Addendum b to
ASHRAE Guideline 36-2024

Public Review Draft

Proposed Addendum b to Guideline 36-2024, High-Performance Sequences of Operation for HVAC Systems

Second Public Review (January 2026)
(Draft shows Proposed Changes to Current Guideline)

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(This foreword is not part of this guideline. It is merely informative and does not contain requirements necessary for conformance to the guideline.)

FOREWORD

Note: In this addendum, changes to the current guideline are indicated in the text by underlining (for additions) and strikethrough (for deletions) unless the instructions specifically mention some other means of indicating the changes.

This addendum addresses how to meet the humidity control requirements of Section 5.12 of Standard 62.1 for buildings with mechanical cooling systems in humid climates using exception 3 to Section 5.12. Addendum k to 62.1-2022 modified Section 5.12 as follows:

> **5.12 Mechanical~~ly~~ and~~or~~ Indirect~~ly~~ Evaporative~~ly~~ ~~Cooled Buildings~~Cooling Systems.** Systems that cool by mechanical means or indirect evaporation shall be designed in accordance with the following sections:
>
> **5.12.1 Humidity Limit.** ~~to limit the~~ The indoor humidity shall not exceed a ~~to a maximum~~ dew point temperature of 60°F (15°C) during both occupied and unoccupied hours in any zone. ~~whenever the outdoor air dew point is above 60°F (15°C). The dew point limit shall not be exceeded when system performance is analyzed with outdoor air at the dehumidification design condition (that is, design dew point and mean coincident dry-bulb temperatures) and with the space interior loads (both sensible and latent) at cooling design values and space solar loads at zero.~~
>
> **5.12.2 Controls.** Devices and controls shall be provided to maintain the humidity at or below the limit defined in section 5.12.1.
>
> **Exceptions to 5.12:**
> 1. Systems in locations where the outdoor dew point temperature is below 68°F (20°C) at the ASHRAE 2% annual dehumidification design condition.
> ~~1~~2. ~~Spaces~~Zones equipped with materials, assemblies, coatings, and furnishings that resist microbial growth and that are not damaged by continuously high indoor air humidity.
> 2. ~~During overnight unoccupied periods not exceeding 12 hours, the 60°F (15°C) dew point limit shall not apply, provided that indoor relative humidity does not exceed 65% at any time during those hours.~~
> 3. Indoor humidity shall be allowed to exceed the section 5.12.1 humidity limit continuously for a period of up to 60 hours provided the 30-day average humidity remains below the limit.

This is now a part of Standard 62.1-2025.

Addendum cy to 90.1-2022 was developed to address how to efficiently comply with Section 5.12 in the climates where this humidity limit is required (those not exempted by Exception 1 above). This addendum requires that systems with zone and system level digital controls must use Exception 3 to minimize energy use, including installing humidity sensors in all zones or representative zones. But complying with this section is not straightforward. Hence, this addendum to Guideline 36 has been developed to specifically provide control sequences that meet this exception. Note that to use this logic, humidity sensors must have the capability of directly or indirectly measuring dew point temperature (DPT), e.g., using psychometric routines from relative humidity and drybulb temperature.

Addendum b to Guideline 36-2024

(IP and SI Units)
Revise Section 3.1.1.4. as follows:

If zone humidity is to be controlled based on zone dew point temperature, retain the following section. Delete otherwise.

3.1.1.4. Zone Dew Point Temperature (DPT) High Limits

For Climate Zones 0A, 1A, 2A, and 3A, ASHRAE Standard 90.1 requires supply air temperature reset to be unimpeded by dehumidification controls, thus implying the use of separate outdoor air cooling coil, dedicated outdoor air system, etc., all of which are currently outside the scope of ASHRAE Guideline 36.

For all other Climate Zones, ASHRAE Standard 90.1 allows humidity controls to adjust the supply air temperature reset in multiple-zone HVAC systems. ASHRAE Guideline 36 provides a means for this adjustment as described below. At the designer's option, this limit may be imposed based on outdoor air dew point, return air dew point, and/or dew point feedback from the zones. Note that Standard 90.1-2022 addendum cy (incorporated into Standard 90.1- 2025) only allows zone humidity-based reset, but the other two options are retained in Guideline 36 for existing projects that do not have zone humidity sensors. If other energy-conserving dehumidification strategies are included in the design, they should be deployed for humidity control before reducing the supply air temperature.

Dew point is used as the humidity variable, rather than relative humidity, based on the dew point high limits prescribed in Standard 62.1-2022 addendum k, which in turn were largely based on ASHRAE Handbook – Applications Chapter 64 Moisture and Mold which recommends controlling dew point temperature (rather than relative humidity) to mitigate mold growth. ~~It is anticipated that~~ Standard 90.1-2022 addendum cy ~~will~~ also limits the use of active dehumidification based on dew point temperature to correspond to Standard 62.1 limits. However, almost all commercial humidity sensors measure relative humidity; to determine dew point temperature, concurrent drybulb temperature must also be measured, and either the sensors must include psychrometric algorithms in firmware to generate a dew point signal, or psychrometric algorithms residing in the digital control system must make this conversion. Both are readily available although not yet commonly used.

The following limits apply to control based on zone dew point in accordance with Standard 90.1-2022 addendum cy. See Section 3.1.4.6 for humidity limits based on outdoor air dew point and return air dew point which may be allowed for existing buildings without zone humidity sensors.

Every zone that has a dew point high limit must be equipped with a humidity sensor.

For zones served by AHUs with off-hour Unoccupied Dehumidification Mode, a variable Time-to-DPT-Lmt is determined for each zone as the time (hours) needed to drive zone dew point temperature down below its unoccupied dew point temperature limit when the Zone Group is in the Unoccupied Dehumidification Mode. Time-to-DPT-Lmt is determined for each zone by the designer, based on past experience, or determined empirically post-construction by running the system in Unoccupied Dehumidification Mode during humid weather and observing performance with trend data.

For these humidity control strategies to be effective and efficient, accurate and reliable humidity sensors are essential. High quality sensors are strongly recommended. Standard 90.1-2022 addendum cy requires dewpoint sensors have an accuracy of ±1.1°C (2°F) with a maximum annual drift of ±0.17°C (0.3°F).

Zones with humidity limits participate in a Trim & Respond loop based on the measured zone dew point. As a result, erroneous humidity sensors can easily create a rogue zone situation that locks the SAT reset loop and wastes energy. It is recommended that the designer set humidity limits only on those zones where it is essential and where required by Standard 62.1, even if all zones are to be equipped with humidity sensors.

Zone Importance factors and the T&R loop Ignore value can be adjusted to ensure that critical zones get an immediate response to high detected high humidity. However, this strategy makes the creation of rogue zones even more likely.

If zones are not served by a system that operates in Unoccupied Dehumidification Mode, delete Unoccupied Dehumidification Runtime Time-to-DPT-Lmt and DPT-ΔT.

a. Dew point temperature high limits and Unoccupied Dehumidification Runtime ~~shall be limited~~ in the following zones and zone types ~~as provided~~shall be as shown in Table 3.1.1.4.

Standard 90.1-2022 addendum cy requires that the initial occupied high limit dew point temperature setting be no higher than 13°C (55°F) and requires that unoccupied high limit dew point temperature be set to the Standard 62.1 high limit of 15.6°C (60°F). The default occupied dewpoint temperature setpoint is set to 14.5°C (58°F), roughly halfway between the two limits to improve energy efficiency while still meeting both Standard 62.1 and Standard 90.1.

Table 3.1.1.4 Dew Point Temperature High Limits for Zones

Zone Tag or Zone Type	Occupied Dew Point Temperature	Unoccupied Dew Point Temperature	Unoccupied Dehu-midification Runtime Time-to-DPT-Lmt
Room #x	~~15.6~~14.5°C (~~60~~58°F) DPT	15.6°C (60°F) DPT	2 hours
Room #y	~~15.6~~14.5°C (~~60~~58°F) DPT	15.6°C (60°F) DPT	2 hours
Operating Room	11.7°C (53°F) DPT	15.6°C (60°F) DPT	2 hours

1. A dew point high limit value shall not be assigned to the zones not listed above, or to zones which do not have a local humidity sensor.

For zones served by AHUs with off-hour Unoccupied Dehumidification Mode, the zone's setback heating setpoint should be increased to avoid causing near saturation conditions (100% relative humidity) in the zone, which can result in condensation on surfaces. This can occur because the setback heating setpoint is often close to the dew point high limit. A default DPT-ΔT of 4.4°C [8°F]) is recommended, which results in a heating setpoint of 20°C (68°F) resulting in a relative humidity of 75% RH at the default 15.6°C (60°F) dew point temperature.

b. Zone Unoccupied Dehumidification Mode heating setpoint above space dew point temperature, DPT-ΔT.

Revise Section 3.1.4.1. as follows:

3.1.4.1. Temperature Setpoints

a. Min_ClgSAT, lowest cooling supply air temperature setpoint

b. Max_ClgSAT, highest cooling supply air temperature setpoint

c. OAT_Min, the lower value of the OAT reset range

d. OAT_Max, the higher value of the OAT reset range

e. Unocc_DehumSAT, cooling supply air temperature setpoint during Unoccupied Dehumidification Mode

Unocc_DehumSAT is the AHU setpoint when operating in Unoccupied Dehumidification Mode. During this condition, it is anticipated that the AHU will run with reduced airflows and zero minimum outdoor air requirement (though economizer is still enabled if relatively cool outside air is available), thereby aiding the cooling coil to

achieve lower discharge air temperatures than possible during typical Occupied Mode operation. Unocc_DehumSAT is typically set below Min_ClgSAT in order to minimize the time operating in Unoccupied Dehumidification Mode; however, the designer must select Unocc_DehumSAT with caution, as excessively low supply air temperatures increase risk of condensation on ductwork and diffusers.

Revise Section 5.3.2.3 as follows:

5.3.2.3. The active setpoints shall be determined by the operating mode of the Zone Group (see Section 5.4.6).

a. During Occupied Mode:

1. The cooling set point shall be the occupied cooling set point.

2. The heating set point shall be the occupied heating set point.

Delete the following if the zone does not have a humidity sensor or zone humidity is not actively limited.

3. The dew point high limit shall be the occupied dew point high limit.

b. During Warm-up Mode:

1. The cooling set point shall be the unoccupied cooling set point.

2. The heating set point shall be the unoccupied heating set point until the time remaining until the zone group's occupied start time is less than the zone's required warm-up time, tz-warmup, at which point the heating set point shall be the occupied heating set point.

Delete the following if the zone does not have a humidity sensor or zone humidity is not actively limited.

3. The dew point high limit shall be the unoccupied dew point high limit.

c. During Cool-down Mode:

1. The cooling set point shall be the unoccupied cooling set point until the time remaining until the zone group's occupied start time is less than the zone's required cool-down time, tz-cooldown, at which point the cooling set point shall be the occupied cooling set point.

2. The heating set point shall be the unoccupied heating set point.

Delete the following if the zone does not have a humidity sensor or zone humidity is not actively limited.

1. The dew point high limit shall be the unoccupied dew point high limit.

d. During Setback Mode:

1. The cooling set point shall be the unoccupied cooling set point.

2. The heating set point shall be 2°C (3°F) above the unoccupied heating set point.

Delete the following if the zone does not have a humidity sensor or zone humidity is not actively limited.

1. The dew point high limit shall be the unoccupied dew point high limit.

e. During Setup Mode:

1. The cooling set point shall be 2°C (3°F) below the unoccupied cooling set point.

2. The heating set point shall be the unoccupied heating set point.

Delete the following if the zone does not have a humidity sensor or zone humidity is not actively limited.

1. The dew point high limit shall be the unoccupied dew point high limit.

f. During Unoccupied Mode:

1. The cooling set point shall be the unoccupied cooling set point.

2. The heating set point shall be the unoccupied heating set point.

Delete the following if the zone does not have a humidity sensor or zone humidity is not actively limited.

3. The dew point high limit shall be the unoccupied dew point high limit.

Delete the following if the zone does not have a humidity sensor or zone humidity is not actively limited.

g. During Unoccupied Dehumidification Mode:

1. The cooling set point shall be the unoccupied cooling set point.

2. The heating set point shall be the higher of:

i. The current zone dew point temperature plus DPT-ΔT, or

ii. The unoccupied heating set point.

3. The dew point high limit shall be the unoccupied dew point high limit.

Add Section 5.3.7.6 as follows:

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.3.7.6. Unoccupied Dehumidification Mode Requests

a. 60-hour limit

This sequence is intended to ensure the zone dew point temperature does not exceed its unoccupied dew point limit for more than 60 hours when the associated Zone Group is not in Occupied Mode.

1. Each zone has a software point DPT-HrsOvrLmt with units of hours. When in other than Occupied Mode, DPT-HrsOvrLmt accumulates the duration of time that the zone dew point temperature exceeds its unoccupied dew point limit.

For example, each minute the zone dew point temperature exceeds its unoccupied dew point limit increments DPT-HrsOvrLmt by 1/60th hours.

2. DPT-HrsOvrLmt resets to zero any time the zone dew point temperature falls below its unoccupied dew point limit for 15 minutes.

b. 30-day average limit

This sequence is intended to ensure that the zone dew point temperature averaged over 30 days does not exceed its unoccupied dew point limit.

1. Each zone has a software point DPT-30Davg that is a continuously rolling 30-day average of zone dew point, regardless of Zone Group mode, utilizing a 1-hour sampling rate.

c. Unoccupied Dehumidification Mode requests

1. If either DPT-30Davg is greater than its unoccupied dew point limit or DPT-HrsOvrLmt equals or exceeds (60 hours minus Time-to-DPT-Lmt for the zone per Section 3.1.1.4.a), send one Unoccupied Dehumidification Mode request.

2. Send 0 Unoccupied Dehumidification Mode requests if

i. The zone group is in Occupied Mode, or

ii. Zone window switch(es) indicate that any zone window is open, or

iii. Both DPT-30Davg is less than unoccupied dew point limit minus 1°C (0.5°F) and DPT-HrsOvrLmt is zero

Add Section 5.4.6.6 as follows:

5.4.6.6. Unoccupied Dehumidification Mode. Unoccupied Dehumidification Mode shall start when the number of Unoccupied Dehumidification Mode Requests > I (I = ignores, default to 0), and shall end when Unoccupied Dehumidification Mode Requests <MT (MT=minimum threshold, default = 1) after a minimum of 10 minutes in this mode.

5.4.6.7. Unoccupied Mode. When the Zone Group is not in any other mode.

5.4.6.8. When zones in one Zone Group are generating requests for different modes, the hierarchy in Section 5.15.1 shall be used to determine Zone Group Operating Mode.

Revise Section 5.5.4 (VAV Cooling Only) as follows:

5.5.4. Active endpoints used in the control logic depicted in Figure 5.5.5 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.5.4).

Table 5.5.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidification	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0
Heating maximum	Vheat-max	Vcool-max	0	0	Vcool-max	Vcool-max	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.5.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.6.4 (VAV with Reheat) as follows:

5.6.4. Active endpoints used in the control logic depicted in Figure 5.6.5 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.6.4).

Table 5.6.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidi-fication	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Cooling minimum	Vmin*	Vdhm-min	0	0	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0
Heating minimum	Max (Vheat-min, Vmin*, Vm)	Max (Vheat-min, Vdhm-min, Vm)	Vheat-min	0	Vheat-max	Vheat-max	0
Heating maximum	Max (Vheat-max, Vmin*)	Vcool-max	Vheat-max	0	Vcool-max	Vcool-max	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.6.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.7.4 (Parallel Fan-Powered − Constant-Volume Fan) as follows:

5.7.4. Active endpoints used in the control logic depicted in Figures 5.7.5-1 and 5.7.5-2 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.7.4).

Table 5.7.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidi-fication	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.7.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall

range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.8.4 (Parallel Fan-Powered − Variable-Volume Fan) as follows:

5.8.4. Active endpoints used in the control logic depicted in Figure 5.8.5 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.8.4).

Table 5.8.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidification	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.8.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.9.4 (Series Fan-Powered − Constant-Volume Fan) as follows:

5.9.4. Active endpoints used in the control logic depicted in Figure 5.9.5 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.9.4).

Table 5.9.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidification	Cooldown	Setup	**Warmup**	**Setback**	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.9.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.10.4 (Series Fan-Powered − Variable-Volume Fan) as follows:

5.10.4. Active endpoints used in the control logic depicted in Figure 5.10.4 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.10.4).

Table 5.10.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidi-fication	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.10.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.11.4 (Dual-Duct VAV – Snap-Acting) as follows:

5.11.4. Active endpoints used in the control logic depicted in Figures 5.11.5-1 and 5.11.5-2 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.11.4).

Table 5.11.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidi-fication	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0
Heating maximum	Vheat-max	Vheat-max	0	0	Vheat-max	Vheat-max	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.11.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.12.4 (Dual-Duct VAV – Mixing with Inlet Airflow Sensors) as follows:

5.12.4. Active endpoints used in the control logic depicted in Figure 5.12.5 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.12.4).

Table 5.12.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidi-fication	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0
Heating maximum	Vheat-max	Vheat-max	0	0	Vheat-max	Vheat-max	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.12.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.13.4 (Dual-Duct VAV – Mixing with Discharge Airflow Sensor) as follows:

5.13.4. Active endpoints used in the control logic depicted in Figure 5.13.5 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.13.4).

Table 5.13.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidi-fication	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0
Heating maximum	Vheat-max	Vheat-max	0	0	Vheat-max	Vheat-max	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.13.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Revise Section 5.14.4 (Dual-Duct VAV – Mixing with Cold-Duct Minimum) as follows:

5.14.4. Active endpoints used in the control logic depicted in Figure 5.14.5 shall vary depending on the mode of the Zone Group the zone is a part of (see Table 5.14.4).

Table 5.14.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Unoccupied Dehumidi-fication	Cooldown	Setup	Warmup	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	Vcool-max	0	0	0
Minimum	Vmin*	Vdhm-min	0	0	0	0	0
Heating maximum	Vheat-max	Vheat-max	0	0	Vheat-max	Vheat-max	0

Delete the following if zone humidity is not actively limited to meet dew point high limits per Section 3.1.1.4.

5.14.4.1. Vdhm-min shall be Vcool-max times the output of a P-only loop which shall limit zone dew point temperature to the active zone dew point temperature limit per Section 3.1.1.4; loop output shall range from 0.0 at the active zone dew point temperature limit minus 1°C (2°F) proportionally up to 1.0 at the zone dew point temperature limit.

This logic will drive the zone minimum to Vcool-max for maximum dehumidification when the zone dew point temperature is at or above the high limit. If the dew point loop is satisfied, the zone minimum will be zero, driving the box closed unless airflow is needed for temperature control.

Add Section 5.15.1.2 as follows:

5.15 Air-Handling Unit System Modes

5.15.1. AHU system modes are the same as the mode of the Zone Group served by the system. When Zone Group served by an air-handling system are in different modes, the following hierarchy applies (highest one sets AHU mode):

Delete modes that do not apply.

5.15.1.1. Occupied Mode

5.15.1.2. Unoccupied Dehumidification Mode

5.15.1.3. Cooldown Mode

5.15.1.4. Setup Mode

5.15.1.5. Warmup Mode

5.15.1.6. Setback Mode

5.15.1.7. Unoccupied Mode

Modify Section 5.16.1.1 as follows:

5.16.1.1. Supply Fan Start/Stop

a. Supply fan shall run when system is in the Unoccupied Dehumidification Mode, Cooldown Mode, Setup Mode, or Occupied Mode.

b. If there are any VAV-reheat boxes on perimeter zones, supply fan shall also run when system is in Setback Mode or Warmup Mode (i.e., all modes except unoccupied).

Modify Section 5.16.2.2 as follows:

c. During Cooldown Mode, setpoint shall be Min_ClgSAT.

d. During Unoccupied Dehumidification Mode, setpoint shall be Unocc_DehumSAT

Note that the supply air temperature setpoint determined above for Occupied, Setup, and Cooldown Modes can be lowered by the humidity control logic in Section 5.16.2.3.

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e. During Warmup Mode and Setback Mode, setpoint shall be 35°C (95°F).