Instruction Manual

HD330/AW-HD330 Dual Output Programmable Humidity Controller
Version 1.3 (Jan., 2022)

1. Overview

The HD330 is a dual-output humidity controller with 8 programmable steps. It contains one humidity sensor and two independent outputs. One output is for humidifier and the other is for dehumidifier. The humidity control can be programmed to vary with different time step setting. It can program up to 8 humidity-time steps and cover 33 days. By using both the humidifying and dehumidifying outputs, the humidity ratio can be controlled at a specific value regardless of whether it is in dry or wet environments.

This controller is a plug-n-play controller, meaning that there is no extra wiring is needed for the humidifier or dehumidifier. Both humidifying and dehumidifying control modes contain a simple on/off operation; they are similar to a mechanical humidistat but operate with higher precision due to adjustable hysteresis band, a precise sensor, and digital read out.

Different operation humidity ranges of the two outputs can be set separately. Once the dehumidifying range is set, the controller program will automatically limit the humidifying range to prevent both outputs from being turned on at the same time.

This humidifier controller is equipped with one of the most robust humidity sensors on the market. It is designed for high relative humidity (>85% RH) and condensing environments, where slight drops in temperature may cause failure or damage to other humidity sensors, a feature many other sensors don't have.

Wireless network connection capability is available in AW-HD330. Users can access the humidity data and parameter settings of the controller from their smart phones or tablets. The AuberWIFI App is available on both iOS and Android platform. For details, please check the supplementary manual.

2. Specifications
Table 1. Specifications

Humidity Control Range	0 ~ 99.9% RH
Humidity Resolution	0.1% RH
Humidity Accuracy	4% RH
Sensor Working Temperature	- 40 ~ 197°F (- 40 ~ 90°C)
Humidity Control Mode	On/off control. Humidifying and dehumidifying
Humidity Control Output	15 A, 120 VAC or 240 VAC *
Timer Range	Each step: 0.1 to 99.9 Hours or 1 to 999 Minutes
Timer Resolution	0.1 Hours or 1 Minute
Max Programmable Time	799.2 Hours or 33.3 Days (for total 8 steps)
Audio Alarm	High and low limit
Controller Operating Environment Temperature	0 ~ 50°C
Dimension	91 x 140 x 46 mm
Input Power	85 ~ 242 VAC, 50 Hz / 60 Hz

Sensor Cable Length	6 ft (2 m)
Power Cable Length	3 ft (1 m)
Warranty	One (1) year for the controller console

* Please note: although both humidity and dehumidity output channels can handle up to 15A, the total power capacity of this controller is 1500 Watts due to input power cord restrictions.

3. Front Panel

Figure 1. Front Panel.

Measured Humidity Window: In normal operating mode, this window shows measured humidity. In parameter setting mode, it shows parameter name.
Set Humidity Window: In normal operating mode, this window shows set humidity. In parameter setting mode, it shows parameter value.
RUN Indicator: This green LED indicator lights up when the controller is running in multi-step mode. It will be off when the controller runs in single-step mode.
WiFi Connection Indicator (for WIFI model only): This blue LED indicator shows WiFi connection status. Please check supplementary manual for details.
SET Key: Access the program settings and parameter settings.
Up Key: Increase parameter value.
Down Key: Decrease parameter value.
PAUSE/STOP Key: Short press to pause the program; Press and hold for 4 seconds to stop the program (works only when the program is paused).
START Key: Start or resume executing the program.
STEP Key: Check the current step; or jump to a different step.
Mute Key: Silent the alarm buzzer.
Dehumidifier Socket: Supply power to dehumidifier.
Dehumidifier Indicator: This red LED indicator lights up when the dehumidifier socket is energized.
Humidifier Socket: Supply power to the humidifier.
Humidifier Indicator: This green LED indicator lights up when the humidifier socket is energized.

Note: WIFI setup (for AW-HD330 model only)
Please download latest AuberWIFI app from iOS Appstore or Android Google play and process the setup through the app. For support, please visit the Help Center, App with WiFi Setup, on auberins.com. To reset the WIFI function of this controller, push down and hold SET key and MUTE key at same time for

about 3s. Then WIFI indicator will blink fast (4 Hz). This indicates that this controller is waiting for new setup now. After the controller is setup to your phone successfully, the WIFI indicator will be solid ON at most of the time.

4. Basic Operation

Here are the basic operating procedures to use this controller. To fully understand the functions on this controller, please read the entire manual.
1) Connect the humidity sensor to the sensor socket that is located on the bottom of the controller. Please check the alignment of the slot on the plug with the key on the socket to ensure a connection. (See section 12 for details.)
2) Plug the controller's power cord to a wall outlet.
3) Set up the program and system parameters. (Please read the rest of this manual for details.)
4) Connect the humidifying and dehumidifying devices to the output sockets on this controller.
5) Press the START key to start running the program.

5. Mode Selection

This controller has 5 different modes: program run, program hold, program stop, parameter setting, and programming mode. Before powering on the controller, please connect the sensor cable to it. If no sensor is connected or if sensor is failed, the controller will show error code "Err".
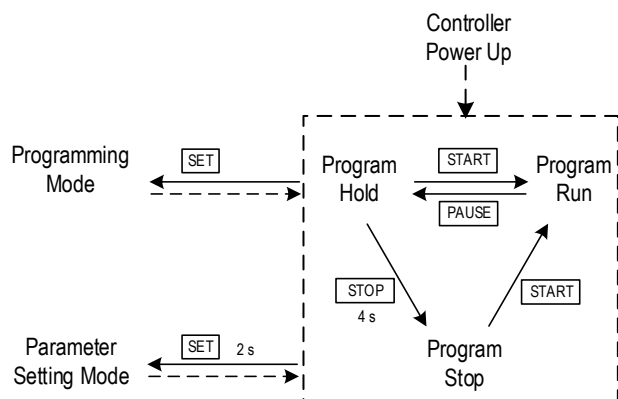

Figure 2. Switching between different modes.

Program Run: In this mode, the controller is executing the saved program. The green indicator labeled "RUN" is lit, and the timer is running. The display window will show the current humidity reading. The controller will send power to its humidifying/dehumidifying outlets to regulate humidity. When the program is running, press the PAUSE key to put the controller in Program Hold mode.
Program Hold: In this mode, the controller pauses the time but still regulates the humidity at the current set value. Here, the "RUN" indicator is off. The display window flashes between the measured humidity value and "Hold". To resume the program, press the START key. To completely stop the program, hold the STOP key for 4 seconds.
Program Stop: The current running program in the system is terminated. Controller outputs are deactivated and timer is also stopped. The "RUN" indicator is off. The display window flashes between the measured humidity value and "Stop". To start the program, press the START key. The controller will execute the program from the first step.
Programming Mode: This mode allows users to review/edit the humidity set value and set time for each steps. When the controller is in Program Run, Hold, or Stop mode, press the SET key to enter Programming mode. Please see figure 4 for details.

Parameter Setting Mode: Review and edit system parameters. When the controller is in Program Run, Hold, or Stop mode, hold the SET key for 2 seconds to enter the Parameter Setting mode. Please see figure 3 for details.

6. Parameter Setup

Please see Table 2 for a list of parameters and Figure 3 for the flow chart of how to set the parameters. Please note that parameters will remain unchanged unless you press set key to confirm the change.

Press and hold the SET key for 5s to enter the parameter settings. The top display shows the parameter name, and the bottom display shows the current value or option for this parameter. Use the up and down keys to adjust the value or option in bottom display. Once finished, press SET key momentarily to confirm and go to next parameter.

Table 2. List of Parameters.

Code		Description	Setting Range	Initial	Note
AH	*AH*	Deviation high alarm	0 ~ 99.9	20.0	1
AL	*AL*	Deviation low alarm	0 ~ 99.9	20.0	1
HY	*HY*	Humidity Control Hysteresis Band	0 ~ 99.9	1.0	2
HYd	*HY d*	Dehumidifier Hysteresis Band	0 ~ 99.9	5.0	3
HYH	*HY H*	Humidifier Hysteresis Band	0 ~ 99.9	5.0	4
oFS	*o FS*	Humidity Offset	-9.9 ~ 9.9	0	5
AS	*AS*	Anti-short Cycle Delay (only for dehumidifying)	M 0 ~ M 99 (0 ~ 99 min)	M 6	6
PrG	*Pr G*	Program Modes	on, off	ON	7
A-M	*A-m*	Power Outage/Startup Modes	S, M, C	S	8
SFA	*S FA*	Sensor Failure Operation	0-0, 0-1, 1-0	0-0	9
TIM	*tIm E*	Time unit	H, M	H	10
PSD	*PS d*	App access password	000 - 999	666	11

Note 1. AH, Deviation high alarm; AL, Deviation low alarm:
Assuming measured humidity is PV and set humidity is H. When PV - H is above AH, the built-in buzzer will turn on (deviation high alarm); when H – PV is above AL, the built-in buzzer will turn on (deviation low alarm). Users can mute the alarm by momentarily pressing the Mute key. The alarm will remain inactive until the process value moves out of the alarm zone. Both alarms are deviation alarms, i.e., if AH = 20%, AL = 30%; and the Set Humidity (H) is 50% RH, the alarm will be activated if the humidity is above 70% or below 20%. The alarm function is suppressed at powering up or when the program jumps from one step to another step. It will be activated automatically once the measured humidity enters the none-alarm zone (between H - AL and H + AH).

Note 2. Hy, Humidity Control Hysteresis Band, or Humidity Control Dead Band:
This parameter sets up a hysteresis band (dead band) within which either the humidifier or dehumidifier will not work (between H - Hy and H + Hy). The minimum value for Hy is 0.5. The Hy value should not be too small if the system has sluggish response. Otherwise, it may result in the humidifier and the dehumidifier working against each other, wasting energy and causing oscillation.

Note 3. Hyd, Dehumidifier Hysteresis Band:

This is the differential band between to turn on and turn off the dehumidifier. It is set to the higher side of the dehumidifier set point (H + Hy). The dehumidifier will turn on when humidity is above (H + HY + Hyd) and turn off when humidity is below (H + Hy). For compressor-based dehumidifier, the Hyd value should not be set too small to prevent frequent cycling.

Note 4. HyH, Humidifier Hysteresis Band:

This is the differential band between turn on and turn off the humidifier. It is set to the lower side of the humidifier set point (H - Hy). The humidifier will turn on when humidity is below (H - HY - HyH) and will turn off when humidity is above (H - Hy).

For example, if Set Humidity H = 50%, Hy = 5%, Hyd = 3%, HyH = 2%, then the humidifier will turn on when the process humidity is lower than 43% (H - Hy - HyH) and will turn off when process humidity is above 45% (H - Hy). The dehumidifier will turn on when process humidity is above 58% (H + Hy + Hyd) and turn off when process humidity drops below 55% (H + Hy).

Note 5. OFS, Humidity Offset:

OFS (Humidity Offset): OFS is used to compensate for the error produced by the sensor or input signal itself. For example, the unit displays 37% when the actual humidity is 32%. Setting parameter OFS = - 5 will make the controller display 32%. The displayed process humidity = actual measured humidity + OFS.

Note 6. AS, Anti-short Cycle Delay:

The Anti-short is the delay time to turn on the dehumidifier. If the dehumidifier is compressor based, the compressor should not be turned on immediately when it is at high pressure (just after turned off). Otherwise, it may shorten the life of compressor. The Anti-Short cycle delay function can be used to prevent the rapid cycling of the compressor. It establishes the minimum time that the compressor remains off (after reaching cutout) before turns on again. The delay overrides any controller demand and does not allow the compressor to turn on until the set time-delay value has elapsed. It gives time to release the refrigerant pressure through evaporator. It typically set to 4- 6 (minutes). The unit is in minutes. This setting is only valid for dehumidifying control.

Note 7. PrG, Program Mode:

When PrG is set to "ON", users can program up to 8 steps (Section 5). When PrG is set to "OFF", this controller is in single step mode (multi-step function is disabled). In single step mode, users can only set "H-1" set point and the controller will regulate the humidity at "H-1" set point forever. No step timer nor other step set points can be set in single step mode. Please be aware that if your controller is in single step mode, the green "RUN" indicator will be off at all time. The start, pause, and STEP keys are disabled. You can check the dehumidifier indicator (red on the left) and humidifier indicator (green on the right) for the socket output status. When the light is on, the corresponding socket will be activated.

Tip: After you change PrG parameter, please reboot your controller so new setting will be activated (remove the power input cord of this controller then plug it back).

Note 8. A-M, Power Outage/Startup Mode:

This parameter determines what the controller should do in an event of power interrupt or outage. It also decides how the controller starts the program while powered up. A-M can be set to three modes: C, S and M.

Mode C. After being powered on, the controller will continue the program from the where it was powered off. For example, if step 3 is set for 40% and 5 hours, the power was interrupted at 2.1 hours. When the controller powers up, the controller will continue to control at 40% for 2.9 hr.

Mode S. The controller will run the program from step 1 every time the controller is powered up. This is suitable for situations where the power never fails or when the program mode "PrG" is set to "off".

Mode M. The program will be held at the step at which the controller was powered off. The controller will hold the humidity at the set value. The controller lower display will flash "hold" and process humidity alternatively. This mode is suitable for situations where the operator's attention is needed after power interruption occurs.

Note 9. SFA, Sensor Failure Operation:

The SFA defines how the output would be if the sensor fails. It can be set to 0-0, 0-1 or 1-0. Please refer to Table 3 for details. For example, in some applications, you may want the dehumidifier to be ON and humidifier to be OFF when sensor fails. Hence you need to set SFA to "1-0".

Table 3. Output of the controller when sensor fails.

SFA	Controller output when sensor fails
0-0	dehumidifier off, humidifier off
1-0	dehumidifier on, humidifier off
0-1	dehumidifier off, humidifier on

Note 10. TIM, Time unit setting:

The Time defines the timer unit setting for its timer function. It can be set to hour (H) or minute (M). By default, Time is set to H.

Note 11. PSD, App access code (for WIFI model only):

To prevent the operator from changing the settings by accident over the AuberWIFI App, this access code is required. The default value is 666.
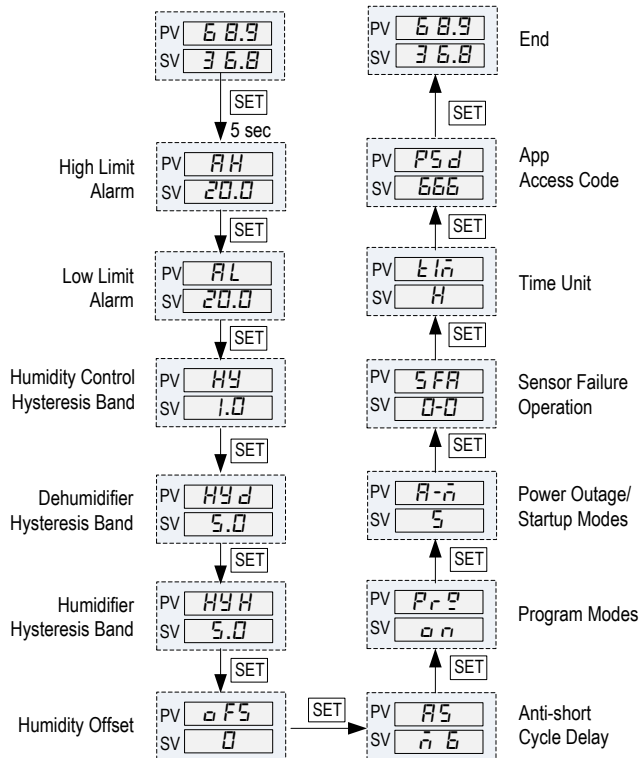
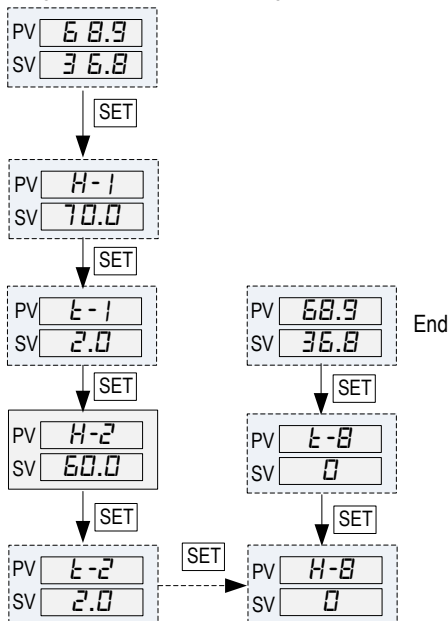Figure 3. Flow chart of setting up parameters.

Figure 4. Flow chart of setting up control program.

A total of 8 steps can be programmed in this controller. Each step contains the humidity set point (H-X) and time duration (t-X), where "X" is the step number (e.g. step 4 humidity is represented by H-4, and step 4 time is represented by t-4). Once time is up, this controller will jump to next step. The time unit can be set to hour or minute.

To program the humidity profile, briefly press the SET key momentarily. The top display will show "H-1" and the bottom display will show the humidity set value for "H-1". Use the ▲ or ▼ keys to adjust the bottom display to the desired value. Then press the SET key again to save the changes and go to next parameter. Then the top display will show "t-1" and the bottom display will

show the preset time for step 1. Use the ▲ or ▼ keys to adjust the bottom display to the desired value. Then press SET key again to save the changes and proceed to next parameter. Repeat operations above until you finish programming all necessary steps. You can set the time for rest of the steps to zero so that the controller will skip these steps.

Note: The set value will not be saved unless SET is pressed. The controller will return to the normal operating mode automatically if it is left alone for 10 seconds.

7. Check the Status
Step Running Time: This indicates how much time has passed since the beginning of the current step. You can check the Step Running Time while the controller is in the Program Run Mode by:
1) Short press the STEP key so the display window will show the current step number "P - X".
2) Wait about 1 second for the step running time to appear in the display window.
3) Press STEP key again to check the Total Power-on Time (see below) or not touching any key for 10 seconds so the display window will show the humidity reading again.
Total Power-on Time: Total Power-on Time shows how much time has passed since the controller is powered on. You can check the Total Power-on Time in Program Run, Hold, or Stop Mode:
1) Short press the STEP key twice, you can see "tol" shown in the display window shortly, and then the Total Power-on Time will be shown.
2) Press STEP again to return to humidity reading.
Once the whole program is finished, the display will show "End" and buzzer will be ON. Press the start key once to restart the program.

8. Program Jump
This controller allows users to skip parts of the program by jumping to a specific program step. For example, the controller has run 3 minutes in its 2nd step. If the user wants to skip the rest of the 2nd step and the entire 4th step, then the user can jump to step 4.

To jump to a specified step:
1) Put the controller in either Program Hold or Stop Mode.
2) Press STEP key so the controller will flash "J-X", where "J" indicates this operation is for jumping to a step ("X" is the step number). Use the UP or DOWN arrow keys to change step number, then press START key to confirm and jump. The display window will show J ñ P ("JUMP") briefly to confirm that jump is accomplished. Then controller will execute that step, the RUN indicator will be lit (multi-step mode), and the display window should show humidity reading as normal.

9. Alarm Buzzer
The controller has a built-in buzzer. Under the following situations, the alarm buzzer will be triggered:
1) When the humidity alarm is triggered, the buzzer will keep on beeping until the MUTE key is pressed.
2) When a program step (other than the 8th step) is finished, the buzzer will beep twice.
3) When the entire program is finished (the 8th step), the buzzer will keep on beeping until the MUTE key is pressed.
When the alarm buzzer is beeping, you can press MUTE key to mute the alarm.

10. Quick Operation Guide

- If you see "Err" message in the display window, check the sensor and sensor cable connection.
- To run the program: if the controller is in Hold or Stop mode, press the START key. The RUN indicator should be lit up.
- To hold the program: when the program is running (RUN indicator on), short press the PAUSE key to put the program on hold.
- To stop the program: put the program to Hold mode, then long press the STOP key for 4 seconds until you see "Stop" in the display window.
- To set up program steps: press the SET key.
- To set up system parameters: long press the SET key for 2 seconds.
- To mute the alarm: press the MUTE key.
- To check the current step number and the step running time: in the Program Run Mode, press the STEP key once, the display will show "P-X", where X is the current step number, then the display window will show the elapsed time in the current step.
- To check the total time since the controller is powered up: in the Program Run Mode, press the STEP key twice. The display window will show "toL" and will display the total time since controller is powered up.
- To start from a specific step (or jump to a specific step): when the program is on hold or stopped, press the STEP key once, and it will show "J-X"(where X is the current step number). Use the UP or DOWN keys to change the step number to the desired value, then press the START key to confirm. The display will show ﹁ɼ ₱ ("JUMP") for a second and then the controller will start executing the specified program step.

**11. Connect the Sensor to the Controller**

The connector of sensor contains a slot for fitting pin connection. It also has a spring lock to prevent disconnections from accidental pulling on the cable.

To install the sensor to the controller: 1) Identify the key on the male sensor connector (Figure 5, a) and the notch on the female connector (Figure 5, b). 2) Hold the tail of the female connector, align the notch and the key, and push the female connector forward.
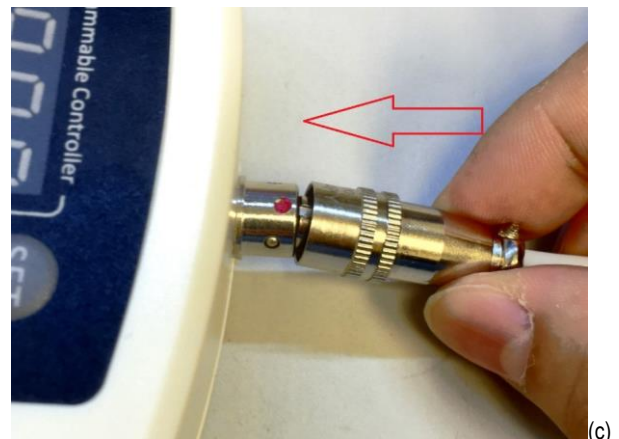
To remove the connector, hold the spring loaded collar on the female connector and pull it back. Please see Figure 6.

(a)
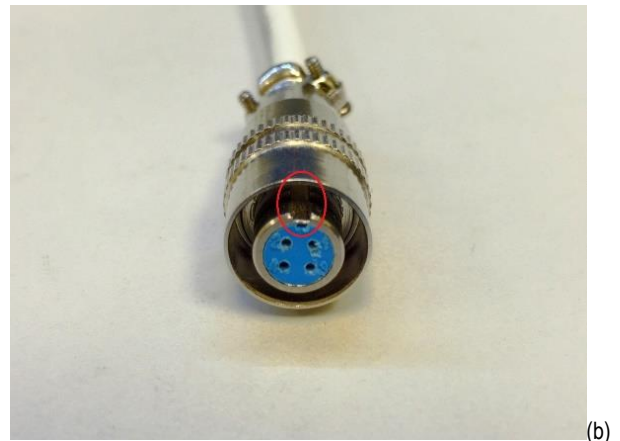
(b)

(c)

Figure 5. Install the sensor.

Figure 6. Remove the sensor.

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