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AN Onity/UTC EMS Product Business Partner

SENSORSTAT DDC EMS THERMOSTAT PRODUCT

BUILDING AUTOMATION AND CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Occupancy sensing controls for guest room environmental conditions.
- B. Guest room centralized management system.

1.2 RELATED SECTIONS

- A. Section 08110 - Metal Doors and Frames: Preparation and installation of door devices.
- B. Section 15050 - Basic Mechanical Materials and Methods.
- C. Section 15760 - Terminal Heating and Cooling Units: Control sequence and logic integration.
- D. Section 15950 - Testing, Adjusting and Balancing: Control sequence and logic function testing and reporting.
- E. Section 16050 - Basic Electrical Materials and Methods: Power, raceway and wiring.

1.3 REFERENCES

- A. NEC Article 725 - National Electric Code: Fire and shock hazard code provisions for Class 2 low voltage wiring.
- B. UL - Underwriters Laboratory.

1.4 SYSTEM DESCRIPTION

- A. General Description:
 - 1. SensorStat DDC 2F:
 - a. The unit appears to the guest as an advanced digital thermostat that is easy to use. Not apparent to the guest are features that allow the HVAC to be automatically

switched from heat to cool or vice versa, automatically increase fan speed to meet increasing heating or cooling demands and to reset the room set temperature when the room becomes unoccupied.

- b. 2 ways, RS485 communications ports.
- c. Programmed with a "full function" handheld programmer.
- d. Central programmed management: Using innPULSE or other DDC software, control strategies can be initiated for individual or groupings of units from a central location.

B. Design Requirements:

- 1. Logic Cycle: The combination of passive infrared sensing and door switch contacts to accurately determine a room's occupancy status. When a guest is in the room, the guest is in control of the temperature (although the hotel has the option to preselect upper and lower limits). After the guest leaves the room, the temperature is allowed to rise or fall to the optimum preset temperature. Once it has been determined that the room is unsold, the temperature is allowed to drift to greater temperatures setback limits.
- 2. Refresh Cycle: This function periodically activates the HVAC system to recirculate the air in the room and keep it fresh.
- 3. Soft Bypass: The energy savings function can be temporarily turned off so that the guest has complete control of the room temperature during the stay.
- 4. Lighting Control: A relay allows the energy management system to turn off lights or other appliances in an unoccupied room.
- 5. Privacy Please!: This guest detection system allows authorized personnel to know if the guestroom is occupied without knocking.

C. Performance Requirements:

- 1. Room temperature controlled deadband: 2 degree F (1.0 degree C).
- 2. Digital temperature accurate to within a 1 degree F (0.4 degree C).
- 3. Heat/Cool switch deadband: 3 Degrees F (1.5 degree C).

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Manufacturer's data sheets on each product to be used, including:

- 1. Preparation instructions and recommendations.
- 2. Storage and handling requirements and recommendations.
- 3. Installation methods.
- 4. Logic programming and system coordination.

C. Shop Drawings: Drawings showing layout, profiles and product components, including anchorage, accessories and wiring diagrams.

D. Quality Assurance Submittals: Refer to Quality Assurance requirements for information description.

- 1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria, and physical requirements.
- 2. Manufacturer's Field Reports: Manufacturer's field reports specified herein.

E. Closeout Submittals: Submit the following:

- 1. Operation and Maintenance Data: Operation and maintenance data for installed products.
- 2. Warranty: Warranty documents specified herein.
- 3. Record Documents: Project record documents for installed materials.

F. Verification Samples: For each product specified, two samples with factory pre-sets for

project equipment requirements to be controlled.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and operation.
- B. Installer Qualifications:
 - 1. Installer experienced in performing work of this section similar to that required for this project.
 - 2. Manufacturer trained, certified or otherwise acceptable to manufacturer.
- C. Regulatory Requirements:
 - 1. Building Codes: Comply with regulations of authorities having jurisdiction.
 - 2. Housing: UL Listed, fire retardant plastic.
 - 3. NEC Class 2 compliant device.
- D. Mock-Up: Provide a mock-up for evaluation of manufacturing and installation workmanship.
 - 1. Provide installation in areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship and operation are approved by Architect.
- E. Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.7 DELIVERY, STORAGE & HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY

- A. Manufacturer/installer has responsibility for an extended Corrective Period for work of this Section for the period stated from date of Substantial Completion against all the conditions indicated below, and when notified in writing from Owner.
- B. Manufacturer/installer shall promptly and without inconvenience and cost to Owner correct deficiencies:
 - 1. Failure due to defective materials and workmanship.
 - 2. Failure due to programming and embedded factory installed system information.
- C. Contractor/manufacturer/installer shall be notified immediately of defective products, and be given a reasonable opportunity to inspect the goods prior to return. Manufacturer will not assume responsibility, or compensation, for unauthorized repairs or labor.

1.10 EXTRA MATERIALS

A. Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.

1. Quantity: Furnish quantity of items listed equal to 2 percent of amount installed not to exceed 20 of each item.

- a. SensorStat unit.
- b. Remote motion detector.
- c. Remote lighting detector.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Energy Products LLC (AN Onity/UTC EMS Partner);

1) 2581 Jupiter Park Drive, Suite F12, Jupiter, FL 33458.

2) (561) 746-8889. Fax:(561) 746-8795.

3)E- mail:brianblake@energyproductsolutions.com.

4)Web: www.energyproductsolutions.com.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 PRODUCTS

A. System Components and Quantity: Refer to drawings for equipment control schedule and room sensor location and quantity.

1. Plastic Housing: UL Listed, FR94 0.
2. Display: 2 Digit LCD (backlit).
3. Controls:
 - a. Power / Fan / Warmer / Cooler.
 - b. Fahrenheit / Celsius
4. Temperature display range: 0.0 degree F to 99 degree F (-17 degree C to 37 degree C).
5. Guest control range: 65 degree F to 90 degree F (18 degree C to 32 degree C).
6. HVAC control types: Standard H/C - Heat Pump (B/O).
7. Input voltage: 12 to 30V AC/DC.
8. Current:
 - a. Input 24VAC.
 - b. 18mA - no output active.
 - c. 70mA - Y/W1, G3, Lighting Active.
9. Output logic:
 - a. 24V = On - Normal.
 - b. 0V = On - Reverse.
10. Outputs:
 - a. W/W2 - Heating.
 - b. Y/W1 - Cooling / Compressor.
 - c. Fan 1.
 - d. Fan 2.
 - e. Fan 3 (or Reversing Valve).
 - f. Lighting.
 - g. Privacy Please!
 - h. Motion I/O.

- i. +5VDC.
- 11. Inputs:
 - a. Door switch.
 - b. Motion I/O.
- 12. Freeze Guard Temp: 42 degree F (6 degree C).
- 13. Programmed with dip switches.
- 14. Door switch:
 - a. Sentrol model 3005 (standard or short housing length) for standard entry doors.
 - b. Sentrol model 1085 for sliding glass doors.
- 15. Wireless door switch: 915 MHz.
 - a. Four function receiver.
 - b. Wireless door status transmitter.
 - c. Three wire SPDT door switch.
- 16. Real Time Clock (RTC): Time of day and motion sensor logic control.
- 17. Guest privacy alert for employees.
 - a. The Privacy Please! output module plugs into the connector on the rear of the unit. Wires are then routed to the IR emitter installed in the doorframe.
 - b. A small IT transmitter LED is installed in the doorframe on the hall side of the door.
 - c. A continuous transmission of IR signal into the hallway with a range of approximately 24 inches from the door, directly in front of the IR LED.
 - d. Privacy scanner:
 - 1) Number required: ____.

B. SensorStat DDC 2F: The unit utilizes a combination of door contacts and a passive infrared (PIR) sensor to control equipment and activate setback controller.

- 1. Dimensions: 6 5/16 by 4 13/16 by 7/8 inches (160 by 122 by 23 mm).
- 2. Plastic Housing: UL Listed, FR94 0.
- 3. Communication: SensorStat DDC 2 operates at two baud rates, 9,600 and 62,500 baud. Also, RF Wireless option available.
- 4. Controlling fan coil units, PTAC and heat pumps.
 - a. Solid state relays for 24 V (ac/dc) control circuits.
 - b. Three HVAC internal control strategies.
- 5. Door switch:
 - a. Sentrol model 3005 (standard or short housing length) for standard entry doors.
 - b. Sentrol model 1085 for sliding glass doors.
- 6. Wireless door switch: 915 MHz.
 - a. Four function receiver.
 - b. Wireless door status transmitter.
 - c. Three wire SPDT door switch.
- 7. Guest privacy alert for employees.
 - a. The Privacy Please output module plugs into the connector on the rear of the unit. Wires are then routed to the IR emitter installed in the doorframe.
 - b. A small IT transmitter LED is installed in the doorframe on the hall side of the door.
 - c. A continuous transmission of IR signal into the hallway with a range of approximately 24 inches from the door, directly in front of the IR LED.
 - d. Privacy scanner:
 - 1) Number required: ____.
- 8. Humidistat control of HVAC and logic.
- 9. Remote PIR lighting control and logic.
- 10. Remote monitoring interior door switch and logic.
- 11. Remote monitoring exterior door switch and logic.
- 12. Diagnostic Tool Kit w/ Hand-held Programmer.

C. Remote Occupancy Sensor:

1. Six relay controller.

D. Power Control Station (PCS): DDC unit to control 110-277 V control circuits. The PCS provides a transformer to step down the line voltage to 24V and relays to control the HVAC cooling and heating valves and up to 3 fan speeds (high, medium, low). An optional relay is available for special purposes such as lighting

PART 3 EXECUTION

3.1 EXAMINATION

A. Compliance: Comply with manufacturer's including product technical bulletins, product catalogue installation instructions and product carton instructions for installation.

B. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.

C. Do not begin installation until areas, supporting construction and substrates have been properly prepared.

D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.4 FIELD QUALITY REQUIREMENTS

A. Manufacturer's Field Services: Provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.5 ADJUSTING

A. Adjusting: Simulate logic control functions and verify correct equipment response at each equipment unit controlled from each sensor and thermostat.

B. Refer to Section 15950 for systems check-out process, calibration, validation, error reporting and correction documentation.

3.6 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's

instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

3.7 PROTECTION

- A. Protect installed products until completion of project.
- B. Protect wiring and devices from subsequent construction and finish work.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

3.8 OWNER'S INSTRUCTION

- A. Instruct Owner's personnel in operation and maintenance of installed units.
- B. Provide instruction to ensure that the energy management system is operated properly. Training shall be accomplished before Owner's personnel operate the system, and shall occur at the site of the project. Include training of managers, front desk, maintenance, security, housekeeping and other staff personnel as identified.

END OF SECTION