INSTALLER and INSPECTOR QUICK-REFERENCE: 2025-NRCA-MCH-16-A Supply Air Temperature Reset Controls

Purpose and Scope of the Test

The purpose of the test is to ensure that the supply air temperature (SAT) modulates to meet system heating and cooling loads in a constant air volume (CAV) or variable air volume (VAV) system serving multiple zones.

Space conditioning systems must have zone level controls to avoid reheat, re-cool, and simultaneous cooling and heating; or, must have controls to reset SAT by at least 25 percent of the difference between the design SAT and the design room air temperature.

Air distribution systems serving zones with constant loads shall be designed for the air flows resulting from the fully reset (e.g., lowest/highest) SAT.

The requirements for SAT reset apply to both CAV and VAV systems. Exceptions include:

- Systems with specific humidity needs for exempt process loads (computer rooms or spaces serving only IT equipment are not exempt).
- Zones served by space conditioning systems in which at least 75 percent of the energy for reheating, or providing warm air in mixing systems, is provided from a site-recovered or site-solar energy source.
- Systems in which SAT reset would increase overall building energy use.
- Systems with controls to prevent reheat, re-cool, and/or simultaneous cooling and heating.
- Systems serving healthcare facilities.

SAT may be reset in response to building loads, zone temperature, outside air temperature, or any other appropriate variable.

SAT should be configured with control sequences of operation in accordance with ASHRAE Guideline 36 for nonresidential buildings.

Test trigger

Newly Constructed and Additions/Alterations: All new SAT reset controls installed on new or existing systems must be tested.

Relevant Energy Code References and Required Compliance Documents

Title 24, Part 6 of the California Building Standards Code, Building Energy Efficiency Standards (Energy Code) sections 120.5(a)15, 140.4(f), 160.3(d)1O, 170.2(c)4D; NA7.5.15; and NRCC-MCH-E Table I, LMCC-MCH-E Table I, NRCC-PRF-E and LMCC-PRF-E.

Who Can Perform the Test

This test must be performed by an acceptance test technician certified by a CEC-approved Acceptance Test Technician Certification Provider, using compliance document NRCA-MCH-16-A.

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Required Tools

Instrumentation to perform this test may include a hand-held temperature probe or temperature data logger. Instrumentation used should be calibrated within the last year with date of calibration noted on the NRCA-MCH-16-A.

Estimated Time to Complete Test

- Construction inspection: 0.5 to 1 hour (depending on sensor calibration).
- Functional testing: 0.5 to 1 hour (depending on system control stability).

Potential Issues and Cautions

- If possible, coordinate test procedures with the controls contractor and building staff since they may be needed to assist with manipulation of the building automation system (BAS) to achieve the desired operating conditions.
- Check to make sure that chilled / hot water coils, if used, are not already fully open and calling for maximum cooling / heating. In this case, reverse Steps 1 and 2 and change the set point range as necessary to allow system to operate within acceptable bounds.
- In general, take care to avoid demand peaks exceeding what would be encountered during the normal operation of the building.
- Ensure that all disabled reset sequences are enabled upon completion of this test.

Inspection Enforcement

Required:

Verify the inspector is in receipt of one NRCA-MCH-16-A for EACH system that must demonstrate compliance. All NRCA forms for Mechanical Systems must have a water mark logo from a certified Mechanical ATTCP Provider.

Optional Equipment Check:

Verify that the acceptance test technician has access to the following equipment:

- A hand-held temperature probe.
- A temperature data logger.

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Acceptance Criteria

Construction Inspection Criteria:

- The temperature sensor(s) must be factory calibrated or field calibrated by a TAB technician, or field checked by test technician with a calibrated standard.
- Calibration certificate or other supporting documentation must be provided.

Functional Testing: For each system, the test criteria include:

- Supply air temperature controls modulate as intended.
- Actual supply air temperature increases or decreases to meet the new set point within +/- 2°F.
- Supply air temperature stabilizes within 15 minutes. Supply air temperature and temperature setpoint must be documented on the NRCA-MCH-16-A.

Follow the **Construction Inspection** and **Functional Testing** instructions on the NRCA-MCH-16-A.