

**SECTION 23 09 93.01  
SEQUENCE OF OPERATIONS**

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**SEQUENCE OF OPERATIONS FOR HVAC CONTROLS**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. This Section includes control sequences for HVAC systems, subsystems, and equipment.
- B. Related Sections, and control requirements shall include the following:
  - 1. Division 23 Section "Instrumentation and Control for HVAC" for control equipment and devices and for submittal requirements. System central controller to control indoor units according to space sensor set point, and occupancy schedule. System, and equipment shall be either in heating or cooling mode according to occupancy schedule settings of the specified central controller.
  - 2. Occupancy schedule settings of central controller,

**1.03 DEFINITIONS**

- A. DDC: Direct digital control.
  - 1. Occupied Time Schedule:
    - a. Input Device: Time clock and or DDC system time schedule.
    - b. Output Device: Time clock or Binary output.
    - c. Action: Enable control.
  - 2. Supply or Discharge-Air Temperature:
    - a. Input Device: Duct-mounted thermostat, or Electronic temperature sensor.
    - b. Output Device: Normally open, 2 position or modulating control valve.
    - c. Action: Maintain supply-air temperature set point of 55 deg F.
  - 3. Temperature Reset:
    - a. Input Device: Space mounted, remote controller, Duct-mounted thermostat or Electronic temperature sensor in return air.
    - b. Output Device: Direct to receiver controller or DDC system in straight-line relationship for the following conditions:
      - 1) 65 deg F when return-air temperature is 70 deg F.
      - 2) 55 deg F when return-air temperature is 75 deg F..
    - c. Action: Reset supply-air temperature set point of 55 deg F.
  - 4. Temperature Reset:
    - a. Input Device: DDC system with input from room thermostats or temperature sensors.
    - b. Output Device: Direct to receiver controller.
    - c. Action: Reset supply-air temperature in response to greatest heating demand.
  - 5. Unoccupied Time Schedule:
    - a. Input Device: Time clock or room thermostat and DDC system time schedule and output.
    - b. Output Device: Room thermostat cycling fan DDC system binary output.
    - c. Action: Enable normal control, Return valve to normal position when fan is cycled on.
- B. Coordination of Air-Handling Unit Sequences: Ensure that heating-coil, and Ventilation fan controls have common inputs and do not overlap in function.

**PART 2 PRODUCTS**

**2.01 (NOT USED)**

**PART 3 EXECUTION**

**3.01 (NOT USED)**

**END OF SECTION 23 09 93.01**