

Specifications: 27 53 13.13 Wireless Clock System Primex OneVue™ Sync System with Bluetooth Low Energy Technology

Publication date October 16, 2020

Specifier Note: This product specification is written according to the Construction Specifications Institute (CSI), MasterFormatTM, SectionFormat, and PageFormat, contained in the CSI Manual of Practice. The section must be carefully reviewed and edited by the Architect/Engineer/Consultant to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings. Delete all “Specifier Notes” when editing this specification.

Table of Contents

1. [GENERAL](#_bookmark0) [3](#_bookmark0)
	1. [GENERAL REQUIREMENTS & SCOPE](#_bookmark1) [3](#_bookmark1)
	2. [RELATED SECTIONS](#_bookmark2) [3](#_bookmark2)
	3. [REFERENCES](#_bookmark3) [3](#_bookmark3)
	4. [DEFINITIONS](#_bookmark4) [3](#_bookmark4)
	5. [SYSTEM DESCRIPTION](#_bookmark5) [4](#_bookmark5)
	6. [REGULATORY REQUIREMENTS](#_bookmark6) [8](#_bookmark6)
	7. [SUBMITTALS](#_bookmark7) [8](#_bookmark7)
	8. [SUBSTITUTIONS](#_bookmark8) [8](#_bookmark8)
	9. [QUALITY ASSURANCE](#_bookmark9) [8](#_bookmark9)
	10. [DELIVERY STORAGE AND HANDLING](#_bookmark10) [8](#_bookmark10)
	11. [PROJECT SITE CONDITIONS](#_bookmark11) [8](#_bookmark11)
	12. [SOFTWARE MAINTENANCE](#_bookmark12) [9](#_bookmark12)
2. [PRODUCTS](#_bookmark13) [10](#_bookmark13)
	1. [SECTION INCLUDES](#_bookmark14) [10](#_bookmark14)
	2. [MANUFACTURER](#_bookmark15) [10](#_bookmark15)
	3. [SYSTEM SOFTWARE](#_bookmark16) [10](#_bookmark16)
	4. [SYSTEM DEVICES & ACCESSORIES](#_bookmark17) [10](#_bookmark17)
3. [EXECUTION](#_bookmark18) [16](#_bookmark18)
	1. [EXAMINATION](#_bookmark19) [16](#_bookmark19)
	2. [INSTALLATION](#_bookmark20) [16](#_bookmark20)
	3. [FIELD INSPECTION](#_bookmark21) [16](#_bookmark21)
	4. [SERVICES](#_bookmark22) [16](#_bookmark22)
	5. [CLEANING](#_bookmark23) [16](#_bookmark23)
	6. [DEMONSTRATION](#_bookmark24) [17](#_bookmark24)
	7. [PROTECTION](#_bookmark25) [17](#_bookmark25)
	8. [TESTING](#_bookmark26) [17](#_bookmark26)

# GENERAL REQUIREMENTS & SCOPE

The system is specified as described.

1. Furnish and install a complete new Wireless Clock System using the Primex OneVue™ Sync System with Bluetooth Low Energy Technology.
2. Furnish and install all system devices, accessories, and materials in accordance with these specifications and drawings to provide a complete and operating Wireless Clock System.
3. All bids shall be based on the equipment as specified herein. The model designations are that of Primex. The specifying authority must approve any alternate Wireless Clock System.
4. System shall include the following system devices

Specifier Note: Edit the following system devices as required for the project.

* + Bridge with [W-Fi] [Ethernet/Power over Ethernet (PoE)] technology and Bluetooth® low energy wireless technology
	+ Repeater with Bluetooth® low energy wireless technology
	+ Analog Clocks with Bluetooth® low energy wireless technology
	+ Digital Clocks with Bluetooth® low energy wireless technology
	+ Digital Code Blue Timers with Bluetooth® low energy wireless technology
	+ Digital Elapsed Timers with Bluetooth® low energy wireless technology
	+ Personal Series LCD Clock with Bluetooth® low energy wireless technology

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by Primex, Inc. is under license. Other trademarks and trade names are those of their respective owners.

# RELATED SECTIONS

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

1. Division 26 “Electrical”
2. Division 26 Section “Common Work Results for Electrical”
3. Division 27 Section "Common Work Results for Communications"
4. Division 27 Section "Communications Horizontal Cabling"

# REFERENCES

System devices specified shall meet or exceed the requirements of the following.

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.

1. Federal Communications Division (FCC); Part 15 - Code of Federal Regulations.
2. National Fire Protection Association (NFPA); NFPA 70E-[2012], Standard for Electrical safety in the Workplace.
3. Institute of Electrical and Electronics Engineers (IEEE); IEEE 802.3af-[1998], Standard for Information Technology - Telecommunications and Information Exchange Between Systems.
4. Bluetooth® wireless technology standard 4.1

# DEFINITIONS

This section provides commonly used terms within this specification.

1. TSA: Technical Support Agreement
2. AWS: Amazon Web Services
3. TLS: Transport Layer Security
4. HTTPS: Hypertext Transfer Protocol Secure
5. DHCP: Dynamic Host Configuration Protocol
6. Bluetooth® low energy: a wireless technology protocol used for communication between embedded devices and smart devices.
7. PoE: Power over Ethernet
8. IP: Internet Protocol
9. NTP: Network Time Protocol
10. UTC: Coordinated Universal Time

# SYSTEM DESCRIPTION

## General Specifications

1. System shall provide synchronized time by way of system devices and a cloud-based system software hosted by the Manufacturer that allows the system OWNER to manage and monitor system devices.
2. System can be scaled from a single building to a network of buildings, or an enterprise spread across many time zones, providing traceability accuracy, data and performance.
3. System shall consist of system Bridge devices equipped with [Wi-Fi] [Ethernet/Power over Ethernet (PoE)] and Bluetooth® low energy wireless technology.
4. System Bridge devices shall be required to have a direct connection to the OWNER'S existing [Wi-Fi] [Ethernet/Power over Ethernet (PoE)] network.
5. System shall consist of system clocks enabled with Bluetooth low energy wireless technology.
6. System shall provide an option to include system repeater devices, enabled with Bluetooth low energy wireless technology, to address coverage gaps.
7. System Bluetooth clock or repeater devices shall not have a direct connection to the OWNER'S IP Ethernet or Wi-Fi network.
8. System Bluetooth devices shall form a system mesh by way of the proprietary Bluetooth Network Protocol designed and developed by the Manufacturer, that allows system Bluetooth devices to form a system mesh to allow a communication path to send device data to the system Bridge devices.
9. System Bridge devices shall receive data from the system Bluetooth clocks and repeater devices over the system proprietary mesh network, and Bridge devices shall send the received data to the system cloud-based software through their direct connection to the OWNER'S existing [Wi-Fi] [Ethernet/Power over Ethernet (PoE)] network.
10. System Bridge devices shall download settings from the system software and send settings to the system Bluetooth devices over the system proprietary mesh.
11. System Bridge devices shall receive UTC time from a Network Time Protocol (NTP) time source; allowing up to three NTP time sources for fail-over purposes.
12. System shall not require the installation of any onsite system hardware or software, with the exception of the specified system devices and mobile configurator app.

## System software specifications

1. System Bridge devices shall download settings from the system software over the OWNER'S existing IP network.
2. System shall provide a mobile app that allows the OWNER to add system Bridge devices to the system software or edit the devices’ assigned network and other primary settings for those devices added to the system software.
3. System software shall log the NTP accuracy of the system Bridge devices.
4. System software shall monitor and display the operating status of system devices.
5. System software shall provide an automated reporting method to notify system users of device operating statuses that may warrant corrective action.
6. System software shall allow the OWNER to manage authorized system users, including user access to data and system settings that is based on the role assigned to each system user. Access can be limited to viewing and managing the system, including reports, device settings, system users, and account settings.
7. System software shall maintain and store data for up to a minimum of ten (10) years.

## System mesh network specifications

1. System mesh shall be able to adjust and synchronize system Bluetooth clocks and repeater devices to specified Time Zone Offset and DST rules; time zone settings are managed within the system software and sent to the system Bluetooth clocks and repeater devices over the system mesh.
2. System mesh protocol shall form a tree-type topology; where data transfer is up or down in a tree structure topology; a path with the highest Bluetooth Wireless Signal level quality is chosen at any time.
3. System mesh shall have the capability to distinguish the system Bluetooth devices with Bluetooth wireless technology by the system devices' unique Device ID and/or Network ID; allowing only system Bluetooth devices to authenticate to the system mesh.
4. At a system set daily time interval, the system Bluetooth clocks and repeaters shall advertise their Bluetooth signal to form a system mesh.
5. System mesh shall be self-forming, self-healing, and self-organizing.
	* Self-healing: in the event of a system Bluetooth clock or repeater hardware failure or loss of Bluetooth wireless signal, a connection previously handled by it is rerouted to another device within the system mesh.
	* Self-forming: a system mesh is automatically formed once daily at a system set time to allow system Bluetooth clocks and repeaters to advertise their status to form the system mesh.
	* Self-organizing: the system mesh automatically connects system Bluetooth clocks or repeaters that are within Bluetooth wireless range to form a data transmission path within the system mesh.

## System Bridge device specifications

1. Bridge shall be equipped with Bluetooth enabled gateway; which allows the device to send and receive communication to and from system Bluetooth clocks and repeater devices.
2. Bridge devices shall connect to the OWNER'S existing [Wi-Fi] [Ethernet/PoE] network to send its device data and the system Bluetooth device data to the system software, download its settings and all system Bluetooth device settings from the system software.
3. Bridge shall send settings to system Bluetooth clocks and repeater devices within the system mesh.
4. Each system Bluetooth device is identified by a unique Device ID allowing each device to receive its unique Device ID settings. Device ID settings shall be managed in the system software. Bluetooth Analog Clock Device ID settings include its Time Zone Offset setting and DST rules. Bluetooth Digital Clock/Timer Device ID settings include its Time Zone Offset setting and DST rules and display settings.
5. Bridge shall listen and receive system Bluetooth clock and repeater device data advertised in the system mesh. During its 8- hour deployment mode, a Bridge shall send new Bluetooth Device IDs to the system software within 30 minutes of receiving them. If not in an 8-hour deployment mode, new Bluetooth device data is sent to the system software within 24 hours to 7 days.
6. Bridge shall obtain Coordinated Universal Time (UTC) derived from a Network Time Protocol (NTP) Server (either internal or external); up to three designated NTP Servers may be specified to ensure continuity of time synchronization. The Bridge shall send obtained UTC time received from its assigned NTP Server (time source) to the system Bluetooth clocks and repeaters, and clocks shall synchronize the received UTC time to their Time Zone Offset setting and DST rules.
7. Bridge devices shall be primarily powered by [ac-power] [Power over Ethernet]. Battery-power shall be used only as a backup power source for a relatively short period of time.
8. Bridge devices can be preconfigured by the Manufacturer with OWNER provided settings before shipment to the OWNER facility or configured locally at the device by the OWNER on-site.
9. Bridge device shall have an LCD screen that displays connection status and indicate when in an error or alarm state.
10. Bridge device shall have LED indicators, located on the front of the device, that provide a visual indicator of its current status and operating state.
11. Bridge device shall have the ability to store configuration data for up to 1000 Bluetooth clocks/repeaters in its local device memory; to avoid loss of data if a network connectivity issue prevents data to be sent to the system software.
12. Bridge device Unresponsive Timeout setting shall be set by the system for three consecutive days. Unresponsive Timeout is defined as the amount of time a device can go without a connection to the system software; when this time is exceeded, the system sets the device to a warning state.

## Specifications: System Clocks enabled with Bluetooth® low energy wireless technology (System Bluetooth clocks)

1. Clocks shall not require manual or direct configuration by an end-user to establish a connection to a system mesh, nor does an end-user need to know about the intricacies of Bluetooth networking. The entire system's Bluetooth mesh infrastructure is transparent to the end-user.
2. Clocks shall be equipped with a Bluetooth low energy wireless technology radio component; that allows system Bluetooth clocks to establish wireless Bluetooth connections to form a system mesh. Each clock shall be a node within the system mesh.
3. Clocks shall form a wireless connection and communication path by way of the proprietary system mesh protocol designed and developed by the Manufacturer.
4. Clocks shall wake-up once a day, at a system-defined time, to form and build a system mesh; allowing each system clock to send and/or forward its status data to a Bridge and receive setting updates sent by a Bridge. Each clock connects to another Bluetooth clock or repeater based on the strongest Bluetooth signal. The Bridge stores and sends clock status data to the system software once a day. When a Bridge is in an 8-hour deployment mode, clock data is sent every 30 minutes to the system software.
5. Upon first-power up at its installation location, a clock shall go through a self-discovery initiation process; the clock shall continuously search for a system mesh to receive its time and daily connection schedule.
6. Clocks shall not be required to be in line-of-sight or directly connected to a system Bridge device and shall act as independent nodes within the system mesh.
7. If a clock's Bluetooth wireless signal connection is interrupted or down, the other clocks or repeaters within the Bluetooth wireless range shall be able to transmit data over the system mesh to a Bridge device through other Bluetooth devices within the system. Clock data moves through the system mesh communication path until the data reaches a system Bridge device.
8. Clocks shall be available, at predefined time intervals set by the system, to connect to new Bluetooth clocks that are attempting to connect to the system mesh; allowing new clocks to receive and synchronize their time from an existing system Bluetooth device.
9. Clock device firmware shall perform diagnostics on battery status, time accuracy, and connection strength. The Bridge devices shall transmit the clock diagnostic data to the system software.
10. Clocks shall operate with a free-running accuracy of .45 seconds per day, and will continue to operate in the absence of receiving the broadcasted UTC time from the Bridge.
11. Clocks shall be fully portable, capable of being relocated at any time.
12. Analog clocks shall report gross mechanical failures by way of automatically performing a daily midnight hand verification check; which if this check shall fail for three consecutive days, the clock shall report a hand position failure status, resulting in a clock warning state within the system software.

Specifier Note: A Repeater is a standalone device that extends the range of the system's proprietary Bluetooth mesh network. Its intended use is to address coverage gaps when a clock may reside too far from a Bridge or other clock to successfully form a communication path within the system's mesh network.

## Specifications: System Repeaters enabled with Bluetooth® low energy wireless technology (System Bluetooth repeater devices)

1. Repeaters shall not require manual or direct configuration by an end-user to establish a connection to a system mesh, nor does an end-user need to know about the intricacies of Bluetooth networking. The entire mesh infrastructure is transparent to the end-user.
2. Repeaters shall form a wireless connection and communication path by way of the proprietary system mesh protocol designed and developed by the Manufacturer.
3. Repeaters shall be equipped with a Bluetooth low energy wireless technology radio component; that allows the device to establish wireless Bluetooth connections to form a system mesh. Each repeater shall be a node within the system mesh.
4. Repeaters shall wake-up once a day, at a system-defined time, to form and build a system mesh; allowing each system Bluetooth device to send and/or forward its status data to the Bridge and receive setting updates sent by the Bridge. Each repeater connects to another system Bluetooth device based on the strongest Bluetooth signal.
5. Upon first-power up at its installation location, a new system Bluetooth repeater shall go through a self-discovery initiation process; the repeater shall continuously search for a system Bluetooth device to receive its time and daily connection schedule.
6. Repeaters shall not be required to be in line-of-sight or directly connected to a system Bridge device and shall act as independent nodes within the system mesh.
7. If a Repeater’s Bluetooth wireless signal connection is interrupted or down, the other system Bluetooth devices within the Bluetooth wireless range shall be able to transmit data to the system Bridge device through other Bluetooth devices within the system mesh. Bluetooth device data moves through the system mesh communication path until the data reaches a system Bridge device.
8. Repeaters shall be available, at predefined time intervals set by the system, to connect to new Bluetooth system devices that are attempting to connect to the system mesh; allowing new system Bluetooth devices to receive and synchronize their time from an existing system Bluetooth device.
9. Repeater device firmware shall perform diagnostics on battery status, time accuracy, and connection strength. The Bridge devices shall transmit repeater diagnostic data to the system software.
10. Repeaters shall be fully portable, capable of being relocated at any time.

## Encryption and Authentication specifications

1. User software access sessions between the web browser and the system software shall be encrypted by the Hypertext Transfer Protocol Secure (HTTPS) protocol.
2. The network communication of system devices enabled with IP Wi-Fi, Ethernet/PoE technology shall be secure and encrypted using the Transport Layer Security (TLS) encryption protocol and Hypertext Transfer Protocol Secure (HTTPS) authentication.

## System Administration specifications

1. Software interface shall allow the OWNER'S system admin user(s) to manage the system components, including system device settings, reports, system-wide user password complexity settings and user session timeout setting to align with OWNER information security policies and procedures, manage system users and grant users' access to system data and features, activate and deactivate system users, and view users' login history.
2. System software shall allow each system user to manage their own system profile, including their password and contact settings.
3. System software shall allow system device settings to be user-defined to meet OWNER requirements.
4. System software shall allow devices, that send data to and download data from the system software over an IP network, to be assigned to a DHCP or Non-DHCP primary and an alternate network for failover purposes. Network settings are managed within the system software, allowing remote management to migrate devices from one network to another.
5. System software shall allow user-defined reporting; the system shall store and present historical data in the form of reports. User-defined data shall include the system devices included in a report, the frequency a report is system generated, and a specific range of data included in a report. System reports shall be displayed in the system software electronically within the interface to allow system users to download reports. The system shall allow report data to be restricted based on the role(s) assigned to the system users.

## System devices with IP Wi-Fi, Ethernet/PoE network communication specifications

1. Network Communication Protocols: Hypertext Transfer Protocol Secure (HTTPS) | IP Addressing: Dynamic Host Configuration Protocol (DHCP and static IP addressing | Data Packet Size: typically less than 5 kilobytes (kB)
2. Network setting data is stored locally in devices shall be encrypted and access to locally stored setting data can be controlled by a system admin user.
3. Manufacturer shall provide standalone configuration software to locally configure a device to meet OWNER security policies if IP network setting data cannot be stored in third-party software or to troubleshoot device network connectivity issues.

# REGULATORY REQUIREMENTS

1. Equipment and components furnished shall be of the Manufacturer latest model.
2. System devices shall be installed in compliance with local and state authorities having jurisdiction.
3. Electrical Components, Devices, and Accessories: Listed and labeled per NFPA 70 by the qualified testing agency.
4. Regulatory Requirements: System design and installation shall comply with the following: National Electric Code (NEC)
* Underwriters Laboratory (UL) standards
* Local codes and regulations

# SUBMITTALS

1. Product Data: Submit complete catalog data for each system device and components, describing physical characteristics and method of installation.
2. Shop Drawings: Showing the following. 1. Diagram of the proposed system showing the communication pathway and schedule of individual system device installation locations. 2. Indicate integration with the OWNER'S network. Include a line diagram of network relationships. 3. Show system device power requirements.
3. Samples: Submit one specified system device model(s) for approval. Approved sample(s) shall be tagged and shall be installed at a location directed.
4. Manufacturer Instructions: Submit complete installation, set-up, and maintenance instructions electronically.

Specifier Note: Informational submittals require review, but no response by A/E or OWNER.

1. Information submittal: Manufacturer Sample Warranty
2. Information submittal: Manufacturer Technical Support Agreement (TSA)

# SUBSTITUTIONS

1. Proposed substitutions, to be considered, shall be manufactured of equivalent materials that meet or exceed specified requirements of this Section.
2. Proposed substitutions shall be identified not less than 10 days prior to the bid date.

# QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of wireless and IP Ethernet/PoE connected system with a minimum of ten years record of satisfactory manufacturing and support of systems comparable to the basis of specified system design.

# DELIVERY STORAGE AND HANDLING

1. Deliver all components to the site in the Manufacturer original packaging.
2. Packaging shall contain Manufacturer name and address, product identification number, and other related information.
3. Store equipment in the finished building and in unopened packaging until ready for installation.

# PROJECT SITE CONDITIONS

1. System design is integrated with the OWNER'S existing IP Wi-Fi, Ethernet/PoE network; limited to system devices equipped with IP network technology.
2. Conductors and Cables: Comply with requirements of Division 27 Sections "Common Work Results for Communications" and "Communications Horizontal Cabling.
3. Signal and Control Circuits: Manufacturer recommended stranded, single conductors, or twisted- pair cables.
4. Data Circuits: Category 5 minimum, twisted-pair cable.

# SOFTWARE MAINTENANCE

1. [Manufacturer] [Reseller] shall offer an annual Technical Support Agreement (TSA); agreement shall be inclusive to system software access, phone/email technical support, software maintenance and revisions, and firmware revisions.
2. All system updates, enhancements and maintenance are performed per agreed upon TSA.

# SECTION INCLUDES

1. The system and equipment are specified as described in this section.
2. All bids shall be based on the equipment as specified herein. The model designations are that of Primex. The specifying authority must approve an alternate system.

# MANUFACTURER

A. System shall be manufactured by:

Primex, Inc. 965 Wells St, Lake Geneva, WI 53147 | Phone: (262) 729-4858 | info@primexinc.com | [www.primexinc.com](http://www.primexinc.com/)

# SYSTEM SOFTWARE

1. Basis of Design System Software: Primex OneVue
2. Cloud-based software that resides on Amazon Web Services (AWS) and is accessed via the internet.
3. System software stores and monitors system device operating conditions.
4. All system devices and system settings are managed from the system software.

# SYSTEM DEVICES & ACCESSORIES

Specifier Note: Remove all SUPPLY MODELS that do not apply to your project's specification requirements. Refer to the Product Data Sheets located on the Primex website for product part numbers. [https://www.primexinc.com/support/literature](http://www.primexinc.com/support/literature)

## Analog Clocks shall meet the following specifications

1. Clocks (single-sided) shall be wall-mounted.
2. Additional colors, finishes, and dial faces are available from Manufacturer.
3. Clock faces can be customized by Manufacturer to display the organization name or logo as specified.
4. Clock frames and lenses are of durable thermoplastic.
5. Clocks shall have a tamper-proof/theft resistant clock-lock mounting slots.
6. A dual-mount kit is available from the Manufacturer that combines two single clocks to create a dual-sided clock.
7. Electric (AC) models include a cord with a plug. The power plug may be removed and the cord cut to length for hardwired (pigtail) installation. Pigtail installation requires a 120V~ power line in a junction box installed by a licensed electrician.
8. If power is interrupted, the clock will stop until power resumes. Upon resumption of power, the clock will self-correct to the current time.
9. Battery-operated analog clocks shall have a 5-year nominal battery life.
10. Installer will furnish clock batteries in accordance with Manufacturer instructions.
11. SUPPLY MODELS - Analog Clocks

## Education series

A. Size: [12.5"] [16"]

* 1. Color: Black
	2. Power: Battery

## Traditional series

A. Size: [12.5”] [16”]

1. Color: [White - 12.5" only] [Black]
2. Power: [AC] [Battery]

## Traditional series

1. Size: 9"
2. Color: Black
3. Power: Battery

## Slim metal series

A. Size: [12.5”] [16”]

B. Power: [AC] [Battery]

## Slim metal series

1. Size: 9"
2. Power: Battery

## Wood series

1. Size: 16"
2. Finish: [Honey] [Dark Cherry] [Clear Oak] [Walnut]
3. Power: [AC] [Battery]

## Wood series

1. Size: 11.5
2. Finish: [Honey] [Dark Cherry] [Clear Oak] [Walnut]
3. Power: Battery

## Gallery series

1. Size: 24"
2. Finish: Distressed Brown
3. Power: [AC] [Battery]

## Personal Series LCD Clocks shall meet the below specifications

1. Clock shall have time (12/24 hour modes), date, and day-of-week display options.
2. Clock shall have a backlight illumination option.
3. Clock shall have an easel stand for desk or tabletop use or can be wall-mounted by way of a patented anti-theft clock lock.
4. Installer shall furnish clock batteries in accordance with Manufacturer instructions; requires 4 C-cell alkaline batteries.
5. Overall dimensions: 7.5”H (19.1cm) x 11.5”W (29.2cm) x 1.75”D (4.5cm); Weight: 1.25 lbs (.57kg). Time display dimensions: 2.25”H (5.7cm) x 5.5”W (14cm). Calendar display dimensions: 3.81”H (9.7cm) x 5.5”W (14cm).
6. SUPPLY MODELS - Personal Series LCD Clock
	* Technology: Bluetooth® low energy wireless technology
	* Power: Battery

## Digital Clocks shall meet the following specifications

1. Clock LED display must include a 12- or 24-hour time display, a PM indicator light, and an alternating time and date display option.
2. Dual-mount kit is available from the Manufacturer that combines two single clocks to allow for a dual-sided clock.
3. AC (120 VAC/50-60 cycle) models, with Bluetooth wireless technology, shall include a 10’ (3m) power cord with a plug The power plug may be removed and cord cut to length for hardwired (pigtail) installation. Pigtail installation requires a 120V~ power line in a junction box installed by a licensed electrician.
4. Flush mount models, with Bluetooth wireless technology, shall have a 30" (44.72 cm) AC-power cord with pigtail.
5. Clock shall have a power outage memory backup and maintain the correct time up in its memory for a minimum of 1 hour without power.
6. Clock shall be viewable from 150 ft. (45.7 m).
7. Clock shall have highly visible 7-segment LED digits.
8. Clock shall have display dimmer options, including 100%, 75%, 50%, and 25%.
9. Clock enclosure shall be ABS plastic and junction box shall be UL listed (UL 50E 1st Ed; listing number E469550).
10. SUPPLY MODELS - Digital Clocks

## Surface Mount 2.5" Digits

* 1. Number of Digits: [4 Digit] [6 Digit]
	2. Digit Color: [Red] [Green]
	3. Bracket: [4˚ Slope Bracket, 10’ (3m) cord with plug] [18˚ Slope Bracket, 10’ (3m) cord with plug]

## Surface Mount 4" Digits

1. Number of Digits: [4 Digit] [6 Digit]
2. Digit Color: [Red] [Green]
3. Bracket: 4˚ Slope Bracket, 10’ (3m) cord with plug

## Flush Mount 2.5" Digits

1. Number of Digits: 6 Digit
2. Digit Color: [Red] [Green]

## Elapsed Digital Timers shall meet the following specifications

1. Timer shall also function as a clock or function as a count-down/count-up interval timer when programmed with a three-button wall mount control switch.
2. Timer shall accurately count up or count down up to a maximum of 99 hours, 59 minutes, and 59 seconds.
3. Timer shall include a three-button wall-mountable control switch. This control will be mounted in a single gang electrical box. Control buttons must be washable with water and common disinfectants.
4. Switch control shall connect to the timer with a supplied reversed wire (cross-pinned) telephone cable with an RJ-11 connector. It can be extended up to 100 ft. (30.48 m).
5. Timer switch control can be configured to simultaneously activate two connected timers.
6. Timer shall be viewable from up to 150 ft. (45.7 m).
7. Timer shall have highly visible 7-segment LED digits.
8. Timer shall have display dimmer options, including 100%, 75%, 50%, and 25%.
9. Timer display shall include a 12 or 24-hour time display, a PM indicator light, and an alternating time and date display option.
10. Timer shall have an audible tone option on the count-up and count-time function with a frequency of 3KHz +/-0.5KHz.
11. AC (120 VAC/50-60 cycle) models, shall include a 10’ (3m) power cord with a plug The power plug may be removed and cord cut to length for hardwired (pigtail) installation. Pigtail installation requires a 120V~ power line in a junction box installed by a licensed electrician.\
12. Flush mount models, with Bluetooth wireless technology, shall have a 30" (44.72 cm) AC-power cord with pigtail.
13. Timer shall have a power outage memory backup and maintain correct time up to a minimum of 1 hour without power.
14. Clock enclosure shall be ABS plastic and junction box shall be UL listed (UL 50E 1st Ed; listing number E469550).
15. SUPPLY MODELS - Elapsed Timers

## Surface Mount 2.5" Digits

* 1. Number of Digits: [4 Digit] [6 Digit]
	2. LED Color: [Red] [Green]
	3. Bracket: [4˚ Slope Bracket [18˚ Slope Bracket]

## Surface Mount 4" Digits

1. Number of Digits: [4 Digit] [6 Digit]
2. Digit Color: [Red] [Green]
3. Bracket: 4˚ Slope Bracket

## Flush Mount 2.5" Digits

1. Number of Digits: 6 Digit
2. Digit Color: [Red] [Green]

## Code Blue Digital Timers shall meet the following specifications

1. Timer shall function as a standard digital clock and integrate with the OWNER'S existing (supported) code blue control system.
2. Timer shall support code blue systems that apply a voltage to start a code blue event or code blue systems that use a dry contact and do not inject a voltage.
3. Timer shall include a three-button wall-mountable control switch. This control will be mounted in a single gang electrical box.
4. Timer switch control and buttons must be a cleanable surface with use common disinfectants.
5. Timer switch control shall connect to timer with a supplied reversed wire (cross-pinned) telephone cable with an RJ-11 connector. It can be extended up to 100 feet (30.48m).
6. Timer switch control can be configured to simultaneously activate two connected timers.
7. Timer display must include a 12 or 24-hour time display, a PM indicator light, and an alternating time and date display option.
8. Code Blue Timer must include an optional audible tone to alert changes in interval cycles in the count-up and count-down function.
9. Digital Clock shall have display dimmer options, including 100%, 75%, 50%, and 25%.
10. AC (120 VAC/50-60 cycle) models, with Bluetooth wireless technology, shall include a 10’ (3m) power cord with a plug The power plug may be removed and cord cut to length for hardwired (pigtail) installation. Pigtail installation requires a 120V~ power line in a junction box installed by a licensed electrician.
11. Flush mount models, with Bluetooth wireless technology, shall have a 30" (44.72 cm) AC-power cord with pigtail.
12. Code Blue Timer shall have a power outage memory backup and maintain the correct time up to a minimum of 1 hour without power.
13. Clock enclosure shall be ABS plastic and junction box shall be UL listed (UL 50E 1st Ed; listing number E469550).
14. SUPPLY MODELS - Code Blue Timers

## Surface Mount 2.5" Digits

* 1. Number of Digits: 6 Digit
	2. Digit Color: [Red] [Green]
	3. Bracket: [4˚ Slope Bracket] [18˚ Slope Bracket]

## Surface Mount 4" Digits

1. Number of Digits: 6 Digit
2. Digit Color: [Red] [Green]
3. Bracket: [4˚ Slope Bracket] [18˚ Slope Bracket]

## Flush Mount 2.5" Digits

* Number of Digits: 6 Digit
* Digit Color: [Red] [Green]

## Bridge shall meet the following specifications

1. Enclosure: ABS plastic | Dimension: 4.7" H x 3.7" W x 1.3" D (11.93cm x 9.39cm x 3.30cm) | Weight: 0.3 lb. (136 gram) with 2 AA batteries
2. Display: Liquid crystal display (LCD), dimension: 0.75 in. H x 1.38 in. W (1.90 cm x 3.50 cm) | LED Status Indicator: green, yellow, red
3. Mounting: Keyhole slot with lockdown screw holes in back panel for wall mount; or surface mount with supplied dual-lock adhesive mounting strips.
4. Configuration: configured from system software or locally at the device with supplied device configuration software
5. Backup Battery-power: 3.0v Primex Lithium/Iron Disulfide Battery Pack or two stand-alone 1.5v Lithium AA batteries. The use of alkaline batteries is not recommended.
6. Local memory storage capacity: configuration data for up to 1400 Bluetooth clocks.
7. Environment: Operating Temperature: 32 to 122° F (0 to 50° C), indoor use only | Storage Temperature: -4 to 140 ° F (-20 to 60° C)
8. AC-power: 5V DC USB Mini B (5 pin) connector interface, 5 feet (1.5 meter) cable, Input: 100-240 VAC, 50/60 Hz, 0.4A, Output: 5V DC, 1.0A max
9. Certifications: FCC, CE, and IC compliant
10. SUPPLY MODELS - Bridge
	* Technology: [Ethernet (PoE) Technology] [Wi-Fi]
	* Power: [AC] [Power over Ethernet (PoE)]

## Repeater shall meet the following specifications

1. Enclosure: ABS plastic | Dimension: 4.7" H x 3.7" W x 1.3" D (11.93cm x 9.39cm x 3.30cm) | Weight: 0.3 lb. (136 gram) with 2 AA batteries
2. Mounting: Keyhole slot with lockdown screw holes in back panel for wall mount or surface mount with supplied dual-lock adhesive mounting strips.
3. Battery-power: 2 DD batteries; typical five (5) year battery life.
4. Environment: Operating Temperature: 32 to 122° F (0 to 50° C), indoor use only | Storage Temperature: -4 to 140 ° F (-20 to 60° C)
5. Certifications: FCC, CE, and IC compliant
6. SUPPLY MODELS - Repeater
	* Technology: Bluetooth® low energy wireless technology
	* Optional AC power accessory: 5V DC USB Mini B (5 pin) connector interface, 5 feet (1.5 meter) cable, Input: 100-240 VAC, 50/60 Hz, 0.4A, Output: 5V DC, 1.0A max

## Accessories

System shall include the accessories below.

1. Analog Clock - Dual Clock Kit

Black - Fits 12.5" Traditional Series or Educational Series Analog Clock White - Fits 12.5" Traditional Series or Educational Series Analog Clock

1. Analog Clock Slim Metal Series Clock - Dual Clock Kit Fits 12.5” (31.75cm) Slim Model Clock

Fits 16” (40.6cm) Slim Model Clock

1. Digital Clock - Dual Clock Bracket Kit

Ceiling mount: [2", 4-Digit] [2", 6-Digit] [4", 4-Digit] [4", 6-Digit]

Wall mount: [2", 4-Digit ] [2", 6-Digit] [4", 4-Digit]

1. Wire Clock Guard

(Part No. 14123) Analog Wire Guard, 18” (45.72cm) square

(Part No. 14388) Digital Wire Guard, Small, 2.5” (6.35cm), 4- or 6-digit

(Part No. 14389) Digital Wire Guard, Large, 4” (10.16cm), 4- or 6-digit, medium or large InfoBoard

1. Polycarbonate Guard

(Part No. 14453) Digital Clock Polycarbonate Guard, Small, 2.5” (31.75cm), 4- or 6-digit. Add a “-1” after item number for the water-resistant gasket.

(Part No. 14455) Digital Clock Polycarbonate Guard, Large, 4” (6.35cm), 4- or 6-digit\*, medium or large InfoBoard. Add a “-1” after item number for the water-resistant gasket.

(Part No. 14503) Analog Clock Polycarb Guard\*\* Fits 9” (22.86cm) and 12.5” (31.75cm) clocks and mini InfoBoard only (Part No. Q13954) Flush-Mount Digital Clock Polycarb Guard, 2.5” (6.35cm), 6 digit

(Part No. 14453F-1) Flush-Mount Digital Clock Polycarb Guard with Gasket, 2.5” (6.35cm), 6 digit

1. Crash Cart Kit

Complete kit for mounting a Digital Clock Timer to a mobile crash cart

# EXAMINATION

1. Examine conditions with the Installer present for compliance with requirements and other conditions affecting the performance of the system and system devices.
2. Do not proceed until unsatisfactory conditions have been corrected.
3. Verify that construction is complete in spaces to receive equipment and that rooms are clean and dry.

# INSTALLATION

1. General: Install system devices in accordance with applicable codes.
2. Install system devices in accordance with Manufacturer written instructions.
3. Provide all system equipment necessary for a complete and operable system.
4. Comply with requirements of Division 27 Sections "Common Work Results for Communications" and "Communications Horizontal Cabling."
5. Cables: Install cables in raceways and cable trays except within consoles, cabinets, and desks [and except in accessible ceiling spaces and framed partitions where exposed wiring is allowed by Owner]. Install plenum cable where required. Conceal cable installation where possible.

# FIELD INSPECTION

1. Inspection: Make observations to verify that system devices and components are properly labeled.
2. Prior to final acceptance, inspect each system device and component, adjust as required, and replace parts that are found defective.
3. At the completion of system device installation and prior to final acceptance, turn on the equipment; ensure that all equipment is operating properly and that the system software and all system devices and components are functioning.

# SERVICES

1. Manufacturer system software user guides and system device installation guides shall be provided electronically within system software.
2. Commissioning General: Provide system commissioning in accordance with Manufacturer written recommendations. Perform operational testing to verify compliance with requirements. Adjust as required.
3. Services shall include a specified level of commissioning services.

Specifier Note: Only include one level of the available commissioning services identified below. Contact Primex for additional information.

1. Remote commissioning service: system deployment training, including system setup, device configuration, and system functionality by way of a web conference.
2. Onsite commissioning service: system training, system setup, validation of device configuration and system functionality, verification of device network connections, and device installation training.
3. Onsite installation and commissioning service: system training, configuration, validation of device configuration, training on system functionality, verification of device network connections, and device installation.

# CLEANING

1. Prior to final acceptance, clean exposed surfaces of devices, using cleaning methods recommended by Manufacturer.
2. Perform cleanup as work progresses and leave the work area clean at the end of each day.
3. Upon completion, remove surplus materials, rubbish, tools, and equipment.
4. Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning.

# DEMONSTRATION

1. Initial Demonstration: provide a demonstration to identified OWNER facility staff that is responsible to maintain the system.
2. Demonstrate maintenance procedures for system devices.
3. Demonstrate the system features, including monitoring and management of system devices.

# PROTECTION

1. Protect finished installation until the final project acceptance.
2. Repair damage to adjacent materials caused by the system installation.

# TESTING

A. All system devices must be tested at their operational installation location under normal operational conditions.