPS time signal receiving antenna or Ethernet connection, analog and/or digital clocks. An expanded system can also include all accessories and options, (such as tone generator, anti-theft brackets, wireless sync relays, remote connect, wired synchronous clocks, bells, signal reception indicator, tone generators) as needed.
- B. **Wireless Master:** The SiteSync IQ system controller shall incorporate a display and a keypad to provide the following features:
1. Time zone selection via the keypad and display for all USA time zones as well as custom time zones. Includes all U.S. time zones: Eastern, Central, Mountain, Pacific, Alaska and Hawaii.
 2. Automatic Daylight Saving Time: adjustment can be enabled or disabled from keypad
 3. CDMA, GPS or Ethernet interface and real time status display mode
 4. Password protected Programming Menu to set the date, local time zone, DST and other system parameters as needed
 5. The system controller shall contain an internal clock such that failure of reception from the CDMA, GPS, or Ethernet will not disable the operation of the clocks
- C. **Time Synchronization Mode:**
1. CDMA Antenna: Attach hinged CDMA antenna to the appropriate location on the back of the system controller and swing it into a vertical position for best operation.
 2. GPS Antenna: Plug antenna cord into the appropriate receptacle on the back of the system controller and locate the GPS antenna outside with a clear view of the sky
 3. Ethernet: Plug Cat 5 or higher patch cable into the appropriate receptacle on the back of the system controller. The controller must be linked with a TCP/IP Network with Internet access or connection to a Network Time Server
- D. **Transmitter:** American Time wireless transmitters may be internal 5 or 10 watts, or external 25 and 40 watts. The transmitter parameters shall be:
1. Frequency Range: 450-470 MHz
 2. Transmitter output power: Internal 5 or 10 watts (built into the SiteSync IQ system controller) or External 25-40 watts in external metal case
 3. Transmission Range: Up to 50 miles radius (transmitter dependent)
 4. Radio technology: Narrowband FM, 12.5 KHz bandwidth
 5. Transmission format: POCSAG, digital one-way communication
 6. Digital Data rate: 512 baud
 7. Operating range: 0 to 60° C / 32 to 140° F

2.3 Equipment (continued)

- E. **Transmitting Antenna:** Shall be American Time Part # H001263 or H002978 for indoor or outdoor applications. Antenna polarization shall be vertical.
- F. **Power supply:** (included with system controller)
 Input: 120vac 50/60 Hz
 Output: 12vdc, 3 Amps
- G. **Surge Protector/Battery Backup:** American Time Part # H002717A.
 Input: 120vac 60 Hz +/- 1 Hz.
 Output: 120vac, 550VA, 300-watts
 Surge Energy Rating: 700 joules with 10x1000uS pulse
- H. **Analog Clocks:** American Time plastic analog clocks are round 10.37", 13.375" or 17.25" outside diameter. Additional colors and finishes are available from manufacturer. Metal case clocks are round and 11.125", 13.187" or 16" outside diameter. Square analog clocks are 12.562" square. Wood frame clocks are 11.750" or 17" outside diameter. Analog clocks, whether round or square, shall be wall mounted and surface or semi-flush mount. Plastic clocks shall have polystyrene frame and polycarbonate lens and metal clocks will use metal frames with glass crystals. Face (dials) shall be white (other options available). Hour and minute hands shall be black and sweep (second) hand is red. Analog clocks available as wall or ceiling mount double dial assemblies.
- Other wireless clock features shall be:
1. Analog clocks with no user mechanical adjustments. Run time of a half hour after power loss without losing time for AC versions.
 2. Time shall be automatically updated from the transmitter 4 times per day.
 3. Use the battery booster pack with 6 AA lithium batteries or AC power adapter without battery.
 4. The clock shall have an ultra sensitive UHF receiver (better than -110dBm) and integrated internal antenna.
 5. The clock will keep operating using its internal quartz clock in case of signal reception loss due to malfunction of the wireless system controller or transmitter.

Specifier Note: Analog clock faces can be made with Owner's logo as an option. If desired, leave in the following and arrange for Owner to provide hard copy or digital copy of logo in format as required by American Time Contact American Time for details.

6. Analog clock faces shall bear Owner's logo as indicated.

Specifier Note: Where desired for protection of analog clocks, specify the following optional equipment.

7. Wire guards: Provide one for each analog clock as follows:
 - A. Part # 1200, 15 by 15 inch size, for nominal 12" diameter analog clocks.
 - B. Part # 1500, 19 by 19-inch size, for nominal 15" diameter analog clocks.
8. Anti-theft Bracket:
 - A. 12" plastic - Part # H001141
 - B. 15" plastic - Part # H003699

2.3 Equipment (continued)

- I. **Digital clocks:** American Time SiteSync IQ digital clocks are available with 4 digits (hours and minutes) or 6 digits (hours, minutes, and seconds) and with 2.5", 4" or 8" high digits. Digital clocks are available as double dial and wall or ceiling mount. Digital clocks require 110vac or 24vac (optional) for operation. Time signal is received via wireless signal (other options and features available).

Other Digital Clock Features are available. Contact American Time directly for various options.

- J. **Digital Elapsed Time Indicators** (Part #SQA261RSAE, Reset Control Station Part #ATSTCS): Multifunction Operating Room/ ICU Elapsed Timers with count up timer with audible alarm and hold or count down timer with audible alarm and hold. Setting and control is by the Timer Control Station (included) which can be mounted up to 30' from the timer. Battery backup (included) is provided by a 9-volt rechargeable ni-cad battery (other options available). Elapsed time indicators require AC power for operation and direct wire to the Timer Control Station. Elapsed Time Indicators receive their time signal from the SiteSync IQ System Controller.
- K. **Wireless Relay** (Part # H004296, H004296-2): A remote relay receives a wireless signal and supplies a contact closure based on the schedule in the system controller that is assigned to that circuit. Multiple modules are available that operate specifically with 1 of 6 corresponding dry contact circuits in the system controller for wireless communication with multiple products. The wireless relay module is programmable via the system controller scheduling capability for a 1-9 second momentary signal or toggled on and off.
- L. **Remote Connect:** The Remote Connect Web interface allows for SiteSync IQ System Controller event and circuit schedule programming, manual circuit activation, time/date settings and other system configuration from your PC.

Remote Connect capabilities include triggering wired and wireless events, assigning custom durations to signals, managing programming of up to six circuits, backing up and restoring schedules to and from PC's and activating circuits manually.

Remote Connect requires Windows 2000, XP, Vista or Windows 7.

- M. **SiteSync IQ Signal Indicator** w/ 9v Battery Option (P/N H004292): American Time hand held signal indicator runs off one 9v battery or may be powered with an AC power adaptor. The Signal indicator receives data transmission from the system controller and indicates signal reception via LED lights. The Indicator LED shows red each time the unit receives signal if it is within range of the transmitter. Blinking green indicates unit has received signal within the past 5 minutes and blinking red indicates the unit has not received signal.
- N. **Remote Receiver:** Analog clocks may be equipped with remote receivers. This option is for rooms shielded from the radio frequencies, such as hospital X-ray rooms. This option uses common RJ11 connectors on both ends of the included 25' or 50' cable separating the receiver component from the clock. Simply locate the clock where it needs to be, place the receiver in a known area with signal reception, and join the two via the cable. One end of the cable will plug into the remote receiver and the other end will plug into the RJ11 jack on the clock.
- O. **Wireless LED Message Board:** These Wireless Message Boards display messages throughout a facility. Messaging is controlled via wireless communication through the Remote Connect web interface on your desktop and the SiteSync IQ System Controller. These Message Boards have a bright red LED display. The SiteSync IQ System Controller is required to provide messages to the Message Boards. The Wireless LED Message Boards are capable of scrolling one or two lines of messaging and up to 10 messages at one time. The Message Boards require 120vac power for operation.

Part #ATS112 28" w x 6¹/₄" h x 2³/₄" d

Part #ATS120 52" w x 6¹/₄" h x 2³/₄" d

Part 3 - Installation

Specifier Note: Allow for a 120vac outlet for operating power for the system controller. This location should be as high and central within a facility as possible. This will allow for positioning the equipment in the best location for optimal signal distribution.

3.1 Site Examination

- A. Verify that construction is complete in the areas where equipment is to be installed and that rooms are clean and dry.
- B. Verify that a 120vac electrical outlet is located within 6 feet of the location of the System Controller and the outlet is operational and properly grounded.
- C. Verify that all 120vac electrical outlets for the AC powered clocks are located at the exact installation points and the outlets are operational and properly grounded.

3.2 System Installation

Refer to the manufacturer installation manuals as supplied with the system, to install each one of the system components.

3.3 Inspection

Prior to final acceptance, inspect each system component to function properly and replace parts that are found defective.

3.4 Cleaning

Prior to final acceptance, clean exposed surfaces of all system components, using cleaning methods recommended by the manufacturer.

3.5 Delivery

If needed, provide technical assistance as demonstrated in the manufacturer's system user guide, on product start up and system setup, to owners or installers representatives via phone: 800-328-8996, fax: 800-789-1882 or email: theclockexperts@atsclock.com.