EXPERT *2V4SA*
Ventilation System

USER'S MANUAL

EXPERT *2V4SA*
Ventilation System

AIRSTREAM
ventilation systems

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PRECAUTIONS

We strongly recommend installing supplementary ventilation as well as a backup thermostat on at least one fan stage (refer to the wiring diagram enclosed with this user's manual to connect the thermostat).

Although overload and overvoltage protection is provided for the controller circuits, we recommend installing additional protection devices in the electrical panel.

The room temperature where the controller is located MUST ALWAYS REMAIN BETWEEN 32°F AND 104°F (0°C TO 40°C).

To avoid exposing the controller to harmful gases or excessive humidity, it is preferable to install it in a corridor.

DO NOT SPRAY WATER ON THE CONTROLLER

FOR CUSTOMER USE
Enter the serial number located on the side of the controller below for future reference.

Model number: **EXPERT 2V4SA**
Serial number: _____

FEATURES

The EXPERT 2V4SA is an electronic device used for environmental control in livestock buildings. It allows the user to maintain a specified target temperature by controlling the operation of ventilation and heating equipment. Two stages of variable fans and four stages of either heaters, mist or ON/OFF fans can be controlled. The main features of the EXPERT 2V4SA are as follows:

LCD DISPLAY
An LCD display provides an efficient interface for displaying, monitoring and adjusting parameter values.

PILOT LIGHTS
Pilot lights indicating the state of outputs allow the user to monitor the operation of the system without having to enter the building.

REMOVABLE CONNECTORS
Input connectors can be removed from the main board. These removable terminal blocks simplify wiring the various inputs.

MINIMUM VENTILATION CYCLE
When ventilation is not required for reducing room temperature, the first and second fan stages can be operated either continuously or intermittently to reduce the level of humidity and supply oxygen to the room.

TEMPERATURE AND MINIMUM VENTILATION CURVES
The controller can be set to automatically change the temperature set point and the minimum ventilation cycle over a given period of time, in accordance with the user's requirements, by specifying a temperature curve and a minimum ventilation cycle curve with up to ten different points each.

CHOICE OF TEN MOTOR TYPES
The variation in motor speed resulting from a change in voltage will depend on the make and capacity of the motor. In order to achieve a high degree of compatibility between controller and motor, the user can choose from among ten different motor types, thus ensuring that the correct voltage is supplied.

EXPERT 2V4SA

ZONED HEATERS

PROBE READINGS RECORDED FOR PAST DAYS
Minimum and maximum readings from temperature probes, static pressure sensors and humidity sensor are recorded for the current day and the previous six days.

WATER MONITORING
A pulse input is provided for monitoring water consumption for the current days and the previous six days.

HEATER RUN TIME MONITORING
Heater run times are kept in memory for the current day and for the previous 6 days.

ALARM MANAGEMENT
Alarms are provided for high-low temperatures, defective probes and other system functions.

FOUR INDEPENDENT TEMPERATURE PROBE INPUTS
Up to four temperature probes can be connected to the controller in order to obtain a more accurate reading of the average room temperature and a faster reaction time.

OUTSIDE TEMPERATURE COMPENSATION
Fan stages are automatically adjusted according to the outside temperature. It ensures a better stability in the room temperature.

0-10V OUTPUT
A 0-10V output can be used to control supplementary ventilation or heating equipment. This output can also control chimney dampers.

HUMIDITY COMPENSATION

The controller can use different mechanisms to reduce the humidity level. When the humidity level is too high, it can disable the mist stage, enhance the minimum speed of stage 1 fans and/or activate heating units in timer mode.

STATIC PRESSURE CONTROL

A static pressure input is provided to control the static pressure level by opening and closing the air inlets (on condition that the air inlet uses a potentiometer). When the pressure level is too high, the inlet opens to compensate. When the pressure level is too low, the air inlet closes.

CONTROL OF AIR INLET MOVEMENT

The movement of air inlets can be coordinated with the operation of the fans using a potentiometer located on the panel drive or with a timer. This allows the air inlets to be adjusted correctly, without the influence of uncontrollable factors such as wind or air from adjoining rooms.

PASSWORD PROTECTION

A password allows to restrict access to the controller's setup functions.

BACKUP BATTERY

A backup battery allows the unit to keep time in case of a power failure.

OVERLOAD AND OVERVOLTAGE PROTECTION

Resettable fuses are provided at low-voltage inputs and outputs of the controller to protect its circuitry in the case of an overload or overvoltage.

COMPUTER CONTROL

The controller can be connected to a computer, thus making it possible to centralize the management of information and diversify control strategies.

TEST MODE

A test mode allows you to simulate temperature changes and verify controller's performance.

EXPERT 2V4SA

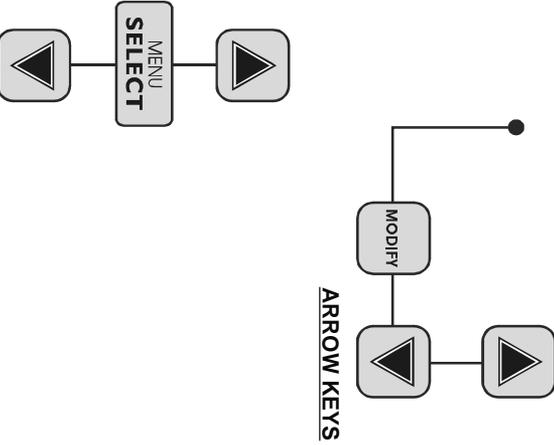*Ventilation System*

AIRSTREAM
ventilation systems

LCD DISPLAY

MENU SELECT BUTTONS

MENU **SELECT**

◀ ▶

ARROW KEYS

MODIFY

◀ ▶

FUNCTIONS

CURRENT CONDITIONS
ROOM TEMPERATURE
PROBE TEMPERATURE
OUTSIDE TEMPERATURE
RELATIVE HUMIDITY
STATIC PRESSURE
TIME & DATE

SETTINGS
SET POINT / CURVE
MINIMUM SPEED / CURVE
STAGE 1
STAGE 2
STAGES 3-6
MIST
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MONITORING
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OUTPUT STATUS

COMPENSATION
HUMIDITY
OUTSIDE TEMPERATURE
STATIC PRESSURE

STATUS LO TEMPERATURE OVERRIDE
DE-ICING - STAGE 2
TEMPERATURE CURVE
MINIMUM SPEED CURVE

ALARMS
DEFECTIVE PROBE
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WATER SPILL

0-10V OUTPUT
INLET
OPEN
CLOSE
MANUAL MODE
CALIBRATION

FAN STAGES
MIST
6
5
4
3
2
1

HEATERS
1
2
HEAT MAT

Led Display: The display on the top right corner of the faceplate shows the current room temperature averaged over all selected room temperature probes. It can also display the static pressure level or the air inlet position.

LCD Display: The LCD display at the left shows the current readings and parameters to be adjusted when you select a function.

```
Room T°    76.9°F
Pr.Act:1234      ▼
```

The three keys beside the display are used to edit parameters and step through the display. When the parameters for a given function cannot all be presented at once on the display, arrows are displayed on the right hand side to indicate that additional parameters can be displayed using the arrow keys ▲ ▼. After 15 minutes of inactivity, the display returns to the current temperature display.

Adjustment and navigation arrow keys: The arrow keys that are located next to the LCD display are used to scroll menus when all parameters cannot be presented all at once. These keys are also used to modify a parameter's value once the MODIFY have been pressed.

Status Leds: The status leds that indicates which function is actually selected.

Adjusting a Parameter: Press on the "MODIFY" button to edit a parameter, the parameter will then flash on the display. This means that it can now be modified. Use the up and down-arrow keys that are located beside the display to modify the parameter's value.

Output Status LEDs: LEDs at the right side of the control panel give the status of each output. When the LED is turned on, the output is activated; when the LED is turned off, the output is deactivated.

INSTALLATION

MOUNTING INSTRUCTIONS

Open the latch and lift the cover. Remove the black caps located on each of the four mounting holes. Mount the enclosure on the wall using four screws. Be sure the electrical knockouts are at the bottom of the enclosure in order to prevent water from entering the controller. Insert the screws in the mounting holes and tighten. Fasten the four black caps provided with the controller onto the four mounting holes. The enclosure must be mounted in a location that will allow the cover to be completely opened right up against the wall.

CONNECTIONS

To connect the controller, refer to the wiring diagram enclosed with this user's manual. Use the electrical knockouts provided at the bottom of the enclosure. Do not make additional holes in the enclosure, particularly on the side of the enclosure when using a computer communications module.

Note that the input connectors are now removable. This makes it easier to connect the different elements to the terminals.

ALL WIRING MUST BE DONE BY AN AUTHORIZED ELECTRICIAN AND MUST COMPLY WITH APPLICABLE CODES, LAWS AND REGULATIONS. BE SURE POWER IS OFF BEFORE DOING ANY WIRING TO AVOID ELECTRICAL SHOCKS AND EQUIPMENT DAMAGE.

1. PROBES

Probes operate at low voltage and are isolated from the supply. Be sure that probe cables remain isolated from all high voltage sources. In particular, do not route the probe cables through the same electrical knockout as other cables. Do not connect the shield from the probe cable to a terminal or a ground.

Extending a probe: Each probe can be extended up to 500 feet (150 meters). To extend a probe:

■ Use a shielded cable of outside diameter between 0.245 and 0.260 in (6.22 and 6.60 mm) (the cable dimensions should not be under 18 AWG) to ensure the cable entry is liquid tight. Do not ground the shielding.

■ It is preferable to solder the cable joint to ensure a proper contact between the two cables.

CAUTION: Do not run probe cables next to other power cables. When crossing over other cables, cross at 90°.

Defective probes:

An alarm is generated when a defective probe is detected. To identify the defective probe, select the PROBE TEMPERATURE or OUT-SIDE TEMPERATURE function. Dashes are

```
1: 74.2   2:-----
3: 72.3   4:73.0
```

displayed instead of a reading when the probe is defective. In the case of room temperature probes, the controller will operate according to the temperature of the remaining probes.

2. ALARM

There are two types of alarms on the market. One type activates when current is cut off at its input, whereas the other activates when current is supplied at its input. For an alarm of the first type, use the NC terminal as shown on the wiring diagram. For an alarm of the second type, use the NO terminal.
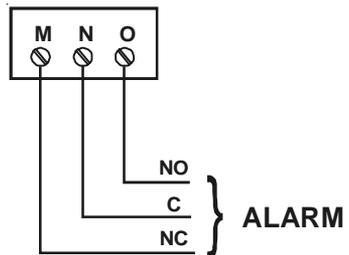
MOTOR TYPES

The relationship between the voltage supplied to a motor and its operating speed is described by a motor curve. This curve varies with the make and capacity of the motor. The various motors available in the industry have been divided into ten categories and the controller has been programmed with a different motor curve for each of these categories. To ensure that the controller supplies the correct voltages, an appropriate curve must be selected separately for stages 1 and 2 variable fans, according to the type of fan motors in use.

Stages 1-2 : Motor Curve Selection:

■ Select the **STAGE 1** or the **STAGE 2** function using the menu select buttons depending on which stage's motor you want to adjust.

■ Press on the down-arrow key, in order to select the **"Motor curve"** screen display.

```
Motor curve
                 4 ▲
```

■ Press on the MODIFY button, the motor curve flashes on the display.

■ Use the arrow keys to adjust the motor curve of the selected stage then press on the MODIFY button once again to validate.
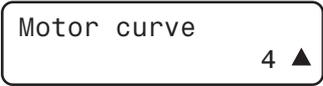
TIME AND DATE FUNCTIONS

■ Set the function to **TIME & DATE** using the menu select buttons. The current time and date are displayed.

■ Press on the MODIFY button. The hours flash on the display. Use the arrow keys to set the hours. Press on the MODIFY button. The minutes flash on the display. Use the arrow keys to set the minutes. Press on the MODIFY button once again. The seconds flash on the display. Use the arrow keys to adjust the seconds to the desired value.

```
12:00:00 PM
01/01/200X
```

■ Press on the MODIFY button. The month flashes. Use the arrow keys to set the month. Press the Modify button. The day flashes. Use the arrow keys to set the day. Press the Modify button once again, the year flashes. Use the arrow keys to set the year.

MONITORING FUNCTIONS

1   Viewing Heater Run Times

The controller has an history in which the heater run times , for the past 6 days, are logged in.

■ Set the function to **HEATER RUN TIME** using the menu select buttons.

    Accessible if at least one heating stage is enabled in the USER SETUP.

```
Heater 1
01/01/0X    2:30 ▼
```

■ The current run time of the first heating stage is displayed along with the time and date.

■ Keep pressing the down-arrow key to scroll the display and look at the run times of this heater for the past 6 days.

2   Viewing Water Consumption

The controller provides a pulse input to monitor the water consumption. The water consumption is logged into an history for the current day and for the past 6 days.

■ Set the function to **WATER** using the menu select buttons. Today's water consumption is displayed.

    Available if the water counter is enabled in the USER SETUP.

```
01/31/0X    1241l
01/30/0X    6189l ▼
```

■ Press the down-arrow key to scroll the display. The water consumption for the past 6 days is displayed.

USER SETUP

The following section describes how to customize the controller for your particular application. Normally, this setup needs to be done only once. A template is available at the end of this manual to write down all these parameters.

☞ It is recommended to clearly define every stage that is going to be used by your controller. **Select the proper stage option on the table below.**

	STAGES COMBINATIONS					
	STAGE 1	**STAGE 2**	**STAGE 3**	**STAGE 4**	**STAGE 5**	**STAGE 6**
☐ OPTION 1	VAR 1	VAR 2	FAN 1	FAN 2	FAN 3	FAN 4
☐ OPTION 2	VAR 1	VAR 2	FAN 1	FAN 2	FAN 3	MIST
☐ OPTION 3	VAR 1	VAR 2	FAN 1	FAN 2	FAN 3	HEAT 1
☐ OPTION 4	VAR 1	VAR 2	FAN 1	FAN 2	MIST	HEAT 1
☐ OPTION 5	VAR 1	VAR 2	FAN 1	FAN 2	HEAT 2	HEAT 1
☐ OPTION 6	VAR 1	VAR 2	FAN 1	MIST	HEAT 2	HEAT 1

1. Set the function to **USER** using the menu select buttons.

   The following parameters are presented below in the order they appear on the display. The installer's password must first be entered to access these menus. To modify a parameter, press on the MODIFY button then use the arrow keys to change it. When you are finished adjusting a parameter, press on the MODIFY button to validate the new value and to return to the display mode. Press on the down-arrow key to move to the next parameter.

2. **Time of Day Format:**
   Select the time format:
   AM-PM or 24 hours mode.

   ```
   Time format
             AM-PM  ▼
   ```

3. **Temperature Units**:
   Select the temperature units:
   Fahrenheit (F°) of Celsius (°C) degrees.

   ```
   Temp. units
                °F   ⬍
   ```

4. # of Temperature Sensors in the Room: Set the total number of temperature sensors that are wired to the controller. Up to 4 temperature sensors can be selected.

```
#T° sensors in
the room:      4 ⬍
```

5. Room Probes:

Select which of the room sensors are used to be part of the average room temperature. Blinking digits represent probes that are selected to be part of the average room temperature. At least one temperature probe must be selected. Press on the MODIFY button then set each probe status by using the arrow keys.

```
Room probes
1234           ⬍
```

```
Room probes
1            On ⬍
```

6. Use Water Meter:

Select **"Yes"** if a water meter is connected to the controller.

```
Use water meter?
            No ⬍
```

7. Water Meter Units:

Select the water units: Gallons or liters.
Accessible if the water meter is enabled above.

```
Water meter units
         lit   ⬍
```

8. Water Meter Calibration:

Set the # of gallons or liters per pulse.
Accessible if the water meter is enabled above.

```
Water unit/pulse
             1 ⬍
```

9. Use Humidity Sensor:

Select **"Yes"** if a relative humidity sensor is connected to the controller.

```
Use humidity
sensor?       No ⬍
```

10. Humidity Compensation on Min. Speed:

Select **"Yes"** to enable the compensation of stage 1 fans' speed, according to the humidity level (refer to the Relative Humidity Compensation chapter).

Accessible if the humidity sensor is enabled above.

```
Rh influence on
Min. Speed?   No ⬍
```

11. **Use Outside Temperature Sensor**:
Select **"Yes"** if an outside temperature sensor is connected to the unit.

```
Use Out T°
sensor?      Yes ♦
```

12. **Outside T° Compensation on Min. Speed**:
Select **"Yes"** to activate the outside temperature compensation on the minimum speed of stage 1 fans (refer to the Outside T° Compensation chapter).
Accesible if the outside temperature sensor is enabled above.

```
Out T° compens.
Min Speed?    No ♦
```

13. **Use Outside T° Compensation on Stg 1**:
Select **"Yes"** to activate the outside temperature compensation on the # of degrees to 100% of stage 1 (refer to the Outside T° Compensation chapter).
Accessible if the outside temperature sensor is enabled above.

```
Out T° compens.
stage1?    No      ♦
```

14. **Use Outside T° Compensation on Stg 2**:
Select **"Yes"** to activate the outside temperature compensation on # of degrees to 100% of stage 2 (refer to the Outside T° Compensation chapter).
Accessible if the outside temperature sensor is enabled above.

```
Out T° compens.
stage2 ?    No     ♦
```

15. **Winter's Reference Temperature**:
Set the temperature that indicates the beginning of the winter season.
Accessible if the compensation is enabled in #12, 13 or 14 above.

```
Outside T° in
winter:   41.0°F ♦
```

16. **Summer's Reference Temperature**:
Set the temperature that indicates the beginning of the summer season.
Accessible if the compensation is enabled in #12, 13 or 14 above.

```
Outside T° in
summer:   59.0°F ♦
```

17. Use the Static Pressure Sensor:
Select **"Yes"** if a static pressure sensor is connected to the controller.

```
Use Stat. P
sensor?      Yes ⬍
```

18. Use the Static Pressure Compensation:
Select **"Yes"** if to activate the static pressure compensation on the opening of the potentiometer-based inlet (refer to the S.Pressure Compensation section).
Accessible if the static pressure sensor is enabled above and if the inlet uses a potentiometer (see below).

```
Use Stat. P
compens.?     No ⬍
```

19. Heaters and 0-10V Output:
Set the number of heating stages, in accordance with you stages' definition, as shown at the beginning of this chapter. Up to two heater stages can be activated.

```
#Heaters:     1
#0-10V        2 ⬍
```

Set the number of 0-10V outputs to the desired value. Adjustable between 0 and 1 output.

20. 0-10V Output # 1 Used for:
Select the proper operation for the first 0-10V output: Ventilation / Heating / Heat mat / Chimney damper.
Accessible if a 0-10V output is enabled above.

```
0-10V 1 used for
   Ventilation   ⬍
```

21. 0-10V follows the Set Point ? :
Select **"Yes"** if the start temperature of the 0-10V output is related to the set point. This means that when the set point changes, the start temperature is adjusted by the same amount. Select **"No"** to use an absolute start temperature on this output.
Accessible if a 0-10V output is enabled above.

```
0-10V 1 follows
setpoint?     No ⬍
```

22. 0-10V or 10-0V Signal:
Select the proper signal of the
0-10V output (0-10V or 10-0V).
Accessible if a 0-10V output is enabled above.

```
0-10V 1 Mode
         0-10V ↕
```

23. Use Mist:
Select "**Yes**" to activate the mist stage.

```
Use Mist?      No
Use Inlet?    Yes↕
```

24. Use Inlet:
Select "**Yes**" to activate the air inlet.

25. Inlet Mode:
Select "Pot" if the inlet moves according to a potentiometer; select "Time" if the inlet moves according to a timer.
Accessible if the air inlet is enabled above.

```
Inlet Mode
          Pot  ↕
```

26. Use a timer on heating stages:
Select "**Yes**" to activate heaters in a timer mode, according to the room temperature.

Accessible if a heating stage is enabled above.

```
Use heaters on
timer ?      Yes↕
```

27. Number of intermediate steps:
If the opening of the air inlet is based on a timer, select the number intermediate opening steps that are performed during a variable stage   (0-2 intermediate steps).

Accessible if the opening of the inlet is base on a timer

```
# Inter. Steps
           2   ↕
```

28. Zoned or standard heaters:
This function allows to run the heating outputs according to the temperature reading of chosen temperature sensors; the heating outputs' operation becomes based on the average reading of these sensors instead of being based on the average room temperature.

Accessible if two heating stages are enabled above.

```
Use Zoned heater?
           No ↕
```

29. Heater 1 - 2 probes:

Select on which temperature sensors the operation of heating stages 1 and 2 is based. Blinking digits represent probes that are assigned for this purpose. At least one temperature probe must be selected per heater. Press MODIFY then set each probe's status with the arrow keys.

Accessible if the heaters' zoned mode is enabled above.

```
Heater 1 probes
1234              ⬍
```

```
Heater 2 probes
1234              ⬍
```

30. Merge between stages 1 and 2:

Select **"Yes"** if to enable the merge between fan stages 1&2 (refer to the "Merge" section of the "Cooling" chapter).

```
Use merge for
stages 1-2    No ⬍
```

31. Merge between stages 2 and 3:

Select **"Yes"** to enable the merge between fan stages 2 and 3 (refer to the "Merge" section of the "Cooling" chapter).

Accessible if stage 3 is used as a fan stage. Refer to the stage option table at the beginning of this chapter.

```
Use merge for
stages 2-3    No ⬍
```

32. De-icing Stage 2:

Select **"Yes"** if to enable the de-icing feature on fan stage 2.

```
Use de-icing on
stage 2?      No ⬍
```

33. Use Night Set Point:

Select **"Yes"** to enable the night set point.

```
Use night setp?
           Yes ⬍
```

34. Night Set Point Starts at:

Select the time at which the night set point starts being used by the controller.

Accessible if the night set point is enabled above.

```
Night setp at
      8:00P      ⬍
```

35. Day Set Point Starts at:
Select the time at which the day set point starts being used by the controller.
Accessible if the night set point is enabled above.

```
Day setp at:
       7:30A      ▲▼
```

36. Transition Time:
Set the transition time between day and night set points to the desired value. It can be adjusted from 15 to 120 minutes.
Accessible if the night set point is enabled above.

```
Transition time
        60 min    ▲▼
```

37. Low Temperature Override:
Select **"Yes"** to activate the following functions when the room temperature is too low:

```
Low T° override
           Yes  ▲▼
```

1. Decrease the speed of stage 1 fans & stop stage 2;

2. Close the air inlet further.

38. Override Below:
Set the temperature below which the "Low temperature override" options start being effective. This temperature is directly related to the set point. When a change in the set point occurs, the override's start temperature is adjusted consequently. Adjustable from 1°F to 40°F (0.6 to 22.2°C) below the set point.
Accessible if the "Low temperature override" feature is enabled above.

```
Override below
        70.0°F   ▲▼
```

39. Override Stops at:
Set the temperature above which the override functions stop when the room temperature increases. This temperature is directly related to the set point. When a change in the set point occurs, the override's stop temperature is adjusted consequently.
Accessible if the "Low temperature override" feature is enabled above.

```
Override stop at
        75.0°F   ▲▼
```

40. Low Temperature Override Settings:

Set the minimum speed of stage 1 fans and the inlet position that will be used by the controller when the "Low Temperature override" function is on. Available if the "Low temperature override" feature is enabled above.

```
Min spd        15%
Inlet          0% ⬍
```

41. Set point curve?

Select **"Yes"** to enable the set point curve function.

```
Set point curve?
              Yes ⬍
```

42. Min speed curve?

Select **"Yes"** to enable the minimum speed curve function.

```
Min speed curve?
              Yes ⬍
```

43. LED Display:

Select the desired LED display amongst the following options:

```
Display:
   T° & Inlet      ⬍
```

- Display the room temperature only (T° Only);

- An alternating display between the temperature and the static pressure level (T° & SP);

- An alternating display between the temperature and the inlet's position (T° & Inlet);

- An alternating display between the temperature, the inlet's position and the static pressure (T° & SP & Inlet).

44. Change Password:

The user can define a password to restrict access to certain functions (USER SETUP and TEST MODE). The password must be entered each time one of these functions is selected. When the correct password is entered, it does not need to be reentered until the display times out (i.e. after 15 minutes of inactivity). The password is a sequence of three numbers from 0 to 99. To disable the password feature, set the password to 0, 0, 0. By default, the password is set to 0, 0, 0.

■ Press on the MODIFY button. The first two digits of the password flash on the display.

■ The new password must be entered, one number at a time. Use the arrow keys to enter the first number. Press on the MODIFY button to step to the next number. Use the arrow keys to enter the second number, etc.

```
New password?
00 ** **        ⬍
```

44. Program Version Number:

The program version number of the controller is displayed.
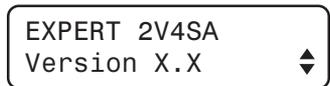
```
EXPERT 2V4SA
Version X.X      ⬍
```

TEMPERATURE SETTINGS

DISPLAYING TEMPERATURES

The controller has an history in which the minimum and maximum temperature readings of the current day and of the past 6 days are logged in, along with the time and date. These values are logged into the history at midnight everyday.

1   Viewing the Room Temperature

The room temperature is the average reading of the temperature probes that have been assigned for this purpose during the USER SETUP.

■   Set the function to **ROOM TEMPERA-TURE** using the menu select buttons. The average room temperature is displayed. The probes that are assigned to be part of the average temperature flash on the display.

```
Room T°   76.5 °F
Pr.Act:1234     ▼
```

■   Press the down-arrow key. Today's minimum temperature is displayed along with the time and date.
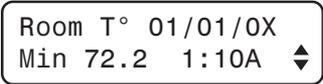
```
Room T° 01/01/0X
Min 72.2  1:10A ▲▼
```

■   Press the down-arrow key once again. Today's maximum temperature is displayed along with the time and date.

■   Keep pressing on the down-arrow key to look at the minimum and maximum temperature readings that have been recorded each day for the past 6 days.

2 Viewing Probe Temperatures

Temperature readings of each individual probe can be displayed as follows. The readings of each activated probe are displayed, whether they are assigned for the average room temperature or not.

■ Set the function to **PROBE TEMPERA-TURES** using the menu select buttons. The current reading of every activated probe is displayed.

```
1: 74.3   2: 75.0
3: 77.1   4: 77.3 ▼
```

■ Press on the down-arrow key once. Today's minimum reading of probe 1 is displayed, along with the time and date.

```
Probe1 01/01/0X
Min 73.3  12:30A ⬍
```

■ Press on the down-arrow key once again. Today's maximum reading of probe 1 is displayed, along with the time and date.

■ Keep pressing the down-arrow key to display the minimum and maximum temperature readings of the past 6 days for each remaining probe.

3 Viewing the Outside Temperature

The following procedure shows how to display the current outside temperature as well as the minimum and maximum temperature readings that have been logged for the past 6 days.

■ Set the function to **OUTSIDE TEMPERATURE** using the menu select buttons. The current outside temperature is displayed.
Accessible if the outside temperature probe is enabled in the USER SETUP.

```
Out T°     55.2°F

              ▼
```

■ Press on the down-arrow key . Today's minimum outside temperature is displayed, along with the time and date.

■ Press on the down-arrow key once again. Today's maximum outside temperature is displayed, along with the time and date.

■ Keep pressing the down-arrow key to display the minimum and maximum outside temperature readings for the past six days.

TEMPERATURE SET POINTS

The temperature set point is the target room temperature. It can be adjusted from -40.0°F to 100°F (-40.0°C to 37.8°C). The temperature curve must be disabled to adjust this target temperature. A night set point can also be enabled, in order to maintain a different target temperature during night time.

ADJUSTING THE MAIN TEMPERATURE SET POINT

■ Set the function to **SET POINT / CURVE** using the menu select buttons. The current set point is displayed.

```
Setp        75.0°F
                  ▼
```

■ Press MODIFY then use the arrow keys to change the set point.
The set point can only be modified while the temperature curve is disabled. Refer to the following section to disable the curve.

ADJUSTING THE NIGHT SET POINT

This is the target room temperature during night. It can be adjusted from -40.0°F to 100°F (-40.0°C to 37.8°C). The night set point is directly related to the main set point, which means that if a change in the main set point occurs, the night set point is adjusted consequently. If the temperature curve is enabled, the night set point follows the same variations as the day set point.

■ Set the function to **SET POINT / CURVE** using the menu select buttons. The current set point is displayed.

■ Press the down-arrow key to select the night set point.
Available if the night set point is enabled in the USER SETUP.

```
Night Setpoint
           75.0°F  ▲▼
```

■ Press MODIFY. The night set point flashes on the display. Use the arrow keys to adjust it to the desired value.

TEMPERATURE CURVE

The temperature curve allows an automatic adjustment of the target room temperature over time. The set point curve function must first be enabled in the USER SETUP.
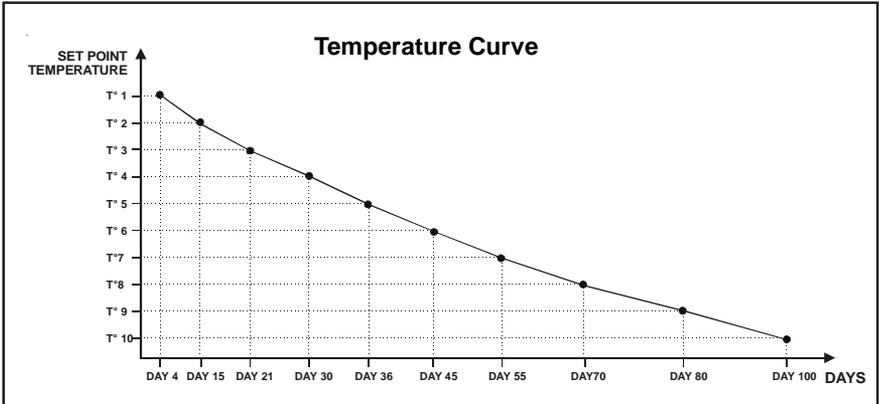
A curve is defined using up to 10 points. Each point specifies a day number and a set point for that day. Once the points of the curve are defined, the curve must be activated. The controller will change the temperature set point every hour in a linear fashion between consecutive points of the curve. When the last point of the curve is reached, the temperature set point for that day is maintained until the curve is reactivated.

NOTES:

i)   All ten points of the curve must be specified. If ten points are not needed, repeat the last temperature value for each unnecessary point.

ii)   Certain restrictions apply to reduce the risk of errors:
     - The highest possible day number is 365.
     - Decreasing day numbers are not allowed.
     - Increasing temperatures are not allowed.

EXPERT 2V4SA

1 Specifying the Curve

■ Set the function to **SET POINT / CURVE** using the menu select buttons. The current set point is displayed.

■ Press the down-arrow key to select the first point of the curve. The day at which this curve point starts being used and the set point for that day are displayed.

```
1. day     1
Setp    75.0°F    ⬍
```

Accessible if the set point curve is enabled in the USER SETUP.

■ Press MODIFY then use the arrow keys to select the day and the set point associated with the first point of the curve.

■ Press the down-arrow key to display and adjust all points of the curve.

2 Activating / Deactivating the Temperature Curve

■ Set the function to **SET POINT / CURVE** using the menu select buttons. The current set point is displayed.

■ Press the down-arrow key to select the curve status.
Accessible if the set point curve is enabled in the USER SETUP.

```
Curve status
           Off    ▼
```

■ Press MODIFY. The curve status flashes on the display. Use the arrow keys to enable or to disable the curve. Press MODIFY once again to validate.

3   Setting the Day Number

The following menu indicates the day that is currently being used by the curve. This day can also be modified in order to move forward or backward on the curve. This day number usually refers to the animal age.

Note that a change in the day number also affects the minimum speed curve (refer to the Minimum Ventilation chapter).

■   Set the function to **SET POINT / CURVE** using the menu select buttons. The current set point is displayed.

■   Press on the down-arrow and select the **"Current day"** screen display.
Accessible if the set point curve or if the minimum speed curve is enabled in the USER SETUP.

```
Current day
                9      ▲
                       ▼
```

■   Press MODIFY. The current day flashes on the display. Use the up and down-arrow keys to set it to the proper value.
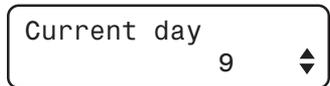
MINIMUM VENTILATION

Principle of Operation

When the room temperature is below the set point, stage 1 fans operate according to a minimum ventilation cycle. Running fans even though ventilation is not required for reducing the room temperature is useful to reduce humidity levels and supply oxygen to the room. It also prevents the fans from freezing in winter.

NOTE: The controller supplies maximum voltage to the variable-speed fans for 2 seconds immediately following each start-up.

MINIMUM VENTILATION TIMER:

The minimum ventilation timer is composed of a running time (On Time) and of a stop time (Off Time) as illustrated below:

On time: Stage 1 fans run at their minimum speed. The pilot light of stage 1 is lit while these fans are running in minimum ventilation.

Off time: Stage 1 fans are stopped.
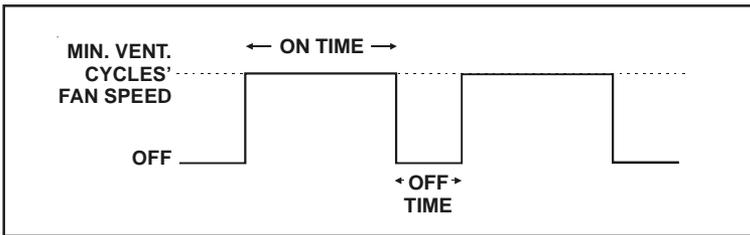
NOTES:

*   To run stage 1 fans continuously at their minimum speed, set the off time to zero and the On time to any value other than zero.

*   To disable minimum ventilation cycles, set the On time to zero and the Off time to any other value.

*   To run stage 1 fans intermittently, set the On and Off time to the proper values.

Stage 2 in Minimum Ventilation

Stage 2 fans can be used to provide minimum ventilation as shown on the following graphic:

Stage 2 Fans in Minimum Ventilation
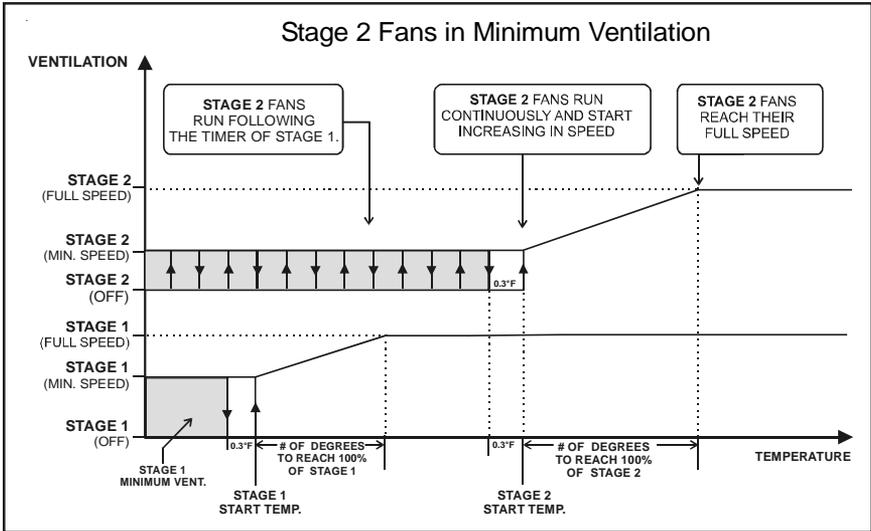
- When **the room temperature decreases** below Stage 2 start temperature, stage 2 fans run intermittently according to the same timer as the one used by stage 1.

- When **the room temperature increases** above Stage 2 start temperature, stage 2 fans start increasing in speed continuously.

Low Temperature Override:

If the room temperature gets too cold while the controller is in minimum ventilation, low temperature override functions can be enabled to reduce the speed of stage 1 fans and to stop stage 2. This allows reheating the room faster. Low temperature override functions must be enabled in the USER SETUP.

EXPERT 2V4SA

Minimum Ventilation Settings

1 Adjusting the Minimum Ventilation Timer

The On and Off times of stage 1 fans can be adjusted between 0 and 900 seconds, in increments of 15 seconds.

■ Set the function to **STAGE 1** using the menu select buttons.

■ Press on the down-arrow key once. The On and Off times are displayed.

```
On:          30sec
Off:        120sec ◆
```

■ Press on the MODIFY button. The On time starts flashing. Use the arrow keys to set it to the proper value.

■ Press on the MODIFY button once again, the Off time flashes. Use the arrow keys to set it to the desired value.

2 Using Stage 2 in Minimum Ventilation

Refer to the COOLING chapter to adjust the main settings of stage 2 and refer to the beginning of this chapter to set the timer of stage 1.

■ Set the function to **STAGE 2** using the menu select buttons. The start temperature of stage 2 is displayed.

■ Press on the down-arrow key in order to select the "**Min Ventilation**" display.

```
Min Ventilation.
           On    ◆
```

■ Press on the MODIFY button. The status flashes on the display. Press on the up-arrow key to activate the minimum ventilation on stage 2 or press on the down-arrow key to deactivate it.

3 Adjusting the Minimum Speed of Stage 1

The minimum speed of stage 1 fans can be adjusted from 10 to 100%. Note that the minimum speed curve must be turned off in order to adjust this value.

■ Set the function to **MIN. SPEED / CURVE** using the menu select buttons. The minimum speed of stage 1 fans is displayed.

■ Press MODIFY then use the arrow keys to set the minimum speed to the desired value.

   This value can only be modified while the minimum ventilation curve is disabled. Refer to the following section to disable the curve.

Minimum Ventilation Speed Curve

It is possible to define a curve to automatically adjust the minimum speed of stage 1 fans, over a given period of time. This speed curve is defined by ten points. Each point specifies a day number and a fan speed for that day. Once the points are defined, the curve must be activated. This function must first be enabled in the USER SETUP.
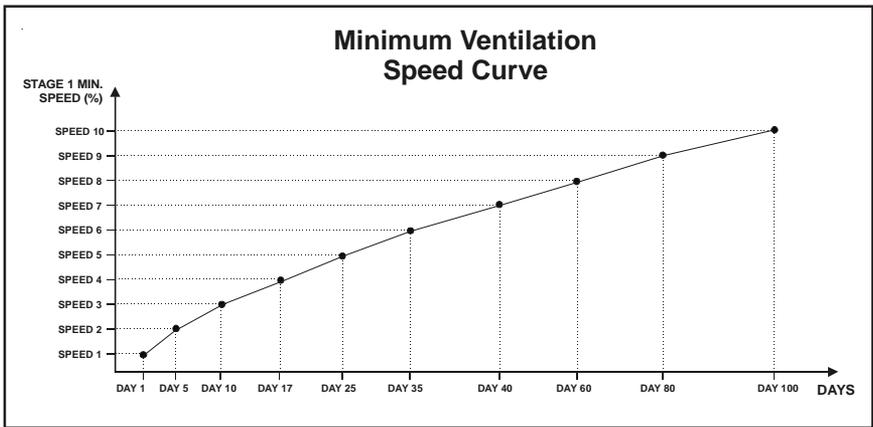
Once the minimum ventilation speed curve is activated, the controller adjusts the minimum speed of stage 1 fans every hour in a linear fashion between two consecutive points. When the last point of the curve is reached, the curve is deactivated. The controller maintains the minimum speed specified for this point until the curve is reactivated

NOTES:

i) All ten points of the curve must be specified. If ten points are not needed, repeat the last speed value for each unnecessary point.

ii) Certain restrictions apply to reduce the risk of errors:
- The highest possible day number is 365.
- Decreasing day numbers are not allowed.
- Decreasing minimum speeds are not allowed.

1 Specifying the Minimum Speed Curve

■ Set the function to **MIN. SPEED / CURVE** using the menu select buttons.

■ Press the down-arrow key to select the first point of the curve. The day at which this curve point starts being used and the minimum speed of stage 1 fans for that day are displayed.
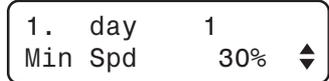
Accessible if the minimum speed curve is enabled in the USER SETUP.

```
1.  day      1
Min Spd    30%   ⬍
```

■ Press MODIFY then use the arrow keys to select the day and the minimum fan speed associated which the first point of the curve.

The curve points can only be modified while the curve status is disabled. Refer to the following section to disable the curve.

■ Press the down-arrow key to display and adjust all points of the curve.

2 Activating the Minimum Ventilation Curve

■ Set the function to **MIN. SPEED / CURVE** using the menu select buttons.

■ Press the down-arrow key to select the curve status display.

Accessible if the minimum speed curve is enabled in the USER SETUP.
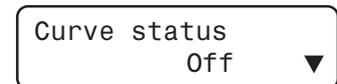
```
Curve status
        Off      ▼
```

■ Press MODIFY. The curve status flashes on the display. Press on the up-arrow key to activate the temperature curve. Press MODIFY once again to validate.

3 Setting the Day Number

The following menu indicates the day that is currently being used by the curve. This day can also be modified in order to move forward or backward on the curve. This day number usually refers to the animal age.

> Note that a change in the day number will also affect the temperature curve (refer to the Temperature Curve section).

■ Set the function to **SET POINT / CURVE** using the menu select buttons.

■ Press on the down-arrow and select the **"Current day"** screen display.
  Accessible if the set point curve or if the minimum speed curve is enabled in the USER SETUP.

```
Current day
             9      ⬍
```

■ Press MODIFY. The current day flashes on the display. Use the up and down-arrow keys to set it to the proper value.
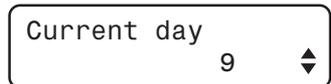
COOLING

The EXPERT 2V4SA controls 2 stages of variable-speed fans (stages 1-2) and 4 optional stages of ON/OFF fans (fan stages 3-6). These stages operate in a sequence to increase the level of ventilation as the room temperature increases.

The user defines a start and a stop temperature for each stage. When the temperature reaches the start temperature of a fan stage, the fans that are associated to this stage are activated. They are deactivated when the temperature decreases to their respective stop temperature.

Start and stop temperatures are defined with respect to the set point and with respect to each other. This means that when the set point changes, or if the start/stop temperature of a cooling stage changes, all consecutive values are adjusted by the same amount. For example, if the set point is increased by 1°F, the start temperatures of all consecutive fan stages are increased by the same amount.

The minimum temperature difference between two start temperatures is 0.5°F (0.3°C). Note that stop temperatures cannot overlap the previous stage's start temperature.

The graphic on next page illustrates the situation.

☞ **Refer to the MINIMUM VENTILATION chapter to set the minimum speed of stage 1 fans.**

Fan Stages
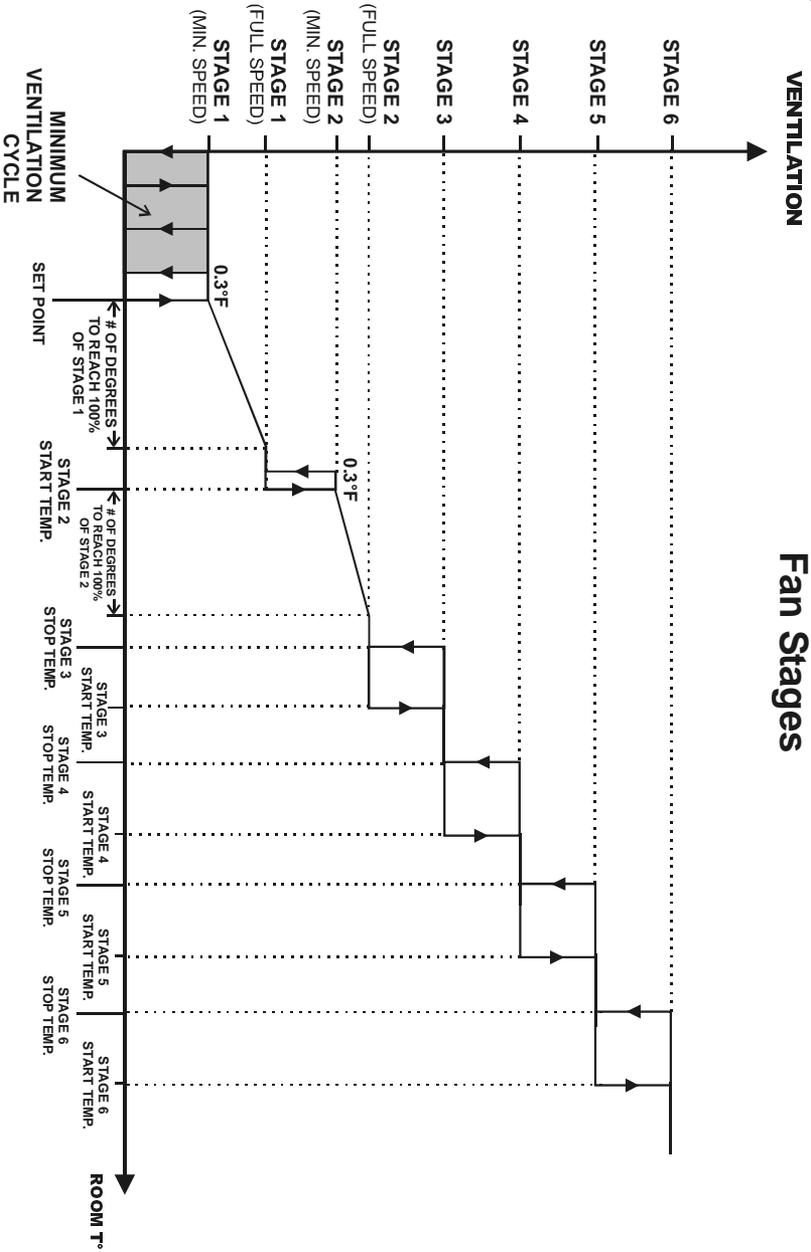
1 Adjusting # of Degrees to Reach 100% of Stage 1

This is the temperature interval over which stage 1 variable speed fans increase in speed, proportionally to the temperature, in order to reach their full speed (see the diagram above). It can be adjusted between 0.5° F and 20.0° F (0.3° C and 11.1° C).

■ Set the function to **STAGE 1** using the menu select buttons. The number of degrees required to reach 100% speed of stage 1 fans is displayed.

```
Degrees to 100%
          2.0°F  ▲▼
```

■ Press MODIFY then use the arrow keys to adjust the number of degrees to the desired value.

☞ **Refer to the MINIMUM VENTILATION chapter to set the minimum speed of stage 1 fans.**

2 Adjusting the Minimum Speed of Stage 2

The minimum speed of stage 2 fans can be adjusted from 10% to 100%.

■ Set the function to **STAGE 2** using the menu select buttons.

■ Press on the down-arrow key to select the **"Minimum Speed"** menu.

```
Minimum Speed
         40%      ▲▼
```

■ Press on the MODIFY button, the minimum speed flashes on the display. Use the arrow keys to set it to the desired value.

3 Adjusting the Start Temperature of Stage 2

The start temperature of stages 2 is the temperature at which the stage's variable-speed fans start running continuously at their minimum speed (refer to the previous diagram). It can be adjusted from 0 to 120° F (0 to 48.9° C) above the set point.

■ Set the function to **STAGE 2** using the menu select buttons. The start temperature of the selected stage is displayed.

```
StartT°: 80.0°F    ⬍
```

■ Press on the MODIFY button, the start temperature of the selected stage flashes on the display. Use the arrow keys to adjust it to the desired value.

4 Adjusting # of Degrees to Reach 100% of Stage 2

This is the temperature interval over which the variable speed fans of stage 2 increase in speed, proportionally to the room temperature, in order to reach their full speed (see the diagram above). It can be adjusted between 0.5°F and 20.0°F (0.3°C and 11.1°C).

■ Set the function to **STAGE 2** using the menu select buttons.

■ Press the down-arrow key twice, the number of degrees to reach 100% of fan stage 2 are displayed.

```
Degrees to 100%
          2.0°F ⬍
```

■ Press on the MODIFY button, the value starts flashing. Use the arrow key to adjust it to the desired value.

5 Adjusting Start/Stop Temperatures of Fan Stages 3-6

Set the start and stop temperatures of fan stages 3-6. The start temperature of these stages must be greater than: stage 2 start T° + # of degrees to 100% of stage 2 + 0.5°F (0.3°C).

■ Set the function to **STAGES 3-6** using the menu select buttons. The start temperature of stage is displayed.
Accessible if stage 3 is used as a fan stage. Refer to stages option table in the USER SETUP.

```
Stage 3
StartT°    84.0°F ▼
```

■ Press MODIFY. The start temperature of stage 3 flashes on the display. Use the arrow keys to adjust the start temperature to the desired value then press the MODIFY button to validate the new value.

■ Press on the down-arrow key. The stop temperature of stage 3 is displayed.

```
StopT°        82.0°F
                    ▲
                    ▼
```

■ Press on the MODIFY button, the stop temperature of stage 3 flashes on the display. Use the arrow keys to adjust it to the desired value. Press MODIFY to validate the new value.

■ Press on the down-arrow key in order to select the start temperature of stage 4.

Accessible if stage 4 is used as a fan stage. Refer to stages option table in the USER SETUP chapter.

```
Stage 4
StartT°    86.0°F ▲▼
```

■ Follow the same procedure as described above to adjust the start and stop temperatures of stages 4-6.

6 Viewing the Current Fan Speed of Stages 1-2

■ Set the function to **STAGE 1**, or **STAGE 2** using the menu select buttons.

■ Press on the down-arrow key in order to select the **"Current speed"** screen display.

```
Current speed
              100%  ▲▼
```

Outside Temperature Compensation

Outside temperature compensation functions allow adapting fan stage parameters in accordance with the outside temperature. This ensures better stability in the room temperature.

☞ Refer to the USER SETUP chapter to adjust summer & winter's reference temperatures.

Outside Temperature Compensation on the Minimum Speed of Stage 1

The minimum speed of stage 1 fans can automatically be adjusted according to the outside temperature: as the outside temperature decreases, the minimum speed of stage 1 fans decreases proportionally to compensate for the change:

- The regular minimum speed is used when the outside temperature is at or above summer's reference temperature.
- The winter speed is used when the outside temperature is at or below winter's reference temperature.

Outside Temperature Compensation on the Minimum Speed of Stage 1 Fans

MINIMUM SPEED OF STAGE 1 FANS

40% (REGULAR MIN SPEED)

20 % (WINTER'S MIN SPEED)

THE MINIMUM SPEED CHANGES DEPENDING ON THE OUTSIDE TEMPERATURE

WINTER T°   SUMMER T°   OUTSIDE TEMPERATURE
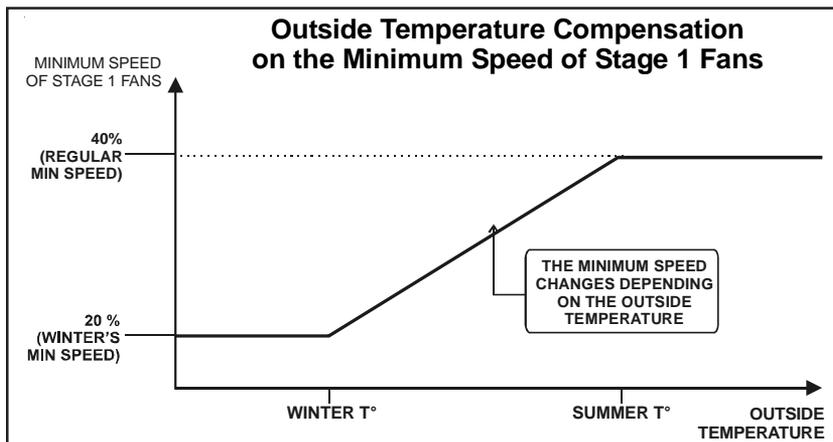
Note that the minimum speed used in winter is directly related to the regular minimum speed. This means that if a change occurs in the regular minimum speed, the winter's minimum speed is automatically adjusted by the same value.

Outside Temperature Compensation on the "number of degrees to 100%" of stages 1 & 2

The number of degrees to reach 100% of stages 1 & 2 can automatically be adjusted according to the outside temperature. The user defines the number of degrees to reach 100% for winter and for summer. The number of degrees to reach 100% are then automatically adjusted as the outside temperature changes.

☞ If the # of degrees to reach 100% of stage 1 or 2 changes, start temperatures of all consecutive fan stages are adjusted by the same amount.

**Outside Temperature Compensation
on the "# of degrees to reach 100 %"
of fan stages 1 & 2**

OF DEGREES
TO REACH 100% OF
FAN SPEED

DEGREES
TO 100%
IN WINTER (5°F)

MAXIMUM
#OF DEGREES TO
REACH 100% OF
FAN SPEED

OF DEGREES TO REACH 100%
OF FAN SPEED
STARTS INCREASING AS THE
OUTSIDE TEMPERATURE
DECREASES

DEGREES
TO 100% (3°F)

WINTER T°   SUMMER T°

OUTSIDE
TEMPERATURE

EXPERT 2V4SA
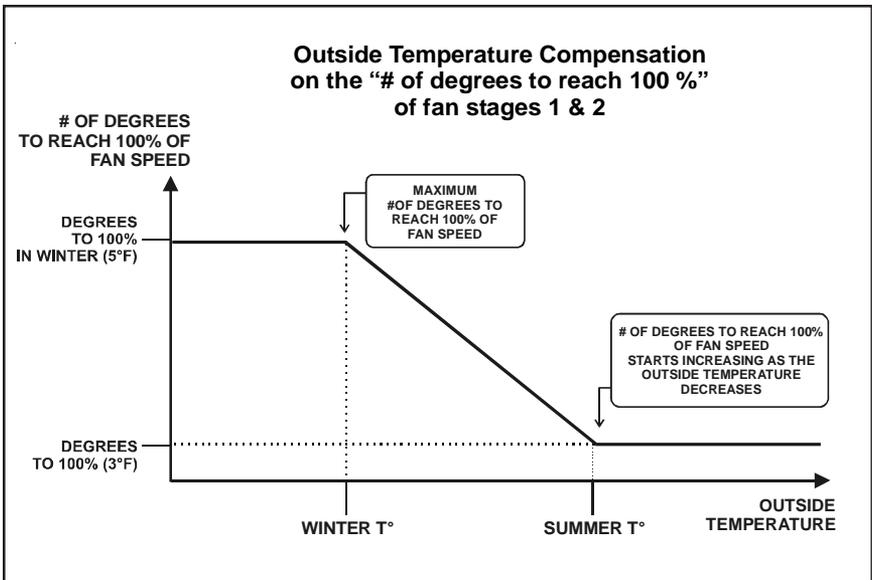
1 Adjusting the Minimum Winter Speed of Stage 1

This is the minimum speed of stage 1 fans when the outside temperature is at or below winter's reference temperature (refer to the min. speed graphic above). Winter's minimum speed is related to the regular minimum speed: if the regular minimum speed changes, winter's minimum speed is adjusted consequently. Refer to the MINIMUM VENTILATION chapter to set the regular minimum speed of stage 1 fans.

■ Set the function to **MIN. SPEED / CURVE** using the menu select buttons.

■ Press on the down-arrow key in order to select the **"Min Speed Winter"** display.

Accessible if the outside T° compensation on the min. speed of stage 1 is enabled in the USER SETUP.

```
Min Speed Winter
          20%      ⬍
```

■ Press on the MODIFY button then use the arrow keys to set the minimum fan speed in winter the desired value. Press on the MODIFY button once again to validate the new value.

This parameter can only be modified while the minimum speed curve is disabled.

2 Adjusting Winter's # of Degrees to Reach 100%

This is the number of degrees that are required to reach 100% of fans' speed (fan stages 1-2) in winter (refer to the previous graphic). The number of degrees to 100% in winter can be adjusted from 0.5 to 20 °F (0.3°C to 11.1°C).

■ Set the function to **STAGE 1** or **STAGE 2** using the menu select buttons.

■ Press on the down-arrow key in order to select **"Degrees to 100% winter"** display.

Accessible if the outside temperature compensation on the selected fan stage is enabled in the USER SETUP.
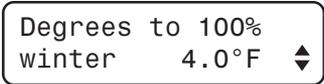
```
Degrees to 100%
winter    4.0°F   ⬍
```

■ Press on the MODIFY button then use the arrow keys to set the number of degrees that are required to reach 100% of fan speed in winter. Press on the MODIFY button to validate the new value.

Merging Fan Stages

Merging Fan Stages 1 and 2

The transition from Stage 1 to Stage 2 can create jumps in the volume of displaced air. This can be smoothed out by merging stages. When the merge between stages 1 and 2 is activated, the speed of Stage 1 fans is decreased to match the speed of Stage 2 fans when Stage 2 fans start up. As the temperature increases, the fan speed of both stages increases to create a smooth progression. When the temperature reaches **Stage 2 Start Temp + #of degrees to reach 100% of fan stage 2**, Stages 1 and 2 both reach their maximum speed.

☞ Refer to the USER SETUP chapter to enable this feature.

Merge of Fan Stages 1 & 2

STAGE 1 FAN SPEED (%)

WHEN STAGE 2 STARTS: STAGE 1 FANS ARE DECREASED AT STAGE 2'S MINIMUM SPEED AND BOTH STAGES INCREASES IN SPEED

STAGE 1 (FULL SPEED)

STAGE 2 (MIN. SPEED)

STAGE 1 (MIN. SPEED)

0.3°F

OF DEGREES TO REACH 100% OF STAGE 1

OF DEGREES TO REACH 100% OF STAGE 2

ROOM T°

STAGE 1 MINIMUM VENT. CYCLE

STAGE 1 START TEMP.

STAGE 2 START TEMP.
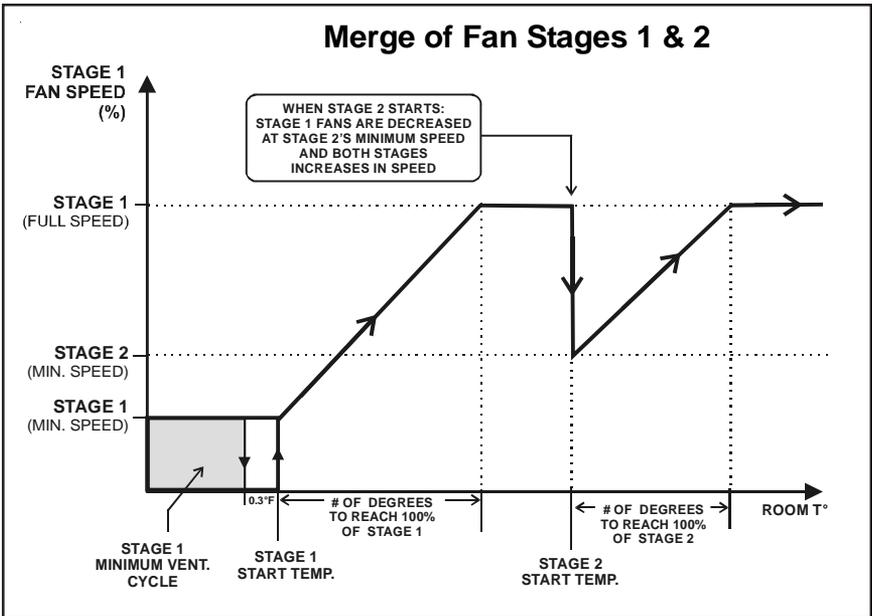
Merging Stages 2 and 3

The transition from Stage 2 to Stage 3 can create jumps in the volume of displaced air. This can be smoothed out by merging two stages. When the merge between stages 2 and 3 is activated, the speed of stage 2 fans is decreased when stage 3 fans start up. As the temperature increases, the speed of stage 2 fans is increased to create a smooth progression. When the temperature reaches **stage 3 start temp. + #of degrees to 100% of stage 3**, stages 2 fans reach their maximum speed once again and stage 3 fans operate at their full speed.

Merge of Fan Stages 2 & 3

VENTILATION

STAGE 3 ON

STAGE 3 OFF

STAGE 2 (FULL SPEED)

STAGE 2 (MIN. SPEED)

STAGE 2 MIN. VENTILATION TIMER

STAGE 2 (OFF)

OF DEGREES TO 100% OF STAGE 2

OF DEGREES TO 100% OF STAGE 3

TEMPERATURE

STAGE 1 START TEMP.

STAGE 2 START TEMP.

STAGE 3 STOP TEMP.

STAGE 3 START TEMP.
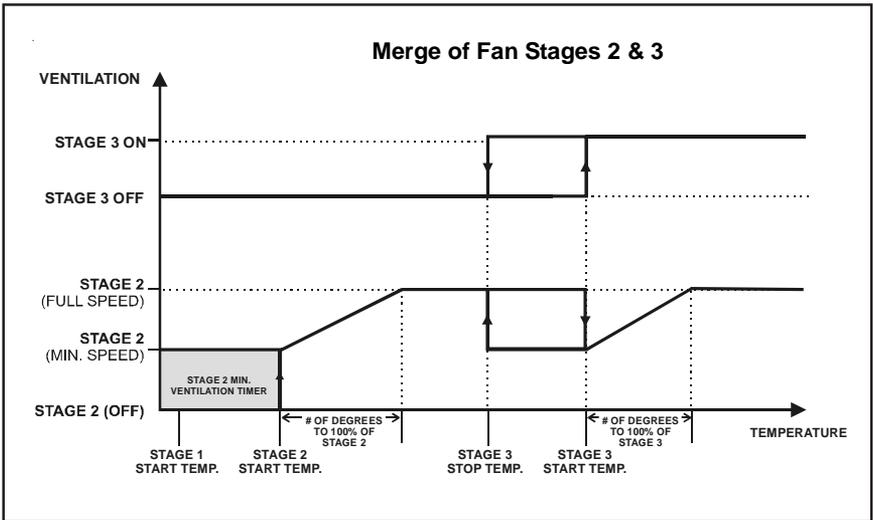
1 Adjusting # of Degrees to Reach 100% of Stage 3

The number of degrees to reach 100% of stage 3 is the number of degrees over which the stage 2 fans increase or decrease in speed proportionally to the temperature once stage 3 fans are activated (see the diagram above). The number of degrees can be adjusted between 0.5° F and 20.0° F (0.3° C and 11.1° C).

■   Set the function to **STAGES 3-6** using the menu select buttons.

■   Press on the down-arrow key in order to select the "**Degrees to 100%**" menu.
     Note that this menu only appears if the merging feature between stages 2 and 3 is enabled in the USER SETUP.

```
Degrees to 100%
2.0°F              ⬍
```
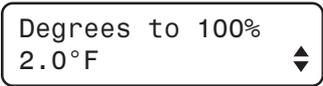
■   Press on the MODIFY button. The number of degrees to 100% flash on the display. Use the arrow keys to adjust them to the desired value.

De-icing Stage 2 Fans

A de-icing cycle is provided to de-ice Stage 2 fans in cold weather conditions. If the controller uses an outside temperature sensor, de-icing cycles are only activated when the outside temperature drops below a defined temperature. If no outside temperature sensor is used, the de-icing cycle is always active, no matter what the outside temperature is.

De-icing Cycles

ON ⟵ ON TIME ⟶

OFF ⟵ CYCLE TIME ⟶
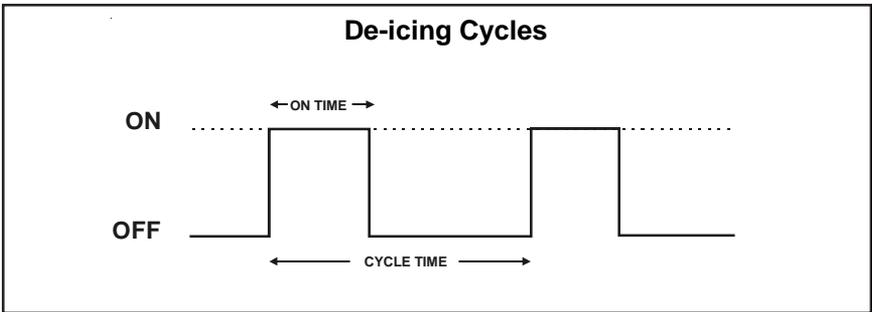
Principle of Operation:

Step 1.   Stage 1 fans are stopped.

Step 2.   Stage 2 fans start running at full speed for 2 seconds then return to their minimum speed during the **On time**.

Step 3.   Stage 2 fans are turned off.

Step 4.   Stage 1 fans' activity is resumed at the appropriate speed.

Step 5.   The cycle restarts after the cycle time has elapsed.

1   De-icing Start Temperature

The de-icing of stage 2 fans starts when the outside temperature drops below this temperature. It can be adjusted from -40 to 120°F (-40.0 to 48.9°C). The start temperature can only be set if an outside temperature sensor is used. If your controller doesn't have one, the de-icing cycles are always active.

■ Set the function to **STAGE 2** using the menu select buttons.

■ Press the down-arrow key to select the outside temperature at which de-icing cycles start.

```
De-icing out T°
          41.0°F ◆
```

Available if the de-icing feature and the outside temperature sensor are enabled in the USER SETUP.

■ Press MODIFY. The de-icing cycle's outside temperature flashes on the display. Use the arrow keys to set the outside temperature below which de-icing cycles start. Press MODIFY to validate the new value.

2   Adjusting De-icing Cycle Timer

The ON time can be adjusted from 0 to 900 seconds. The cycle time must be greater than the ON time. It can be adjusted from 1 to 720 minutes.

■ Set the function to **STAGE 2** using the menu select buttons.

■ Press the down-arrow key to select the de-icing timer.

```
On:        20sec
Cycle:    720min ◆
```

Available if the de-icing feature and the outside temperature sensor are enabled in the USER SETUP.

■ Press on the MODIFY button. The On time flashes on the display. Use the arrow keys to adjust it to the desired value.

■ Press on the MODIFY button once again. The cycle time flashes on the display. Use the arrow keys and set the cycle time to the desired value. Press MODIFY to validate the new value.

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Mist Cooling

The last cooling stage can be configured as a mist stage. Mist units operate according to two different timer cycles; the timer selection is based on the room temperature (see graphic below).

Refer to the USER SETUP section to activate the mist stage and to see which stage is used for this purpose (see the stages' definition table).

Mist Operation

MIST STATUS

MIST UNITS OPERATE ACCORDING TO TIMER 2

MIST UNITS TURN ON IN TIMER MODE 1

MIST ON (TIMER 2)

MIST UNITS TURN OFF

MIST ON (TIMER 1)

MIST OFF

MIST STOP TEMP. 1 — MIST START TEMP. 1 — MIST STOP TEMP. 2 — MIST START TEMP. 2 — ROOM TEMPERATURE
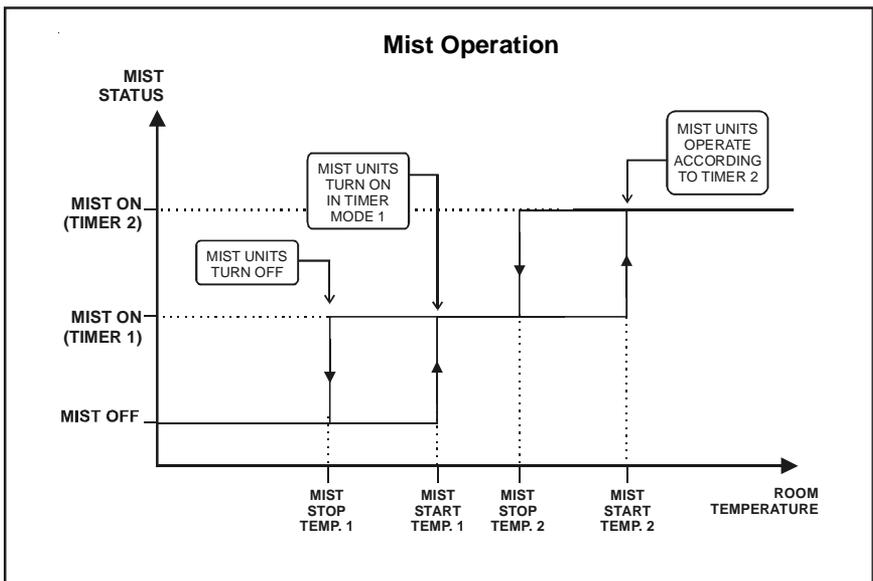
If humidity compensation is used, the mist units are disabled when the humidity reaches a user-defined maximum humidity level. Refer to the Humidity Compensation chapter for further information on this feature.

1 Setting Start and Stop Temperatures of Timers 1 & 2

Start and stop temperatures of both mist timers are directly related to the set point. This means that when the main set point changes, the start and stop temperatures are adjusted by the same amount.

The start temperature of the first mist timer can be adjusted from -40°F to 40°F (-22.2°C to 22.2°C) from the set point; the stop temperature can be adjusted from 0.5°F to 40°F (0.3°C to 22.2°C) below its start temperature.

The start temperature of the second mist timer can be adjusted from 0.5°F to 40°F (0.3°C to 22.2°C) above the start temperature of the first timer; the stop temperature can be adjusted from 0.5 °F to 40°F (0.3°C to 22.2°C) below its start temperature.

■ Set the function to **MIST** using the menu select buttons. The start temperature of the first mist timer is displayed.
Accessible if mist units are enabled in the USER SETUP.
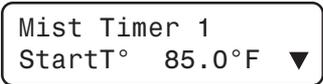
```
Mist Timer 1
StartT°  85.0°F  ▼
```

■ Press on the MODIFY button. The start temperature of the first timer flashes on the display. Adjust the start temperature to the proper value using the arrow keys.

■ Press on the down-arrow key. The stop temperature for the first timer is displayed.
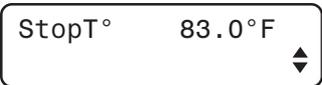
```
StopT°     83.0°F
                ▲▼
```

■ Press on the MODIFY button once again. The stop temperature flashes on the display. Adjust it to the desired value using the arrow keys. Press on the MODIFY button once again to validate.

■ Press on the down-arrow key twice. The start temperature of the second mist timer is displayed.

■ Follow the same procedure as described above to set the start and stop temperatures of the second mist timer.

2 Setting Timer 1 & 2 Time On and Time Off

The On and Off times of the mist units, of both timers, can be adjusted from 0 to 60 minutes.

■ Set the function to **MIST** using the menu select buttons. The start temperature of the first mist timer is displayed.
Accessible if mist units are enabled in the USER SETUP.

■ Press on the down-arrow key twice. The On and Off times of the first mist timer are displayed.

```
On:      1:00min
Off:   10:00min  ⬍
```

■ Press on the MODIFY button. The on time flashes on the display. Use the arrow keys to set it to the desired value.

■ Press on the MODIFY button. The off time flashes on the display. Use the arrow keys to set it to the desired value. Press on the MODIFY button to validate the value.

■ Press on the down-arrow key three times. The On and off times of the second mist timer are displayed.

■ Press on the MODIFY button. The on time of the second mist timer flashes on the display. Use the arrow keys to set it to the desired value.

■ Press on the MODIFY button. The off time of the second mist timer flashes on the display. Use the arrow keys to it to the desired value. Press on the MODIFY button to validate the value.

Relative Humidity (RH) Compensation

The controller has 2 ways to compensate for a high relative humidity (RH) level:

1. The minimum speed of stage 1 fans can be enhanced;
2. The mist units are shut off.

1. RH Compensation the Minimum Speed of Stage 1

The minimum speed of stage 1 fans can automatically be adjusted as a function of relative humidity. As the humidity level increases, the minimum speed of stage 1 fans increases proportionally to compensate for the change. At humidity levels at or below the humidity set point, stage 1 minimum speed is equal to the normal uncompensated speed. The user specifies the percentage increase in minimum speed for a relative humidity equal to the humidity set point + 10%. For example, if the minimum speed is 40% and the compensation adjustment is 30%, the minimum speed will be adjusted to 70% of full speed when the humidity rises 10% above the humidity set point. In addition to adjusting the minimum speed, the humidity compensation feature also changes the operation of the minimum ventilation cycle: if the controller is operating in minimum ventilation mode when the relative humidity exceeds the humidity set point, the minimum ventilation fans are operated continuously rather than cycled.

RH Compensation on the Minimum Speed of Stage 1 Fans
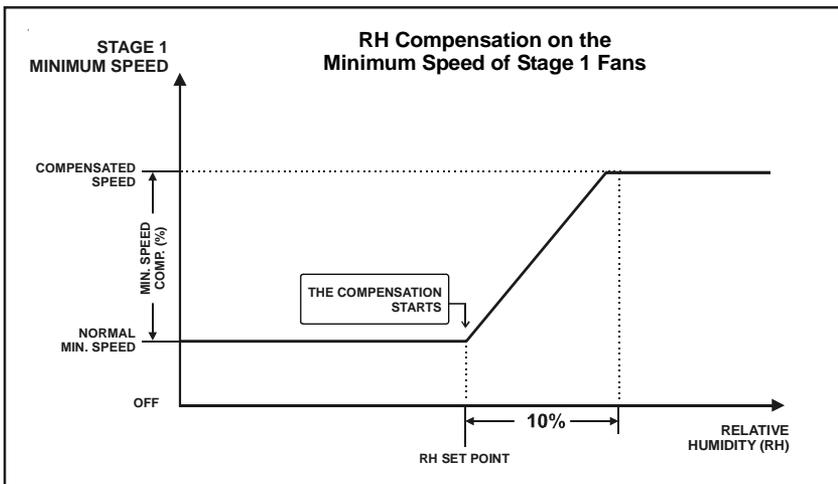
2. RH Compensation on Mist Units

When the humidity level is too high, mist units are shut off to avoid increasing the humidity level any further. They stop operating whenever the humidity exceeds the Mist Shutoff value.

1   Viewing the Relative Humidity

■ Set the function to **RELATIVE HUMIDITY** using the menu select buttons. The current humidity level is displayed.
Accessible if the humidity sensor is enabled in the USER SETUP.

■ Press on the down-arrow key once. The minimum humidity reading for the current day is displayed, along with the time and date.

```
Humid.      50%
                  ▼
```

■ Press on the down-arrow key once again. The maximum humidity reading for the current day is displayed, along with the time and date.
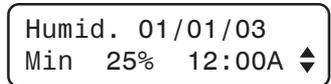
```
Humid. 01/01/03
Min  25%  12:00A ⬍
```

■ Keep pressing on the down-arrow key to display the minimum and maximum humidity levels for the previous 6 days. Use the up-arrow key to return to the previous display screens.

2 Adjusting Relative Humidity Set Point

The RH set point is the humidity level above which RH Compensation function start. This set point can be adjusted from 40 to 100% of humidity.

■ Set the function to **STAGE 1** using the menu select buttons.

■ Press on the down-arrow key in order to reach the **"Humidity set point"** display.

*Accessible if the "**RH Influence on Minimum Speed**" feature is enabled in the User Setup.*

```
┌─────────────────────┐
│ Humidity setp       │
│          65%      ▲ │
│                   ▼ │
└─────────────────────┘
```

■ Press on the MODIFY button. The humidity set point flashes on the display. Adjust the humidity set point to the desired value using the arrow keys. Press on the MODIFY button to validate the new value.

3 Adjusting the Minimum Speed Compensation

This is the increment in the minimum speed of fan stage 1 for humidity levels that are higher than the humidity set point + 10% (refer to the previous graphic). The value ranges from 0 to 100%.

■ Set the function to **STAGE 1** using the menu select buttons.

■ Press on the down-arrow key in order to display the minimum speed compensation menu.

*Note that this menu only appears if the "**RH Influence on Minimum Speed**" feature has been activated in the User Setup.*

```
┌─────────────────────┐
│ RH speed comp.      │
│          60%      ▲ │
│                   ▼ │
└─────────────────────┘
```

■ Press on the MODIFY button. The minimum speed compensation flashes on the display. Use the arrow keys to set the speed compensation to the desired value. Press MODIFY to validate the new value.

4 Adjusting the Mist Shutoff Set Point

This mist shutoff set point is the humidity level above which mist units are deactivated. It can be adjusted from 40% to 99% of humidity. Select "Off" to deactivate this function.

■ Set the function to **MIST** using the menu select buttons.
  Available if mist units are enabled in the USER SETUP.

■ Press on the down-arrow in order to select the "**Mist Shutoff at**" display.

```
Mist Shutoff at
            95%   ◆
```

■ Press on the MODIFY button. The mist shutoff set point flashes on the display. Use the arrow keys to adjust the set point to the desired value. Press MODIFY to validate the new value.

HEATER SETTINGS

Regular Heating Stages

Stages 5 and 6 can be used to control heating units. The controller automatically uses stage 6 as the heater stage if only 1 heating stage is activated (refer to the stage option table in the USER SETUP). Regular heating stages operate according to the average room temperature, using start and stop temperatures.

Regular Heating Stages

HEATERS

HEATER 1 + 2 ARE ACTIVATED

HEATERS 1-2 ON

HEATER 1 IS ACTIVATED

HEATER 1 ON
HEATER 2 OFF

OFF

| HEATER 2 START TEMP. | HEATER 2 STOP TEMP. | HEATER 1 START TEMP. | HEATER 1 STOP TEMP. | SET POINT | ROOM TEMP. |
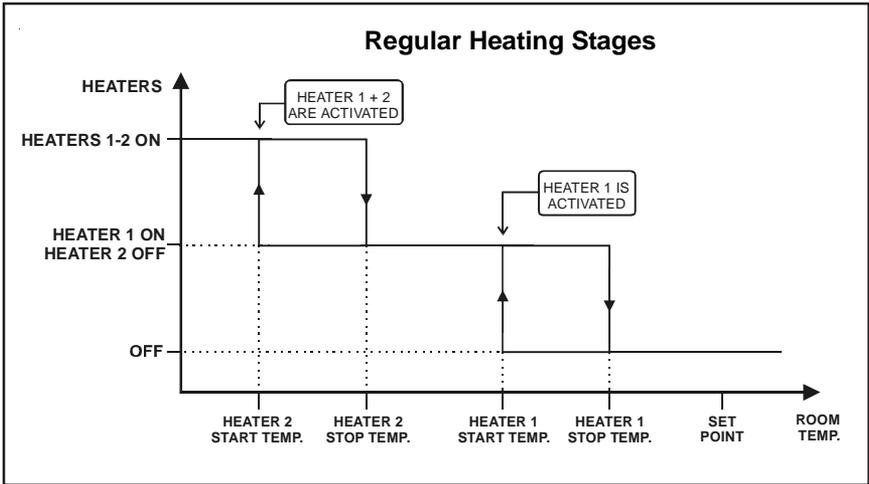
Zoned Heating Stages

If zoned heater stages are used, both heater outputs do not operate according to the same temperature probes. The user determines which of the temperature probes is assigned to each heating stage. By default, sensors 1 and 2 are assigned to the first heater stage and temperature sensors 3 and 4 are assigned to the second heater stage. The controller then uses the average temperature of selected sensors to operate the heater stages.

☞ Activate the **"Use zoned heaters"** option in the USER SETUP to activate this function.

Zoned Heaters
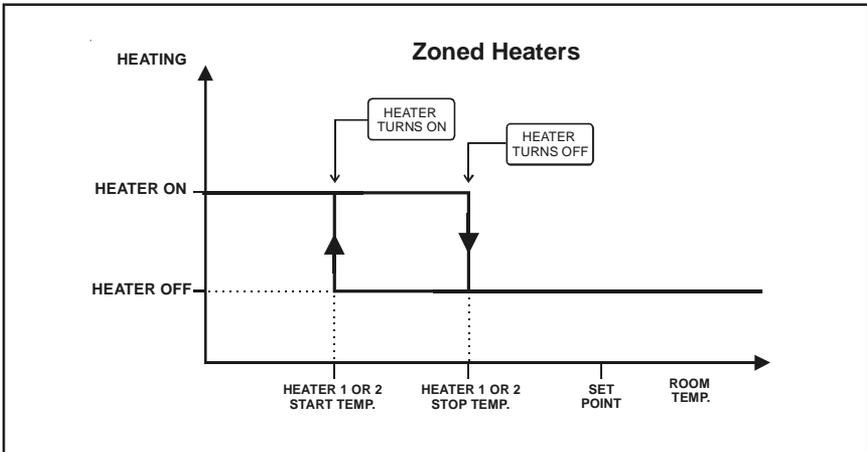
Heating Stages using Timers

It is possible to run heater stages according to timer settings. When this function is used, each heater stage operates according to two timers. When the temperature decreases below the start temperature of the heater stage, the heating output is activated, according to the corresponding timer as illustrated below:

Heating Stages' Timers

TIMERS

THE HEATING OUTPUT STARTS OPERATING ACCORDING TO TIMER 2

THE HEATING OUTPUT STARTS OPERATING ACCORDING TO TIMER 1

TIMER 2 ON

THE HEATING OUTPUT TURNS OFF

TIMER 1 ON

OFF

HEATER START T° TIMER 2

HEATER STOP T° TIMER 2

HEATER START T° TIMER 1

HEATER STOP T° TIMER 1
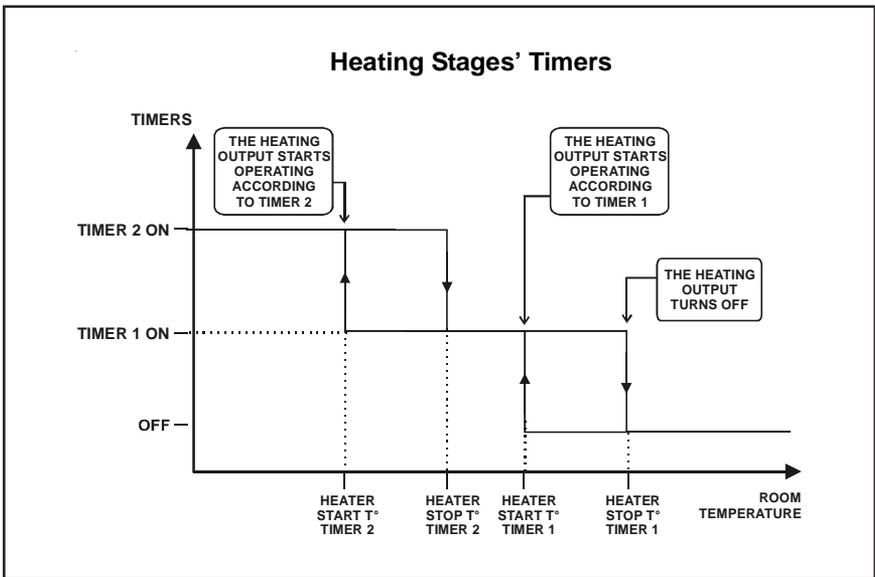
ROOM TEMPERATURE

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1 Adjusting the Start T° of Heater Stages 1 - 2

The start temperature of a heating stage can be adjusted from 40°F (22.2°C) below the set point to 39.5°F (21.9°C) above the set point; its stop temperature can be adjusted from O.5°F above the start temperature to 40°F (22.2°C) above the set point. Using a start temperature that is greater than the set point can be used to control heat mats for instance.

■ Set the function to **HEATERS** using the menu select buttons. The start temperature of heater 1 is displayed.

   Available if a heater is enabled in the USER SETUP.

```
Heater 1
StartT°  73.0°F  ▼
```

■ Press on the MODIFY button. The start temperature of the first heater stage 1 flashes on the display. Use the arrow keys to set it to the desired value. Press on the MODIFY button to validate.

■ Press on the down-arrow key. The stop temperature of the first heater stage is displayed.

```
StopT°    75.0°F
                 ⬍
```

■ Press on the MODIFY button once again. The stop temperature flashes on the display. Set it to the desired value using the arrow keys. Press on the MODIFY button to validate.

■ If two heaters are used, press on the down-arrow key, in order to display the start temperature of the second heater stage then follow the same procedure to adjust the start and stop temperatures of the second heater stage (if applicable).

2 Adjusting Heater Stages' Timer

If the timer has been enabled in the USER SETUP, follow this procedure to adjust the timer's On and Off times. They can be adjusted from 0 to 15 minutes, in increments of 15 seconds.

■ Set the function to **HEATERS** using the menu select buttons. The start temperature of heater 1 is displayed.

   Available if a heater is enabled in the USER SETUP.

```
Heat 1 Timer 1
StartT°  73.0°F  ▼
```

■ Press on the MODIFY button. The start temperature for the first timer of the first heater stage flashes on the display. Use the arrow keys to set it to the desired value. Press on the MODIFY button to validate.

■ Press on the down-arrow key once. The stop temperature for the first timer of the first heater stage flashes on the display. Use the arrow keys to set it to the desired value. Press on the MODIFY button to validate.

■ Press on the down-arrow key once again. The On and Off times for the first timer of the first heating stage are displayed.

```
On:        1:00min
Off:       1:00min ⬍
```

Note that this menu is only accessible if the timer has been enabled on heating stages in the USER SETUP.

■ Press on the MODIFY button. The On time of the first timer flashes on the display. Use the arrow keys to set it to the desired value.

■ Press on the MODIFY button once again. The Off time of the first timer flashes on the display. Use the arrow keys to set it to the desired value.

■ Press on the down-arrow key once again. The start temperature for the second timer of the first heating stage is displayed.

```
Heat 1 Timer 2
StartT°  71.0°F  ⬍
```

■ Follow the same procedure to set the start/stop temperatures and the On and Off times for the second timer of the first heater stage.

■ If two heater stages are used, proceed in similar fashion to the timers of the second heating stage (if applicable).

TIMER-BASED AIR INLET

Principle of Operation

The controller can control the inlet opening with a timer instead of using a potentiometer. With the timer mode, the controller converts inlet openings into time values. To use this opening mode, enable the inlet timer in the USER SETUP menu.

Opening of the Air Inlet
The controller adjusts the opening of the air inlet according to the operation of the ventilation stages. As the temperature increases and new stages are activated, the inlet is opened or closed accordingly. The ventilation curve is divided into steps and the user must program a new air inlet position for each step.

Opening of the Air Inlet During Variable Stages
A step is also added when a variable stage starts increasing in speed, right after the stage's differential. This step is called " Step x Hi ". The step number is not increased as we are dealing with the same ventilation stage. In the previous graph, Step 1 corresponds to the activation of Stage 1 and Step 1 Hi signals the point where Stage 1 fans reach their full speed.

The user must thus define the inlet opening position (%) required at the beginning and at the end of each variable stage. Once this is done, the user can choose to subdivide this opening into 0 to 2 intermediate opening steps to progressively open the inlet during the variable stage.

When intermediate opening steps are enabled, the controller splits up the variable stage's opening (%) evenly between the number of intermediate steps (e.g., if one intermediate step is enabled, the controller will open the inlet twice during the variable stage (opens of 50% of the variable stage's opening at the first intermediary step, 50 % at the end of the variable stage).

Intermediate steps are activated when a variable stage reaches predefined fan speeds. These fan speeds are set differently depending on the number of intermediate steps in use. For example, if 1 intermediate step is enabled, the inlet opens during half the variable stage's opening when the stage's speed is of 75 %; it reaches the stage's HI opening position when the fan speed is 100 % (refer to the following graphs).

The three following graphs illustrate when each intermediate step starts.

Opening of the Inlet
During a Variable Stage
with **0 Intermediate Step**

Opening of the Inlet During a Variable Stage with 1 **Intermediate Step**

Opening (Time or %)

Step HI Opening

1/2

Intermediary Step 1

1/2

Step Opening

Variable Stage Speed

50 %   75 % (interm. step 1)   100 %

Opening of the Inlet During a Variable Stage with 2 **Intermediate Steps**

Opening (Time or %)

Step HI Opening

1/3

Intermediary Step 2

1/3

Intermediary Step 1

1/3

Step Opening

Variable Stage Speed

50 %   60 % (interm. step1)   85 % (interm. step2)   100 %

Opening of the Timer-Based Air Inlet

Opening (%)

Room T°

STEP 0
STEP 1
STEP 1 HI
STEP 2
STEP 2 HI
STEP 3
STEP 3 HI
STEP 4
STEP 5
STEP 6

MINIMUM VENTILATION

SET POINT

OF DEGREES TO REACH 100% OF STAGE 1

STAGE 2 START T°

OF DEGREES TO REACH 100% OF STAGE 2

STAGE 3 STOP T°

STAGE 3 START T°

OF DEGREES TO REACH 100% OF STAGE 3

STAGE 4 STOP T°

STAGE 4 START T°

STAGE 5 STOP T°

STAGE 5 START T°

STAGE 6 STOP T°

STAGE 6 START T°

STEP 1
STEP 1 HI
STEP 2
STEP 2 HI
STEP 3
STEP 3 HI
STEP 4
STEP 5
STEP 6

* STEP 3 HI IS ONLY USED IF THE MERGE BETWEEN STAGE 2 AND STAGE 3 IS ACTIVATED.

Automatic Reset of the Actuator's Position

The controller needs to reset the actuator's position at regular interval to make sure the inlet's position is always accurate. Resetting the actuator's position clears all accumulated time offsets caused by the frequent openings and closings of the inlet. This reset is performed automatically according to one of these two methods:

- **Reset the minimum position only** *(Close mode)*
  Each time a reset is performed, the inlet totally closes. Once the actuator's position is reset, the inlet returns to its previous position.

- **Reset toward the nearest position** *(Open/Close mode)*
  Each time a reset is performed, the inlet fully opens on condition that its current opening is over 50 %; if the current inlet opening is less than 50 %, the controller closes the inlet to reset the actuator's position. This way, the inlet never closes when the room temperature already asks for a large opening.

> **Make sure limit switches are located at both ends of the actuator when using this resetting method.**

Maximum Opening of the Timer-Based Inlet

A supplementary stage can be calibrated in order to continue opening the air inlet beyond the last temperature of the controller's ventilation stages. This supplementary stage is used to direct the airflow more efficiently during periods of warm weather. The user must specify the maximum inlet opening and the number of degrees over the last ventilation stage at which this opening must be reached.

Maximum Opening Stage of the Timer-Based Inlet

Settings

1 Adjusting the Reference Points (Steps)

The controller adjusts the opening of the air inlet according to the operation of the ventilation stages. The following procedure shows how to assign an inlet position to each ventilation stage.

■ Set the function to **INLET** to adjust the reference points of the air inlet
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key once. The opening of step 0 is displayed.

```
St. 0          10%
               ▲
               ▼
```

■ Press MODIFY. The opening of step 0 flashes on the display. Use the arrow keys to set it to the desired value. Press MODIFY once again to validate.

■ Press the down-arrow key. The opening of step 1 and step 1 Hi are displayed. Press MODIFY then use the arrow keys to adjust these openings to the desired value. Proceed in similar fashion to assign an inlet opening to every step.

2 Setting the Total Run Time of the Inlet

Enter the **exact time** that is required to reach the actuator's maximum limit switch when the actuator is closed. The controller refers to this value to convert opening values into time values.

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key to select the "**Total Run Time**" display.
Accessible if the timer-based inlet option is enabled in the USER SETUP.

```
Total Run Time
        2:00min ▲▼
```

■ Press MODIFY then use the arrow keys to adjust the total run time to the desired value.

3   Setting the Maximum Opening

The maximum inlet opening is reached beyond the last ventilation stage.

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key, in order to select **"Max Opening"** display.

```
Max opening
              100%    ⬍
```

■ Press MODIFY then use the arrow keys to adjust the max opening to the desired value. Press MODIFY to validate.

4   Setting the # of Degrees to Maximum Opening

This is the temperature interval over which the air inlet goes from the opening associated with the last ventilation stage towards its maximum opening (see previous graphs). This parameter can be adjusted from 0.5 to 20°F (0.3 to 11.1°C).

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key, to select the **"Degrees to max opening"** display.

```
Degrees to max
opening    5.0°F ⬍
```

■ Press MODIFY. The number of degrees to max opening flash on the display. Use the arrow keys to set this parameter to the desired value.

5 Selecting the Reset Mode

This section explains how to choose the desired resetting method: choose *"Open/Close"* to reset the actuator toward its nearest position; select *"Close"* to reset the actuator toward its closed position only; select "Off" to disable the auto-reset function. Refer to the previous section for further information about this feature.

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key to select the "**Reset Mode**" display.
Accessible if the timer-based inlet option is enabled in the USER SETUP.

```
Reset Mode
    Open/Close    ⬍
```

■ Press MODIFY then use the arrow keys to select the desired reset mode then press MODIFY to validate.

6 Auto-Reset Time & Frequency

This section shows how to set the time at which the reset is performed and the frequency at which it occurs. The reset can be performed once every 1-7 days.

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key to select the "**Reset Time**" display.
Accessible if the timer-based inlet option is enabled in the USER SETUP.
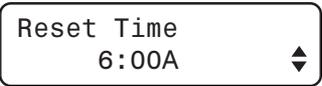
```
Reset Time
    6:00A        ⬍
```

■ Press MODIFY then use the arrow keys to select the time at which reset needs to be performed then press MODIFY to validate.

■ Press the down-arrow key once more. The frequency at which the actuator needs to be reset is displayed.

```
Reset Period
            3days   ⬍
```

■ Press MODIFY then use the arrow keys to select the frequency (Period) then press MODIFY twice to validate.

7   Performing a Manual Reset

It is possible to reset the actuator's position without waiting for the next time of reset. The following procedure shows how to perform a manual reset.

■ Set the function to **INLET**.
   Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key to select the **"Reset Now?"** display.
   Accessible if the timer-based inlet option is enabled in the USER SETUP.

```
Reset Now?
               No   ▲
```

■ Press MODIFY twice then press the up-arrow key to start the actuator's reset then press MODIFY to validate. The controller launches the reset and the "Yes" answer on screen switches back to "No".

Manual Opening of the Air Inlet

It is possible to open (or close) the air inlet manually. When an inlet is controlled manually, the controller stops controlling the inlet output.

■ Set the function to **INLET**. The current position of the inlet and its operating mode are displayed (Auto/ Open/ Off/ Close).

```
Opening     35%
Mode        Open   ▼
```

Accessible if the air inlet is enabled in the USER SETUP.

■ Press MODIFY then use the arrow keys to select the proper control mode: select "**Open**" to manually open the inlet; select "**Close**" to manually close it; select "**Off**" to stop the actuator.

■ Do not forget to return to the automatic control mode afterwards so that the controller can take back control of this output.

⚠ **WARNING**

If the inlet is controlled by a timer, perform a manual reset of the actuator's position after each manual opening of the air inlet.

POTENTIOMETER-BASED AIR INLET

Principle of Operation

If the inlet has a potentiometer, the controller controls the opening of the air inlet according to the reading of this potentiometer (expressed as a percent). The graph on next page shows how the potentiometer-based inlet opens during variable and on-off stages. Refer to the USER SETUP section to enable the inlet's potentiometer.

The controller adjusts the opening of the air inlet according to the operation of the ventilation stages. As the temperature increases and new stages are activated, the inlet is opened or closed accordingly. The ventilation curve is divided into steps and the user must program a new air inlet position for each step.

A step is also added when the speed on a variable speed stage reaches 100% without activating a new stage. The figure on next page illustrates this. In this example, a step is added when the first ventilation stage reaches full speed at " temperature set point + #degrees to 100% of stage 1 " even though no new stages are activated at this point. This step is called " Step 1 Hi "; the step number is not increased as we are dealing with the same ventilation stage as Step 1. Step 0 defines the initial position of the air inlet.

Inlet Calibration
If a potentiometer is used, the inlet must first be calibrated. This calibration tells the controller what are the minimum and maximum openings of the actuator. Refer to the following section to calibrate the inlet.

Actuator's Accuracy
When the actuator isn't moving, a minimum opening or closing percentage is necessary so that the actuator can start to move. This user-defined value is called ACCURACY and can be adjusted from 2 to 10%. This value prevents the actuator from moving constantly.

Opening of the Potentiometer-Based Air Inlet

Opening (%)

Room T°

STEP 6
STEP 5
STEP 4
STEP 3 HI
STEP 3
STEP 2 HI
STEP 2
STEP 1 HI
STEP 1
STEP 0

* STEP 3 HI IS ONLY
USED IF THE MERGE
BETWEEN STAGE 2
AND STAGE 3 IS ACTIVATED.

MINIMUM
VENTILATION

SET POINT

OF DEGREES
TO REACH 100%
OF STAGE 1

STAGE 2
START T°

OF DEGREES
TO REACH 100%
OF STAGE 2

STAGE 3
STOP T°

STAGE 3
START T°

OF DEGREES
TO REACH 100%
OF STAGE 3

STAGE 4
STOP T°

STAGE 4
START T°

STAGE 5
STOP T°

STAGE 5
START T°

STAGE 6
STOP T°

STAGE 6
START T°

Maximum Opening of the Air Inlet

A supplementary stage can be calibrated in order to continue opening the air inlet beyond the last temperature of the controller's ventilation stages. This supplementary stage is used to direct the airflow more efficiently during periods of warm weather. The user must specify the maximum inlet opening and the number of degrees over the last ventilation stage at which this opening must be reached. The inlet can reach this maximum opening two different ways:

1) Progressive Mode:

The controller **gradually** opens or closes the panels in a linear fashion as the room temperature rises above the last reference point temperature. The inlet reaches its maximum opening at the *"temperature of the last reference point + #of degrees to max. opening"*.

MAXIMUM OPENING STAGE: PROGRESSIVE MODE
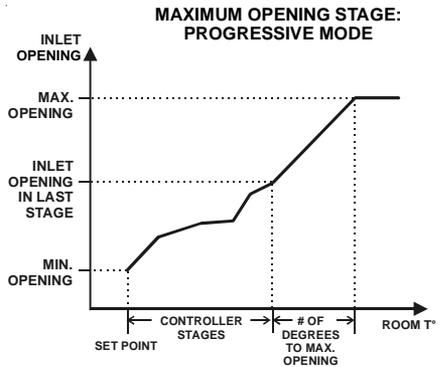
2) Dump Mode:

When the temperature increases above the last ventilation stage, the air inlet position is maintained. When the temperature reaches *"temperature of the last reference point + #of degrees to max. opening"*, the inlet opens to its maximum opening at once.

MAXIMUM OPENING STAGE: DUMPING MODE
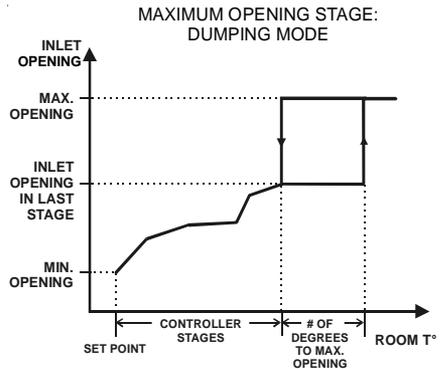
Settings

1   Inlet Calibration

The calibration tells the controller what are the minimum and maximum openings of the actuator. The controllers automatically calibrates the minimum position according to the limit switch. The user must then open the actuator to its maximum position using the manual opening function.

■   Set the function to **INLET** .
Accessible if the inlet is enabled in the USER SETUP.

■   Press the down-arrow key in order to select the "**Calib Inlet?**" display.
Accessible if the inlet's potentiometer is enabled in the USER SETUP.

```
Calib Inlet?
               Yes ▲
```

■   Press MODIFY then press the up-arrow key to select **"Yes"**. Press MODIFY once again to validate. The calibration starts: the actuator automatically closes to its minimum position, as determined by the limit switch). The message "**Please wait while closing**" is displayed.

■   Once the inlet's minimum position (0%) is defined, the controller asks to open the air inlet to its maximum position. Select the "Open" or "Close" functions

```
OpenToMax    Open
Save calib    No ▲
```

to set the actuator to its maximum position (100%). When it is properly positioned press the up or down-arrow key to select "Off", then press MODIFY to stop the actuator.

■   Once the max position (100%) is defined, select **"Yes"** to save the calibration then press MODIFY to validate.

```
OpenToMax    Open
Save calib   Yes ▲
```

■   The calibration is now done and the inlet starts being controlled automatically by the controller. The controller also displays the message **"Calibration completed !"**.

```
Calibration
completed !
```

EXPERT 2V4SA

2 Adjusting the Reference Points (Steps)

The controller adjusts the opening of the air inlet according to the operation of the ventilation stages. The following procedure shows how to assign an inlet position to each ventilation stage.

■ Set the function to **INLET** to adjust the reference points of the air inlet
  Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key once. The opening of step 0 is displayed.

```
St. 0          10%
                    ⬍
```

■ Press MODIFY. The opening of step 0 flashes on the display. Use the arrow keys to set it to the desired value. Press MODIFY once again to validate.

■ Press the down-arrow key. The opening of step 1 and step 1 Hi are displayed. Press MODIFY then use the arrow keys to adjust these openings to the desired value. Proceed in similar fashion to assign an inlet opening to every step.

3 Setting the Maximum Opening

The maximum inlet opening is reached beyond the last ventilation stage.

■ Set the function to **INLET**.
  Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key, in order to select **"Max Opening"** display.

```
Max opening
           100%   ⬍
```

■ Press MODIFY then use the arrow keys to adjust the max opening to the desired value. Press MODIFY to validate.

4 Setting the # of Degrees to Maximum Opening

This is the temperature interval over which the air inlet goes from the opening associated with the last ventilation stage towards its maximum opening (see previous graphs). This parameter can be adjusted from 0.5 to 20° F (0.3 to 11.1° C).

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key, to select the "**Degrees to max opening**" display.

```
Degrees to max
opening    5.0°F ⬍
```

■ Press MODIFY. The number of degrees to max opening flash on the display. Use the arrow keys to set this parameter to the desired value.

5 Selecting the Maximum Opening Mode

Select the proper maximum opening method: dumping / progressive. Refer to previous graphs.

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key, in order to select "**Max.Opening Mode**" display.
Accessible if the inlet's potentiometer is enabled in the USER SETUP.

```
Max Opening Mode
Progressive      ⬍
```

■ Press MODIFY then use the arrow keys to select the proper opening mode (dumping / progressive). Press MODIFY once again to validate.

6   Adjusting the Accuracy of the Air Inlet

When the actuator isn't moving, a minimum opening or closing percentage is required so that the actuator can start to move. This value, called accuracy, can be adjusted from 2 to 10%. The accuracy parameter prevents the actuator from flickering.

■   Set the function to **INLET**.

    Accessible if the air inlet is enabled in the USER SETUP.

```
Accuracy
            + / -    3% ▲
```
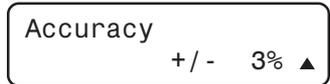
■   Press the down-arrow key to select the **"Accuracy"** display.

■   Press MODIFY then use the arrow keys to adjust it to the desired value.

Manual Opening of the Air Inlet

It is possible to open (or close) the air inlet manually. When an inlet is controlled manually, the controller stops controlling this inlet output and stops monitoring potentiometer alarms.

■ Set the function to **INLET**. The current position of the inlet and its operating mode are displayed (Auto/ Open/ Off/ Close).

```
Opening      35%
Mode        Open   ▼
```

Accessible if the air inlet is enabled in the USER SETUP.

■ Press MODIFY then use the arrow keys to select the proper mode. Select "**Open**" to manually open the inlet. Select "**Close**" to manually close it or select "**Off**" to stop the actuator.

■ Do not forget to return to the automatic control mode afterwards so that the controller can take back control of this output.

Static Pressure Compensation on the Inlet Opening

A compensation can be used to ensure a certain uniformity in the static pressure level in the room. This static pressure compensation allows opening or closing the air inlet further when the static pressure level is out of range.

When the static pressure level exceeds the normal range (above the Hi Pressure Set point or below the Lo Pressure Set Point), the controller waits for the *Compensation Delay* to make sure this unusual pressure condition is not temporary. If the pressure is still out of range after this delay has elapsed, the inlet compensation (%) is applied on the opening of the inlet: it closes further by its compensation value (%) when the pressure level is too low [**point A** on the graphic] or opens further by its compensation value (%) when the pressure level is too high [**point C** on the graphic]. The controller then waits for the *Compensation Delay* once again. If the pressure level is still out of range afterwards, the opening compensation is applied once more. This cycle is repeated up until the pressure gets back to the normal range or until a new stage starts. When the pressure level gets back to the normal range [**points B & D** on the graphic], the inlet keeps its compensated position until the beginning of a new stage. No compensation is applied on the inlet opening when a new stage starts.
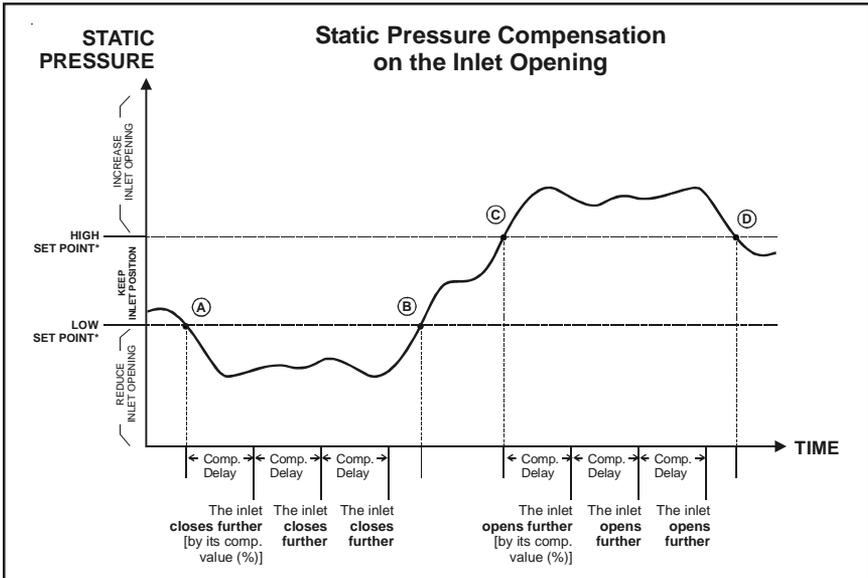
1   Viewing the Static Pressure Level

■ Set the function to **STATIC PRESSURE** using the menu select buttons. The current static pressure level is displayed.
Accessible if the static pressure sensor is enabled in the USER SETUP.

```
Stat. P     .05"WC
                  ▼
```

■ Press the down-arrow key once. Today's minimum static pressure reading is displayed, along with the time and date.

```
Stat P 31/12/XX
Min  .02  12:00A  ⬍
```

■ Press on the down-arrow key once again. Today's maximum static pressure reading is displayed, along with the time and date.

■ Keep pressing the down-arrow key to display minimum and maximum pressure readings of the 6 last days. Use the up-arrow key to return to previous screen displays.

2   Adjusting Hi and Lo Pressure Set Points

The static pressure compensation starts when the static pressure level exceeds the Hi or Lo static pressure set points.

■ Set the function to **INLET**.
Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key, in order to select the " **Low SP**" display.
Available if the static pressure compensation feature is enabled in the USER SETUP.
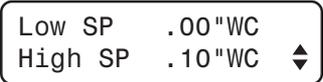
```
Low SP    .00"WC
High SP   .10"WC  ⬍
```

■ Press MODIFY. The Low Static Pressure set point flashes on the display. Use the arrow keys to set it to the desired value.

■ Press MODIFY once again. The High Static Pressure set point flashes on the display. Use the arrow keys to set it to the desired value. Press MODIFY once again to validate.

3 Adjusting the Compensation Value

Select the opening percentage that must be added or removed when a compensation is applied on the inlet openings. Adjustable from 0 to 10%

■ Set the function to **INLET**.
  Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key in order to select the "**Stat. P compens**." display.
  Available if the static pressure compensation feature is enabled in the USER SETUP.
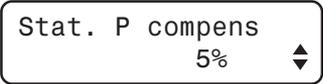
```
Stat. P compens
          5%      ⬍
```

■ Press MODIFY. The compensation value flashes on the display. Use the arrow keys to set it to the desired value.

4 Adjusting the Compensation Delay

Each time the compensation delay elapses and the pressure level exceeds the normal range, a compensation is applied on the inlet opening. This delay can be adjusted from 15 to 900 seconds.

■ Set the function to **INLET**.
  Accessible if the air inlet is enabled in the USER SETUP.

■ Press the down-arrow key in order to select "**Compens. delay**." display.
  Available if the static pressure compensation feature is enabled in the USER SETUP.

```
Compens.delay
        30 sec   ⬍
```

■ Press MODIFY. The compensation delay flashes on the display. Use the arrow keys to set it to the proper value. Press MODIFY once again to validate.

0-10V OUTPUTS

The EXPERT 2V4SA has one 0-10V output that can be used in many different ways. This output can either be used as a supplementary fan or heating stage, it can also be used to control heat mats or chimney dampers. The following section explains each of these features separately. Refer to the USER SETUP to enable the 0-10V output and to select its function.

Note that the controller may give a 10-0V signal instead of a 0-10V signal. This may be useful for safety reasons: if the main controller loses power and its 0-10V output drops to 0V, the controller then gives the maximum load to the module connected on the output.

0-10V Ventilation Output

The controller has one 0-10V output that can be used to control a supplementary ventilation stage. Refer to the USER SETUP section to enable this type of output.

0-10V OUTPUT : VENTILATION MODE

THE 0-10V OUTPUT OPERATES CONTINUOUSLY AND STARTS INCREASING IN SPEED

THE 0-10V OUTPUT REACHES ITS MAX. SPEED

THE 0-10V OUTPUT IS DEACTIVATED

THE 0-10V OUTPUT OPERATES ACCORDING TO THE TIMER SETTINGS

0-10V OUTPUT FANS

MAXIMUM SPEED

MINIMUM SPEED

OFF

MAX T°   STOP AT   ROOM TEMP.
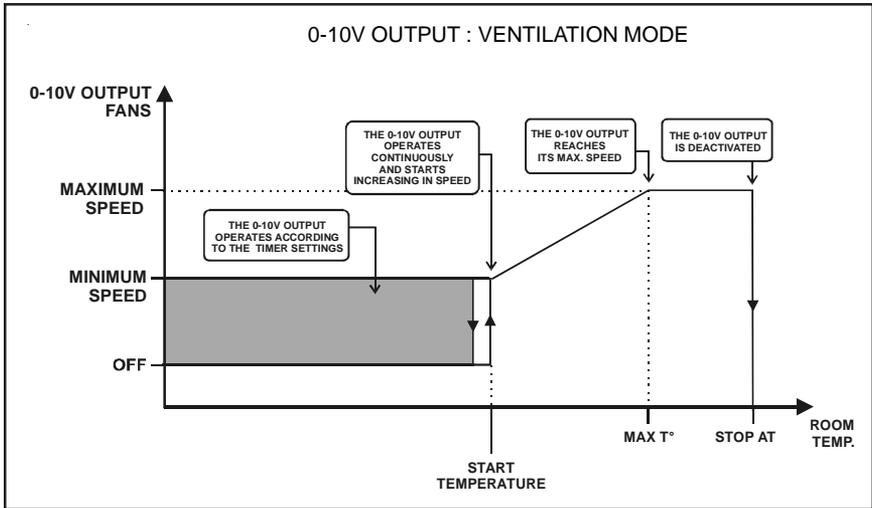
START TEMPERATURE

WHEN THE ROOM TEMPERATURE INCREASES:

Below the start T° :
The output operates at its minimum speed, according to a timer;

At the start T° :
The 0-10V fan output runs continuously at its minimum speed and starts increasing in speed as the temperature increases;

At the Maximum T° :
The 0-10V fan output reaches its maximum speed;

Above the "Stop At" temperature:
The 0-10V fan output is disabled.

1 Adjusting the Start Temperature of 0-10V Fan Outputs

The 0-10V fan output start running when the room temperature reaches the output's start temperature. This temperature can be set as an absolute value or it can be related to the set point. This means that when the set point changes, the start temperature is adjusted by the same amount. This function must be set in the USER SETUP (**"0-10V follows set point"**). The start temperature can be set from -40 to 120°F (-40 to 48.9°C).

■ Set the function to **0-10V OUTPUT**. The start temperature of the selected output is displayed.

> ```
> StartT° 75.0°F
>                    ▼
> ```

Make sure the 0-10V output uses the "Venti-lation" option in the USER SETUP.

■ Press MODIFY. The start temperature flashes on the display. Use the arrow keys to set it to the desired value then press MODIFY again to validate.

2 Adjusting Min/Max. Speeds of the 0-10V Fan Output

The minimum and maximum speed of the 0-10V fans can be adjusted from 0 to 100%.

■ Set the function to **0-10V OUTPUT**.
   Make sure the 0-10V output uses the "Ventilation" option in the USER SETUP.

■ Press the down-arrow key in order to se-lect the Min/Max speed display.

> ```
> Min Spd    40%
> Max Spd   100%     ⬍
> ```

■ Press MODIFY. The minimum speed flashes on the display. Use the arrow keys to set it to the desired value.

■ Press MODIFY once again, the maximum speed flashes on the display. Use the ar-row keys to set it to the desired value.

3 Operating Temperatures of the 0-10V Fan Output

The **maximum temperature** is the temperature at which the 0-10V fan output reaches its full speed. It can be adjusted from 0.5 to 20°F (0.3°C to 11.1°C) above the output's start temperature.

The **stop temperature** is the temperature above which the output is deactivated as the temperature rises (refer to the previous diagram). It can be set from 0.1°F (0.1°C) above the output's start temperature to 120°F (48.9°C). Select **"Off"** if you do not wish to deactivate the output.

■ Set the function to **0-10V OUTPUT**.
   Make sure the 0-10V output uses the "Ventilation" option in the USER SETUP.

■ Press the down-arrow key in order to select the **"MaxT° / Stop at"** display.

```
Max T°   77.0°F
Stop at 79.0°F   ⬍
```

■ Press on the MODIFY button. The maximum temperature flashes on the display. Use the arrow keys to set it to the desired value.

■ Press on the MODIFY button once again, the stop temperature flashes on the display. Use the arrow keys to set it to the desired value.

4 Setting the 0-10V Fan Outputs' Timer

When the temperature falls below the start temperature of the 0-10V fan output, 0-10V fans operate at their minimum speed, according to a timer. The timer's On and Off times can be adjusted from 0 to 900 seconds, in increments of 15 seconds.

■ Set the function to **0-10V OUTPUT**.
   Make sure the 0-10V output uses the "Ventilation" option in the USER SETUP.

■ Press on the down-arrow key and select the timer display.

```
On:          15sec
Off          0sec   ⬍
```

■ Press on the MODIFY button. The On time flashes on the display. Use the arrow keys to set it to the desired value.

■ Press on the MODIFY button once again, the Off time flashes on the display. Use the arrow keys to set it to the desired value.

5   Assigning T° Probes to 0-10V Fan Outputs

When used as a ventilation output, the 0-10V output operates according to the average temperature of chosen temperature probes. The following procedure shows how to assign temperature sensors to the 0-10V fan output.

■ Set the function to **0-10V OUTPUT**.
   Make sure the 0-10V output uses the "Venti-lation" option in the USER SETUP.

■ Press on the down-arrow key to select the probe selection display.

```
Probes
1234         ▲
```

■ Select which of the sensors are used to control the selected 0-10V output. Blinking digits represent probes that are assigned for this purpose. At least one temperature probe must be selected. Press on the MODIFY button then set each probe's status by using the arrow keys.

0-10V Heating Output

When it is used for heating, the 0-10V output is activated when its **Start Temperature** is reached. The heat intensity gradually increases as the room temperature decreases. The user specifies at what temperature heating units must reach their maximum intensity (**Maximum T°**) and the room temperature above which the output is deactivated (**Stop at T°**).
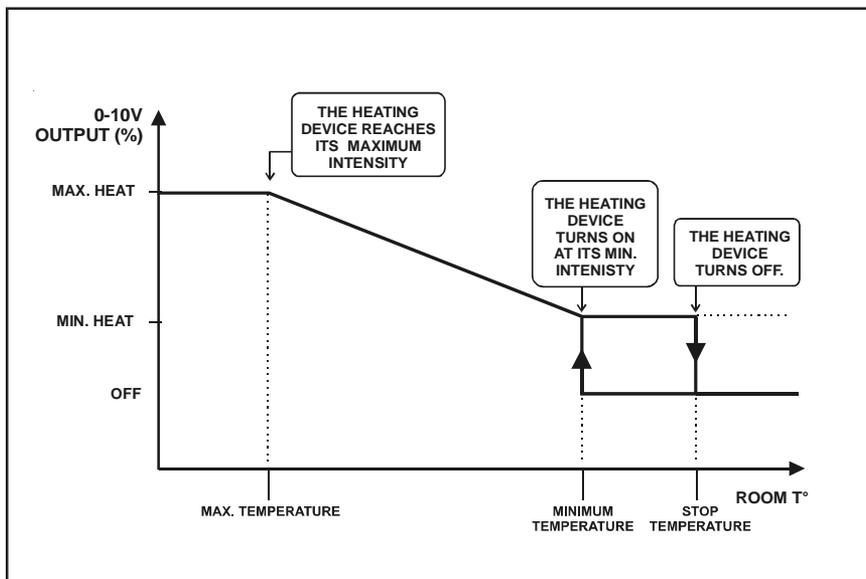
1 Adjusting the Min T° of the 0-10V Heating Output

The minimum temperature is the temperature below which the heater units of the 0-10V output start operating at their minimum capacity (refer to the previous diagram). This parameter can be a fix value (absolute) or it can be related to the set point. This means that when the set point changes, the minimum temperature is adjusted by the same amount. This function must be set in the USER SETUP (**"0-10V follows set point"**). It can be set from -40 to 120°F (-40 to 48.9°C).

■ Set the function to **0-10V OUTPUT**.

   Make sure the 0-10V output uses the "Heating" option in the USER SETUP.

■ Press MODIFY. The minimum temperature flashes on the display. Use the arrow keys to set it to the desired value.

```
Min T°   75.0°F
                    ▼
```

2 Min/Max Heat of the 0-10V Heating Output

The minimum and maximum capacity of the 0-10V heating units can be adjusted from 0 to 100%.

■ Set the function to **0-10V OUTPUT**.

   Make sure the 0-10V output uses the "Heating" option in the USER SETUP.

■ Press on the down-arrow key in order to select the Min/Max heat display.

```
MinHeat   10%
MaxHeat  100%       ⬍
```

■ Press MODIFY. The minimum heat flashes on the display. Use the arrow keys to set it to the desired value.

■ Press MODIFY once again, the maximum heat flashes on the display. Use the arrow keys to set it to the desired value.

3 Operating T° of the 0-10V Heating Output

The **maximum temperature** is the temperature at which the 0-10V heating output reaches its full capacity. It can be adjusted from 0.5 to 20°F (0.3°C to 11.1°C) below the output's minimum temperature.

The **stop temperature** is the temperature above which the output is deactivated. It can be set from 0.5 to 20°F (0.3 to 11.1°C) above the output's minimum temperature. Refer to the previous diagram.

■ Set the function to **0-10V OUTPUT**.
Make sure the 0-10V output uses the "Heating" option in the USER SETUP.

■ Press the down-arrow key in order to select the **"MaxT° / Stop at"** display.
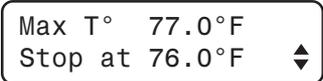
```
Max T°   77.0°F
Stop at 76.0°F    ⬍
```

■ Press on the MODIFY button. The maximum temperature flashes on the display. Use the arrow keys to set it to the desired value.

■ Press on the MODIFY button once again, the stop temperature flashes on the display. Use the arrow keys to set it to the desired value.

4 Assigning T° Probes to 0-10V Heating Output

When it used for heating, the 0-10V output operates according to the average temperature of chosen temperature probes. The following procedure shows how to assign temperature sensors to the 0-10V heating output.

■ Set the function to **0-10V OUTPUT**.
Make sure the 0-10V output uses the "Heating" option in the USER SETUP.

■ Press on the down-arrow key to select the probe selection display.

```
Probes
1234              ▲
```

■ Select which of the sensors are used to control the selected 0-10V output. Blinking digits represent probes that are assigned for this purpose. At least one temperature probe must be selected. Press on the MODIFY button then set each probe's status by using the arrow keys.

0-10V Chimney Damper Output

Chimney dampers open and close according to the operation of the controller's ventilation stages. As the temperature increases and new stages are activated, the chimney damper is opened or closed accordingly. The ventilation curve is divided into steps and the user must program a new chimney position for each step.

A step is also added when the speed on a variable speed stage reaches 100% without activating a new stage. The figure besides illustrates this. In this example, a step is added when the first ventilation stage reaches full speed at " temperature set point + #of degrees to 100% of stage 1 " even though no new stages are activated at this point. This step is called " Step 1 Hi " - the step number is not increased as we are dealing with the same ventilation stage as Step 1. Step 2 corresponds to the activation of Stage 2 and Step 2 Hi defines the point where Stage 2 reaches full speed. Step 0 defines the initial position of the air inlet and corresponds to a room temperature of 0.3° F below the set point.

Opening of the Chimney Damper

Room T°

Opening (%)

STEP 6
STEP 5
STEP 4
STEP 3 HI
STEP 3
STEP 2 HI
STEP 2
STEP 1 HI
STEP 1
STEP 0

* STEP 3 HI IS ONLY
USED IF THE MERGE
BETWEEN STAGE 2
AND STAGE 3 IS ACTIVATED.

STAGE 6 START T°
STAGE 6 STOP T°
STAGE 5 START T°
STAGE 5 STOP T°
STAGE 5 STOP T°
STAGE 4 START T°
OF DEGREES TO REACH 100% OF STAGE 3
STAGE 3 START T°
STAGE 3 STOP T°
OF DEGREES TO REACH 100% OF STAGE 2
STAGE 2 START T°
OF DEGREES TO REACH 100% OF STAGE 1
SET POINT
MINIMUM VENTILATION

1 Manual Opening of Chimney Dampers

It is possible to open (or close) chimney dampers manually. When it is controlled manually, the controller stops controlling the 0-10V chimney output.

- Set the function to **0-10V OUTPUT**.
  Make sure the 0-10V output is used as a chimney damper in the USER SETUP.

- Press MODIFY then press the up-arrow key to select the manual control mode "**Manu.**"

```
Mode        Manu
Opening      5% ▼
```

- Press MODIFY. The current damper opening flashes on the display. Use the arrow keys to select the desired opening.

- Do not forget to return to the automatic control mode afterwards so that the controller can take back control of this output.

2 Adjusting the Reference Points

The controller adjusts the opening chimney dampers according to the operation of the ventilation stages. The following procedure shows how to assign an actuator opening with each ventilation stage (refer to the previous diagram).

- Set the function to **0-10V OUTPUT**.
  Make sure the 0-10V output is used as a chimney damper in the USER SETUP.

- Press the down-arrow key once to select step 0.

```
St. 0         5%
              ▼
```

- Press MODIFY then use the arrow keys to set the opening of step 0 to the desired value. Press MODIFY once again to validate.

- Press on the down-arrow key. The opening of step 1 and of step 1 Hi are displayed. Press MODIFY then use the arrow keys to adjust the openings. Proceed in similar fashion to set all openings in turn.

0-10V Outputs: Heat Mat Settings

When it is used to control heat mats, the 0-10V output runs at its maximum intensity when the temperature of a chosen sensors falls under the heat mat set point.
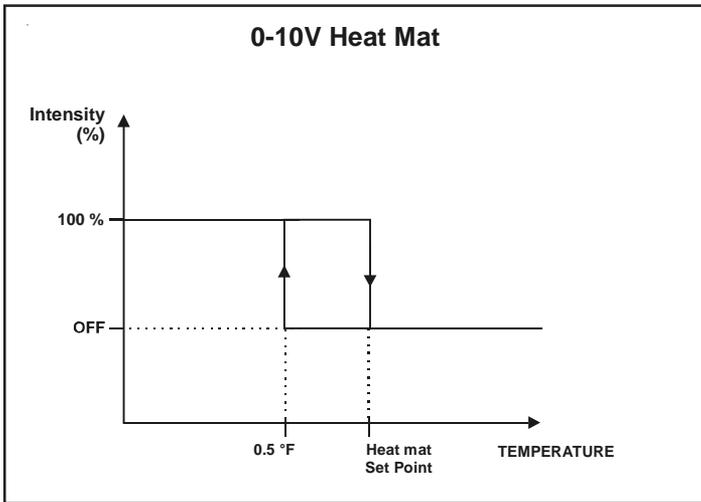
0-10V Heat Mat

1 Adjusting the Heat Mat Set Point

The 0-10V heat mat starts operating when the temperature decreases below: heat mat set point - 0.5°F (0.3°C). This set point can be adjusted from -40 to 120°F (-40 to 48.9°C).

■ Set the function to **0-10V OUTPUT**.
Make sure the 0-10V output uses the "Heat Mat" option in the USER SETUP.

■ Press MODIFY. The heat mat set point flashes on the display. Use the arrow keys to set it to the desired value. Press MODIFY to validate.

```
Heat mat setp
        75.0°F  ▼
```

2 Assigning T° Probes to 0-10V Heat Mat

The heat mat operates according to the average temperature of its assigned temperature probes. The following procedure shows how to assign temperature sensors to a 0-10V heat mat output.

- Set the function to **0-10V OUTPUT**.
  Make sure the 0-10V output uses the "Heat Mat" option in the USER SETUP.

- Press the down-arrow key to select the probe selection display.

```
Probes
1234          ▲
```

- Assign the desired probes to the 0-10V output. Probes that are assigned to the output are blinking on screen. Note that at least one probe must be selected. Press MODIFY then use the arrow keys to set the status of each probe.

ALARM SETTINGS

The alarm output is activated when certain alarm conditions are detected. For example, when the room temperature is too high or too low, an alarm is set off. Each new alarm type is recorded in memory until it is acknowledged by the user. The alarm conditions are as follows:

- Defective Probe
- Defective potentiometer
- Temperature alarm
- Water Spill alarm

Another alarm situation occurs when power to controller fails. In this case, the alarm relay is activated.

Temperature Alarms

The following diagram explains how temperature alarms are detected:

When the average room temperature exceeds the high temperature alarm setting, a high temperature alarm is generated. When the average room temperature drops below the low temperature alarm setting, a low temperature alarm is generated. Although these settings are entered by the user as absolute values, they are defined relative to the current set point and are automatically adjusted by the controller when the set point changes. This means, for example, that when the controller switches to the nighttime set point, the high and low temperature alarms are readjusted using the same offset from the daytime set point.
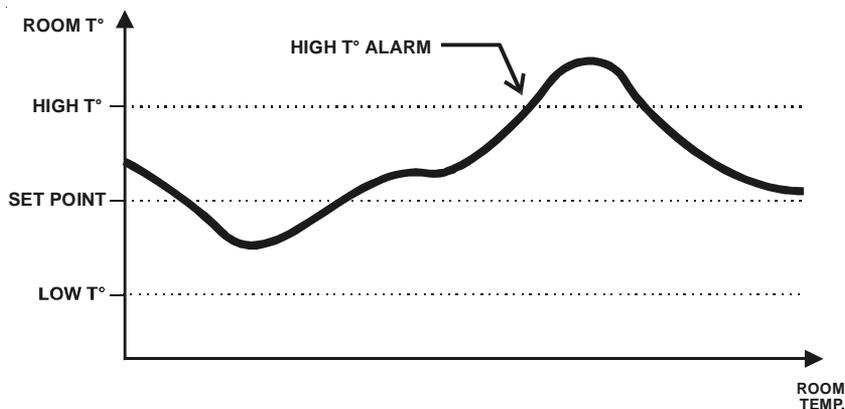
The situation is slightly different when the outside temperature is greater than the set point. In this case, the set point is replaced by the outside temperature as the reference point. Another parameter, called the critical temperature, is defined to continue monitoring the indoor temperature for high temperatures. When the indoor temperature reaches the critical high temperature (defined as an absolute value), an alarm is set off.

1 Adjusting Low and High Alarm Temperatures

The low temperature alarm can be adjusted from 40°F to 0.5°F (22.2 to 0.3°C) below the set point. The high temperature alarm can be adjusted from 0.5°F to 40°F (0.3 to 22.2°C) above the set point. A change in the set point will change these values by the same amount.

■ Set the function to **ALARMS** using the menu select buttons. The Hi and Lo alarm limits are displayed.

■ Press on the MODIFY button. The low alarm limit flashes. Use the arrow keys to adjust the low alarm limit to the desired temperature.

```
Low:      65.0°F
High:     95.0°F     ▼
```

■ Press MODIFY button. The high alarm limit flashes. Use the arrow keys to adjust the high alarm limit to the desired temperature. Press on the MODIFY button once again to validate.

2 Adjusting the Critical Temperature

The critical temperature is the absolute maximum temperature allowed in the room. It can be adjusted from −40 to 120ºF (-40 to 48.9ºC). This function is only available if an outside temperature sensor is enabled in the USER SETUP.

■ Set the function to **ALARMS** using the menu select buttons. The Hi and Lo alarm limits are displayed.

■ Press on the down-arrow key. The Critical High temperature is displayed. *Accessible if the outside temperature sensor is enabled in the USER SETUP.*

```
Critical high:
          95.0°F  ▲▼
```

■ Press on the MODIFY button and set the critical high temperature to the desired value. Press on the MODIFY button once again to validate.

Defective Probe Alarm

To identify the defective probe, select the PROBE TEMPERATURE or OUTSIDE TEMPERATURE function. Dashes are displayed instead of a reading when the probe is defective. In the case of room temperature probes, the controller will operate according to the temperature of the remaining probes.

Defective Potentiometer Alarm

If the static pressure compensation is used:

If the potentiometer feedback is defective, the inlet starts operating according to the static pressure level. The controller then uses the same settings that have been set for the static pressure compensation.

If the static pressure compensation is not used:

If the potentiometer is defective, the controller will operate in security mode:

When the temperature is 2°F (1.1°C) above the set point, the inlet opens according to the following cycle:
- 8 seconds ON
- 60 seconds OFF.

When the room temperature is 2°F (1.1°C) below the set point, the inlet closes according to the same cycle.

Water Spill Alarm

A water spill alarm is detected when the water consumption monitored by the EXPERT 2V4SA exceeds a user-defined maximum value. The maximum allowable water quantity can be adjusted from 0 to 1,000 gallons or liters per 15 minutes.

In addition, it is possible to use two maximum water consumption limits, depending on the time. The maximum allowable amount of water may then be set differently for the day and night times.

■ Set the function to **ALARMS** using the menu select buttons. The Hi and Lo alarm limits are displayed.

■ Press on the down-arrow key in order to select the "**Water spill set 1**" display.
Note that this menu is only available if the water meter has been enabled in the User Setup.

```
Water spill set1
#/15min    50l     ⬍
```

■ Press on the MODIFY button. The maximum allowable water quantity for set 1 flashes on the display. Use the arrow keys to adjust it to the desired value. Press on the MODIFY button once again to validate.

■ Press on the down-arrow key. The time at which the water spill set 1 starts being used is displayed.

```
From    6:00A
To     10:00P    ⬍
```

■ Press on the MODIFY button. The time at which set 1 starts flashes on the display. Use the arrow keys to adjust it to the desired value.

■ Press on the MODIFY button once again. The time at which the water spill set 1 stops being used is displayed. Use the arrow keys to adjust it to the desired value.

■ Press on the down-arrow key and proceed in similar fashion to adjust the water spill limit and the start/stop times of the second set.

TEST MODE

A test mode allows you to simulate temperature changes and verify controller performance. In test mode, the room temperature probe inputs are turned off, allowing the user to change the temperature used by the controller to operate the stages. The controller operates as before using the new temperature settings.

1 Adjusting Room Temperature

When the room temperature is adjusted, the controller bypasses the temperature probe inputs and uses the new value as a reference.

■ Set the function to **TEST** using the menu select buttons. The ON/OFF status of the test mode is displayed.

```
Test Mode
            Off
```

■ Press on the MODIFY button. The mode flashes on the display. Press on the up-arrow key once to activate the test mode. Press on the MODIFY button once again to validate.

■ Once the test mode is activated, press the down-arrow key once. The room temperature of the test mode is displayed

```
Room T° bypass:
         78.0°F  ▲
```

■ Press on the MODIFY button. The test temperature flashes. Use the arrow keys to set it to the desired value. The appropriate outputs are activated or deactivated immediately following the new temperature setting. The test mode ends when the user exits this menu.

TECHNICAL SPECIFICATIONS

Supply: 120/240 VAC (-18%, +8%),50/ 60 Hz, overload and overvoltage protection fuse F1-1A fast blow.

Alarm: ON-OFF output, 30VDC, 24VAC.

Temperature Probes: Low voltage (< 5V), isolated from the supply. Operating range: -40.0° to 120.0°F (-40.0° to 48.9°C). Accuracy: 1.8°F (1°C) between 41° and 95°F (5° and 35°C).

Relative Humidity Input: 4 to 20mA current loop

Static Pressure Input: 4 to 20mA current loop

Water Meter Pulse Input: Input pulse width > 12ms.

0-10V Output : 30mA max

Stage 1: Variable output, 50/60Hz, 10A FAN (3/4HP/115VAC) / (1.5HP/ 230VAC), fuse F2-15A slow blow.

Stage 2: Variable output, 50/60Hz, 10A FAN (3/4HP/115VAC) / (1.5HP/ 230VAC), fuse F3-15A slow blow.

Stage 3: ON/OFF output, 115/230VAC, 50/60Hz, 30VDC, 6A FAN, 7.5A RES, heating or cooling, fuse F6-15A slow blow.

Stage 4: ON/OFF output, 115/230VAC, 50/60Hz, 30VDC, 6A FAN, 7.5A RES, heating or cooling, fuse F5-15A slow blow.

Stage 5: ON/OFF output, 115/230VAC, 50/60Hz, 30VDC, 6A FAN, 7.5A RES, heating or cooling, fuse F9-15A slow blow.

Stage 6: ON/OFF output, 115/230VAC, 50/60Hz, 30VDC, 6A FAN, 7.5A RES, heating or cooling, fuse F7-15A slow blow.

Inlet: OPEN/CLOSE output, 115/230VAC, 50/60Hz, 30VDC, 5A winch output, fuse F4-5A slow blow.

Enclosure: ABS, moisture and dust-tight.

> The room temperature where the controller is located MUST ALWAYS REMAIN BETWEEN 32° AND 104°F (0° AND 40°C).

MEMORY CARD

The memory card is used to create a backup copy of your controller's configuration. The card is also useful to transfer the configuration of one controller to another controller of the same type.

The switch at the bottom of the card is used to lock or to unlock the card (▉ = locked, ▉ = unlocked).

⚠ **WARNING** **Turn off power each time you open the controller's enclosure. This prevents accidental exposure to areas of high voltage.**

TO TRANSFER A CONFIGURATION:

1. Turn off power to the controller.

2. Open the latch and lift the controller's cover.

3. If you are about to copy the controller's configuration on the memory card, make sure the card's switch is at the unlocked position.

4. Insert the card in the J2 connector located on the electronic board inside the controller. Components of the memory card must face down as illustrated.

5. Close the cover then reapply power to the controller. The transfer menu should be shown on screen (if this is not the case, simultaneously press the MENU SELECT up and down-arrow keys for 3 seconds to display this menu).
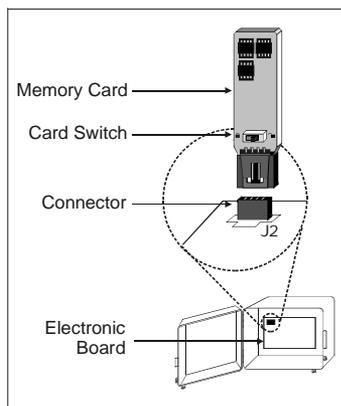
6. Select the proper type of transfer:

MEMORY CARD → CONTROLLER:

To transfer the memory card's content into the controller, select the **"*Mem.Card → Ctrl* "** menu using the ADJUSTMENT buttons. Once it is selected, simultaneously press the ADJUSTMENT buttons' up- and down-arrow keys to start the transfer.

```
MemStick  to  Control
Press ▲ to start
      ▼
```

CONTROLLER → MEMORY CARD:

To save the controller's configuration into the memory card, select the **"*Ctrl → Mem.Card*"** menu using the ADJUST-MENT buttons. Once this menu is selected, simultaneously press the ADJUSTMENT buttons' up- and down-arrow keys to start the transfer.

```
MemStick  to  Control
Press ▲ to start
      ▼
```

7. Once the transfer is over, simultaneously press and hold the MENU SELECT up and down-arrow keys for 5 seconds to exit the transfer menu, then remove the memory card from the connector as follows:

  - Turn off power to the controller;
  - Open the controller's cover;
  - Remove the card from the connector;
  - Close the cover then reapply power to the controller.

☞ **IMPORTANT:**

REMOVE THE MEMORY CARD FROM THE CONNECTOR WHEN THE TRANSFER IS OVER!

8. Lock the card's switch (🔒) if required.

TRANSFER ERROR

⚠ **WARNING**

The controller will not warn you if the transfer is incorrect.
Respect the following rules to make sure the transfer works properly:

- Make sure the card switch is at the unlocked position before transferring a configuration on the card.
- Do not move or hold the card while a transfer is ongoing.

INSTALLATION REPORT

CLIENT

Name: _____

Address: _____

_____

_____

City: _____

Tel.: _____

Fax: _____

INSTALLER

Name: _____

Address: _____

_____

_____

City: _____

Tel.: _____

Fax: _____

USER SETUP

PARAMETER	SETTINGS			
Time format	☐ 24H	☐ AM/PM		
Temperature units	☐ °C	☐ °F		
Number of temperature sensors	☐ 1	☐ 2	☐ 3	☐ 4
Selected sensors for average T°	☐ 1	☐ 2	☐ 3	☐ 4
Use water meter ?	☐ Yes	☐ No		
Water meter units	☐ Lit	☐ Gal		
Water meter unit/pulse	_____ / PULSE			
Use humidity sensor?	☐ Yes	☐ No		
Humidity influence on Min. speed?	☐ Yes	☐ No		
Use outside temperature probe ?	☐ Yes	☐ No		
Use outside T° comp. on min speed?	☐ Yes	☐ No		
Outside T° comp. on stage 1	☐ Yes	☐ No		
Outside T° comp. on stage 2	☐ Yes	☐ No		
Winter's reference temperature	_____ °			
Summer's reference temperature	_____ °			
Use the static pressure sensor ?	☐ Yes	☐ No		
Use the static pressure compensation?	☐ Yes	☐ No		
Number of heating stages ?	☐ 1	☐ 2		
Number of 0-10V outputs	☐ 1	☐ 2		
Use Mist?	☐ Yes	☐ No		
Use Inlet?	☐ Yes	☐ No		
Inlet Mode	☐ Timer	☐ Potentiometer		
Use a timer on the heating stage?	☐ Yes	☐ No		
Merge on stages 1 and 2?	☐ Yes	☐ No		
Merge on stages 2 and 3?	☐ Yes	☐ No		
De-icing on stage 2?	☐ Yes	☐ No		

EXPERT 2V4SA

PARAMETER	SETTINGS
0-10V output #1 used for :	☐ Ventilation ☐ Heating ☐ Heat Mat ☐ Chimney Damper
0-10V #1 follows the set point?	☐ Yes ☐ No
0-10V output #1 signal	☐ 0-10V ☐ 10-0V
Use night set point?	☐ Yes ☐ No
Night starts at	_____ : _____
Day starts at	_____ : _____
Transition time	_____ min
Use low temperature override	☐ Yes ☐ No
Override below:	_____ °
Override stops at:	_____ °
Override minimum speed:	_____ %
Override inlet opening:	_____ %
Use Set Point curve ?	☐ Yes ☐ No
Use Min. speed curve ?	☐ Yes ☐ No
Led Display	☐ T° ☐ T° / SP ☐ T° / INLET ☐ SP / INLET
Password	_____ _____ _____

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