



Project Name and Address		Authority Having Jurisdiction	
Name:		Enforcement Agency:	
Address:		Permit Number:	
City, Zip:		Permit Application Date:	

Building:	Floor:	Room:	Control/tag:
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<input type="checkbox"/> Construction inspection and functional testing comply	Date Submitted to AHJ:
<input type="checkbox"/> Does not comply	

<b>Intent:</b>	To demonstrate adiabatic condensers and condenser fan motor variable speed controls comply with the requirements of the Energy Code. Reference NRCC-MCH-E for nonresidential (including nonresidential spaces in high-rise multifamily) building permits or LMCC-MCH-E for nonresidential spaces in low-rise multifamily building permits. Submit one Certificate of Acceptance for each system that must demonstrate compliance. Reference 120.6(a)4, 120.6(a)7, 140.4(h), 170.2(c)4F, and NA7.10.3.3.
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### Table A: Construction Inspection

Prior to functional testing, verify and document all of the following:

Step	Entry	Item	Code Reference
1.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify the control system minimum Saturated Condensing Temperature (SCT) setpoint is at or below 70°F.	NA7.10.3.3.1(a)
2.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify the control system maximum SCT setpoint (if used) is at or near the system design SCT.	NA7.10.3.3.1(b)
3.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify accuracy of refrigerant pressure-temperature conversions and consistent use of either temperature or pressure for the controlled variable setpoint in the control system.	NA7.10.3.3.1(c)
4.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify the discharge pressure sensor (or condenser pressure if used) reads accurately, using a National Institute of Standards and Technology (NIST) traceable reference pressure gauge or meter. At the minimum, the discharge pressure sensor accuracy shall be verified at two different pressures within the typical operating range. Calibrate if needed. Replace if outside manufacturer's recommended calibration range and retest.	NA7.10.3.3.1(d)
5.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify the ambient dry bulb temperature using a NIST traceable instrument, including verification of at least two different ambient readings. Calibrate if needed. Replace if outside manufacturer's recommended calibration range and retest.	NA7.10.3.3.1(e)
6.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify all ambient dry bulb temperature sensors are not mounted in direct sunlight or are provided within a suitable solar shield.	NA7.10.3.3.1(f)



Step	Entry	Item	Code Reference
7.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify that all sensor readings used by the condenser controller convert or calculate to the correct conversion units and are displayed at the controller (e.g., observed pressure reading is correctly converted to appropriate saturated temperature, etc.).	NA7.10.3.3.1(g)
8.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify that all fan motors are operational and rotating in the correct direction.	NA7.10.3.3.1(h)
9.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify that all condenser fan speed controls operate automatically in response to changes in both pressure (SCT) and ambient temperature.	NA7.10.3.3.1(i)
10.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Check "Pass" if construction inspection <b>complies</b> with all requirements. Check "Fail" if construction inspection <b>does not comply</b> with all requirements.	N/A

**Table B: Functional Testing**

Step	Entry	Functional Testing	Code Reference
0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Confirm that the cooling load and ambient conditions allow for typical system operation with the condenser in dry mode.	NA7.10.3.3.2
1.0	No Entry	Verify mechanical controls and other strategies will not affect tests using steps 1.1, 1.2, 1.3, and 1.4.	NA7.10.3.3.2 Step 1
1.1	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify condenser pressure low-limit holdback and/or bypass regulating valves, if any, are set below the minimum SCT setpoint.	NA7.10.3.3.2 Step 1(a)
1.2	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Turn off any heat reclaim controls and any intermittent defrost pressure offset strategies that would affect condenser setpoint control.	NA7.10.3.3.2 Step 1(b)
1.3		Change the adiabatic mode switching temperature in the controller to just below current ambient conditions and document the adiabatic switching setpoint. (°F)	NA7.10.3.3.2 Step 1(c)
1.4	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Adiabatic pads are completely dry before beginning tests.	NA7.10.3.3.2 Step 1(c)
2.0	No Entry	Verify stable fan operation at a mid-range speed level using steps 2.1 and 2.2.	NA7.10.3.3.2 Step 2
2.1	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Verify the condenser control value is operating in the variable setpoint control range (i.e., above the minimum SCT setpoint and below the maximum SCT setpoint).	NA7.10.3.3.2 Step 2(a)



Step	Entry	Functional Testing	Code Reference
2.2	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Observe control operation for at least 30 minutes to confirm stable control operation, as shown by condenser fan speed varying as compressor capacity changes, and not ranging from maximum to minimum fan speed or constant "hunting".	NA7.10.3.3.2 Step 2(b)
3.0	No Entry	Identify control Temperature Difference using steps 3.1, 3.2, 3.3, and 3.4.	NA7.10.3.3.2 Step 3
3.1	°F (outdoor) °F psig <input type="checkbox"/> Disch Press <input type="checkbox"/> Cond Press	Record the current outdoor ambient-air dry bulb and refrigeration system condensing temperature/condensing pressure readings from the control system. Note whether discharge pressure or a dedicated condenser pressure sensor is used for condenser pressure control.	NA7.10.3.3.2 Step 3(a)
3.2	psig °F(TD)	Document current head pressure control setpoints, including the Temperature Difference (TD) setpoint.	NA7.10.3.3.2 Step 3(b)
3.3	°F(TD)	Calculate and record the actual observed TD, defined as the difference between the dry bulb temperature and the refrigeration system SCT.	NA7.10.3.3.2 Step 3(c)
3.4	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Confirm agreement between the current control system TD setpoint and the observed TD. If values are different, address and correct controls system methods.	NA7.10.3.3.2 Step 3(d)
4.0	No Entry	Test adjusted control Temperature Difference (Setpoint 1) using steps 4.1, 4.2, 4.3, 4.4, and 4.5.	NA7.10.3.3.2 Step 4
4.1		Enter a smaller TD value into the control system sufficient to cause an observable response, such as 1 to 2 degrees smaller, but not small enough to cause the system to operate continuously at 100% fan speed. Record this value as TD Test Setpoint 1. (°F TD)	NA7.10.3.3.2 Step 4(a)
4.2	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Observe change in control system operation which should include an increase in fan speed and a decrease in condensing temperature.	NA7.10.3.3.2 Step 4(b)
4.3	psig °F(TD)	Allow time for the control system to achieve stable operation. Document current head pressure control setpoint and TD	NA7.10.3.3.2 Step 4(c)-(d)
4.4		Calculate and record the actual observed TD, defined as the difference between the wet bulb temperature and the refrigeration system SCT. (°F TD)	NA7.10.3.3.2 Step 4(e)



Step	Entry	Functional Testing	Code Reference
4.5	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Confirm agreement between the current control system TD setpoint and the observed TD. If values are different, address and correct control system methods.	NA7.10.3.3.2 Step 4(f)
5.0	No Entry	Test adjusted control Temperature Difference (Setpoint 2) using steps 5.1 through 5.7.	NA7.10.3.3.2 Step 5
5.1		Enter a TD value into the control system that is different from TD Test Setpoint 1 sufficient to cause an observable response. Record this value. (°F TD)	NA7.10.3.3.2 Step 5
5.2	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Observe change in control system operation which should include an increase in fan speed and a decrease in condensing temperature.	NA7.10.3.3.2 Step 5(a)
5.3		Allow time for the control system to achieve stable operation. Record the current outdoor ambient dry bulb temperature. (°F)	NA7.10.3.3.2 Step 5(b)-(c)
5.4	°F psig	Record the current refrigeration system condensing temperature/condensing pressure readings from the control system.	NA7.10.3.3.2 Step 5(d)
5.5	psig °F(TD)	Document current head pressure control setpoints, including the TD setpoint.	NA7.10.3.3.2 Step 5(e)
5.6		Calculate and record the actual observed TD, defined as the difference between the dry bulb temperature and the refrigeration system SCT. (°F TD)	NA7.10.3.3.2 Step 5(f)
5.7	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Confirm agreement between the current control system TD setpoint and the observed TD. If values are different, address and correct control system methods.	NA7.10.3.3.2 Step 5(g)
6.0		Document current minimum condensing temperature setpoint using steps 6.1, 6.2, 6.3, and 6.4. (°F)	NA7.10.3.3.2 Step 6
6.1	No Entry	Using the control system, change the minimum condensing temperature setpoint to a value greater than the current operating condensing temperature.	NA7.10.3.3.2 Step 6
6.2	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Condenser fan controls modulate to decrease capacity.	NA7.10.3.3.2 Step 6(a)
6.3	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	All condenser fans serving common condenser loop modulate in unison.	NA7.10.3.3.2 Step 6(b)
6.4	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Condenser fan controls stabilize within a 5-minute period.	NA7.10.3.3.2 Step 6(c)



Step	Entry	Functional Testing	Code Reference
7.0	No Entry	Using the control system, reset the system head pressure controls, fan motor controls and minimum condensing temperature control setpoint to original settings documented in Steps 3 and 6.	NA7.10.3.3.2 Step 7
8.0	No Entry	Restore any heat reclaim, floating suction pressure, floating head pressure and defrost functionality. Reset the minimum condensing temperature setpoint to the value documented in Step 6.	NA7.10.3.3.2 Step 8
9.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Check "Pass" if all Functional Test results comply with requirements.	N/A



<b>Declaration Statement</b>	<b>Signatory</b>
<p><b>Document Author</b> I assert that this Certificate of Acceptance documentation is accurate and complete.</p>	
<p><b>Field Technician</b> I certify the following under penalty of perjury, under the laws of the State of California: The information provided on this Certificate of Acceptance is true and correct. I am the person who performed the acceptance verification reported on this Certificate of Acceptance (Field Technician). The construction or installation identified on this Certificate of Acceptance complies with the applicable acceptance requirements indicated in the plans and specifications approved by the enforcement agency and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and signed by the responsible builder/installer and has been posted or made available with the building permit(s) issued for the building.</p>	
<p><b>Responsible Person</b> I assert the following under penalty of perjury, under the laws of the State of California: I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this Certificate of Acceptance. I am eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Acceptance and attest to the declarations in this statement (responsible acceptance person). The information provided on this Certificate of Acceptance substantiates that the construction or installation identified on this Certificate of Acceptance complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and is posted or made available with the building permit(s) issued for the building. I understand that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections, and I will take the necessary steps to ensure this requirement is accomplished. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy, and I will take the necessary steps to ensure this requirement is accomplished.</p>	