

SPECIFIER NOTE: This specification section includes guide notes identified as “PTS COMMENT” for information purposes and to assist the specification writer in making appropriate product selections. The PTS COMMENT precedes the text to which it is referring. Each section serves as a guideline only and should be edited with deletions and additions to meet specific project requirements and local building codes. This section covers Pyramid Time Systems TimeTrax Sync™ PoE Network Synchronized Clock Systems. Consult with Pyramid Time Systems for assistance in editing this section for the specific application.

PTS NOTE: This specification section is written in accordance to the Construction Specifications Institute, Project Resource Manual including MasterFormat™, SectionFormat™, and PageFormat™ contained in the CSI Manual of Practice. Optional text is indicated by square brackets []; delete the optional text including the brackets in the final copy of the specification and retain only text pertaining directly to the project. Delete the PTS COMMENTS in the final copy of the specification. Trade/brand names with appropriate product model numbers, styles, and types are used in PYRAMID COMMENTS and in the specification text titled “Basis of Design”.

1 GENERAL

1.01 SUMMARY OF WORK

- A. This Section specifies materials and accessories for a power over ethernet (IP Network) clock system.
- B. Section Includes:
 - 1. Software Interface;
 - 2. PoE Analog Clock;
 - 3. PoE Digital Clock;
 - 4. Accessories.

1.02 RELATED REQUIREMENTS

PTS COMMENT: Include in this Paragraph only those sections and documents that directly affect the work of this section. If a product or component is specified elsewhere, the related section number(s) should be listed in the Paragraph below. Edit the following paragraphs according to specific project.

- A. Section [27 05 00 - Common Work Results for Communications: conductors and cables].
- B. Section [27 10 53 - Clock System Commissioning].

PTS COMMENT: In the following section, include only those reference standards included in the final version of the project specification.

1.03 REFERENCE STANDARDS

- A. Federal Communications Division (FCC)
 - 1. Part 15 - Code of Federal Regulations.
- B. National Fire Protection Association (NFPA).
 - 1. NFPA 70E-[2012], Standard for Electrical safety in the Workplace.
- C. US Green Building Council (USGBC).
 - 1. LEED® NC Version 2.2-[2009], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package for New Construction and Major Renovations.
- D. Underwriter’s Laboratories (UL).
 - 1. UL

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Co-ordination: Co-ordinate work of this Section with communications and electronics work and with work of other trades for proper time and sequence to avoid construction delays.

PTS COMMENT: The pre-installation meeting may be omitted if the size and complexity of the project does not require prior co-ordination and review of the system installation.

- B. Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and [one week] before starting work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
1. Comply with Section 01 31 19 - Project Meetings and co-ordinate with other similar pre-installation meetings.
 2. Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
 3. Ensure meeting agenda includes review of methods and procedures related to installation including co-ordination with related work.
 4. Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within [one week] of meeting.

PTS COMMENT: Article below includes submittal of relevant data to be furnished by Contractor.

1.05 ACTION AND INFORMATIONAL SUBMITTALS

- A. Make submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.
- B. Product Data: Submit product data including manufacturer's literature for clock system materials and accessories, indicating compliance with specified requirements and material characteristics.
1. Submit list of materials and accessories to be incorporated into Work.
 2. Include product name.
 3. Include preparation instructions and recommendations, installation methods, and storage and handling requirements.
 4. Include contact information for manufacturer and their representative for this Project.
- C. Shop Drawings: Submit shop drawings with information as follows:
1. Diagram of proposed system showing system platform appliance, communication pathway, and schedule of individual device locations.
 2. Indicate integration with the Owner's network and servers. Include line diagram of network relationships.
 3. Show system power requirements.
- D. Samples:
1. Submit one sample of each type of device used on project. Samples will be returned to Contractor for incorporation into the Work after Consultant's review.
- E. Test Reports:
1. Submit evaluation and test reports or other independent testing agency reports showing compliance with specified performance characteristics and physical properties.
- F. Subcontractor Experience: Submit verification of communication and electronics subcontractor's experience.
- G. Sustainable Design (LEED).
1. LEED Submittals: In accordance with Section [01 35 21 – LEED Requirements]

1.06

PTS COMMENT: If LEED is not a part of the project, delete the following Paragraph in its entirety as well as the reference standards in 1.03.

- A. Sustainable Design Closeout Documentation (LEED).
 - 1. Provide calculations on end-of-project recycling rates, salvage rates, and landfill rates for work of this Section demonstrating percentage of construction wastes which were recycled.
 - 2. Submit verification from recycling facility showing receipt of materials.
- B. Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.
 - 1. List materials used in clock system work.
 - 2. Warranty: Submit warranty documents specified.

1.07 QUALITY ASSURANCE

- A. Communications and Electronics Subcontractor Quality Assurance:
 - 1. Work experience of [3] years minimum with work similar to work of this Section.
 - 2. Manufacturer with minimum of [5] year minimum record of satisfactory product manufacturing and support of systems similar in size and scope.
- B. Supplier's Accreditation: Use only authorized dealers of clock system manufacturer.

PTS COMMENT: If LEED is not a part of the project delete the following Paragraph in its entirety as well as the reference standards in Articles 1.03 and 1.05.

- C. Sustainability Standards Certification (LEED).
 - 1. LEED submittals: In accordance with Section [01 35 21 - LEED Requirements].

PTS COMMENT: The following Article, although not part of Quality Assurance, can be used to enhance the quality of materials by ensuring that they are delivered and handled properly at the work site.

1.08 DELIVERY STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
 - 2. Deliver materials and accessories in clock system manufacturer's original packaging with identification labels intact and to suit project.
 - 3. Ensure clock system materials are not exposed to moisture during delivery.
 - 4. Replace damaged clock system materials.
- B. Storage and Handling Requirements: Store materials off ground in dry location and protected from exposure to fumes and harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 1. Store in original packaging until installed.
- C. Packaging Waste Management:

PTS COMMENT: For smaller projects that do not have a separate Section for waste management and disposal, delete the following paragraph.

- 1. Separate and recycle waste packaging materials in accordance with Section [01 74 19 - Construction Waste Management and Disposal].
- 2. Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.

PTS COMMENT: For smaller projects that do not have a Waste Management Plan, delete the option referring to a Waste Management Plan.

3. Collect and separate for disposal, paper and plastic material in appropriate on-site storage containers for recycling [in accordance with Waste Management Plan].

1.09 WARRANTY

- A. Project Warranty: Refer to Contract Conditions for project warranty provisions.
- B. Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

PTS COMMENT: Co-ordinate article below with manufacturer's warranty requirements.

- C. Warranty period: [3] years commencing on Date of Purchase.

2 PRODUCTS

2.01 MANUFACTURER

- A. Manufacturer: Pyramid Time Systems, LLC., 45 Gracey Avenue, Meriden, CT 06451, Phone: 1.888.479.7264, URL: pyramidtimesystems.com

2.02 SYSTEM REQUIREMENTS

- A. Ensure clock system components are designed to operate as a Power over Ethernet clock system and as part of complete system including "fail-proof" design to ensure power interruption does not cause system failure.

PTS COMMENT: Use the following paragraph only if system is being installed as part of a renovation in an existing building.

- B. Ensure system can work in conjunction with existing infrastructure.
- C. Ensure system synchronizes all clocks and devices to each other.
- D. Ensure system operates using Power over Ethernet to IEEE 802.3af.
- E. Ensure system works with software for system settings from one location, including:
 1. IP address assignment.
 2. Universal or individual clock time source/zone selection.
 3. Clock name assignment.
 4. Custom Daylight Saving Time configurations.
- F. Ensure system software is installed on PC on same network as PoE Network system.
- G. Ensure each clock in system has built-in Ethernet interface for programming.
- H. Ensure system is capable of programming clocks immediately upon receipt of signal.
 1. Analog and digital clocks automatically correct themselves upon receipt of signal.
- I. Ensure each individual product is bench tested at manufacturer's facility.
 1. Random testing is unacceptable.

J. Ensure each product is designed, assembled and tested in the United States of America.

K. Basis of Design: Pyramid Time Systems, TimeTrax Sync™ PoE Network Clock System.

2.03 SOFTWARE

A. Desktop software interface.

1. Ensure software capable of the following functions:
 - a. Display features;
 - b. Show IP settings;
 - c. Show associated clocks;
 - d. Show clock IP addresses;
 - e. Show clock settings;
 - f. Selection of NTP time source.
2. Ensure software is capable of customizing Daylight Saving Time, in the event of international use or a change in government regulations.
3. Basis of Design: Pyramid Time Systems, TimeTrax Sync™ PoE Network Clock System Software SASDLCWDXX.

2.04 CLOCKS

A. Analog Clocks: UL and cUL, designed for PoE Network system with fully automatic plug and play capability.

1. Ensure clock is capable of receiving NTP protocol through RJ45 (CAT5).

PTS COMMENT: Analog clocks are available in 12 hour, 12 hour with seconds and 12/24 hour options. Custom logo clocks are available and may be specified in the following paragraph. Contact Pyramid Time Systems directly for complete analog clock display format offering.

2. Clock display: [12] [12 with seconds] [12/24] hour [white face with black numbers] [black face with white numbers] [custom]
3. Built-in software interface includes features:
 - a. Password protected interface;
 - b. Naming clock;
 - c. Selecting time interval clock receives NTP time;
 - d. Setting GMT offset for time zone configuration;
 - e. DHCP capability;
 - f. Domestic and International Daylight Saving Time capability
4. Materials:
 - a. Dial: Polystyrene

PTS COMMENT: Analog clocks are available in black bezel (white face with black numbers), silver bezel (white face with black numbers or black face with white numbers), hardwood cherry finish bezel (white face with black numbers, battery operated only), hardwood oak finish (white face with black numbers, battery operated only) or hardwood walnut finish bezel (white face with black numbers, battery operated only).

- b. Bezel: [Low profile, smooth surface ABS, black] [Low profile, smooth surface ABS, silver] [Hardwood cherry finish] [Hardwood Oak finish] [Hardwood walnut finish]
 - c. Crystal: Shatter-proof, side-molded, polycarbonate.
5. Hand tolerance:
 - a. Hour and minute hands: $\pm 1/4$ minute.
 - b. Second hand: $\pm 1/2$ minute.
6. Power Requirements: Power over Ethernet (PoE), 48 V DC.
7. Clock mounting: [Surface mount security bracket] [double wall mount] [double ceiling mount].
8. Basis of design: Pyramid Time System, [TimeTrax Sync™ 13" Series PoE Network Analog Clock] [TimeTrax Sync™ 17" Series PoE Network Analog Clock] [TimeTrax Sync™ 16" Wood Series PoE Analog Clock].

- B. Digital Clocks: UL and cUL 863, designed for PoE Network system with fully automatic plug and play capability.

1. Display: 7-segment, high-efficiency red LED numeral display with [4] [6] digits.
 - a. Numeral size: [2.5] [3] [4] inches.
 - b. Format: 12/24 hour.

PYRAMID COMMENT: For LED clocks, choose either black or silver bezel.

- c. Bezel: Low profile, smooth surface ABS, [black] [silver].

PYRAMID COMMENT: For visibility from 75 feet away, 2.5 x 6 digit LED format. For visibility from 100 feet away, choose either 2.5 inches x 6 digit LED format. For visibility from 200 feet away, choose 4 inches x 4 digit. For visibility from 250 feet away, choose either the 4 inches x 4 digit or 4 inches x 6 digit LED format.

- d. Visibility: [75] [200] [100] [250]
2. Built-in software interface includes features:
 - a. Password protected interface;
 - b. Naming clock;
 - c. Selecting time interval clock receives NTP time;
 - d. Setting GMT offset for time zone configuration;
 - e. 12/24 hour mode;
 - f. Select all IP settings;
 - g. DHCP capability;
 - h. Domestic and International Daylight Saving Time capability.
3. Power Requirements: Power over Ethernet (PoE), 48 V DC.
4. Clock mounting: [security surface mount] [double wall mount] [double ceiling mount].
5. Basis of design: Pyramid Time System [TimeTrax Sync™ PoE Network LED Digital Clock, 2.5" x 6 digit] [TimeTrax Sync™ PoE Network LED Digital Clock, 4" x 6 digit] [TimeTrax Sync™ PoE Network LED Digital Clock, 3" x 4 digit] [TimeTrax Sync™ PoE Network LED Digital Clock, 4" x 4 digit]

PTS COMMENT: Clock systems work best when all of the components come from a single manufacturer. However, it is possible for components from manufacturers to be mixed within a system as long as the components are compatible. In renovation projects existing systems may differ from new additions to the system. Check with the manufacturers of both the existing system and the new components to ensure compatibility before specifying different manufacturers of the components. It is recommended that for new projects all system components come from the same manufacturer.

2.05 SOURCE QUALITY CONTROL

- A. Ensure clock system components and accessories are supplied or approved in writing by single manufacturer.

2.06 PRODUCT SUBSTITUTIONS

- A. Substitutions: [In accordance with Section 01 23 13 - Product Substitution Procedures] [No substitutions permitted].

3 EXECUTION

3.01 INSTALLERS

- A. Use only installers with [3] years minimum experience with work similar to work of this Section.
- B. Ensure all clock system components are installed by single communications and electronics subcontractor.

3.02 EXAMINATION

- A. Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for clock system installation in accordance with manufacturer's written recommendations.
1. Visually inspect substrate in presence of Consultant.

2. Ensure surfaces are free of snow, ice, frost, grease and other deleterious materials.
3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

B. Start of clock system installation indicates installer's acceptance of substrate installation conditions.

3.03 INSTALLATION

PTS COMMENT: Refer to the manufacturer's current installation guide for detailed information regarding installation.

- A. Install wireless clock system in accordance with manufacturer's written recommendations and in accordance with NFPA 70E.
- B. Integrate clock system with Owner's electrical and communications network.
- C. Install wiring in accordance with requirements of local Authority Having Jurisdiction.
 1. Do cabling in accordance with Section [27 15 00 - Communications Horizontal Cabling].
- D. Conceal wiring except in unfinished spaces and as approved in writing by Consultant.
- E. Install clocks only after painting and other finish work is completed in each room.
- F. Install clocks and other devices square and plumb.

3.04 FIELD QUALITY CONTROL

- A. Field Inspection: Coordinate field inspection in accordance with Section [01 45 00 - Quality Control].

PTS COMMENT: Specify requirements if manufacturers are to provide field quality control with onsite personnel for instruction or supervision of product installation, application, or construction. Manufacturer field reports are included under PART 1, Action and Informational Submittals.

3.05 SYSTEM STARTUP

- A. At completion of installation and before final acceptance, turn on equipment and ensure equipment is operating properly, and clock system devices and components are functioning.
- B. Evaluate and test each device in clock system on room-by-room basis using factory-trained technicians.
 1. Fix or replace devices which fail test or are functioning incorrectly.
 2. Submit evaluation and report showing results of room-by-room tests and overall system compliance within 3 days of testing being carried out.

3.06 CLEANING

PTS COMMENT: For smaller projects that do not have a separate Division 01 Section for cleaning, delete the reference to Section 01

- A. Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 00 - Cleaning and Waste Management].
 1. Leave work area clean at end of each day.
- B. Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment [in accordance with Section 01 74 00 – Cleaning and Waste Management].
- C. Waste Management:
 1. Co-ordinate recycling of waste materials with [01 74 19 - Construction Waste Management and Disposal].
 2. Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.

3. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.07 DEMONSTRATION AND TRAINING

- A. Arrange system demonstration and training session for Owner's operation and maintenance personnel.
 1. Allow Owner and Consultant [7] days minimum advance notice before training session.
- B. Break down system demonstration and training session into logical segments for Owner's operations and maintenance personnel.
- C. Train Owner's maintenance personnel in procedures and schedules involved in operating, troubleshooting, servicing, and preventative maintenance of clock system.

3.08 SYSTEM COMMISSIONING

- A. Do clock system commissioning in accordance with Section [27 10 53 - Clock System Commissioning].

3.09 PROTECTION

- A. Protect installed products and accessories from damage during construction.
- B. Repair damage to adjacent materials caused by clock system installation.

END OF SECTION 27 53 13 – POE NETWORK CLOCK SYSTEM