

SAMOD

Automatic Temperature Control Specification

Controls and Automation

PART 1: General

- 1.1 The automatic temperature controls (ATC) under this section will be supplied and installed in accordance with the General Conditions, Supplementary Conditions, and all Division I General Requirements and Referenced Documents.
- 1.2 The installation of the ATC shall be in accordance with all National, State and Local codes pertaining to this type of work.
- 1.3 All work must comply with Section – Basic Materials and Methods – and all other Division Sections, as applicable.
- 1.4 The scope shall include furnishing and installing a temperature control system to include remote control panels, temperature control devices, appurtenances, etc. to accomplish specific control sequences specified herein, to provide overheating and freeze protection for HVAC units, sensing and indicating devices, temperature indicating instruments, supporting structures and other required components.
- 1.5 The scope shall include all thermostats, sensors, dampers, actuators, microprocessor central controllers, VAV diffusers, static pressure sensors, fan powered boxes, re-heat products and all other new components of the system requiring connections.

PART 2: General Instructions

- 2.1 The Automatic Temperature Control (ATC) Systems as specified herein shall be provided in their entirety by the ATC Contractor. The ATC Contractor shall base his/her Bid on the system as specified and on the sequence of operations.
- 2.2 As part of his/her Bid, the ATC Contractor shall submit for review by the owner's authorized representatives a written description of his ATC systems, including block diagrams, showing all major components and control panels and required cabling between each.
- 2.3 The ATC contractor shall include manufacturer's literature for each type of panel, controller, or device that may be shown on the Riser Diagram.
- 2.4 The Riser Diagram shall show schematically the entire building system with all major components identified.

PART 3: Scope of Work

- 3.1 The ATC systems shall be supplied and installed completely under the ATC Contract. Control components shall be mounted and wired by the ATC Contractor.
- 3.2 The ATC Contractor shall provide the engineering, installation, calibration, software programming and checkout necessary for complete and fully operational ATC systems, as specified hereafter.
- 3.3 Wiring in exposed areas and in mechanical rooms shall be in EMT. Wiring in accessible, concealed areas shall be plenum rated cable.

PART 4: Submittals

- 4.1 The following data/information shall be submitted for approval:
- 4.2 Complete sequence of operation.
- 4.3 Control system drawings, including all pertinent data, to provide a functional operating system.

- 4.4 Damper schedules showing size, configuration, capacity and location of all equipment.
- 4.5 Data sheets for all hardware control components.
- 4.6 A description of the installation materials including conduit, wire, flex, etc.
- 4.7 Thermostat/Sensor locations.
- 4.8 Control panel locations.
- 4.9 Provide as part of the submittal five copies of all data and control drawings.

PART 5: Qualifications

- 5.1 The ATC Contractor shall have an office within a 100-mile radius of the job site, staffed with factory trained personnel capable of providing instruction, routine maintenance and 24-hour emergency maintenance service for all system components.
- 5.2 The ATC Contractor shall have a minimum of three years of experience installing and servicing similar microprocessor-based control systems.
- 5.3 The Contractor shall be prepared to provide evidence of this history as a condition of acceptance and approval prior to bidding.

PART 6: System Description

- 6.1 The SYSTEM shall be a commercial modulating Auto Changeover single zone system. The controller will monitor discharge air temperature using air temperature sensor for operational mode, Heat/Vent/Cool, operation for automatic system changeover.
- 6.2 Zone dampers shall be fully modulating in either round or rectangular styles. The system shall measure duct temperature and zone temperature every 60 seconds to evaluate mode of operation and zone demand. System will modulate damper when heating/cooling set point calls and controller determines "Cool" air or "Heat" air is available to zone. If ventilation air is present, controller will modulate the damper to 40% open.
- 6.3 System controller shall digitally display room temperature, zone relative humidity, temperature set point, and provide duct air temperatures at the controller.
- 6.4 The System shall provide AUX Heating or Zone REHEAT control.

PART 7: Control Manufacturer

- 7.1 The control system shall be the SAMOD, (Stand Alone Modulating Damper) as manufactured by Zonex Systems, Huntington Beach, CA. Any substitution of the above specified control system will require a 10-day prior approval by the engineer.
- 7.2 For pricing, contact the factory at 800-228-2966 or visit www.zonexproducts.com
- 7.3 For substitution, submit a complete description, engineering data, and names of existing installations of substitute products.
- 7.4 Be prepared to provide a field inspection by the engineer if they request to observe the actual installation of proposed substitution.

PART 8: Zone Temperature Sensors

- 8.1 The typical Zone Temperature Controller (SAMOD) will:
 - 1. Use a Zone temperature sensors to control fully modulating zone dampers to maintain the proper temperature requirements.
 - 2. Include full color LCD touchscreen controls on the the zone thermostat to adjust set point to maintain room temperature.
 - 3. Have an adjustable temperature range from 55 to 95 degrees F. Celsius display shall also be available.

4. Have a large digital display showing current space temperature, relative humidity, duct temperature, the current mode of operation, and the heating/cooling set point established.
5. Have the ability to manually open and close the zone damper through the thermostat menu.
6. Have the ability to be Locked via Menu settings
7. Have the ability to be field calibrated
8. Be able to control up to three slaved dampers.
9. Be available with Remote sensor capability.
10. Have the capability to utilize perimeter electric or hot water baseboard heating for supplemental heating. The thermostat will operate the zone damper only for airflow and energize the supplemental heat when the temperature drops two degrees below set point. A call for heat will be made, one degree below set point.
11. Be configurable to operate with Auxiliary Heat or Reheat applications. In reheat applications, the thermostat shall energize reheat and modulate damper 40% to provide space temperature heating.

PART 9: Zone Dampers

- 9.1 Each round zone damper (Model STMPD) shall consist of 20-22 gauge galvanized metal duct fitted with an elliptical damper to provide linear airflow. The damper shall contain a foam seal to prevent leakage when fully closed. Each damper will contain a full stall 24-volt modulating actuator, which shall not draw more than 5 VA on one drive assembly. The damper shell will be crimped on one end and beaded on both ends for damper rigidity. Dampers shall be equipped with min/max position stops and indicators.
- 9.2 Each rectangular zone damper (Model STCD) shall be constructed of a 20-gauge “snap-lock” steel frame with S & Drive connections. The total length of the damper will be 16”. Dampers 10” and smaller in height will utilize single blade construction; those dampers larger than 10” in height will utilize opposed blade construction. The damper blades are of formed steel design with gasketed stops to provide quiet operation and structural integrity. Dampers shall be equipped with min/max position stops and indicators.
- 9.3 Zone dampers shall be fully modulating in operation based on input received from each zone thermostat. Modulation shall be predicated on variance from set point. If the system has satisfied all calls, all dampers shall modulate to the 50% position for ventilation.
- 9.4 All zone dampers shall be connected to its zone thermostat by 3-wire, 18-gauge copper wiring. The zone thermostat shall continuously monitor room temperature, supply air temperature, and modulate damper position based on variance from set point to control zone temperature as required.
- 9.5 If the total amount of air volume flowing through a SAMOD zone or zones exceeds 30% of the total air capacity of the air supply source/HVAC unit, a bypass damper with an integrated static pressure controller (Model STBP or STCDBP for round and rectangular, respectively) will also be necessary to prevent excessive static duct pressure and noise.

PART 10: Transformers and Wiring

- 10.1 An independent 24-volt transformer sized at 5 VA per zone damper shall power each SAMOD damper system.
- 10.2 An independent 24-volt transformer shall power each modulating bypass damper and integrated static pressure control, if required.
- 10.3 All power wiring of this system shall be 24-volt AC.

END OF SECTION