AprilAire
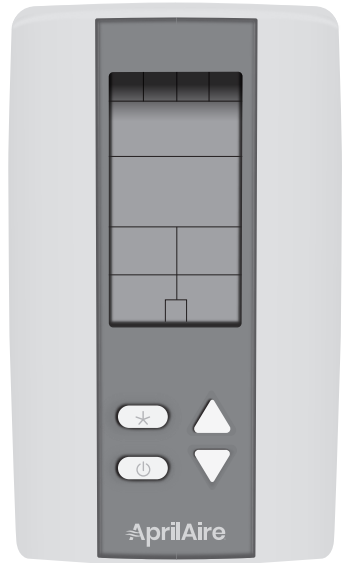
Humidifier

Model 63 & 5558

Automatic Digital Modulating
Control (ADMC)

⚠ WARNING

RISK OF ELECTRICAL SHOCK: Disconnect power to steam humidifier before opening electrical access panel for humidistat installation.

⚠ CAUTION

RISK OF DAMAGE: Do not apply 120VAC to humidistat, humidistat is powered by 24VAC. Disconnect power to humidistat prior to separating humidistat from its base.

EXCESS HUMIDITY: Do not set humidity higher than recommended. Condensation may cause damage to structure and furnishings.
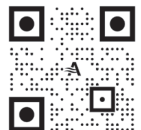

Product Info &
Digital Manual

READ AND SAVE THESE INSTRUCTIONS

TABLE OF CONTENTS

MATERIALS LIST

MODEL 63

- Automatic Digital Modulating Control
- Duct Sensor
- Outdoor Temperature Sensor
- Blower Activation Relay

MODEL 5558

- Automatic Digital Modulating Humidistat
- Outdoor Temperature Sensor

PRINCIPLES OF OPERATION

The AprilAire® Automatic Digital Modulating Control (ADMC) is designed to be mounted on a wall in the living space. The ADMC provides precise humidity control by providing a variable output to the humidifier based on the difference between the user set point and the sensed humidity. See **FIGURE 1**. The proportional band default setting is 5% RH and can be varied from 2% to 10% RH in increments of 0.5%. Adjust the proportional band based on the humidity control needs of the living space.

FIGURE 1 – HUMIDIFIER OUTPUT FOR ADMC SIGNAL

90-2008
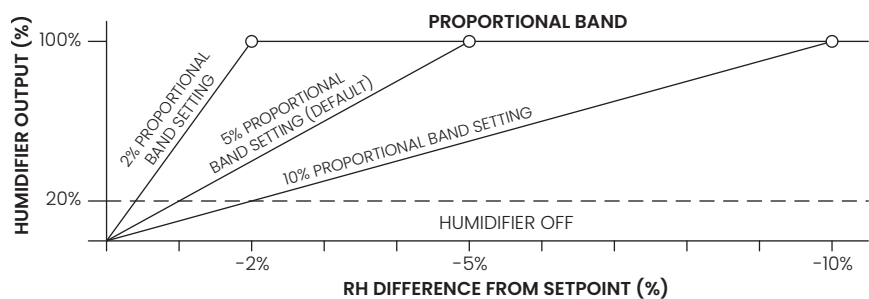
DUCT SENSOR (MODEL 801 ONLY)

The AprilAire ADMC package comes with a duct sensor that can be installed in the return duct to be used as the control sensor or installed in either the return or supply duct to be used as a high limit duct humidity sensor. If duct sensor is used as a high limit sensor, it must be installed at least 4 feet downstream of the steam dispersion tube. See the **SET UP** section for configuration details.

TEMPERATURE COMPENSATION

The automatic mode is the preferred method of installation to help prevent condensation on windows. When installed in this mode, the ADMC utilizes an Outdoor Temperature Sensor to measure outdoor temperature. The ADMC then automatically adjust the desired indoor RH. See **TABLE 1** for temperature and RH values.

TABLE 1 – ADMC MAXIMUM SET POINT FOR OUTDOOR TEMPERATURE	
Outdoor Temperature °F (°C)	Maximum Setpoint (%RH)
20 (−7)	35%
10 (−12)	30%
0 (−18)	25%
−10 (−23)	20%
−20 (−29)	15%

When an Outdoor Temperature Sensor cannot be installed or the application requires a specific RH set point, the ADMC can be configured to manual mode. In this configuration, the humidifier and control will maintain a constant RH, regardless of outdoor temperature.

NOTE: If the building is not designed to handle the amount of RH the humidifier is supplying, the occupants may need to adjust the RH setting on the ADMC to a lower value during extremely cold days to prevent condensation on interior surfaces.

BLOWER ACTIVATION (MODEL 801 ONLY)

The AprilAire Blower Activation Relay is provided with ADMC to energize the HVAC system blower when there is a call for humidity. See **FIGURE 4** on page 8 for wiring to the ADMC and HVAC system.

INSTALLATION

DETERMINE LOCATION FOR CONTROL

The ADMC should be mounted on an interior wall in the area the homeowner wants to monitor and control moisture levels. Mount approximately 5 feet off the floor and at least 18" from an outside wall. See **FIGURE 2**.

DO NOT MOUNT ADMC

• In the flow of a supply register

• Behind doors, in corners or other dead air spaces

• In direct sunlight, near lighting fixtures, or other appliances that give off heat.

• On an outside or unconditioned area wall

• In stairwells or near outside doors

• On a wall with concealed pipes or ductwork

FIGURE 2 – MOUNTING LOCATION
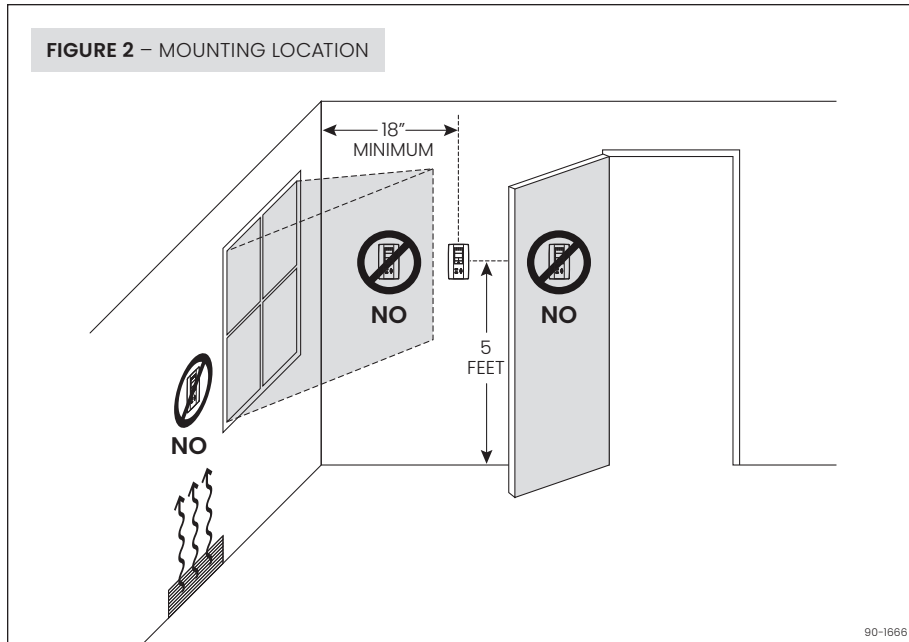
90-1666

⚠ CAUTION

RISK OF DAMAGE: Disconnect power to humidistat prior to separating humidistat from its base.

1. Loosen the bottom screw holding the front cover to the base.

2. Lift the front cover of the humidistat to separate it from the base.

3. Pull wires through the base hole.

4. Secure the base to the wall using wall anchors and screws (provided).

5. Wire the control. See **WIRING DIAGRAMS** section.

6. Install the humidistat to the base and tighten the bottom screw.

DETERMINE LOCATION FOR DUCT SENSOR (MODEL 801 ONLY)

When using the duct sensor to control space humidity, mount it in the main return duct at least 6" upstream of fresh air intake ducts and 12" upstream of the steam humidifier dispersion tube. The wall mount ADMC sensor is disabled and can be mounted anywhere.

When using the duct sensor as a high limit sensor, mount in the supply duct at least 4 feet downstream of the steam humidifier dispersion tube. The ADMC must be located in the living space. See **DETERMINE LOCATION FOR CONTROL** section.

Drill a 7/8" hole in the duct and mount with sheet metal screws included.

The location of the Outdoor Temperature Sensor must meet the following requirements (see **FIGURE 3**):

1. Must be mounted out of direct sunlight on the North, East or West side of the house.

2. Must be at least 3 feet from all exhaust vents.

3. Must be above the expected snow line.

FIGURE 3 – OUTDOOR TEMPERATURE SENSOR LOCATION
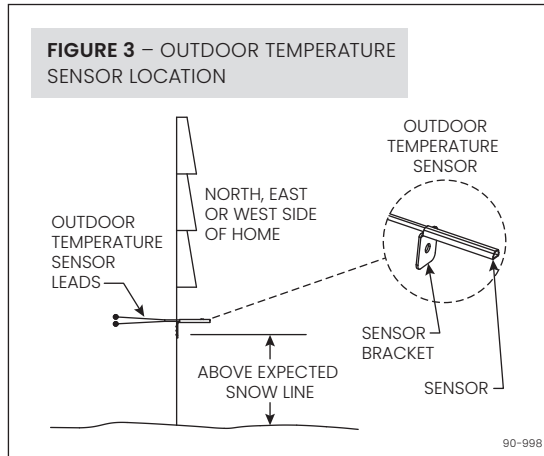
A convenient way to route the sensor wire outside is to make used of unused wires running to the A/C condensing unit (if applicable). Other ways are to use existing holes for Cable TV lines, telephone lines, AC line, etc.

NOTICE

ELECTRICAL INTERFERENCE CAN CAUSE OUTDOOR TEMPERATURE SENSOR INACCURACY.

• Do not run Outdoor Temperature Sensor alongside wires carrying high voltage (120VAC or higher).

• Do not run Outdoor Temperature Sensor wire lengths greater than 100 feet.

Run wire from the humidistat to the Outdoor Temperature Sensor. Secure the sensor bracket with a #8 screw.

WIRING DIAGRAMS

TERMINAL DESCRIPTIONS

1	Common
2	24VAC
3	Window temperature sensor or outside temperature sensor input (AI3)
6	Not Used
7	Relay Common
8	Humidify dry or powered contact (see **JUMPER SETTINGS**)
9	Dehumidify dry contact (NOT USED)
10	Humidify set point analog output (NOT USED)
11	Alarm status digital input (NOT USED)
12	External humidity sensor
13	Outdoor temperature sensor
14	Humidify analog output (see **STEP 6**)
15	Dehumidify analog output (NOT USED)
16	Actual humidity output (NOT USED)

JUMPER SETTINGS
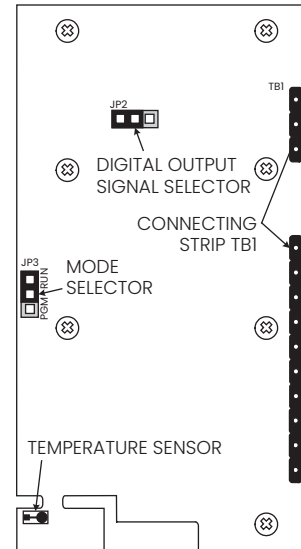
Humidistat Back

DIGITAL OUTPUT SIGNAL SELECTION (JP2)

	Jumper (JP2) on left: 24VAC powered contacts when wiring Terminals 1 and 8.		**Jumper (JP2) on right:** 24VAC dry contact when wiring terminals 7 and 8.

MODE SELECTION (JP3)

	Jumper (JP3) on RUN: Humidistat is in Operation Mode. Humidistat set point is adjustable.		**Jumper (JP3) on PGM:** Humidistat is set in **Program Mode.** Refer to the set up section for instructions. **Humidistat will not operate in this mode.**

FIGURE 4 – ADMC WITH MODEL 801

REMOVE

THERMOSTAT

Y
G
W
C
R

FURNACE

Y
G
W
C
R

BLOWER ACTIVATION RELAY

4851

YLW (C)

WHT / BLU

ORG (NO)

BLU (NC)

WHT / YLW

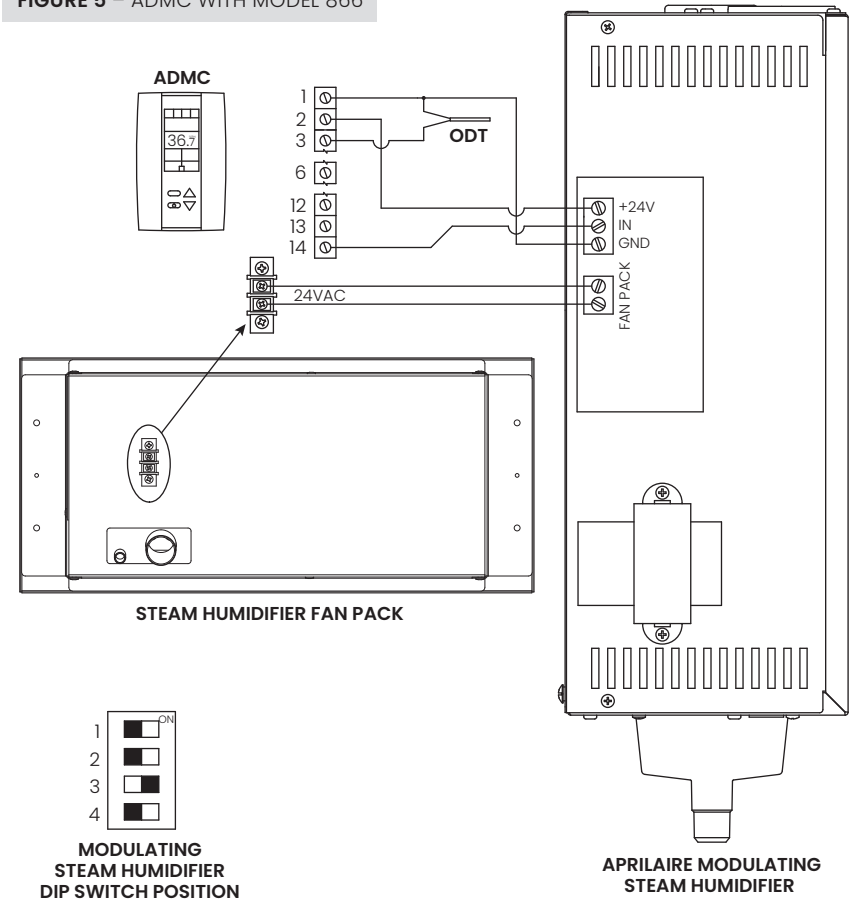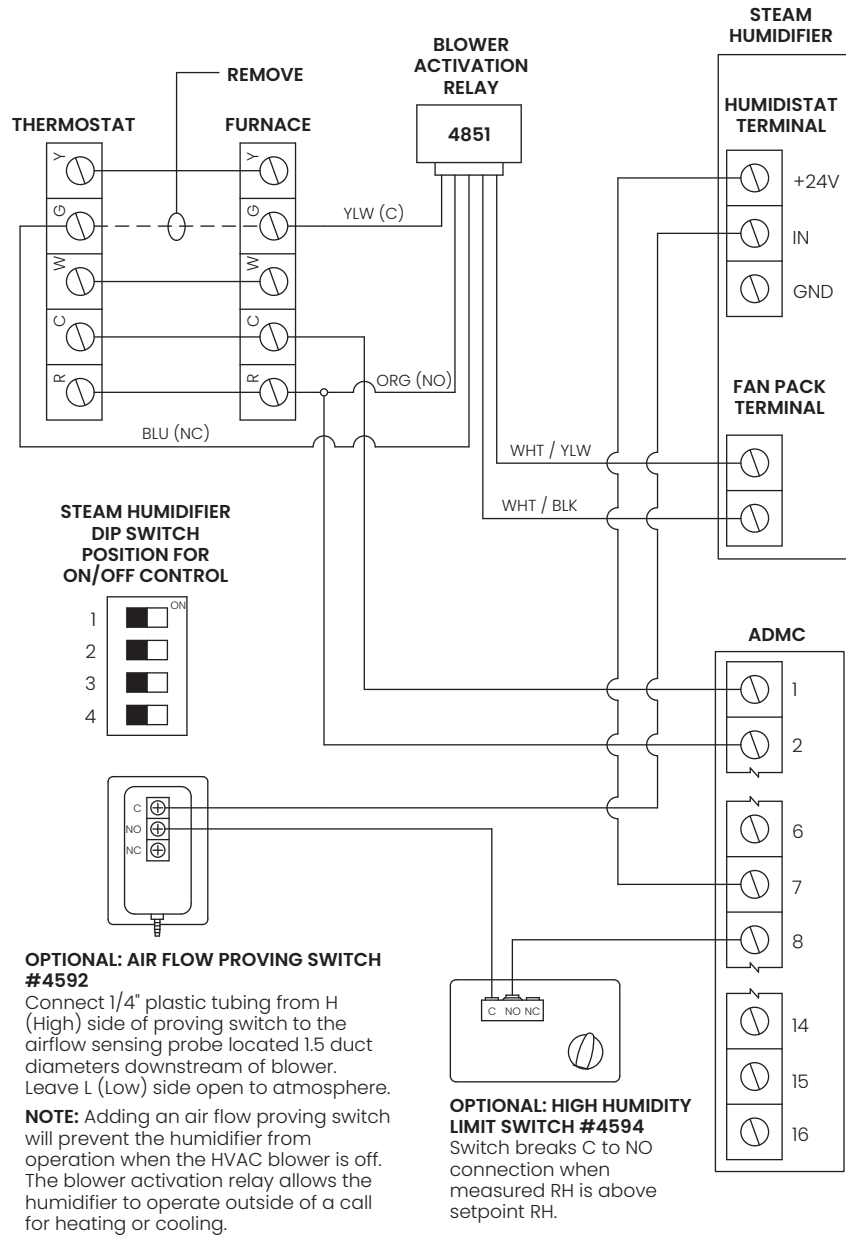**801 HUMIDISTAT TERMINAL**

24
IN
GND

FAN PACK

ADMC

1
2
3
7
8
12
13
14

ODT

(OPTIONAL) DUCT SENSOR

1
2
3
4

C
NO
NC

OPTIONAL: AIR FLOW PROVING SWITCH #4592
Connect 1/4" plastic tubing from H (High) side of proving switch to the airflow sensing probe located 1.5 duct diameters downstream of blower. Leave L (Low) side open to atmosphere.

MODULATING STEAM HUMIDIFIER DIP SWITCH POSITION

ON
1
2
3
4

NOTE: Place ADMC jumper J2 in the left position (powered). See **JUMPER SETTINGS** on page 7.

C NO NC

OPTIONAL: HIGH HUMIDITY LIMIT SWITCH #4594
Switch breaks C to NO connection when measured RH is above setpoint RH.

90-1992

FIGURE 5 – ADMC WITH MODEL 866

ADMC

36.7

1
2
3
6
12
13
14

ODT

+24V
IN
GND

FAN PACK

24VAC

STEAM HUMIDIFIER FAN PACK

MODULATING STEAM HUMIDIFIER DIP SWITCH POSITION

ON
1
2
3
4

APRILAIRE MODULATING STEAM HUMIDIFIER

WIRE – 18 AWG ACCEPTABLE FOR 24VAC APPLICATION.

90-1995

FIGURE 6 – ADMC WITH 800/801 NON-MODULATING (ON/OFF)

STEAM HUMIDIFIER

BLOWER ACTIVATION RELAY
4851

THERMOSTAT

FURNACE

REMOVE

YLW (C)

ORG (NO)

BLU (NC)

HUMIDISTAT TERMINAL
+24V
IN
GND

FAN PACK TERMINAL
WHT / YLW
WHT / BLK

ADMC
1
2
6
7
8
14
15
16

STEAM HUMIDIFIER DIP SWITCH POSITION FOR ON/OFF CONTROL
1 ON
2
3
4

OPTIONAL: AIR FLOW PROVING SWITCH #4592
Connect 1/4" plastic tubing from H (High) side of proving switch to the airflow sensing probe located 1.5 duct diameters downstream of blower. Leave L (Low) side open to atmosphere.

NOTE: Adding an air flow proving switch will prevent the humidifier from operation when the HVAC blower is off. The blower activation relay allows the humidifier to operate outside of a call for heating or cooling.

OPTIONAL: HIGH HUMIDITY LIMIT SWITCH #4594
Switch breaks C to NO connection when measured RH is above setpoint RH.

C NO NC

NOTE: Model 800 humidistat terminal only has two positions, +24V and IN. Place ADMC jumper J2 in the right position. See **JUMPER SETTINGS** on page 7.

90-1996

SET UP

INTERFACE

SYMBOLS ON DISPLAY

| Symbol	Description
	Humidification ON 33, 66, 100% output
	Dehumidification ON 33, 66, 100% output
%RH	Percentage of humidity
°C or °F	°C: Celsius scale °F: Fahrenheit scale
🔒	Menu set-up lock
🔧	Programming mode (technician setting)
⚠	Alarm status

⚠ CAUTION

RISK OF DAMAGE: Disconnect power to humidistat prior to separating humidistat from its base.

PROGRAM MODE

To enter program mode for ADMC set up, remove the humidistat from its base. On the ADMC back, place Jumper J3 in the PGM position then reinstall onto the base. The symbol 🔧 will be displayed. Press button ✱ to advance to the next program function, press buttons △ or ▽ to change value, press button ⏻ to return to preceding stage. Exit the programming mode at any time by placing Jumper J3 in the RUN position, settings will be saved. **JUMPER J3 MUST BE IN RUN MODE TO OPERATE.**

STEP 1 – Internal Humidity Sensor Offset Calibration

Display shows *INSIDE HUMIDTY SENSOR OFFSET* and the relative humidity percentage read by internal humidity sensor and the Humidify symbol is displayed. You can adjust the calibration of the sensor by comparing with a known humidistat.	**VALUES** **Range:** 10 to 90%RH (max. offset ± 5%) **Increment:** 0.1%RH 0.0%RH no humidity sensor (factory calibrated)

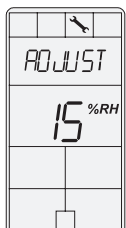## STEP 2 – Internal Temperature Sensor Calibration

Display shows *INSIDE TEMPER SENSOR OFFSET* and the temperature read by internal temperature sensor. You can adjust the calibration of the sensor by comparing with a known thermometer.	**VALUES** **Range:** 50 to 104°F [10 to 40°C] (max. offset ± 5°C) **Increment:** 0.2°F [0.1°C] (factory calibrated)

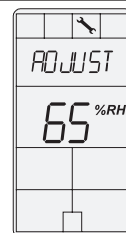## STEP 3 – Minimum Set Point

Display shows *ADJUST MINIMUM USER SETPNT* and the minimum humidity set point. Select the desired minimum humidity set point. The minimum set point is restricted by the maximum value. (**STEP 4**)	**VALUES** **Minimum range:** 10 to 90%RH **Increment:** 1%RH **Default setting:** 15%RH

STEP 4 – Maximum Set Point

Display shows *ADJUST MAXIMUM USER SETPNT* and the maximum humidity set point. Select the desired maximum humidity set point. The maximum set point is restricted by the minimum value. (**STEP 3**)	**VALUES** **Maximum range:** 10 to 90%RH **Increment:** 1%RH **Default setting:** 65%RH

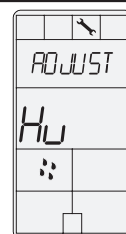## STEP 5 – Locking the Set Point

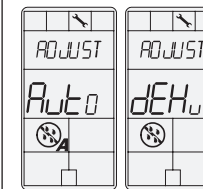|	
Display shows *USER SETPNT LOCKED* and the status of the function. The set point adjustment can be locked or unlocked. If locked, **YES** and lock symbol will appear, and set point adjustment will not be allowed in the operating mode.	**VALUES** **Default setting:** Unlocked (NO)

STEP 6 – Adjust the Control Mode

Display shows *ADJUST CONTROL MODE*. Humidify or dehumidify symbols are also displayed. Select which control mode you want to authorize: Automatic humidify and dehumidify (**Auto**), humidify only (**Hu**) or dehumidify only (**dEHu**). **If you have selected dehumidify only, go directly to STEP 8.**	**VALUES** **Default setting:** humidify only

STEP 7 – Adjust Humidify Set Point
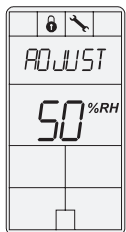
Display shows *ADJUST HUMIDTY SETPNT* and the humidity set point. You can change the humidity set point to the desired value; it should be within the humidity range set in **STEPS 3** and **4**. Lock symbol will appear if the set point was locked at **STEP 5**. Set point value is restricted by the minimum and maximum value. (**STEPS 3** and **4**) **If you have selected humidify only at STEP 6, go directly to STEP 9.**	**VALUES** **Set point range:** 10 to 90%RH **Increment:** 1%RH **Default setting:** 40%RH

STEP 8 – Adjust Dehumidify Set Point

Display shows `ADJUST DEHUMI SETPNT` and the dehumidify set point.

You can change the dehumidify set point to the desired value; it should be within the humidity range.

Lock symbol will appear if the set point was locked at **STEP 5**.

Set point value is restricted by the minimum and maximum value. (**STEP 3** and **4**)

VALUES

Set point range: 10 to 90%RH

Increment: 1%RH

Default setting: 50%RH

STEP 9 – Set On/Off Function Enable or Disable

Display shows `ENABLE ON OFF CONTROL MODE`.

You can enable or disable the humidistat On/Off function in the operation mode. If Enable (YES), the humidistat can be turned On/Off in operation mode. If Enable (NO), the humidistat cannot be turned OFF in the operation mode.

If you have selected dehumidify only at STEP 6, go directly to STEP 11.

VALUES

Default setting: Enable (YES)

STEP 10 – Humidify Proportional Band
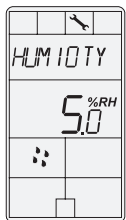
Display shows `HUMIDTY CONTROL RAMP` and the value of the humidification proportional band and the Humidify symbol is displayed.

Select the desired proportional band.

If you have selected humidify only at STEP 6, go directly to STEP 12.

VALUES

Proportional band: 2 to 10%RH

Increment: 0.5%RH

Default setting: 5.0%RH

STEP 11 – Dehumidify Proportional Band

Display shows `DEHUMI CONTROL RAMP` and the value of dehumidification proportional band and the Dehumidify symbol is displayed.

Select the desired span for the dehumidify ramp.

VALUES

Proportional band: 2 to 10%RH

Increment: 0.5%RH

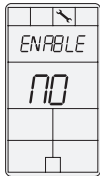**Default setting:** 5.0%RH

STEP 12 – Control Dead Band

Display shows `CONTROL DEAD BAND` and its value. Humidify/dehumidify symbols are also displayed since this value applies to both.

Please select the desired dead band value.

If you have selected dehumidify only at STEP 6, go directly to STEP 14.

VALUES

Dead band range: 0.3 to 5.0%RH

**Increment:** 0.1%RH

Default setting: 0.3%RH

STEP 13 – Humidity Integral Time

Display shows `HUMIDTY INTGRAL TIME` and humidity integral time value. Humidify symbol is also displayed.

Appears only if **Auto** or **Hu** are selected at **STEP 6** "Adjust Control Mode." Set the integral time for the humidity ramp. The integral control cumulates a factor of the difference between the set point and the actual reading in order to give an additional push to the ramp.

VALUES

Range: 0 to 60 minutes

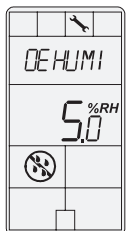**Increment:** 1 minute

Default setting: 0 minutes

STEP 14 – Humidity Derivative Time

Display shows `HUMIDTY DERIVAT TIME` and its value.

Display shows only if **Auto** or **Hu** are selected at **STEP 6** "Adjust Control Mode."

Humidify symbol is displayed.

Set the derivative time for the humidity ramp. Many, if not most, control applications run with just P and I control. The derivative control adds a factor to time scale in order to dampen or try to predict the control effort. As it approaches the set point, it settles with a minimum of overshoot.

VALUES

Derivative Time range: 0.0 to 300.0 seconds

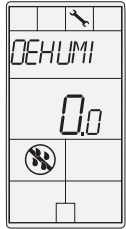**Increment:** 0.5 seconds

Default setting: 0 seconds

STEP 15 – Dehumidity Integral Time

Display shows `DEHUMI INTGRAL TIME` and its value.

Display shows if **Auto** or **dEHu** are selected at **STEP 6** "Adjust Control Mode."

Dehumidify symbol is also displayed.

Set the integral time for the dehumidify ramp. The integral control cumulates a factor of the difference between the set point and the actual reading to give an additional push to the ramp.

VALUES

Integral Time range: 0 to 60 minutes

Increment: 1 minute

Default setting: 0 minutes

STEP 16 – Dehumidity Derivative Time

Display shows DEHUMI DERIVAT TIME and its value.

Display shows if **Auto** or **dEHu** are selected at **STEP 6** "Adjust Control Mode."

Dehumidify symbol is displayed.

Set the derivative time for the dehumidify ramp. Many control applications can run with just P and I control. The derivative control adds a factor to time scale in order to brake or dampen the control effort.

VALUES

Derivative Time range: 0.0 to 300.0 seconds

Increment: 0.5 seconds

Default setting: 0 seconds

STEP 17 – Humidity Dehumidity Locked Time

Display shows HUMIDTY DEHUMI LOCKED TIME and its value.

Display shows if **Auto** is selected at **STEP 6** "Adjust Control Mode."

Represents a delay before switching from one mode to the other. For example, if set to 2 minutes and the system is currently humidifying, the system will only switch to dehumidification if the demand for dehumidification is active for 2 consecutive minutes.

VALUES

Locked Time range: 0 to 120 minutes

Increment: 1 minute

Default setting: 0 minutes

STEP 18 – Minimum Voltage of Humidify Modulating Output

Do not change setting for AprilAire Model 801 Modulating Steam Humidifier.

Display shows MIN VDC ANALOG AO1 OUTPUT and the value of the minimum voltage of the signal **0.0** for 0 to 10 VDC or **2.0** for 2 to 10 VDC. Humidify symbol is also displayed.

If you have selected humidify only at STEP 6, go directly to STEP 15.

VALUES

Range: 0.0 or 2.0 Volt

Default setting: 0.0 Volt

STEP 19 – Minimum Voltage of Dehumidify Modulating Output

Do not change setting for AprilAire Model 801 Modulating Steam Humidifier.

Display shows MIN VDC ANALOG AO2 OUTPUT and the value of the minimum voltage of the signal **0.0** for 0 to 10 VDC or **2.0** for 2 to 10 VDC. Dehumidify symbol is also displayed.

Select the desired value of the minimum voltage of AO2 output.

VALUES

Range: 0.0 or 2.0 Volt

Default setting: 0.0 Volt

STEP 20 – Minimum Voltage of AO3 Output

Do not change setting for AprilAire Model 801 Modulating Steam Humidifier.

Display shows MIN VDC ANALOG AO3 OUTPUT and the value of the minimum voltage of the signal **0.0** for 0 to 10 VDC or **2.0** for 2 to 10 VDC. Humidify symbol is also displayed.

Select the desired value of the minimum voltage of AO3 output.

If you have selected dehumidify only at STEP 6, go directly to STEP 17.

VALUES

Range: 0.0 or 2.0 Volt

Default setting: 0.0 Volt

STEP 21 – Minimum Voltage of AO4 Output

Do not change setting for AprilAire Model 801 Modulating Steam Humidifier.

Display shows MIN VDC ANALOG AO4 OUTPUT and the value of the minimum voltage of the signal **0.0** for 0 to 10 VDC or **2.0** for 2 to 10 VDC. Humidify symbol is also displayed.

Select the desired value of the minimum voltage of AO4 output.

VALUES

Range: 0.0 or 2.0 Volt

Default setting: 0.0 Volt

STEP 22 – Set AI1 (Duct Sensor) Input Signal

Display shows SELECT AI1 INPUT SIGNAL. Use when installing the duct humidity sensor.

If duct sensor is not installed select the default setting, **OFF**.

To configure the duct sensor as the primary control sensor (installed in the return duct) select **EHS.0**.

If you have selected OFF, go directly to STEP 20.

VALUES

Default setting: OFF

STEP 23 – External Humidity Sensor Offset Calibration

(If **EHS.0**, **EHS.2**, **HIL.0** or **HIL.2** has been selected at **STEP 17**.)

Display shows EXTERN HUMIDTY SENSOR OFFSET and relative humidity percentage read by duct humidity sensor. Humidify symbol is also displayed.

If the sensor is not connected or short circuited, the display shows **Error**.

You can adjust the calibration of the sensor by comparison with a known humidistat.

VALUES

Range: 10 to 90%RH (max. offset ± 5%)

Increment: 0.1%RH

0.0%RH = no humidity sensor
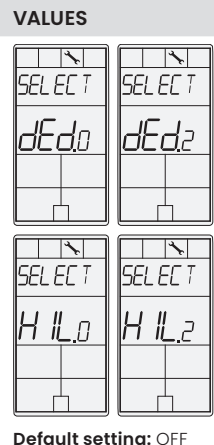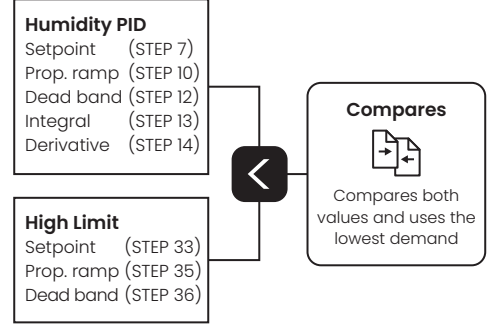
STEP 24 – External Humidity Sensor 1 Offset

Display shows *EXTERN HUMIDTY SENSOR 1 OFFSET* and its value.

This option appears if you have selected **EHS.0** or **EHS.2** at **STEP 22**.

If the sensor is disconnected or short circuited, **OFF**, **---**, and the alarm symbol are displayed. Humidify symbol is also displayed.

When the humidistat is connected to analog input (AI1), the display shows the relative humidity percentage read by the external humidity sensor. Adjust the offset by comparing it with a known value humidistat.

VALUES

Range: 10 to 90%RH (max. offset ± 5%)

Increment: 0.1%RH

STEP 25 – Select AI2 (Temperature Sensor) Input Signal

Display shows *SELECT AI2 INPUT SIGNAL*.

Select the input signal type for **AI2** (analog input 2).

If selected options for **AI1** and **AI2** are similar or conflicting, the **AI2** option takes precedence.

- **dEd.0** (0-10VDC) or **dEd.2** (2-10VDC) = **External Demand signal**.
- **HIL.0** (0-10VDC) or **HIL.2** (2-10VDC) = **High limit**. If selected, the controller compares the demand of the room humidity PID loop with the duct/high limit PID loop and applies the lower of the two.

Humidity PID
Setpoint   (STEP 7)
Prop. ramp (STEP 10)
Dead band (STEP 12)
Integral   (STEP 13)
Derivative   (STEP 14)

High Limit
Setpoint   (STEP 33)
Prop. ramp (STEP 35)
Dead band (STEP 36)

Compares
Compares both values and uses the lowest demand

VALUES

Default setting: OFF

STEP 26 – External Humidity Sensor 2 Offset

Display shows *EXTERN HUMIDTY SENSOR 2 OFFSET* and its value.

Shows display if **AEr.0**, **AEr.2**, **HIL.0**, **HIL.2**, **dUC.0**, or **dUC.2** are selected at **STEP 25**.

If the sensor is disconnected or short circuited, then **OFF**, **---**, and the alarm symbol are displayed. The humidify symbol is also displayed.

When the humidistat is connected to analog input (AI2), the display shows the relative humidity percentage read by the external humidity sensor. Adjust the offset by comparing it with a known value humidistat.

VALUES

**Range:** 10 to 90%RH (max. offset ± 5%)

Increment: 0.1%RH

STEP 27 – Humidity High Filter Time

Display shows *HUMIDTY HIGH FILTER TIME* and the time value.

Shows display if **EHS.0** or **EHS.2** is selected at **STEP 22** or if **HIL.0**, **HIL.2**, **dUC.0**, or **dUC.2** is selected at **STEP 25**.

VALUES

Time range:
0 to 32 seconds

Increment: 1 second
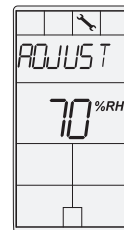
Default setting:
8 seconds

STEP 28 – Adjust Duct Supply Zero (not used with AprilAire)
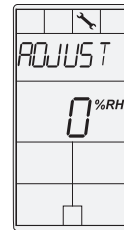
Display shows *ADJUST DUCT SUPPLY ZERO* and humidity set point.

Appears only if **dUC.0** or **dUC.2** is selected at **STEP 25**.

A demand of 0% is converted to a minimum set point value. For example, if you set this value to 10% and the demand received is 5%, the controller will convert the demand to a set point of 14%.

VALUES

Humidity range:
0 to span (**STEP 27**) %RH

Increment: 1% RH

Default setting: 0% RH

STEP 29 – Adjust Duct Supply Span (not used with AprilAire)

Display shows *ADJUST DUCT SUPPLY SPAN* and humidity value.

Appears only if **dUC.0** or **dUC.2** is selected at **STEP 25**.

Represents a span conversion, where a demand of 100% is converted to a maximum set point value. For example, if you set this value to 70% and the demand received is 80%, the controller will convert the demand to a set point of 70%.

VALUES

Humidity range:
Duct supply zero (**STEP 26**) to 90% RH

Increment: 1% RH

Default setting: 70% RH

STEP 30 – Adjust Duct Supply Ramp Humidity (not used with AprilAire)

Display shows ADJUST DUCT SUPPLY RAMP HUMIDTY and humidification proportion value. Humidify symbol is also displayed.

Appears only if **dUC.0** or **dUC.2** is selected at **STEP 25**.

Select the desired proportional ramp for the duct supply humidity. Proportional control sets proportion to distance from set point. The closer to set point, the less it pushes. A demand of 100% is applied at the beginning of the ramp. For example, with a set point of 40% and a ramp of 5%, the controller will apply a demand of 100% at 35% RH.

VALUES

Humidity range:
2 to 10% RH (recommended).
For special applications, the controller can go to a maximum range of 300%.

Increment: 0.5% RH

Default setting:
5.0% RH

STEP 31 – Duct Supply Dead Band (not used with AprilAire)

Display shows DUCT SUPPLY DEAD BAND and humidification dead band value. Humidify symbol is also displayed.

Appears only if **dUC.0** or **dUC.2** is selected at **STEP 25**.

Select the desired dead band value for the duct supply humidity ramp. The dead band is the interval of the signal band where no action occurs to prevent repeated activation-deactivation cycles.

VALUES

Humidity range:
0.3 to 50% RH

Increment: 0.1% RH

Default setting:
0.3% RH

STEP 32 – Duct Supply Integral Time (not used with AprilAire)

Display shows DUCT SUPPLY INTGRAL TIME and its integral time value. Humidify symbol is also displayed.

Appears only if **dUC.0** or **dUC.2** is selected at **STEP 25**.

Set the integral time for the duct supply humidity ramp. The integral control cumulates a factor of the difference between the set point and the actual reading in order to give an additional push to the ramp.

VALUES

Time range:
0 to 60 minutes

Increment: 1 minute

Default setting:
0 minutes

STEP 33 – Duct Supply Derivative Time (not used with AprilAire)

Display shows DUCT SUPPLY DERIVAT TIME and the derivative time value. Humidify symbol is also displayed.

Appears only if **dUC.0** or **dUC.2** is selected at **STEP 25**.

Set the derivative time for the duct supply humidity ramp. Most control applications run well with just P and I control. The derivative control adds a factor to the time scale in order to brake or dampen the control effort. As it approaches the set point, it settles with minimum overshoot.
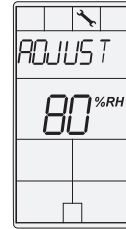
VALUES

Time range:
0.0 to 300.0 seconds

Increment:
0.5 seconds

Default setting:
0 seconds

STEP 34 – High Limit Humidity Set Point

Display shows ADJUST HIGH LIMIT SETPNT and its humidification set point value.

Appears only if **HIL.0**, **HIL.2**, **dUC.0**, or **dUC.2** is selected at **STEP 25**. Set the desired duct humidity setpoint within the defined range. If using the duct supply humidity ramp (**dUC.0** or **dUC.2**), the High Limit Setpoint must be higher than the Duct Supply Span at **STEP 27**.
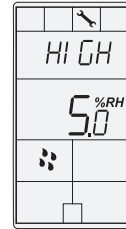
VALUES

Humidity range:
10 to 100% RH

Increment: 1% RH

Default setting:
80% RH

STEP 35 – Adjust High Limit Humidity Ramp

Display shows HIGH LIMIT RAMP and its humidification ramp value. Humidify symbol is also displayed.

Appears only if **HIL.0** or **HIL.2** is selected at **STEP 25**.

Select the desired proportional ramp for the high limit ramp. The control proportions how far you are from the set point. The closer you get to the set point, the less it pushes. A 100% demand is applied at the beginning of the ramp. For example with a set point of 40% and a ramp of 5%, the controller will apply a demand of 100% at 35% RH.
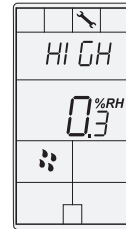
VALUES

Humidity range:
2 to 10% RH (recommended).
For special applications, the controller can go to a maximum range of 300%.

Increment: 0.5% RH

Default setting:
5.0% RH

STEP 36 – High Limit Dead Band

Display shows HIGH LIMIT DEAD BAND humidification dead band value. Humidify symbol is also displayed.

Appears only if **HIL.0** or **HIL.2** is selected at **STEP 25**.

Select the desired dead band value for the duct humidity ramp. The dead band is the interval of the signal band where no action occurs to prevent repeated activation-deactivation cycles.

VALUES

Humidity range:
0.3 to 50% RH

Increment: 0.1% RH

Default setting:
0.3% RH

STEP 37 – Average Inside Humidity Sensor (not used with AprilAire)

Display shows AVERAGE INSIDE HUMIDITY SENSOR and **YES** or **NO**.

This option only appears if **AEr.0** or **AEr.2** is selected at **STEP 22** and/or **25**.

If **YES**, the controller will average the internal sensor's reading in addition to the selected analog inputs (AI1 and/or AI2). **NO** disables averaging of the internal sensor's reading.

VALUES

Range: NO, YES

Default setting: NO

STEP 38 – Select LSS Mode (not used with AprilAire)

Display shows SELECT LSS MODE and **LSS** or **HuLs**.

This option only appears if **LSS.0** or **LSS.2** is selected at **STEP 22** and/or **25**.

If **HuLs** is selected (Humidity vs LSS input), the controller compares the internal demand in addition to the selected analog inputs (AI1 and/or AI2) to select the lowest level signal. Selecting **LSS** (LSS only) bypasses any verifications and conditions, such as High Limit to directly transfer the lowest signal to the output.

VALUES

Range: LSS, HuLs

**Default setting:** HuLs

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STEP 39 – Select A13 Input Signal

Display shows SELECT AI3 INPUT SIGNAL and **Ots**, **Uts**, or **OFF**.

Select the input signal type for the external temperature sensor input AI3 (analog input 3).

- If **OtS** (Outside Temperature Sensor) is selected, the controller will override the maximum set point value based on the outside temperature reading using the following conditions.
  - If outside temperature is less than -29.0°C (-20.2°F), maximum set point = 15%RH
  - If outside temperature is less than -23.0°C (-9.4°F), maximum set point = 20%RH
  - If outside temperature is less than -18.0°C (-0.4°F), maximum set point = 25%RH
  - If outside temperature is less than -12.0°C (10.4°F), maximum set point = 30%RH
  - If outside temperature is less than -7.0°C (19.4°F), maximum set point = 35%RH
  - At higher temperatures, the maximum set point = 100%RH
- If **UtS** (Window Temperature Sensor) is selected, the controller applies a compensation factor (**STEP 39**) based on the dew point to avoid condensation on the window. The temperature sensor should be installed on the coldest window in the room

VALUES

Default setting: OFF

STEP 40 – External Temperature Sensor Offset
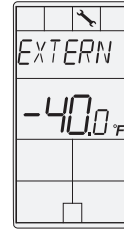
Display shows EXTERN TEMPER SENSOR OFFSET and the temperature value.

This option appears if you have selected **UtS** or **OtS** at **STEP 39**. The display shows the temperature read by the external temperature sensor. Adjust the offset by comparing it with a known value (e.g. thermometer). If the sensor is not connected or short circuited, the unit displays the sensor's limit.

VALUES

Temperature range: -22 to 194°F [-30 to 90°C] (max. offset ± 5°C)

Increment: 0.2°F [0.1°C]

Default setting: -40.0°F [-40.0°C]


STEP 41 – Window Temperature Sensor Compensation

Display shows WINDOW TEMPER SENSOR COMPENS and compensation value.

This option appears if you have selected **UtS** at **STEP 39**.

Adjust the compensation factor value to avoid condensation on the window.

Using a lower compensation value increases the dew point derating factor to ensure there is no condensation, but decreases the capacity to reach the humidity set point. Using a higher compensation value decreases the dew point derating factor to allow the control demand to approach the humidity set point while reducing the occurrence of condensation.

VALUES

Compensation factor range: 25 to 90

Increment: 5

Default setting: 80

OPERATING MODE

STEP A
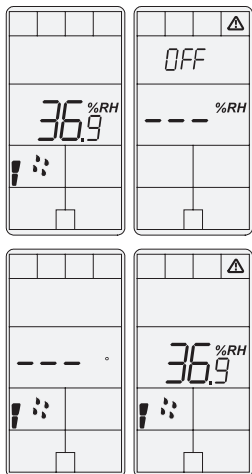
At powering up, ADMC will light display and activate all LCD segments for 2 seconds.

ILLUMINATING THE LCD

To illuminate the LCD, push any of the 4 buttons. LCD will light for 4 seconds.

HUMIDITY DISPLAY

In operation mode, ADMC will automatically display the humidity reading.

If **OFF**, **−−−** and alarm symbol are displayed, the humidity sensor is not connected or is short circuited.

TEMPERATURE DISPLAY

To display the temperature, press (★). The temperature reading is displayed for 2 seconds, if **−−−** is displayed, the temperature sensor is not connected or is short circuited.

To change the scale between ºC and ºF, press both △ and ▽ for 3 seconds.

STEP B – Humidity Set Point(s) Display and Adjustment
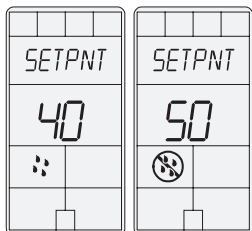
1. To display the set point(s), press two times on △ or ▽.
2. **If Control Mode was set to Humidify only or Dehumidify only:**
   a. Humidify or Dehumidify set point will be displayed during 3 seconds.
   b. To adjust set point, press on △ or ▽ while the set point is displayed.

   If Control Mode was set to Automatic Humidify and Dehumidify:
   a. Humidify set point will be displayed for 3 seconds. To adjust the set point, press on △ or ▽ while the set point is displayed.
   b. Press on (★) to switch to the dehumidify set point. To adjust the set point, press on △ or ▽ while the set point is displayed.
   c. You can press on (★) to go back to display the humidify set point or go **STEP 3**.
3. After 3 seconds of no activity, the humidistat will return to normal mode.

NOTE: If set point adjustment has been locked, 🔒 symbol will be displayed.

STEP C – On/Off Selection
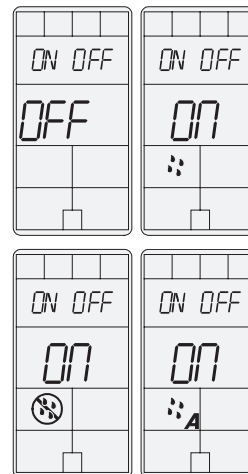
To turn On/Off the ADMC, press the (⏻) button. Control mode will be displayed for 5 seconds.

- Humidify only / OFF
- Dehumidify only / OFF
- Automatic Humidify & Dehumidify / OFF

NOTE: These selections can vary according to the choice made in **STEP 6** of the programming mode.

TECHNICAL DATA

ADMC

Outputs	Actual humidity (0-100%RH), 0-10 VDC / 2-10 VDC
	Humidity set point (0-100%RH), 0-10 VDC / 2-10 VDC
	Humidification proportional control signal, 0-10 VDC / 2-10 VDC
	Dehumidification proportional control signal, 0-10 VDC / 2-10 VDC
	Humidification dry contacts 24VAC, 1 A max, 3 A in-rush
	Dehumidification dry contacts 24VAC, 1 A max, 3 A in-rush
Inputs	Window temperature sensor or outside temperature sensor (10 KΩ)
	External humidity sensor (0-10 VDC / 2-10 VDC) or high limit (0-10 VDC / 2-10 VDC)
	1 alarm status digital input (24VAC or dry contact)
Power supply	22 to 26VAC 50/60 Hz or 28 to 32 VDC
Power consumption	1 VA
Set point range	10 to 90%RH (in 1% increments)
Sensor precision	± 3% or better at 40%RH and 23ºC (73ºF)
Proportional band	2% to 10% for control signal
Electrical connection	0.8 mm^2 (18 AWG) minimum
Operating condition	0ºC to 40ºC (32ºF to 104ºF), 0-95%RH
Storage condition	-10ºC to 50ºC (14ºF to 122ºF), 0-95%RH
Temperature compensation reset feature	Automatic readjustment of set point from an Outdoor Temperature Sensor (included)
Weight	130 g (0.3 lb)

ADMC DIMENSIONS

DIMENSION	IMPERIAL (in)	METRIC (mm)
A	2.85	73
B	4.85	123
C	1.00	24
D	2.36	60
E	3.27	83
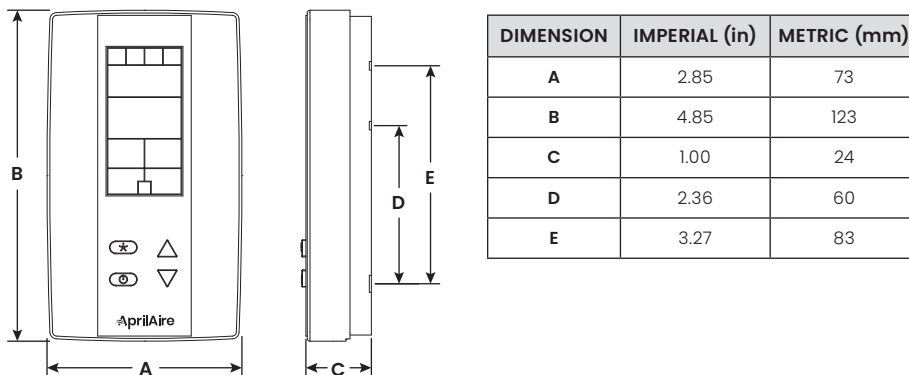
DUCT SENSOR

Power supply	22 +/-10% VAC or VDC
Power consumption	1 VA
Electrical connection	18 AWG minimum
Set point range	10 to 90%RH (in 1% increments)
Output	0-10 VDC, Humidity set point (0-100%RH),
Sensor precision	± 3% at 40%RH and 73ºF (23ºC)
Relative Humidity Range	0 to 100%RH
Operating temperature	-40ºF to 176ºF (-40ºC to 80ºC)
Storage condition	-10ºC to 50ºC (14ºF to 122ºF), 0-95%RH
Weight	0.35 lb (160 g)

DUCT SENSOR DIMENSIONS
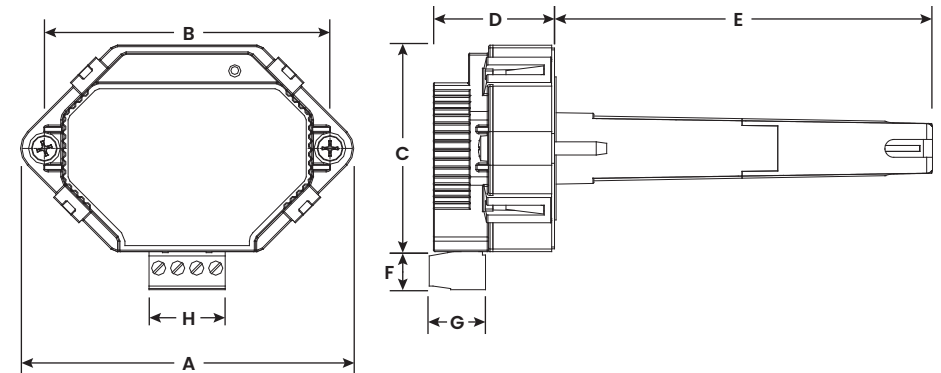
DIMENSION	IMPERIAL (in)	METRIC (mm)
A	3.50	89
B	3.00	76
C	2.16	55
D	1.30	33
E	3.95	100
F	0.37	9.5
G	0.60	15
H	0.80	20

LIMITED WARRANTY

Your AprilAire® Automatic Digital Modulating Control is expressly warranted for five (5) years from date of installation to be free from defects in materials or workmanship.

The exclusive obligation of AprilAire under this warranty shall be to supply, without charge, a replacement for any control which is found to be defective within such five (5) year period and which is returned not later than thirty (30) days after said five (5) year period by you to either your original supplier or to AprilAire, Madison, Wisconsin 53701, together with the installation date of the control.

THIS WARRANTY SHALL NOT OBLIGATE APRILAIRE FOR ANY LABOR COSTS AND SHALL NOT APPLY TO DEFECTS IN WORKMANSHIP OR MATERIALS FURNISHED BY YOUR INSTALLER AS CONTRASTED TO DEFECTS IN THE CONTROL ITSELF.

IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFORESAID FIVE YEAR PERIOD. THE APRILAIRE LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFORESAID IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECTS(S) RESULT FROM FAILURE TO HAVE THIS UNIT INSTALLED BY A QUALIFIED HEATING AND AIR CONDITIONING CONTRACTOR. IF THE LIMITED WARRANTY IS VOID DUE TO FAILURE TO USE A QUALIFIED CONTRACTOR, ALL DISCLAIMERS OF IMPLIED WARRANTIES SHALL BE EFFECTIVE UPON INSTALLATION.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages so the above exclusion or limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

WARRANTY REGISTRATION

Visit us online at **aprilaire.com** to register your AprilAire product. If you do not have online access, please mail a postcard with your name, address, phone number, email address, product purchased, model number, date of purchase, and dealer name and address to: AprilAire, P.O. Box 1467, Madison, WI 53701.

Your warranty registration information will not be sold or shared outside of this company.