

**1. GENERAL**

- .1 The control sequences contain a general description of the intent of the operation of the systems to be controlled. The Contractor shall review individual systems to ensure equipment and life safety interlocks are not overridden.
- .2 The relationships between the points, systems and building are described in the control sequences.
- .3 Review with the Contract Administrator during the shop drawing stage to finalise the control sequences for each system.

**2. PRODUCTS**

Not Applicable

**3. EXECUTION**

- .1 Provide database for all hardware points listed for system operation to meet specification operating sequences.

**4. CONTROL SEQUENCES**

**4.1 Air Handling Units (AHU-1 and AHU-2)**

- .1 General
  - .1 Two air handling units provide 100% redundancy. The units shall be interlocked to prevent both units from operating simultaneously.
  - .2 The air handling units shall have a remote HVAC Control Panel as shown in drawings.
  - .3 All system alarms shall latch until manually reset by operator.
  - .4 The air handling units are a constant volume system.
- .2 AHU Selection
  - .1 A selector switch on the Remote HVAC Control Panel shall be used to select either AHU-1 or AHU-2.
  - .2 When energized the “AHU Ready” light on the Remote HVAC Control Panel shall indicate which unit is active.
- .3 System Start/Stop

- .1 The air handling units will normally be energized from the Remote HVAC Control Panel via a Hand/Off/Auto Switch.
- .2 In “auto” mode, the air handling unit selected on the AHU Selector switch shall be energized first. If a “fault” occurs on the selected unit at any time, the system shall automatically energize (switch over) to the other unit. The “Fault” light shall indicate the tripped unit. The “AHU Ready” light shall indicate the unit, which is energized.
- .3 The supply and return fan on the energized unit shall cycle as required to maintain space temperature. When operating the “AHU Running” light shall energize on the Remote HVAC Panel.
- .4 Free Cooling Mode
  - .1 When the air handling unit is operating and the outdoor air temperature is below 10°C (50°F) the unit shall provide free cooling by modulating the mixed, outdoor and relief dampers to maintain the supply air temperature at 13°C (55°F).
  - .2 When the air handling unit is not operating, the outdoor and relief dampers shall be fully closed and the mixed air damper shall be fully opened.
- .5 Mechanical Cooling Mode
  - .1 When the air handling unit is operating and the outdoor air temperature is above 10°C (50°F) the outdoor and relief dampers shall remain fully closed and the mixed air damper shall remain fully open.
  - .2 The mechanical cooling system shall operate as required to maintain the supply air temperature at 13°C (55°F).
  - .3 The system shall modulate by staging the mechanical cooling.
- .6 Power Failure and Restoration
  - .1 Shutdown sequence: the outside air and relief air dampers are to fail to a normally closed position.
  - .2 Start up sequence:
    - .1 Energize the appropriately selected unit.
    - .2 Energize the supply and return fan if cooling is required..
    - .3 Energize and modulate the return air, outside air and relief air dampers if free cooling is required.
    - .4 Energize condensing unit if mechanical cooling is required.
- .7 Freeze Stats

- .1 Provide averaging type freeze stat in each air handling unit at location indicated. Upon sensing a low temperature, the supply fan shall stop, and all outdoor and exhaust air dampers shall close. The return fan shall remain energized. The freeze stat must be reset manually.
  
- .8 Fire Protection Mode
  - .1 The AHUs shall shut down on fire detection.

**END OF SECTION**