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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate product model numbers, styles and types are used in Specifier Notes and in the specification text Article titled "Acceptable Material." Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies clock systems manufactured by Inova Solutions, Inc. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

27 5313 CLOCK SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies clock systems.

Specifier Note: Revise Paragraph below to suit project requirements. Add section numbers and titles per CSI MasterFormat and specifiers practice.

- B. Related Requirements:

Specifier Note: Include in this Paragraph only those sections and documents that directly affect the work of this section. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the Subparagraph below. Do not include Division 00 documents or Division 01 sections since it is assumed that all technical sections are related to all project Division 00 documents and Division 01 sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered part of the Contract.

1. Section [26 33 53 – Static Uninterruptable Power Supply].
2. Section [27 15 00 – Communications Horizontal Cabling].
3. Section [27 20 00 – Data Communications].
4. Section [26 05 19 Low-Voltage Electrical Power Conductors and Cables].
5. [].

1.02 REFERENCES

Specifier Note: Define terms that are unique to this Section and are not provided elsewhere in the contract documents. Include in this Article terms that are unique to the work result specified that may not be commonly known in the construction industry.

- A. Definitions:
1. DHCP: Dynamic host configuration protocol.
 2. IP: Internet protocol.
 3. NTP: Network time protocol.
 4. POE: Power over Ethernet.
 5. SNTP: Simple time network protocol.

6. UPS: Uninterruptible power source.
7. UTC: Coordinated universal time.
8. [].

Specifier Note: Paragraph below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References Paragraph when specifying products and installation by an industry reference standard. List retained standard(s) referenced in this section alphabetically. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Contract Conditions Section 01 42 00 - References may establish the edition date of standards. This Paragraph does not require compliance with standard(s). It is a listing of all references used in this section. Only include here standards that are referenced in the body of the specification in PARTS 1, 2 and/or 3. Do not include references to building codes at any level.

B. Reference Standards:

1. Institute of Electrical and Electronic Engineers (IEEE):
 - a. IEEE 802.3af-2003 Power over Ethernet .
 - b. POE+ compatible.
2. Underwriters Laboratories, Inc. (UL)/Canadian Standards Association (CSA):
 - a. ANSI/UL 60950-1, Second Edition-2007 Standard for Information Technology Equipment – Safety – Part 1: General Requirements and CSA C22.2 No. 60950-1, Second Edition (2007).
3. Restriction of Hazardous Substances (RoHS) Directive: European ban on certain hazardous substances from use in manufacturing electrical and electronic equipment.
 - a. RoHS Directive (EU 2002/95/EC).
4. ETL Listing: European product safety listing issued by Intertek Group plc.
5. CE Marking: European conformity marking required for certain products sold within the European Economic Area (EEA) since 1985.
6. [].

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Contract Conditions and Section 01 33 00 - Submittal Procedures.

1.03 SUBMITTALS

A. Product Data: Manufacturer's standard specifications and descriptive literature, including:

1. SPEC-DATA product sheet.
2. Catalog cut-sheets.
3. Cabling diagrams.
4. Sample warranty.
5. [].

Specifier Note: Samples are actual products intended to illustrate the products to be incorporated into the project. Sample submittals are commonly necessary for such characteristics as colors, textures and other appearance issues.

B. Samples:

1. Manufacturer's standard colors and finishes available on digital clock bodies [and face plates], for selection by [Architect].
2. [].

Specifier Note: Specify submittals intended to document manufacturer installation, storage and other instructions.

C. Manufacturer's Written Instructions, including:

1. Delivery, storage and handling.
2. Preparation and Installation.
3. Maintenance.
4. [].

Specifier Note: Coordinate Article below with Contract Conditions and with Section 01 78 36 - Warranties.

D. Warranty: Fully executed, issued in [Owner's] name and registered with manufacturer, including:

1. Manufacturer's [2-year] warranty, from date of substantial completion, covering defects in materials and workmanship.
2. [].

1.04 QUALITY ASSURANCE

- A. Installer: Acceptable to the manufacturer, experienced in performing work of this section and has specialized in installation of work similar to that required for this project.
- B. [].

1.05 DELIVERY, STORAGE & HANDLING

- A. Deliver materials in accordance with manufacturer's written instructions.
- B. Deliver materials in manufacturer's original packaging with identification labels intact.
- C. Store materials protected from exposure to harmful weather conditions and at temperature conditions in accordance with manufacturer's written instructions.

Specifier Note: USGBC's LEED® certification includes credits for the diversion of construction waste from landfill. Diversion can be tracked by either weight or volume but must be consistent for all materials. Manufacturer may reclaim packaging and delivery materials for recycling.

- D. Remove packaging materials from site and dispose of at appropriate recycling facilities.
- E. [].

PART 2 PRODUCTS

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as or equal, approved equal or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining or equal products.

2.01 CLOCK SYSTEMS

Specifier Note: Include in the following Paragraph manufacturer's name, address, phone number, fax number, e-mail address and website URL.

- A. Manufacturer: Inova Solutions, Inc.
 1. Contact: 110 Avon St.; Charlottesville, VA 22902; Telephone: 800-637-1077; Fax: 434-817-8002; Email: info@inovasolutions.com; Website: www.inovasolutions.com.

Specifier Note: Substitution procedures must either be in the Contract Conditions or in Section 01 25 00 - Substitution Procedures. Do not include substitution procedures here.

2. Single Source Responsibility: Provide components and materials specified in this section from a single manufacturer.
3. Substitutions: No substitutions permitted.

Specifier Note: Include an overall description of the system, assembly, product or material. Include required properties or characteristics that do not obviously belong under other titles. Examples: Configuration, size and color.

- B. Inova Ontime Analog Clock; Model ONTA12-BK: 12-hour, round, single-sided, analog clock designed for POE technology using same network components as IP telephones to get time, data and power directly from the network; without a master clock, electrical outlets or batteries; meeting IEEE 802.3af, POE+ compatible, UL/CSA 60950-1, RoHS, ETL listing and CE marking.
 1. Description:
 - a. Face: White with black numbers, black hour and minute hands and red second hand.
 - b. Body:
 - 1) Material: Injection-molded plastic.
 - 2) Size: 12 ³/₄ inch (29.5 cm) diameter by 1⁷/₈ inch (5.1 cm) depth.
 - 3) Weight: 1.6 pound (0.73 kg).
 - 4) Color: Black.
 - c. Mounting method: Surface-mount.

- d. [____].
- 2. Performance:
 - a. Viewing distance: 100 feet (30 m).
 - b. Accuracy: ±1 second.
 - c. Power consumption: 3 W.
 - d. [____].
- 3. Operation:
 - a. Direct plug-in to standard Ethernet jack.
 - b. Time set automatically by SNTP.
 - c. Time zone automatically offsets from UTC for Daylight Savings Time.
 - d. Compatible with DHCP or static IP addressable 10/100BaseT Ethernet.

Specifier Note: Inova Ontime Clocks allow centralized UPS backup.

- e. [Provide UPS backup]
- f. [____].

Specifier Note: Inova Ontime Clocks are available with optional cloud-based management system.

- g. [Provide cloud-based management system].
- h. [____].

- C. Inova Ontime Analog Clock; Model ONTA12DS-BK.: 12-hour, round, double-sided, analog clock designed for POE technology using same network components as IP telephones to get time, data and power directly from the network; without a master clock, electrical outlets or batteries; meeting IEEE 802.3af, POE + compatible, ANSI/UL 60950-1, ETL listing and CE marking.

- 1. Description:
 - a. Face: White with black numbers, black hour and minute hands and red second hand.
 - b. Body:
 - 1) Material: Injection-molded plastic.
 - 2) Size: 12 ^{3/4} inch (29.5 cm) diameter by 4 inch (10.8 cm) depth.
 - 3) Weight: 7 pounds (3.2 kg).
 - 4) Color: Black.
 - c. Mounting method: Offset-mount on wall or ceiling with junction box adapter plate.
 - d. [____].
- 2. Performance:
 - a. Viewing distance: 100 feet (30 m).
 - b. Accuracy: ±1 second.
 - c. Power consumption: 4 W.
 - d. [____].
- 3. Operation:
 - a. Direct plug-in to standard Ethernet jack [with UPS backup].
 - b. Time set automatically by SNTP.
 - c. Time zone automatically offsets from UTC for Daylight Savings Time.
 - d. Compatible with DHCP or static IP addressable 10/100BaseT Ethernet.

Specifier Note: Inova Ontime Clocks allow centralized UPS backup.

- e. [Provide UPS backup].

Specifier Note: Inova Ontime Clocks are available with optional cloud-based management system.

- f. [Provide cloud-based management system].
- g. [____].

Specifier Note: Select single-sided or double-sided clocks.

- D. Inova Ontime Digital Clock; Model [____];[Single-sided] [Double-sided – order two clocks and required mounting kit per installation method], 4-digit, rectangular, 12 or 24-hour, LED clock designed for POE technology using same network components as IP telephones to get time, data and power directly from the network; without master clock, electrical outlets or batteries; meeting IEEE 802.3af, POE+ compatible, UL/CSA 60950-1, RoHS compliant, ETL listing and CE marking.

Specifier Note: Select descriptive information to match specific clock model specified.

1. 1. Description:
 - a. Face: 4-digit, [red] [green] LED display; including, 4 inch (102 mm) hour and minute numerals.
 - b. Body:

Specifier Note: Select plastic, aluminum or stainless steel body material, finish and weight.

- 1) Material, finish and weight:
 - a) Injection-molded plastic: [black] [off-white] [putty] color finish; 1.6 pounds (0.7 kg).
 - b) Material, finish and weight: Aluminum; black color finish; 2.2 pounds (1 kg).
 - c) Material, finish and weight: Stainless steel; brushed finish; 4 pounds (1.85 kg).
- 2) Size: 12 inch (305 mm) long by 6 inch (152 mm) high by 2.28 inch (56 mm) depth.

Specifier Note: Select face plate for recessed mounting.

- c. Face plate:

Specifier Note: Select aluminum or stainless steel face plate material and finish.

- 1) Material and finish:
 - a) Plastic: [black] [putty] [off white].
 - b) Stainless steel; brushed finish.
- 2) Size: 15 inch (381 mm) long by 7¹/₂ inch (191 mm) high.

Specifier Note: Select mounting method for single-sided clocks.

- d. Mounting method for single-sided clocks: [Surface-mounted on wall] [Recessed-mounted in wall with face plate] [Cantilever-mounted on wall with ONT4KIT-W mounting kit] [Pendant-mounted from ceiling with ONT4KIT mounting kit].
 - e. Mounting method for double-sided clocks: [Cantilever-mounted on wall ONT4KIT-W] [Pendant-mounted from ceiling ONT4KIT].
 - f. [___].
2. Performance:
 - a. Viewing distance: 150 feet (50 m).
 - b. Accuracy: ±200 milliseconds.
 - c. Power consumption: 8 W.
 - d. [___].
 3. Operation:
 - a. Direct plug-in to standard Ethernet jack.
 - b. Time set automatically by SNTP.
 - c. Time zone automatically offsets from UTC for Daylight Savings Time.
 - d. Compatible with DHCP or static IP addressable 10/100BaseT Ethernet.

Specifier Note: Inova Ontime Clocks allow centralized UPS backup.

- e. [Provide UPS backup].

Specifier Note: Inova Ontime Clocks are available with optional cloud-based management system.

- f. [Provide cloud-based management system].
- g. [___].

Specifier Note: Select single-sided and double-sided clocks (order two clocks and required mounting kit per installation method).

- E. Inova Ontime Digital Clock; Model [___];[Single-sided] [Double-sided- order two clocks and required mounting kit per installation method], 6-digit, rectangular, 12 or 24-hour, LED clock designed for POE technology using same network components as IP telephones to get time, data and power directly from the network; without a master clock, electrical outlets or batteries; meeting IEEE 802.3af, IEEE 802.3at, ANSI/UL 60950-1, RoHS compliant, ETL listing and CE marking.

Specifier Note: Select descriptive information below to match specific clock model specified.

1. Description:

- a. Face: 6-digit, [red] [green] LED display; including, 4 inch (102 mm) hour and minute numerals and 3 inch (76 mm) second numerals.
- b. Body:

Specifier Note: Select aluminum or stainless steel body material, finish and weight.

- 1) Material, finish and weight:
 - a) Aluminum; black color finish; 3¹/₄ pound (1.47 kg).
 - b) Stainless steel; brushed finish; 5.6 pound (2.5 kg)
- 2) Size: 17¹/₂ inch (445 mm) long by 6 inch (152 mm) high by 2.28 inch (56 mm) depth.

Specifier Note: Select face plate for recessed mounting.

- c. Face plate:

Specifier Note: Select aluminum or stainless steel face plate material and finish.

- 1) Material and finish:
 - a) Aluminum; black color finish.
 - b) Stainless steel; brushed finish.
- 2) Size: 20¹/₂ inch (515 mm) long by 7¹/₂ inch (191 mm) high.

Specifier Note: Select mounting method for single-sided clocks.

- d. Mounting method for single-sided clocks: [Surface-mounted on wall] [Recessed-mounted in wall with face plate] [Cantilever-mounted on wall with ONT6KIT-W mounting kit] [Pendant-mounted from ceiling with ONT6KIT mounting kit].

Specifier Note: Select mounting method double-sided clocks.

- e. Mounting method for double-sided clocks: [Cantilever-mounted on wall with ONT6KIT-W mounting kit] [Pendant-mounted from ceiling with ONT6KIT mounting kit].
- f. [___].
- 2. Performance:
 - a. Viewing distance: 150 feet (50 m).
 - b. Accuracy: ±200 milliseconds.
 - c. Power consumption: 9.5 W.
 - d. [___].
- 3. Operation:
 - a. Direct plug-in to standard Ethernet jack [with UPS backup].
 - b. Time set automatically by SNTP.
 - c. Time zone automatically offsets from UTC for Daylight Savings Time.
 - d. Compatible with DHCP or static IP addressable 10/100BaseT Ethernet.

Specifier Note: Inova Ontime Clocks allow centralized UPS backup.

- e. [Provide UPS backup].

Specifier Note: Inova Ontime Clocks are available with optional cloud-based management system.

- f. [Provide cloud-based management system].
- g. [___].

2.02 ACCESSORIES

- A. Pendant Mounting kit for ceiling mounting, 4-digit LED clock: Model ONT4KIT.
- B. Cantilever Mounting Kit for wall mounting, 4-digit LED clock: Model ONT4KIT-W
- C. Pendant Mounting kit for ceiling mounting. 6-digit LED clock; Model ONT6KIT.
- D. Canitlever Mounting Kit for wall mounting, 6-digit LED clock: Model ONT6KIT-W.
- E. NEMA Enclosure for 4-digit LED clock; Model ONT4NEMA.

- F. NEMA Enclosure for 6-digit LED clock; Model ONT6NEMA.
- G. Single Port Midspan Power Injector; Model 722442.
- H. [____].

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions of work previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to installation of clock systems.
 - 1. Notify [Architect] of unacceptable conditions upon discovery.
 - 2. Proceed with installation only after unacceptable conditions have been corrected.
- B. [____].

Specifier Note: Specify actions required to prepare the surface, area or site for incorporation of the section's primary products. Describe requirements for exposure or removal of existing assemblies, components, products or materials.

3.02 PREPARATION

Specifier Note: Specify preparatory work required prior to installation/application/erection of primary products.

- A. Prepare work to receive clock systems in accordance with manufacturer's written instructions and approved submittals.
- B. [____].

3.03 INSTALLATION

- A. Install clock systems in accordance with manufacturer's written instructions and approved submittals.
- B. Accurately fit, align, securely fasten and install free from distortion or defects.
- C. [____].

3.04 CLEANING

- A. Perform daily progress cleaning.
- B. Upon completion, remove surplus materials, rubbish, tools and equipment.
- C. Collect recyclable waste and dispose of at appropriate recycling facilities.
- D. [____].

Specifier Note: Specify protection methods completed after installation, but prior to acceptance by the owner. Protection of surrounding areas and surfaces during application or installation is included under PART 3, Preparation. Include only statements unique to this Section.

Specifier Note: Coordinate the following Article with Section 01 76 00 - Protecting Installed Construction.

3.05 PROTECTION

- A. Protect installed product from damage during construction in accordance with manufacturer's written instructions.
- B. Repair or replace adjacent materials damaged by installation of clock systems.
- C. [____].

3.06 MAINTENANCE

- A. Maintain clock systems in accordance with manufacturer's instructions [and terms of warranty].
- B. [____].

END OF SECTION