EXPERT 2V4SA

Temperature Controller

User's manual

WARNINGS

The warranty can be void if this product is used in a manner not specified by the manufacturer.

Every effort has been made to ensure that this manual is complete, accurate and up-to-date. The information contained in it is however subject to change without notice due to further developments.

EXPERT 2V4SA

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1. INTRODUCTION

1.1. Precautions

⚠️ **WARNING: Read and save these instructions!**

Safety may be jeopardized if the equipment is used in a manner not specified by the manufacturer. Carefully read and keep the following instructions for future reference.

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

Although fuses at the input and outputs of the controller protect its circuits in case of an overload or over-voltage, we recommend installing an additional protection device on the controller's supply circuit.

The room temperature where the controller is located must always remain between 32°F and 104°F (0°C to 40°C). Indoor use only!

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

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Do not spray water on the controller! In order to clean the control, wipe it with a damp cloth.

⚡ *Before servicing or cleaning unit, switch power off at service panel and lock the switch disconnecting means to prevent power from being switched accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.*

1.2. Symbols of the Manual

⚠️ *Warning. Read the following text carefully; it contains important information which, if ignored, may cause the controller to operate improperly.*

⚡ *High Voltage. Hazard of electrical shock. Read the message and follow the instructions carefully.*

☞ *Pay attention. The following text contains very useful information.*

∼ *Both direct and alternating current (AC/DC).*

⎓ *Direct current (DC).*

∼ *Alternating current (AC).*

⏚ *Earth Ground Terminal*
Primarily used for functional earth terminals which are generally associated with test and measurement circuits. These terminals are not for safety earthing purposes but provide an earth reference point.

For Customer Use: Enter below the serial number located on the side of the alarm system and keep this information for future reference.

Model:	EXPERT 2V4SA
Serial number:	_____
Date installed:	_____

1.3. 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. The EXPERT 2V4SA can control the following outputs:

- 2 variable fan outputs
- on/off outputs (heaters, misters or fans)
- 1 air inlet output
- 1 0-10V output (heaters, heat mats, chimney or fans)

Main Features :
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 to simplify wiring.

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 & Min. 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.

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 six days.

Alarm Management — Alarms are provided for high-low temperatures, defective probes and other system functions.

Four 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. This ensures a better stability in the room temperature.

0-10V Output — One 0-10V output can be activated to control supplementary ventilation or heating stages or to control chimney dampers.

Humidity Compensation — The control offers many ways to compensate for high or low humidity levels.

Static Pressure Control — A static pressure input is provided to control the static pressure level by opening and closing the air inlets. 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 inlet can be coordinated with the operation of the fans. This allows the air inlet 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.

2. MOUNTING INSTRUC- TIONS

2.1. Installing the Controller on the Wall

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.

2.2. Connections

Refer to the wiring diagram enclosed with this user's manual to connect the controller. Drill holes at the bottom of the enclosure to pass the wires and install watertight connectors to prevent water from entering in the enclosure. Do not make any holes at the side and top of the enclosure.

⚠ *All wiring must be done by an authorized electrician and must comply with applicable codes, laws and regulations. Make sure power is off before doing any wiring to avoid electrical shocks and equipment damage.*

☞ *Note that the input terminal blocks can be removed from the electronic board. This makes it easier to make the connections.*

2.2.1. Sensor Inputs

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

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

To extend a sensor: 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.

⚠ *Do not run sensor cables next to other power cables. When crossing over other cables, cross at 90°.*

Defective sensors:
An alarm is generated when a defective sensor is detected.

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

To identify the defective probe, select the PROBE TEMPERATURE or OUTSIDE TEMPERATURE menu. Probe readings are then displayed. 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.

2.2.2. Alarm Connection

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.

3. USER INTERFACE

3.1. Location of the Controls
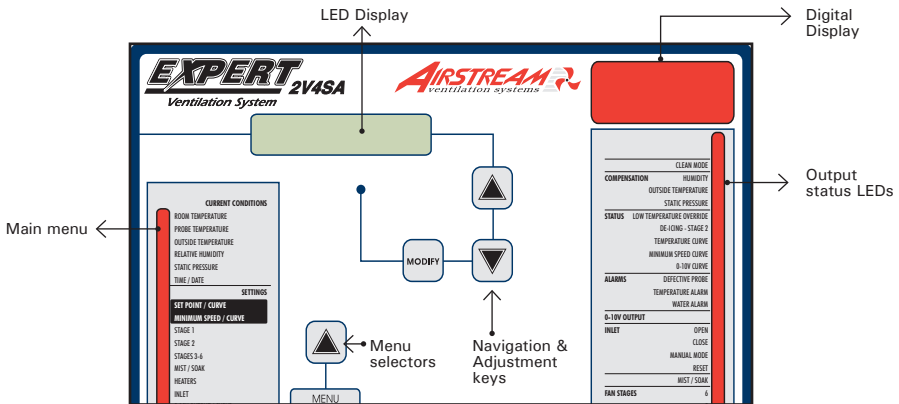
Digital LED Display — The red LED display at the top can show various pieces of information such as the average room temperature, static pressure level, inlet position, etc.

LCD Display — The LCD screen shows the current readings and parameters to be adjusted when you select a function. The three keys next to the display are used to edit parameters and scroll down the menus. 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 Keys — The arrow keys on top are used to scroll down the menus when the parameters cannot be presented all at once. These keys are also used to modify a parameter in the editing mode.

Output Status LEDs — The LEDs located at the left side of the control panel give the status of each output. When an output LED is on, the output is activated; when it is off, the output is deactivated.

3.2. Parameter Adjustment

Select a parameter you want to adjust and then press the MODIFY push-button to enter the editing mode. The parameter's value will start flashing on screen which means it can be modified. Use the up and down-arrow keys located next to the display to modify the parameter's value. Finally, press the MODIFY push-button to validate the new value and to exit from the editing mode.

LED		MEANING	
Clean Mode		Solid LED:	Clean mode is active.
Humidity Compensation		Solid LED	A RH compensation function is ON.
Outside Temp. Compensation		Solid LED	The outside temperature compensation is ON.
Static Pressure Compensation		Solid LED	A static pressure compensation is applied on the inlet opening.
Low Temperature Override		Solid LED	The low temperature override parameters are ON.
De-icing Stage 2		Solid LED	Stage 2 fans are being de-iced.
Temperature Curve		Solid LED	The temperature set point is defined by a curve.
Minimum Speed Curve		Solid LED	The minimum ventilation speed is defined by a curve.
0-10V Curve		Solid LED	The start T° of the 0-10V output is defined by a curve.
Defective probe alarm		Solid LED	A defective probe alarm is active.
		Flashing LED	A defective probe alarm occurred, no longer exists, and must be acknowledged.
Temperature alarm		Solid LED	A temperature alarm is active.
		Flashing LED	A temperature alarm occurred, no longer exists, and must be acknowledged.
Water alarm		Solid LED	A water spill or water consumption alarm is active.
		Flashing LED	A water spill or water consumption alarm occurred, no longer exists, and must be acknowledged.
0-10V output		Solid LED	The 0-10V output is active.
Inlet	Open	Solid LED	The air inlet is opening.
	Close	Solid LED	The air inlet is closing.
	Manual Mode	Solid LED	The inlet operates in manual mode.
	Reset	Flashing LED	The controller is now opening or closing the air inlet in order to reset the actuator's position.
Mist/ Soak		Solid LED	Time On of the mist or soaking timer.
		Flashing LED	Time Off of the mist or soaking timer.
Fan stages 1-6		Solid LED	The fan stage is ON.
Heaters 1-2		Solid LED	The heating stage is ON.
Heat mat		Solid LED	The heat mat is ON.

4. INSTALLATION SETUP

4.1. Time and Date

1. From the main menu, select: **TIME & DATE.**

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

2. Press MODIFY to enter the editing mode.

3. Use the adjustment keys to set the first parameter flashing on screen.

4. Press MODIFY to step to the next parameter.

5. Proceed the same way to set the whole time and date.

4.2. Setting the Day Number

The day number refers to the day that is currently being used by the controller's curves and usually corresponds to animal age. The day number can be modified in order to move forward or backward on the curves.

☞ *Making a change to the day number will affect all curves in use (Min. Vent, Set Point & 0-10V Heat curves).*

1. From the main menu, select: **SET POINT / CURVE**.

2. Use the navigation keys to select this screen:

```
Current day
            9
```

*This screen is accessible if a curve function and/or a 0-10V heating output is enabled in the "User Setup Menu" on page 11.

3. Select the desired day number.
(The parameter adjustment process is explained in section 3.2 on page 8).

4.3. Selecting Type of Motor

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 for Stage 1 and Stage 2, according to the type of fan motors used.

1. From the main menu, select: **STAGE 1** or **STAGE 2**.

2. Press the down-arrow key to select this screen:

```
Motor curve
            4
```

3. Set the following parameters:
(The parameter adjustment process is explained in section 3.2 on page 8).

   Motor Curve — Set the motor curve of the selected fan stage to the desired value.

4.4.   User Setup Menu

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

Before you begin, be sure to know what will be assigned to each stage of the controller. The table below gives all possible stage combinations.

Settings:
1. From the main menu, select: **USER**.

2. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    Contrast — Set the contrast of the LCD screen to the desired value (from 10 to 100%).

    ```
    Contrast:    80
    ```

    Time Format — Select the desired time format: AM-PM or 24-hour.

    ```
    Time format
             AM-PM
    ```

    Temperature Units — Select the temperature units: Fahrenheit (F°) or Celsius (°C) degrees.

    ```
    Temp. units
             °F
    ```

    # of Temperature Sensors in the Room — Set the number of temperature sensors that are connected to the controller (1-4).

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

    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 MODIFY then use the arrow keys to

set the status of each probe.

```
Room probes
1234
```

Use Water Meter — Select "Yes" if a water meter is connected to the controller.

```
Use water meter?
             No
```

Water Meter Units — Select the water units: Gallons or liters. *This parameter is accessible if the water meter is enabled above.*

```
Water meter unit
          lit
```

Water Meter Calibration —Set the number of gallons or liters per pulse. *This parameter is accessible if the water meter is enabled above.*

```
Water unit/pulse
          1
```

Use Humidity Sensor— Select "Yes" if a relative humidity sensor is connected to the controller.

```
Use humidity
sensor?      No
```

Humidity Compensation on Min. Speed — Select "Yes" to enable the compensation of stage 1 fan speed, according to the humidity level (see chapter 9 on page 33).*Accessible if the humidity sensor is enabled above.*

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

Use Outside Temperature Sensor — Select "Yes" if an outside temperature sensor is connected to the controller.

```
Use Out T°
sensor?      Yes
```

Outside T° Compensation on Min. Speed— Select "Yes" to activate the outside temperature compensation on the minimum speed of stage 1 fans (see section 6.3 on page 25). *This parameter is accessible if*

the outside temperature sensor is enabled above.

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

Use Outside Temperature Compensation on Stages 1 & 2 — Select "Yes" to activate the outside temperature compensation on the number of degrees required to reach 100% of fan stage 1 and 2 (see section 6.3). **This parameter is accessible if the outside temperature sensor is enabled above.*

```
Out T° compens.
stage1?
```

```
Out T° compens.
stage2?
```

Winter& Summer Reference T° — Set the temperature that signals the beginning of winter and summer. *This parameter is accessible if the outside compensation function is enabled above.*

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

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

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

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

Use the Static Pressure Compensation — Select "Yes" to use inlets to compensate for high or low pressure levels (see section 11.3 on page 44). *This parameter is accessible if the static pressure sensor and inlet are enabled.*

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

Heaters and 0-10V Outputs — Enable the desired number of heating stages (refer to the stage combination table in section 4.4 on page 11). Up to two heater stages can be used. Then, set the number of 0-10V output (0-1 output).

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

0-10V Output Used for — Select the operating mode of the 0-10V output: Ventilation / Heating / Chimney damper / Heat mat. *This parameter is accessible if the 0-10V output is enabled above.*

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

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 for this output. *This parameter is accessible if the 0-10V output is enabled above.*

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

Use 0-10V Curve — If the 0-10V is used for heating, it is possible to define a 10-point curve to change its start temperature of over time. Select "Yes" to enable this function or "No" to disable it. *This parameter is accessible if the 0-10V output function is set to "Heating" or to "Heat mat" above and if the output does not follow the Set Point.*

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Output Mode (0-10V or 10-0V) — Select the type of signal used by the 0-10V output (0-10V or 10-0V). *This parameter is accessible if the 0-10V output is enabled above.*

```
0-10V Mode
          0-10V
```

Use Soaking — Select "Yes" to enable the soaking function.

```
Use Soaking ?
          Yes
```

Use Mist — Select "Yes" to enable the mist function.

Use Inlet — Select "Yes" to enable the air inlet.

Use Overopening — A supplementary stage can be defined in order to continue opening air inlet beyond the activation temperature of the last ventilation stage. This over-opening stage is used to direct the airflow more efficiently during periods of warm weather. Select "Yes" to enable the inlet over-opening function or select "No" to disable it. *This parameter is accessible if an air inlet is enable above.*

```
Use Overopening
          Yes
```

Move in 1 Step — The air inlet can either reach its over-opening position instantaneously when the room temperature reaches a certain point or it can reach its over-opening position gradually as the room temperature departs from the start temperature of the last fan stage. Select "Yes" to use the instant opening mode or select "No" to use the progressive opening mode. Note that either case, the inlet reaches its full over-opening position at: On T° of the last fan stage + Over-Opening bandwidth (see chapter 11). *This parameter is accessible if the over-opening function is enabled above.*

```
Move in 1 step?
          No
```

Use a timer on heating stages — Select "Yes" for heater to run in timer mode as a function of the room temperature. *This parameter is accessible if at least one heating stage is enabled above.*

```
Use heaters on
timer ?      No
```

Zoned or standard heaters — Zoned heating allows heating stages to operate according to specific temperature sensors instead of using the average room temperature as a reference. *This parameter is accessible if two heating stages are enabled above.*

```
Use Zoned heater?
            No
```

Heater 1-2 probes — Select which probes are used to control each heating stage. Blinking digits represent probes that are assigned for this purpose. At least one temperature probe must be selected. Press MODIFY then set each probe's status with the arrow keys. *This parameter is accessible if zoned heaters are enabled above.*

```
Heater 1 probes
1234
```

```
Heater 2 probes
1234
```

Merge between stages 1 and 2 — Select "Yes" if to enable the merge between fan stages 1&2 (see "Merging Fan Stages" on page 27).

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

Merge between stages 2 and 3 — Select "Yes" to enable the merge between fan stages 2 and 3 (see "Merging Fan Stages" on page 27). *This parameter is accessible if stage 3 is used as a fan stage (refer to the stage combination table in section 4.4).*

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

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

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

Use Night Set Point — Select "Yes" to use a night set point.

```
Use night setp?
             Yes
```

Night Set Point Starts at — Select the time at which the night set point starts being used. *This parameter is accessible if the night set point is enabled above.*

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

Day Set Point Starts at — Select the time at which the day set point starts being used by the controller. *This parameter is accessible if the night set point is enabled above.*

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

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. *This parameter is accessible if the night set point is enabled above.*

```
Transition time
        60 min
```

Low Temperature Override — Select "Yes" to enable the low temperature override functions: A) decrease the speed of stage 1 fans & stop stage 2 fans. B)Close the air inlet further).

```
Low T° override
            Yes
```

Override Below — Set the temperature below which "Low temperature override" options starts. This temperature is directly related to the set point which means it is automatically adjusted as the set point changes and it ranges from 1°F to 40°F (0.6 to 22.2°C) below the set point. *This*

parameter is accessible if the "Low temperature override" feature is enabled above.

```
Override below
        70.0°F
```

Override Stops at — Set the temperature above which override functions stop. This temperature is directly related to the set point which means it is automatically adjusted as the set point changes. *This parameter is accessible if the "Low temperature override" feature is enabled above.*

```
Override stop at
        75.0°F
```

Low Temperature Override Settings — Set the minimum speed of stage 1 fans and the inlet position that is reached when the "Low Temperature override" function is enabled. *This parameter is accessible if the "Low temperature override" feature is enabled above.*

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

Set point curve? — Select "Yes" to enable the set point curve function.

```
Set point curve?
             Yes
```

Min speed curve — Select "Yes" to enable the minimum speed curve function.

```
Min speed curve?
             Yes
```

Display — Select the desired LED display amongst the following options:

- Temperature only (T° Only);

- Alternating display between temperature and the static pressure (T° & SP);

- Alternating display between temperature and the inlet position (T° & Inlet);

- Alternating display between temperature, inlet position and static pressure (T° & SP & Inlet).

```
Display:
   T° & Inlet
```

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 it, set the password to 0, 0, 0. By default, the password is disabled. *Use the MODIFY button to step from a digit to the next.*

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

Program Version Number — The version number of the controller is displayed.

```
EXPERT 2V4SA
Version X.X
```

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4.5. Clean Mode

The clean mode is used to interrupt regular operations of the controller when the room is empty. When this mode is enabled, the controller only provides a minimum level of heat and ventilation (optional). If minimum ventilation is used in the clean mode, the air inlet will open to its respective minimum ventilation position; otherwise it will remain closed.

Cleaning the room: A soaking output can be used to clean up the room. If this output is enabled, it will automatically start running according to a user-defined timer at clean mode startup. Refer to chapter 8 on page 32 to get further information about the soaking output.

Clean mode set point: During the clean mode, the fans that are used to provide minimum ventilation and the heaters operate according to the clean mode set point: the heaters turn on when the room temperature is lower than the clean mode set point and fans turn on when temperature is higher than this set point.

Low temperature alarm: The controller can sound an alarm if temperature gets too low while being in clean mode. Refer to section 12.1.3 to set this alarm limit.

1. From the main menu, select: **CLEAN MODE**.

```
Status:      Off
Setp:     45.0°F
```

```
End of clean
delay:     15min
```

```
Use minimum
vent.?        No
```

```
Detect low
temp. ?       No
```

2. Set the following parameters:
(The parameter adjustment process is explained in section 3.2 on page 8).

Status — Select "On" to enable the clean mode or select "Off" to disable it.

Clean mode set point — Select what is the target room temperature while the controller operates in clean mode.

End of clean delay — At the end of the clean mode, the controller waits a certain time before monitoring temperature alarms again. Specify the time required for the room temperature to get back to normal or select "Off" to disable this function (decrease the parameter value until letters "Off" are displayed).

Use minimum ventilation? — Select "Yes" to activate minimum ventilation cycles while the clean mode is on.

Detect low temperature? — Select "Yes" to enable the low temperature alarm limit or select "No" to disable this alarm condition.

4.6.   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.

The test mode is used to simulate temperature changes in order to verify the controller's performance. The temperature probe inputs are turned off while the test is on and the test automatically ends after 15 minutes of inactivity.

1. From the main menu, select: **TEST.**

2. Use the navigation keys to select the following parameters:

```
Test Mode
            Off
```

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

3.   Set the following parameters:
   (The parameter adjustment process is explained in section 3.2 on page 8).

   Test Mode Status — Select *"Yes"* to enable the test mode or select *"No"* to exit from the test mode.

   Temperature — Enter the simulated room temperature. *This parameter can only be changed when the test mode is enabled.*

5. TEMPERATURE SET POINTS

The set point is a target temperature in the room. The activation of most outputs of the controller is based on this reference temperature.

☞ ***Note that the set point can only be modified while the set point curve is disabled. Refer to the following section to disable the curve.***

5.1. Set Point Settings

1. From the main menu, select: **SET POINT** / **CURVE**.

2. Set the following parameters:
   (The parameter adjustment process is explained in section 3.2 on page 8).

```
Setp      75.0°F
ClnSetp   45.0°F
```

```
Night Setpoint
        75.0°F
```

Setp — Set the temperature set point that is used during the day (this set point is used all day long if the night set point is not enabled). It ranges from -40.0°F to 100°F (-40.0°C to 37.8°C) *This parameter can only be modified while the set point curve is inactive (sec. 5.2.)*

Clean mode set point — Select what is the target room temperature while the controller operates in clean mode.

Night Set Point — A different temperature set point can be used at night. The night set point can be used to lower the target room temperature for instance. This set point is relative to the day set point, which means that it is automatically adjusted when the day set point changes. Set the night set point to the desired value. *This parameter is accessible if the night set point is enabled in the User Setup Menu.*

5.2. Set Point Curve

A curve is made of 10 steps. Each step specifies a day number and a temperature set point for that day. Once the curve is activated, the controller changes the set point every hour in a linear fashion between consecutive steps of the curve. When the last step is reached, the controller keeps using the temperature set point associated to that day.
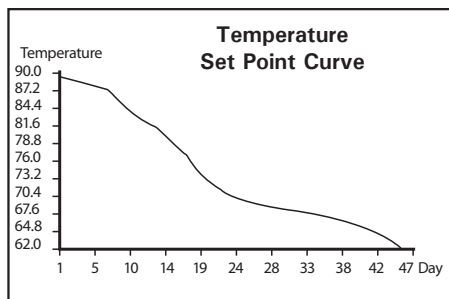
Notes
Certain restrictions apply to reduce the risk of errors:

1. The highest day number is 365.

2. Decreasing day numbers is not allowed.

3. Increasing temperature set points is not allowed.

4. All ten steps must be specified. If you don't need ten different steps, repeat the last temperature for each unnecessary step.

Curve Settings

1. From the main menu, select: **SET POINT** / **CURVE**.

2. Use the navigation keys to select this screen:

```
1. day    1
Setp    82.0°F
```

(This screen is accessible if the set point curve is enabled in the User Setup Menu).

3. Set the following parameters:
(The parameter adjustment process is explained in section 3.2 on page 8).

```
1. day     1
Setp    82.0°F
```

```
2. day     5
Setp    78.0°F
```

...

```
10. day    40
Setp    62.0°F
```

```
Curve status
          Off
```

☞ **These parameters can only be modi-fied while the curve is off.**

Day numbers — Set the day at which each curve step starts.

Setp — Assign a temperature set point to each step of the curve.

Curve status — Select *"Yes"* to enable the curve (or *"No"* to disable it). Once the curve is on, the controller automatically adjusts the set point between consecutive points of the curve; for this reason, curve steps cannot be modified while the curve is running.

☞ *If all curves are disabled (Min. Vent, Set Point & 0-10V Heat curves), the controller will automatically set the day number back to 1 day when a curve is being activated.*

6.   COOLING

6.1.   Minimum Ventilation

6.1.1. Principle of Operation

Definition: Minimum ventilation cycles are activated when the room temperature is lower than the set point. Running the 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.

Minimum Ventilation Timer: During the *"Time On"*, the fans of stage 1 run at their minimum speed and the status LED associated with stage 1 is on; during the *"Time Off"*, the fans return to a stop and the status LED is off. Note that the minimum speed of stage 1 can automatically be adjusted with time by using a curve (see section 6.1.4 on page 22).
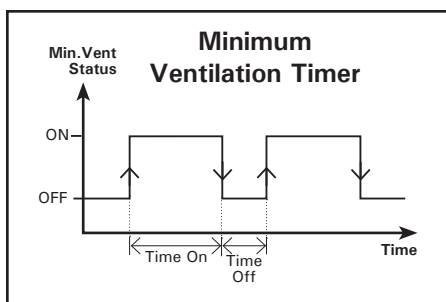
☞ *Hints*
The controller supplies maximum voltage to the variable-speed fans for 2 seconds at each start-up.

To run the fans continuously at minimum speed, set the Time Off to zero and Time On to any value other than zero.

To stop the fans, set the Time On to zero and Time Off to any value.

☞ *Refer to section 6.2.3 to set the minimum speed of stage 1.*

6.1.2. Timer Settings

1. From the main menu, select: **STAGE 1**.

2. Use the navigation keys to select this screen:

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

3. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    On — Set the *"Time On"* of the minimum ventilation timer. This parameter ranges from 0 to 900 seconds and can be adjusted in increments of 15 seconds.

    Off — Set the *"Time Off"* of the minimum ventilation timer. This parameter ranges from 0 to 900 seconds and can be adjusted in increments of 15 seconds.

6.1.3. Stage 2 in Min Ventilation

Stage 2 fans can be used to provide minimum ventilation as shown on the graph below:

**Stage 2 Fans in Minimum Ventilation**

- When **the room temperature falls** below the start temperature of stage 2, stage 2 fans run intermittently according to the same timer as the one used by stage 1.

- When **the room temperature increases** above the start temperature of stage 2, 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. Refer to the "User Setup Menu" on page 11 to enable the Low Temperature Override functions.

1. From the main menu, select: **STAGE 2**.

2. Use the navigation keys to select this screen:

```
Min Ventilation.
          On
```

3. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    Minimum ventilation — Select *"Yes"* if to use stage 2 fans in minimum ventilation.

6.1.4. Min Ventilation Curve

A curve is made of 10 steps. Each step specifies a day number and a minimum ventilation speed for that day (the day number refers to the animal age). When the curve is activated, the controller changes the minimum ventilation speed every hour in a linear fashion between consecutive steps of the curve. When the last step is reached, the controller keeps using the speed associated to that day.
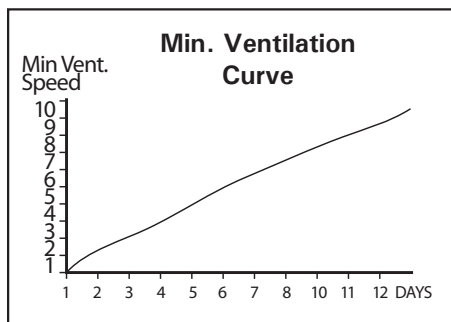
Notes: Certain restrictions apply to reduce the risk of errors:

1. The highest possible day number is 365.

2. Decreasing day numbers are not allowed

3. Decreasing min speeds are not allowed.

4. All ten steps must be specified. If you don't need 10 different steps, repeat the last speed for each unnecessary step.

☞ *Refer to section 4.2 on page 10 to set the current day number.*

Settings:

1. From the main menu, select: **MIN. SPEED/ CURVE**.

2. Use the navigation keys to select this screen:

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

This screen is accessible if the set point curve is enabled in the User Setup Menu.

3. Set the following parameters:
(The parameter adjustment process is explained in section 3.2 on page 8).

```
Curve status
        Off
```

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

```
1.  day    5
Min Spd   45%
```

...

```
10. day    40
Min Spd   100%
```

Curve status — Select *"Yes"* to enable the curve (or *"No"* to disable it). Once the curve is on, the controller automatically adjusts the set point between consecutive points of the curve; for this reason, curve steps cannot be modified while the curve is running.

☞ *If all curves are disabled (Min.Vent, Set Point & 0-10V Heat curves), the controller will automatically set the day number back to 1 day when a curve is being activated.*

☞ *The parameters below can only be modified while the curve is off.*

Day numbers — Set the day at which each curve step starts.

Min Spd — Assign a minimum speed to each step of the curve.

EXPERT 2V4SA

6.2.   Fan Stages

6.2.1.   Principle of Operation

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

A start and a stop temperature must be defined for each stage. When the room temperature rises and reaches the start temperature of a fan stage, the fans associated to that stage are activated; likewise the stage's fans are deactivated when the room temperature falls to the stage's stop temperature.

Start temperatures of fan stages are defined with respect to the set point and with respect to each other. This means that when one of these values is adjusted, all the consecutive values are adjusted by the same amount. For example, if the set point is increased by 1°F, the start temperature of all fan stages will be increased by the same amount.
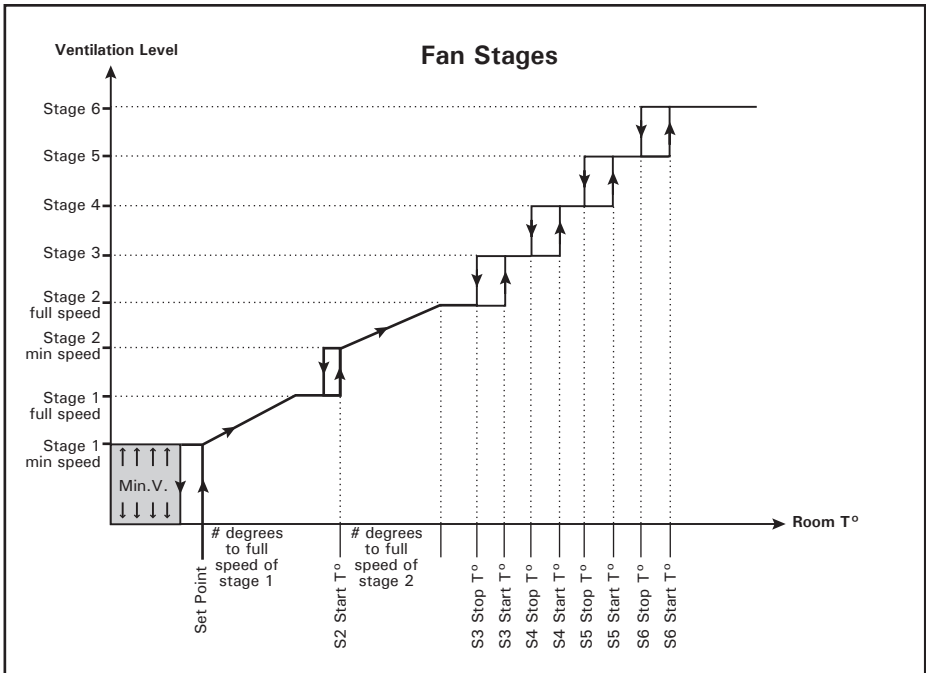
Fan Stages

6.2.2.   Fan Stage Start Temperature

1. From the main menu, select the option that corresponds to the fan stage you want to adjust:

>   **STAGE 2**
>   **or**
>   **STAGES 3-**

2. Use the navigation keys to select these parameters:

```
Stage x
StartT°: 75.0°F
```

```
Stop T°: 74.0°F
```

3. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    Start T° — Set the start temperature of the selected fan stage.

    Stop T° — Set the stop temperature of the selected fan stage.

☞ ***The minimum difference between two consecutive start temperatures is 0.5 °F (0.3 °C).***

☞ ***The start temperature of a fan stage must be greater value than its stop temperature.***

6.2.3.   Minimum Fan Speed

1. From the main menu, select the option that corresponds to the fan stage you want to adjust:

>   **MIN. SPEED/CURVE**
>   (to set the min.fan speed of stage 1)
>   **or**
>   **STAGE 2**
>   (to set the min.fan speed of stage 2)

2. Use the navigation keys to select this screen:

```
Minimum Speed
        40%
```

3. Set the minimum speed of the fans that are associated with the selected fan stage (10 to 100%) *This parameter can only be modified while the minimum ventilation curve is off (see section 6.1.4 on page 22).*

6.2.4.   Adjusting # of Degrees to Reach 100% of Stages 1 & 2

1. From the main menu, select the option that corresponds to the fan stage you want to adjust:

>   **STAGE 1**
>   **STAGE 2**

2. Use the navigation keys to select the start temperature screen:

```
Degrees to 100%
        2.0°F
```

3. Set the number of degrees required for the selected fan stage to reach its full speed (0.5°F to 20.0°F (0.3°C and 11.1°C)).

6.3. Outside Temperature Compensation

6.3.1. Compensation on Stage 1 Min Speed

The controller can automatically decrease the minimum ventilation speed (stage 1 minimum speed) as it gets cold outside.

Outside Temperature Compensation on the Min Vent. Speed
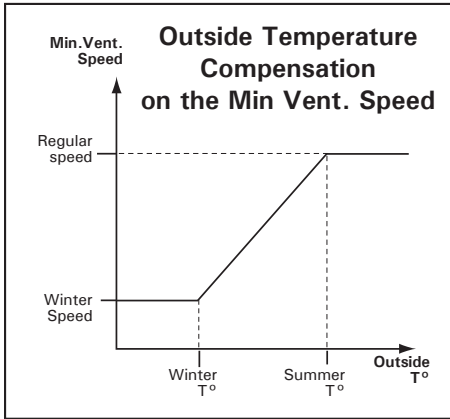
The controller uses the regular minimum ventilation speed when the outside temperature is at or above the summer's reference temperature and uses the winter's minimum ventilation speed when the outside temperature gets below the winter's reference temperature. Refer to the User Setup menu to set the summer & winter reference temperatures.

Note that the winter speed is related to the regular speed. This means that if a change occurs in the regular speed, the same variation will be applied to the winter speed.

1. From the main menu, select: **MIN. SPEED/ CURVE**.

2. Use the navigation keys to select this screen:

```
Min Speed Winter
     20%
```

   This parameter is accessible if the outside T° compensation on the minimum speed of stage 1 speed is enabled in the User Setup Menu.

3. Set the minimum ventilation speed that should be used in winter to the desired value. *This parameter can only be modified if the minimum speed curve is off (see section 6.1.4).*

6.3.2. Compensation on the Number of Degrees to Reach Full Speed of Stages 1 & 2

The controller can automatically adjust the number of degrees required to reach the full speed of the fans (bandwidth) as a function of outside temperature. If this outside temperature compensation function is enabled in the User Setup menu, you must specify a winter bandwidth and a summer bandwidth. Normally, the winter's bandwidth should be greater than the summer's bandwidth.

# of Degrees to Full Speed as a Function of Outside Temperature
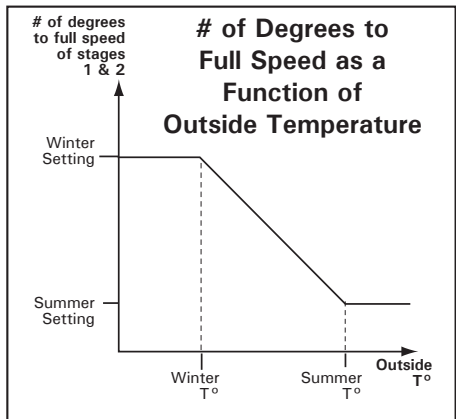
☞ ***When a change occurs in the number of degrees to 100% of stages 1 or 2, the start temperature of all consecutive fan stages are adjusted by the same amount.***

1. From the main menu, select the option that corresponds to the fan stage you want to adjust:

    STAGE 1
    STAGE 2

2. Use the navigation keys to select the start temperature screen:

    ```
    Degrees to 100%
    winter    4.0°F
    ```

    *This parameter is accessible if the outside T° compensation on the # of degrees to 100% of the selected stage is enabled in the User Setup Menu.

3. Set the number of degrees required for the selected fan stage to reach its full speed in winter (0.5°F to 20.0°F (0.3°C and 11.1°C)).

6.4. Merging Fan Stages

☞ *Refer to the User Setup Menu to enable the Stage Merge options.*

6.4.1. Merging Fan Stages 1 & 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.

6.4.2. 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.
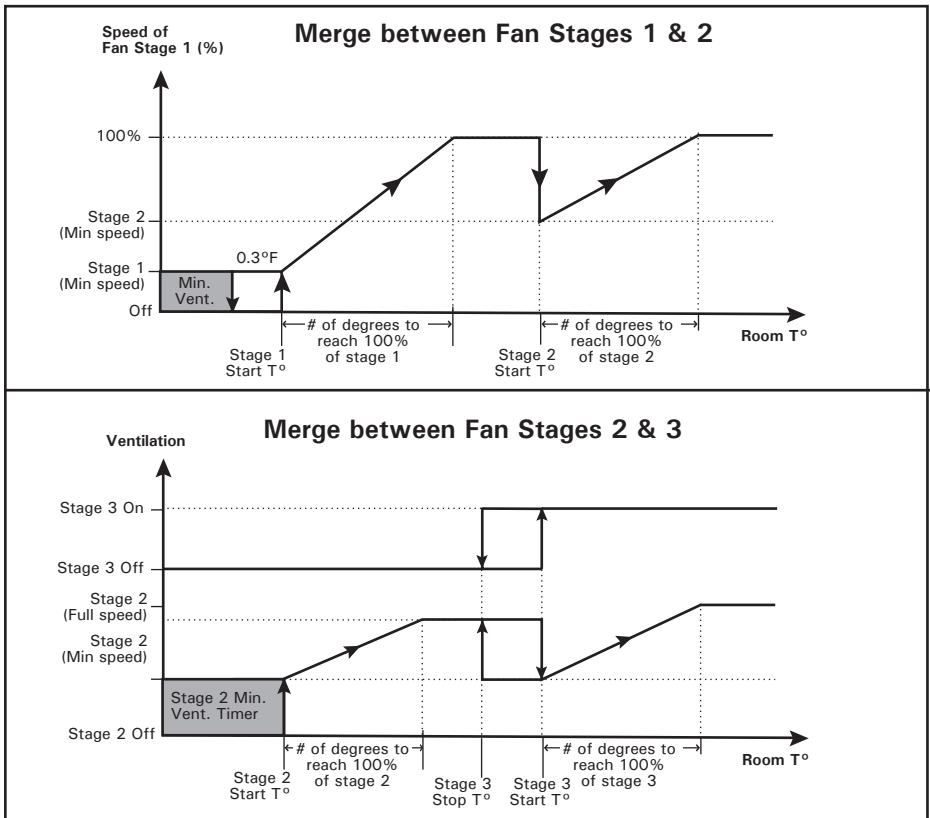
6.4.3. Nbr of Degrees to 100% of Stage 3

1. From the main menu, select: **STAGES 3-**.

2. Use the navigation keys to select this parameter:

```
Degrees to 100%
2.0°F
```

(This parameter is accessible if the merge between stages 2 and 3 is enabled in the User Setup Menu.)

3. Set the number of degrees required to reach 100% of Stage 3. This value represents range of temperature over which stage 2 fans increase or decrease in speed proportionally to the temperature once stage 3 fans are activated (see previous graph). This parameter ranges from 0.5°F to 20.0°F (0.3°C to 11.1°C).

6.5. De-icing Stage 2 Fans

Stage 2 fans can automatically be de-iced in cold weather conditions (or in any conditions if the controller does not use an outside temperature sensor).

When a de-icing cycle starts, Stage 1 fans are stopped then stage 2 fans start running at full speed for 2 seconds. Stage 2 fans then run at their minimum speed during the de-icing time. Once the de-icing time has elapsed, stage 2 fans stop running and the regular ventilation process is resumed.
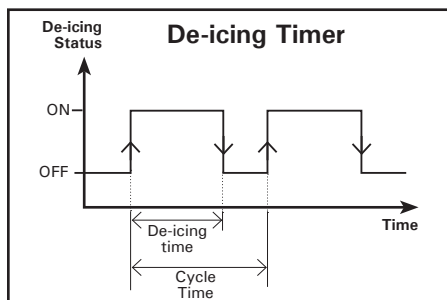
☞ *The de-icing cycles are only activated when the outside temperature falls below a user-defined temperature unless the controller has no outside temperature sensor. In that case, the de-icing cycles are always active.*

Settings

1. From the main menu, select: **STAGE 2**.

2. Use the navigation keys to select these parameters:

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

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

3. Set the following parameters:
   (The parameter adjustment process is explained in section 3.2 on page 8).

   De-icing out T° —Set the outside temperature below which the de-icing cycles must start. *This parameter is only accessible if the de-icing function and the outside temperature sensor are enabled in the User Setup Menu.*

   On — Set the Time On portion of the de-icing cycles. It ranges from 0 to 900 seconds. ***This parameter is only accessible if the de-icing function is enabled in the User Setup Menu.)*

   Cycle — Set the amount of time that separates two consecutive de-icing cycles. The cycle time ranges from 1 to 720 minutes and must be greater than the Time On. ***This parameter is only accessible if the de-icing function is enabled in the User Setup Menu.)*

6.6. 0-10V Fan Output

A 0-10V output can be used to activate supplementary fans. Refer to the User Setup Menu to enable this kind of output.

A 0-10V fan output can operate as an independent ventilation stage and use its own temperature settings. The graph below shows how this type of output works.

Independent 0-10V Fan Output
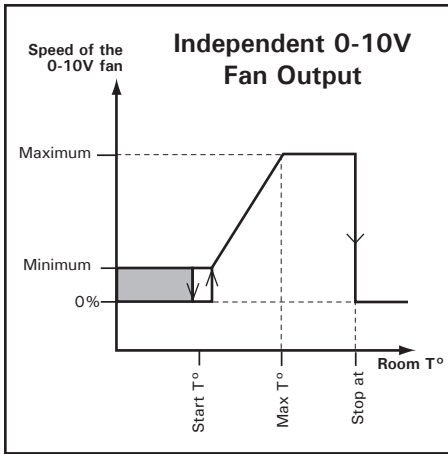
• **Below the start temperature:** The output follows a timer and runs at its minimum speed;

• **At the start temperature:** The output operates continuously at its minimum speed, and starts increasing in speed as the temperature increases;

• **At the maximum temperature:** The output reaches its maximum intensity;

• **Above the stop temperature:** The output is deactivated.

To enable a independent 0-10V fan output, set the operating mode of this output to *"Ventilation"* in the User Setup Menu.

The start temperature of the independent 0-10V fan output 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. Refer to the User Setup Menu to tell if the start temperature of the 0-10V output must follow the set point or not.

Settings

1. From the main menu, select the option:

☞ **0-10V OUTPUT**
Make sure the function of the 0-10V output is set to "Ventilation" in the User Setup Menu before adjusting the parameters below.

2. Use the navigation keys to select these parameters:

```
StartT° 75.0°F
```

```
Min Spd   40%
Max Spd  100%
```

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

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

```
Probes
1234
```

3. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    Start T° — Set the start temperature of the selected 0-10V output to the desired value (-40 to 120°F (-40 to 48.9°C)).

    Min / Man Spd — Set the minimum and maximum speeds of the 0-10V fan output.

    Max T° — Set the temperature at which the 0-10V fan output reaches its full speed This parameter ranges from 0.5 to 20°F (0.3°C to 11.1°C) above the start temperature.

Stop T° — Set the temperature over which the 0-10V fan output is disabled. This parameter ranges from 0.1°F (0.1°C) above the start temperature to 120°F (48.9°C). You can also disable this parameter by decreasing the value until the word *"Off"* is displayed.

Time On and Off — Set the timer being used by the 0-10V fan output when the temperature is lower than the start temperature. The Time On and Off range from 0 to 900 seconds in increments of 15 seconds.

Probes — The selected 0-10V fan output operates according to the average temperature a chosen set of probes. Select what temperature probes are used for this purpose. Note that the blinking digits represent the probes that are being used by the output.

7. MIST COOLING

The mist output operates according to two different timers whose activation are based on the room temperature. Refer to the User Setup Menu section to enable the mist output and to see which stage of your controller is used for this purpose.

The 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.
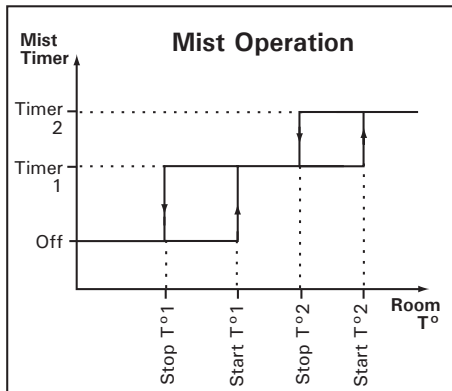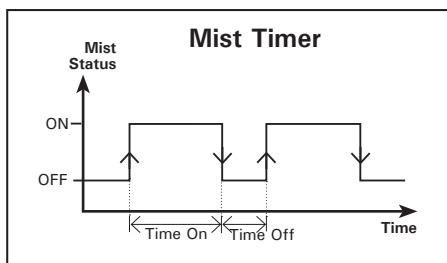
Mist Timer

Mist Operation

☞ *The misting & soaking devices are sharing the same output. When the clean mode is OFF, this output operates according to the mist parameters; it runs according to the soaking parameters when the clean mode is ON. Refer to chapter 4.5 for further information about the clean mode.*

Settings

1. From the main menu, select: **MIST/SOAK**.

2. Use the navigation keys to select these parameters:

```
Mist Timer 1
StartT°  85.0°F
```

```
StopT°    83.0°F
```

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

```
Mist Timer 2
StartT°  88.0°F
```

(…)

```
Mist Shutoff at
          95%
```

These parameters are accessible if the mist output is enabled in the User Setup Menu.

3. Set the following parameters:
(The parameter adjustment process is explained in section 3.2 on page 8).

Mist Timer 1-2 Start T° — Set the start temperature of both timers. Note that the start temperature of the second timer must be at least 0.5°F (0.3°C) higher than the start temperature of the first timer.

Mist Timer 1-2 Stop T° — Set the stop temperature of both timers. Note that the stop temperature of a given timer must be at least 0.5°F (0.3°C) lower than its start temperature.

Time On & Time Off — Set the Time On and Time Off of both timers.

Mist Shutoff at — Set the humidity level over which the mist units must stop being used. This value ranges from 40 to 99% of humidity. You can disable it by setting this value to "Off" (100%) *This parameter is accessible if the humidity sensor is enabled in the User Setup Menu.*

8.   SOAKING

The controller can use the mist/soak output for soaking while being in clean mode. If the soaking option is enabled, the controller automatically activates the soaking output in timer mode when the clean mode starts.

The user can specify the number of soaking cycles that need to be performed or can choose to make them run continuously.

☞ *The misting & soaking devices are sharing the same output. When the clean mode is OFF, this output operates according to the mist parameters; it runs according to the soaking parameters when the clean mode is ON. Refer to chapter 4.5 for further information about the clean mode.*

Settings

1. From the main menu, select: **MIST/SOAK**.

2. Use the navigation keys to select these parameters:

```
Soaking Timer
On:    10:00min
```

```
Soaking Timer
Off:   50:00min
```

```
# Soaking cycle
         Cont.
```

These parameters are accessible if the soaking output is enabled in the User Setup Menu.

3. Set the following parameters:

    Time On & Off — The soaking timer is made of a Time On and of a Time Off. The Time On ranges from 0 to 3600 seconds (1 hour) and the Time Off ranges from 0 to 240 minutes (4 hours). Set these parameters to the desired values.

    # of soaking cycles — Select the number of soaking cycles that need to be performed or select "cont." to run these cycles continuously.

9. RH COMPENSATION

Relative Humidity (RH) Compensation on the Minimum Ventilation Speed

The controller can compensate for high humidity levels by increasing the minimum ventilation fan speed. As the RH level rises, the controller increases the minimum ventilation speed to compensate for the change and reaches the maximum compensated speed when the RH level is 10% above the RH set point.

In addition, if the controller is already operating with the minimum ventilation mode when this compensation starts, it will then make the minimum ventilation fans run continuously rather than cycled.
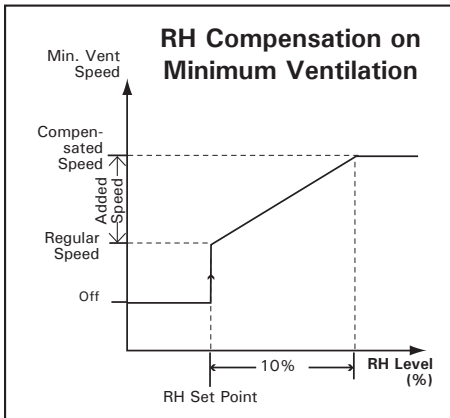
RH Compensation on Minimum Ventilation

Settings

1. From the main menu, select: **STAGE 1.**

2. Use the navigation keys to select these parameters:

```
Humidity setp        *
     65%
```

```
RH speed comp.       **
     60%
```

These menus are accessible if the RH Compensation function is set to "Ventilation" in the User Setup Menu.

3. Set the following parameters:
(The parameter adjustment process is explained in section 3.2 on page 8).

**Humidity setp** — Set the humidity level over which the minimum ventilation speed starts increasing. This set point ranges from 40 to 100% of humidity.

RH speed comp — Set the speed that must be added to the regular minimum ventilation speed when the humidity level exceeds the set point by more than 10%.

10.   HEATERS

10.1.   Regular Heating Stages

Stages and can be used to control heating units. If only one heating stage is enabled, stage # will then be assigned for this purpose (refer to the stage combination table in the User Setup Menu).

A heating stage starts running when the average room temperature gets lower than the stage's start temperature; likewise, the heating stage stops when the room temperature gets higher than the stage's stop temperature.
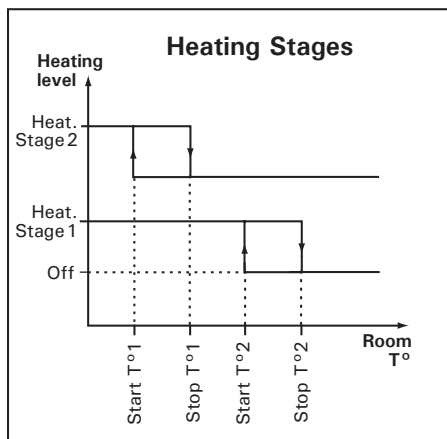
10.2.   Zoned Heating

With the zoned heating functions, each heating stage can operate according to the average temperature of a chosen set of sensors. When enabling this feature in the User Setup menu, the controller automatically assigns sensors 1 and 2 to the first heating stage and sensors 3 and 4 to the second.

☞   *To enable zoned heating, activate the "*Use zoned heaters*" option in the User Setup Menu.*

10.3.   Heating Timers

The heating stages can run in timer mode and according to two different timers based on the room temperature. The graph below shows how the heating timers work.
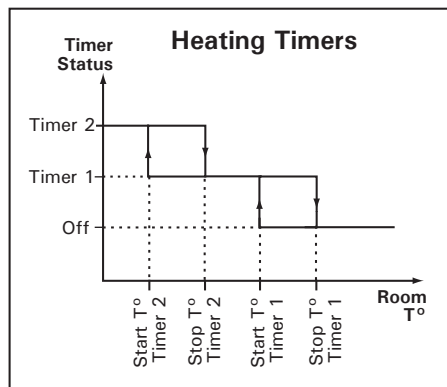
10.4. Heater Settings

1. From the main menu, select: **HEATERS**.

2. Use the navigation keys to select these parameters:

```
Heater 1
StartT°   73.0°F
```
or
```
Heat 1 Timer 1
StartT°   73.0°F
```

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

(...) Idem for Heater 2

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

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

```
StopT°    73.0°F
```

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

(...) Idem for Heater 2

(These parameters are accessible if at least one heating stage is enabled in the User Setup Menu.)

3. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    Start T° — Set the temperature below which each heating stage starts. If you are using heating timers, set this temperature separately for both timer of each heating stage.

    Stop T° — Set the temperature over which each heating stage stops. If you are using heating timers, set this temperature separately for both timer of each heating stage. Note that the stop temperature for a given stage musts be at least 0.3°F higher than its start temperature.

    Time On & Off — If the heating timers are enabled, set the Time On and Off of both timers for each heating stage.

10.5. 0-10V Heater

The controller has one 0-10V output that can either be used to control heaters, fans or actuators. This section explains how a 0-10V heater works.
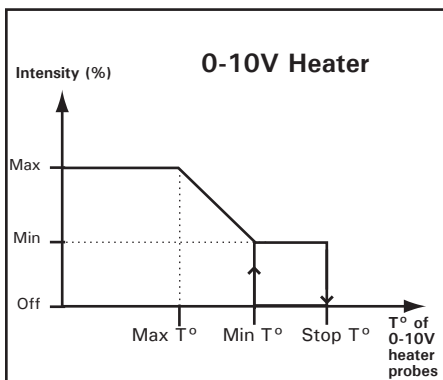
The 0-10V heater start at its minimum intensity when the temperature falls below its start temperature. It then increases in intensity as the temperature decreases and reaches its maximum intensity when the temperature gets lower than the Max. Temperature value.

Settings

1. From the main menu, select the option:

   0-10V OUTPUT /CURVE

   ☞ *Make sure the function of the se-lected 0-10V output is set to "Heat-ing" in the User Setup Menu before adjusting the parameters below.*

2. Use the navigation keys to select these parameters:

```
Min T°  75.0°F
```

```
Max T°  73.0°F
Stop at 76.0°F
```

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

```
Stop at day
          Off
```

```
Probes
1234
```

```
Probe average T°
          73.0°F
```

3. Set the following parameters:
   (The parameter adjustment process is explained in section 3.2 on page 8).

   Minimum T° — Set the temperature below which the 0-10V heating output starts operating at its minimum intensity (-40 to 120°F (-40 to 48.9°C)). This parameter can be defined as an absolute value or it can be related to the set point, which means it is automatically adjusted when the set point changes. Refer to the User Setup Menu to set the proper operating mode ("0-10V follows set point").

☞ *If the 0-10V heat curve is used, the temperature at which the 0-10V heating output starts must be defined separately for each step of the curve. See "0-10V Heating Curve" on page 38 for further information about this curve.*
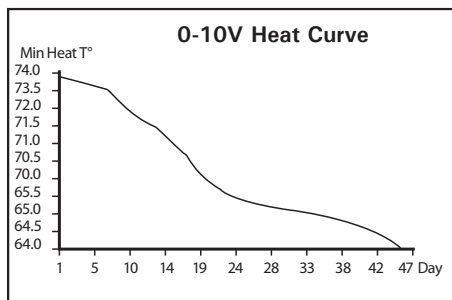
Max T° — Set the temperature at which the 0-10V heater reaches its maximum intensity. This parameter ranges from 0.5 to 20°F (0.3°C to 11.1°C) below the output's minimum temperature.

Min/Max Heat — Set the minimum and maximum intensity of the 0-10V heating output (from 0 to 100%).

Stop T° — Set the temperature over which the 0-10V heater is disabled. This parameter ranges from 0.5 to 20°F (0.3°C to 11.1°C) above the output's minimum temperature.

Stop at day — Set the animal age over which the 0-10V heating output must stop being used. See "Setting the Day Number" on page 10 to view/modify the current day number.

Probes — The 0-10V heating output oper-ates according to the average temperature a chosen set of probes. Select what tem-perature probes are used for this purpose. Note that the blinking digits represent the probes that are being used by the output.

Probe average T° — This is the average temperature reading of the temperature probes that were chosen above.

10.6.   0-10V Heat Mat

When it is used to control heat mats, the 0-10V output runs at its maximum intensity when the temperature of a chosen group of probes gets lower than the heat mat set point.
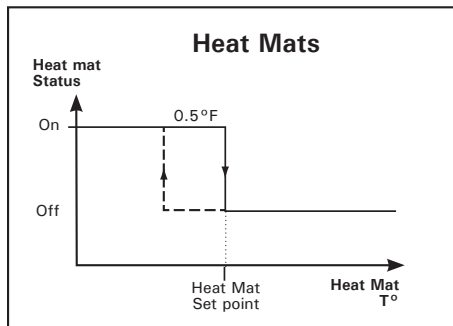
Heat Mats

Heat mat Status

0.5°F

On

Off

Heat Mat Set point

Heat Mat T°

Settings

1. From the main menu, select the option:

    0-10V OUTPUT /CURVE

☞ *Make sure the function of the selected 0-10V output is set to "Heat mat" in the User Setup Menu before adjusting the parameters below.*

2. Use the navigation keys to select these parameters:

```
Heat mat setp
          80.5°F
```

```
Stop at day
            Off
```

```
Probes
1234
```

```
Probe average T°
        73.0°F
```

3. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    Heat Mat Set Point T° — Set the temperature below which the 0-10V heat mat turns on. This heating set point ranges from -40 to 120°F (-40 to 48.9°C).

    ☞ *If the 0-10V heat curve is used, the temperature at which the 0-10V heating output starts must be defined separately for each step of the curve. See "0-10V Heating Curve" on page 38 for further information about this curve.*

    Stop at day — Set the animal age over which the 0-10V heating output must stop being used. See "Setting the Day Number" on page 10 to view/modify the current day number.

    Probes — The 0-10V heating output operates according to the average temperature a chosen set of probes. Select what temperature probes are used for this purpose. Note that the blinking digits represent the probes that are being used by the output.

    Probe average T° — This is the average temperature reading of the temperature probes that were chosen above.

10.7. 0-10V Heating Curve

The controller can automatically change the temperature at which the 0-10V heater (or heat mat) starts over time by using a curve. This heating curve is optional. Refer to the User Setup menu in section 4.4 to enable it.

0-10V Heat Curve

Min Heat T°

74.0
73.5
72.0
71.5
71.0
70.5
70.0
65.5
65.0
64.5
64.0

1   5   10   14   19   24   28   33   38   42   47 Day

The 0-10V heat curve is made of 10 steps. Each step specifies a day number and a start temperature of the 0-10V heating output for that day. Once it is activated, the controller changes this start temperature every hour in a linear fashion between consecutive steps of the curve. When the last step is reached, the controller keeps using the start temperature associated with that day.

Notes
Certain restrictions apply to reduce the risk of errors:

1. The highest day number is 365.

2. Decreasing day numbers is not allowed.

3. Increasing heater set points is not allowed.

4. All ten steps must be specified. If you don't need ten different steps, repeat the last temperature for each unnecessary step.

☞ **Refer to section 4.2 on page 10 to set the current day number.**

Settings

1. From the main menu, select: **0-10V OUT-PUT / CURVE**.

2. Use the navigation keys to select this screen:

```
1. day    1
Setp    74.0°F
```

(This screen is accessible if the set point curve is enabled in the User Setup Menu).

3. Set the following parameters:
(The parameter adjustment process is explained in section 3.2 on page 8).

```
1. day    1
Setp    74.0°F
```

```
2. day    5
Setp    72.5°F
```

...

```
10. day    40
Setp    65.0°F
```

```
Curve status
        Off
```

Day numbers — Set the day at which each curve step starts.

Setp — Assign a temperature set point (start temperature of the heating output) to each step of the curve.

Curve status — Select *"Yes"* to enable the curve (or *"No"* to disable it). Once the curve is on, the controller automatically adjusts the set point between consecutive points of the curve; for this reason, curve steps cannot be modified while the curve is running.

☞ **If all curves are disabled (Min. Vent, Set Point & 0-10V Heat curves), the controller will automatically set the day number back to 1 day when a curve is being activated.**

11. AIR INLET & CHIM-NEY DAMPERS

11.1. Principle of Operation

The controller can control the opening of 1 air inlet and of a 0-10V chimney damper.

When using the inlet or chimney output, the user must associate an actuator position with the start-up of each fan stage. As the room temperature increases and new stages are activated, the air inlet will open or close accordingly.

Inlet opening in minimum ventilation:
The inlet is at its closed position (step 0) during the *"Time Off"* portion of a minimum ventilation cycle and opens to its minimum ventilation position (step 1) during the *"Time On".*

Over-opening of the air inlet: A supplementary stage can be defined in order to continue opening the air inlet beyond the activation temperature of the last ventilation stage.

This over-opening stage is used to direct the airflow more efficiently during periods of warm weather.

The air inlet can either reach its over-opening position right away when the room temperature reaches a certain point or it can reach its over-opening position gradually as the room temperature departs from the start temperature of the last fan stage. In either case, the inlet reaches its full over-opening position at: On T° of the last fan stage + Over-opening bandwidth. Refer to the User Setup Menu to enable the Over-Opening function.

Low Temperature Override — The low temperature override function allows bypassing the inlet's normal operation when the room temperature is too cold. When this override function is enabled, the inlet directly goes to a user-defined position when the room temperature falls below a user-defined temperature limit (Low Override Temperature). Refer to the User Setup Menu to activate this function and to set the low temperature limit.

Opening of the Air Inlets & Chimney Dampers
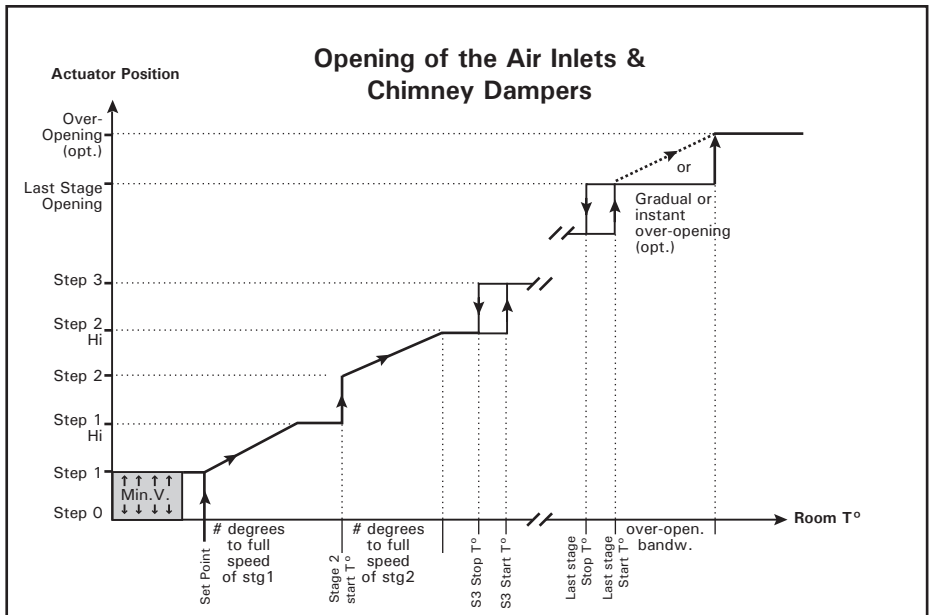
11.2.   Inlet & Chimney Settings

1. From the main menu, select the option that corresponds to the type of air inlet you want to adjust:

> **INLET**
> **0-10V OUTPUT /CURVE**

☞ *If you are selecting a 0-10V output, make sure the function of this output is set to "Chimney" in the User Setup Menu before adjusting the parameters below.*

2. Use the navigation keys to select the following parameters:

```
Min Spd      45%
St. 0        10%
```

```
St. 1        20%
St. 1Hi      30%
```

...

```
St.          80%
```

```
Total run time
        1:15min
```

```
Max opening
        100%
```

```
Degrees to max
opening    2.0°F
```

```
Accuracy
        +/- 2sec
```

...

```
Under run open
time       0sec
```

3. Set the following parameters:
   (The parameter adjustment process is explained in section 3.2 on page 8).

   Min Spd — During the minimum ventilation cycles and in stage 1, the inlet will use its minimum ventilation position (Step 1) as long as the fan speed is lower than the *"Min Speed"* value. Once the minimum speed is reached and keeps increasing the inlet will open further towards Step 1 Hi opening. Set the minimum fan speed to the desired value.

   St.x — Assign an actuator opening (in %) with the startup of each fan stage.

   St.x Hi — Assign the actuator opening (in %) that must be used when a variable fan stage reaches full speed

   Total run time (inlet only) — Enter the <u>exact time</u> that is required to reach the actuator's maximum limit switch. The controller will limit the opening of the inlet according to this parameter value.

   Max opening (inlet only) — Set the opening that is reached beyond the start temperature of the last ventilation stage.**This parameter is accessible if the over-opening function is enabled in the User Setup Menu.*

   Degrees to max opening (inlet only)— Set the temperature range over which the actuator opens beyond its last stage opening towards its maximum opening (see previous graph). This parameter ranges from 0.5 to 20°F (0.3 to 11.1°C).**This parameter is accessible if the over-opening function is enabled in the User Setup Menu.*

   Accuracy (inlet only)— To prevent the actuator from flickering, a minimum opening or closing command is required for the actuator to start moving. Set this parameter to the desired value (from 1 to 15 seconds).

Under run open time (inlet only) — When an inlet timer ends, it may take a few seconds for the actuator to actually stop moving. For this reason, the controller can switch off the actuator's motor slightly before its time for the actuator to reach its exact moving time without exceeding it. This parameter ranges from 0 to 3 seconds. *This parameter is only accessible with the installer password.*

11.2.1. Actuator Reset

⚠ *No reset can be made when the outside temperature falls below a user-defined value. This limitation applies to both automatic & manual resets.*

Resetting the actuator's position is used to clear accumulated time offsets caused by the frequent openings and closings of the inlet. The controller resets the actuator's position at regular intervals to make sure the inlet position is always accurate. *The actuator reset is not required for the 0-10V chimney.*

☞ *The inlet RESET pilot light flashes while an actuator is being reset.*

This reset is performed automatically according to one of these two methods:

1. **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.

2. **Reset toward the nearest position**
    (Open/Close mode)
If the current inlet position is higher than 50% at the reset time, the controller fully opens the inlet to reset the actuator's position; if the current inlet position is lower than 50%, the controller closes the inlet to perform the reset. This way, the inlet never closes when the room temperature already asks for a wide opening.

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

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1. From the main menu, select: **INLET.**

2. Use the navigation keys to select the following menus:

```
Reset Mode
     Open/Close
```

```
Reset 1 5:00 PM
Reset 2 5:00 PM
```

```
Reset 3 5:00 PM
Reset 4 5:00 PM
```

```
Reset Now?
            No
```

```
Reset delay
         2 min
```

```
Disable if OutT°
is Below 10.0°F
```

(These menus are accessible if an inlet is enabled in the User Setup Menu).

3. Set the following parameters:

    Reset Mode — Select the desired reset mode: *"Open/Close"* to reset the actuator toward its nearest position; select *"Close"* to reset the actuator toward its closed position only or select *"Off"* to disable the automatic reset.

    Reset 1,2,3,4 — Set the times at which resets are performed. The inlets reset up to 4 times per day when the reset times are set to different times. Set all 4 reset times to the same time if you only want the inlets to reset once.

    Reset now? — Select *"Yes"* to reset the actuator's position now.

Reset delay — During a reset, the controller opens or closes the inlet during this delay, or up until a limit switch is reached. The reset delay should be set to the same time value or higher than the total opening time (as defined in previous section).

Disable if Out.T° is Below — To prevent the inlet from closing against ice, the controller can stop all inlet resets when it is too cold outside. Set the outside temperature below which inlet resets are forbidden. Note that the inlet can still be reset manually regardless of the outside temperature. *This parameter is accessible if an outside temperature sensor is enabled in the User Setup Menu.*

11.2.2. Manual Opening of the Actuators

The controller allows you to change the position of the actuators manually. When an inlet or chimney damper is controlled this way, the controller simply stops controlling the output.

1. From the main menu, select the option that corresponds to the type of air inlet you want to adjust:

   INLET
   0-10V OUTPUT/CURVE

☞ *If you are selecting a 0-10V output, make sure the function of this output is set to "Chimney" in the User Setup Menu before adjusting the parameters below.*

2. Use the navigation keys to select the following menu:

   ```
   Opening    35%
   Mode       Open
   ```

3. Set the Mode to the desired status: Open, Close, Off or Auto.

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

11.3. Static Pressure Compensation on the Inlet

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 inlets further when the static pressure level gets 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 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 all inlets: they close further by their respective compensation value (%) when the pressure level is too low [**point A** on the graph] or open further by their compensation value (%) when the pressure level is too high [**point C** on the graph]. The controller then waits for the Compensation 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 in the normal range or until a new stage starts. When the pressure level gets back to the normal range [**points B & D** on the graph], all inlets keep their compensated position until the beginning of a new stage. No compensation is applied on the inlet opening when a new stage starts

☞ *This compensation will not be made if the static pressure probe is defective.*

Static Pressure Compensation on the Inlet Opening
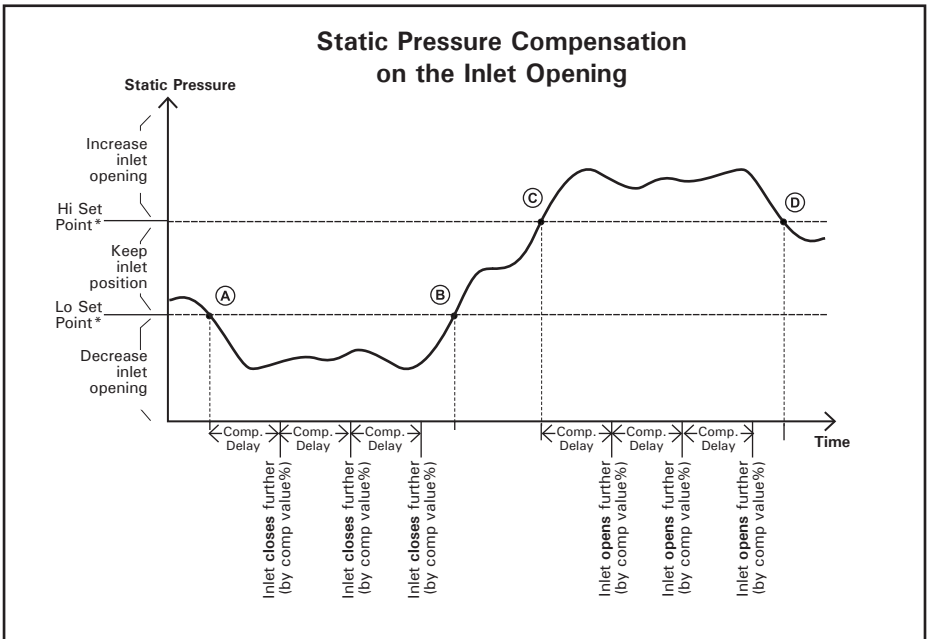
Settings:

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

1. From the main menu, select: **INLET.**

2. Use the navigation keys to select the following parameters:

```
Low SP   .00"WC
High SP  .10"WC
```

```
Stat. P compens
         5%
```

```
Compens.delay
         30 sec
```

These parameters are accessible if the static pressure compensation feature is enabled in the User Setup menu.

3. Set the following parameters:
    (The parameter adjustment process is explained in section 3.2 on page 8).

    Low SP & High SP — Set the static pressure level below and above which the static pressure compensation must be applied on the inlet opening.

    Stat. P compens — Select the opening percentage that must be added or removed when the static pressure compensation is applied on the inlet openings. This parameter ranges from 0 to 10%. *Note that this compensation is never applied more than four times on the inlet opening.*

    Compens. delay — Each time this delay has elapsed and the pressure exceeds the normal range, the static pressure compensation is applied on the inlet opening. This parameter ranges from 0 to 900 seconds.

12. MONITORING FUNCTIONS

12.1. Alarms

The alarm output is activated when an abnormal situation occurs. Each triggered alarm is logged in a history menu and must be acknowledged by the user. The alarm conditions are as follows:

- **Defective temperature probe;**
- **Defective outdoor probe;**
- **Defective humidity probe;**
- **Defective static pressure probe;**
- **Hi/Low/Critical temperature;**
- **Clean mode low temperature;**
- **Water spill alarm;**
- **Hi/Low Water usage.**

☞ *When an alarm is active, its respective pilot light turn on; when an alarm is no longer active but has not been acknowledged by the user, its pilot light flashes. Refer to the following section of this manual to acknowledge the alarms.*

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

12.1.1. Managing the Alarms

The controller has an alarm monitoring menu which contains a list of all alarms that are currently active and a list of all alarms that are no longer active but that have not been acknowledged yet.

1. From the main menu, select: **ALARMS [MONITORING].**

```
Active Alarms
Water Spill  ←──── Rolling active
                   alarm conditions
```
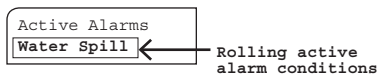
The first screen shows the active alarm conditions. If there is more than one active alarm, the alarm messages will be displayed in turn.*The message "No Alarm" is displayed if there is currently no active alarm.*

2. Press the down-arrow key once to select the alarm log. All unacknowledged alarm conditions are displayed in turn (unacknowledged alarms represent the alarm conditions that are no longer active).

```
T° Pr.1 defect  ←──── Rolling unackn.
Unacknowledged         alarm conditions
```
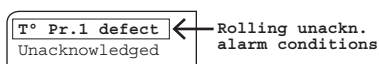
3. Set the status of the unacknowledged alarms to "Acknowledged" to acknowledge all the alarms at the same time.

12.1.2. Alarm Conditions

12.1.2.1. Temperature Alarms

The following diagram explains how temperature alarms are detected:

Detection of Temperature Alarms

Alarm Limits (T°)

Hi T° alarm

High Alarm Limit

Set Point

Low Alarm Limit
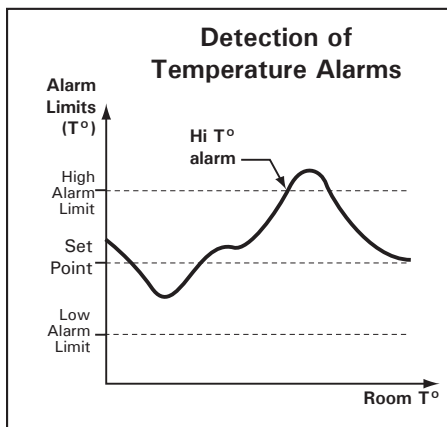
Room T°

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 high alarm 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.

12.1.2.2. Water Alarms

• **Water Spill Alarms:**
A water spill alarm sets off when the water consumption exceeds a certain limit. This limit can be adjusted from 0 to 1,000 gallons or liters per 15 minutes. The alarm is activated if a greater amount of water is detected within the 15 minute interval. A separate water spill limit can also be defined for day and night.

• **Water Consumption Alarms:**
When the percent difference in water consumption between the last 24-hour period and the previous 24-hour period is greater than a given maximum value, an alarm is set off.

Water Consumption

Previous 24h   Last 24h   Time

Now
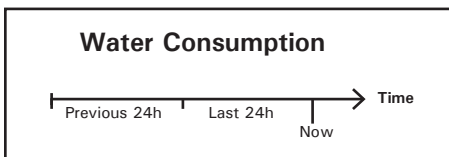
The high and low water consumption alarm limits are defined as follows:

• **Case #1:** If more water has been consumed in the last 24 hours than in the 24 hours that precede, the controller will determine how much more water has been consumed and will convert this value in percent. If the surplus (in %) is higher than the *"High Alarm"* limit, the controller will set off an alarm.

$$\frac{\text{Last 24h - Previous 24h}}{\text{Previous 24h}} \times 100 > \text{Hi Alarm}$$

• **Case #2:** If less water has been consumed in the last 24 hours than in the 24 hours that precede, the controller will determine how much less water has been consumed and will convert this value in percent. If the deficit (in %) is higher than the *"Low Alarm"* limit, the controller will set off an alarm.

$$\frac{\text{Previous 24h - Last 24h}}{\text{Previous 24h}} \times 100 > \text{Lo Alarm}$$

☞ ***Before it can start monitoring the water consumption alarms, the controller needs to gather consumption data for 48 hours in a row (no consumption alarm can be detected within this 48-hour delay). This 48-hour delay starts when enabling the water meter in the User Setup Menu.***

12.1.3. Alarm Settings

1. From the main menu, select: **ALARMS.**

2. Use the navigation keys to select the following parameters:

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

```
Critical high:
         95.0°F
```

```
Clean mode low
temp.    38.0°F
```

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

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

```
Lo Water usage
         Off%
```

```
Hi Water usage
         Off%
```

3. Set the following parameters:
   (The parameter adjustment process is explained in section 3.2 on page 8).

   Low & High Temperature Limits — Set the room temperature below and above which a temperature alarm must be triggered. The low limit can be adjusted from 40°F to 0.5°F (22.2 to 0.3°C) below the set point and the high limit 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.*

   Critical Temperature — Set the absolute maximum temperature that is allowed in

the room. This parameter ranges from −40 to 120°F (-40 to 48.9°C). *Accessible if the outside temperature sensor is enabled in the User Setup Menu.*

Clean mode — Set the temperature below which a temperature alarm is set off in clean mode.

Water spill set 1 — Set the first maximum amount of water that can be consumed in a 15-minute delay. *This parameter is accessible if the water meter is enabled in the User Setup Menu.*

From / To — Set the period of time during which the first water spill limit is being used.

Water spill set 2 — Set the second maximum amount of water that can be consumed in a 15-minute delay. *This parameter is accessible if the water meter is enabled in the User Setup Menu.*

Water Lo Alarm Usage — An alarm is set off if the water consumption measured by a water meter in the last 24 hours is too low compared to the consumption measured in the 24 hours that precede. To disable this monitoring function, decrease the parameter value until the word *"Off"* is displayed. *This parameter is accessible if a water meter is enabled in the User Setup Menu. See "Water Alarms" on page 47 for more information on this alarm limit.*

Water Hi Alarm Usage — An alarm is set off if the water consumption measured by a water meter in the last 24 hours is too high compared to the consumption measured in the 24 hours that precede. To disable this monitoring function, decrease the parameter value until the word *"Off"* is displayed. *This parameter is accessible if a water meter is enabled in the User Setup Menu. See "Water Alarms" on page 47 for more information on this alarm limit.*

Reset Water Alarm ? — If a water alarm is on (high or low water consumption or water spill alarm), select *"Yes"* to acknowledge the alarm condition. Note that when a reset is made, the controller needs 48 hours to gather new consumption data before it can start monitoring the high/low water consumption alarms again (no consumption alarms can happen by the end of this 48-hour delay). *This parameter is accessible if a water alarm is on.*

12.2. Water Consumption

12.2.1. History

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

1. From the main menu, select: **WATER HISTORY.**

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

(*This menu is accessible if the water meter is enabled in the User Setup Menu.)*

2. The water consumption history is displayed Press the down-arrow key to scroll down the water consumption history.

12.2.2. Water Consumption of the Last 48 Hours

1. From the main menu, select: **LAST 48-HOUR WATER.**

```
L.24Hr Water
usage:   123L
```

The water consumption of the last 24 hours is displayed. *This menu is accessible if the water meter is enabled in the User Setup Menu.)*

2. Press the down-arrow key to see the water consumption of the previous 24 hours (i.e. 24 hours that are preceeding the last 24 hours).

```
P.24Hr Water
usage:   234L
```

12.3.   Heater Run Time History

The controller has an history in which run times of the heating units are logged in for the past 6 days.

1. From the main menu, select: **HEATER RUN TIME.**

    This menu is accessible if at least one heating stage is enabled in the User Setup Menu.

    ```
    Heater 1
    01/01/0X    2:30
    ```

2. The run time of the first heating stage is displayed along with the time and date. Press the down-arrow key to scroll down the heater run time history.

13.   CURRENT CONDITIONS

13.1.   Current Room Temperature

The room temperature is the average reading of the temperature probes that have been chosen for this purpose in the User Setup Menu.

1. From the main menu, select: **ROOM TEMPERATURE**.

2.
    ```
    Room T°    76.5 °F
    Pr.Act:1234
    ```

    The average temperature probes are flashing on screen.

3. Press the down-arrow key once. The minimum temperature recorded today is displayed along with the time and date.

    ```
    Room T° 01/01/0X
    Min 72.2  1:10A
    ```

4. Press the down-arrow key once again. The maximum temperature recorded today is displayed along with the time and date.

    ```
    Room T° 01/01/0X
    Max 76.2  10:25A
    ```

5. Keep pressing on the down-arrow key to look at the minimum and maximum temperature readings of the past six days.

13.2.   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.

1. From the main menu, select: **PROBE TEMPERATURE**.

2. Press the down-arrow key once. The current reading of each activated probe is displayed.

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

3. Press 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
```

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

```
Probe1 01/01/0X
Max 75.1  3:30P
```

5. Keep pressing the navigation down-arrow key to display the minimum and maximum temperatures of the past six days for each remaining probe.

13.3.   Outside Temperature

The following procedure shows how to display the current outside temperature and how to see the minimum and maximum outside temperature readings of the past six days.

1. From the main menu, select: **OUTSIDE TEMPERATURE**.

2. Press the down-arrow to select the outside temperature reading.

```
Out T°    55.2°F
```

*   *This reading is accessible if the outside temperature probe is enabled in the User Setup Menu.*

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

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

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

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13.4. Current Humidity Level

1. From the main menu, select: **RELATIVE HUMIDITY**.

2. Press the down-arrow to select the following screen.

```
Humid.   50%
```

(This reading is accessible if the humidity sensor is enabled in the User Setup Menu).

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

```
Humid. 01/01/01
Min  25%  12:00A
```

4. Press the down-arrow key once again. Today's maximum humidity reading is displayed, along with the time and date.

5. Keep pressing the navigation down-arrow key to display the minimum and maximum humidity readings of the past six days.

13.5. Current Pressure Level

1. From the main menu, select: **STATIC PRESSURE**.

2. Press the down-arrow to select the following screen.

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

(This reading is accessible if the static pressure sensor is enabled in the User Setup Menu).

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

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

4. Press the down-arrow key once again. Today's maximum humidity reading is displayed, along with the time and date.

```
Stat P 31/12/XX
Max  .07  14:00A
```

5. Keep pressing the navigation down-arrow key to display the minimum and maximum humidity readings of the past six days.

13.6. Current Speed of the Variable Fans

1. From the main menu, select the option that corresponds to the fan stage you want to consult:

    STAGE 1
    STAGE 2

2. Use the navigation keys to select this screen:

```
Current speed
          100%
```

The current fan speed is displayed.

14.   TECHNICAL SPECIFICATIONS

Supply: …………………115/230 VAC (-18%, +8%), 50/ 60Hz, 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).

Rel. Humidity Input: ……4 to 20mA current loop

Static Pressure Input: ….4 to 20mA current loop

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

0-10V Output: ………….30mA max

Stage 1: …………………Variable output, 50/60Hz, 115VAC 1/2HP (373W), 230VAC 1.5HP (1120W), 10 Amp Max. Fuse F2-15A slow blow.

Stage 2: …………………Variable output, 50/60Hz, 115VAC 1/2HP (373W), 230VAC 1.5HP (1120W), 10 Amp Max. Fuse F3-15A slow blow.

Stage 3: …………………ON/OFF output, 50/60Hz, 115VAC 1/4HP (187W), 230VAC 1/2HP (373W), 10 A Res. Max, 30VDC 5A Ind. Heating or cooling. Fuse F6-15A slow blow.

Stage 4: …………………ON/OFF output, 50/60Hz, 115VAC 1/4HP (187W), 230VAC 1/2HP (373W), 10 A Res. Max, 30VDC 5A Ind. Heating or cooling. Fuse F5-15A slow blow.

Actuator (winch): ……… Open/Close output, 50/60Hz, 115VAC (0.17HP 124W), 230VAC (0.5HP 373W), 30 VDC 5A Ind. 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). For indoor use only !

15.   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 on the card is used to lock or to unlock the card (🔒 = locked, 🔓 = unlocked).

⚡ *Turn off power each time you open the controller's enclosure. This prevents accidental exposure to areas of high voltage.*
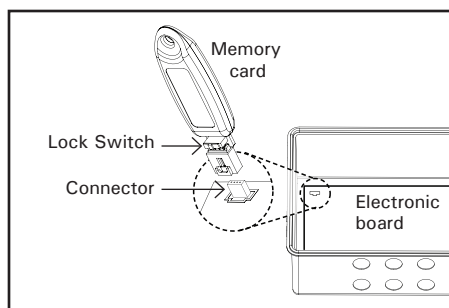
To Transfer a Configuration:
1. Turn off power to the controller.

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. The lock switch on the 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 up and down menu select keys for 3 seconds to display this menu).

6. Use the up and down navigation buttons to select the proper type of transfer:

Memory Card To Controller:
To transfer the memory card's content into the controller, select the *"Mem.Card –> Ctrl"*. When it is selected, simultaneously press the up and down adjustment buttons to start the transfer.

```
Mem.Card -> Ctrl
▲ to start
▼
```

Controller To Memory Card:
To save the controller's configuration into the memory card, select the *"Ctrl –> Mem. Card"* menu. Once it is selected, simultaneously press the up and down adjustment buttons to start the transfer.

```
Ctrl -> Mem.Card
▲ to start
▼
```

7. When the transfer is over, simultaneously press and hold the up and down menu select keys for 5 seconds to exit from the transfer menu and 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.

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

⚠ *Remove the memory card from the connector when the transfer is over!*

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.

16.   INSTALLATION REPORT

CLIENT

Name: _____

Address: _____

_____

_____

City: _____

Tel.:   _____

Fax: _____

INSTALLER

Name: _____

Address: _____

_____

_____

City: _____

Tel.:   _____

Fax: _____

User Setup Menu	
Contrast	_____ (10-100%)
Time format	___24h ____AM/PM
Temperature Units	___°F ____°C
# of temperature sensors in the room	_____ (1-4)
Room probes	__1 __2 __3 __4
Use water meter ?	___Yes ____No
Water meter units	___Lit ____Gal
Water meter calibration	# ___ unit/pulse
Use humidity sensor ?	___Yes ____No
Humidity Compensation on Min. Speed ?	___Yes ____No
Use Outside Temperature Sensor ?	___Yes ____No
Outside T° Compensation on Min. Speed?	___Yes ____No
Out T° compens. stage 1?	___Yes ____No
Out T° compens. stage 2?	___Yes ____No
Outside T° in winter	_____ °
Outside T° in summer	_____ °
Use the Static Pressure Compensation	___Yes ____No
Number of heaters	_____ (0-2)
Number of 0-10V outputs	_____ (0-1)
0-10V output used for:	___Heat ____Vent. ___Heat mat ____Chimney
0-10V output follows the set point ?	___Yes ____No
0-10V curve ?	___Yes ____No
Output mode	_____ (0-10V or 10-0V)
Use Soaking ?	___Yes ____No

User Setup Menu	
Use Mist ?	___Yes ____No
Use Inlet ?	___Yes ____No
Use Over-Opening ?	___Yes ____No
Move in 1 step ?	___Yes ____No
Use heaters on timer ?	___Yes ____No
Use zoned heaters ?	___Yes ____No
Heater 1 probes	__1 __2 __3 __4
Heater 2 probes	__1 __2 __3 __4
Use merge for stages 1-2	___Yes ____No
Use merge for stages 2-3	___Yes ____No
De-icing stage 2	___Yes ____No
Use night set point	___Yes ____No
Night set point starts at	____:____ (hh:mm)
Day set point starts at	____:____ (hh:mm)
Transition time	____min (15 to 120 min)
Low Temperature Override	___Yes ____No
Override Below	_____ °
Override Stops at	_____ °
Low T° Override Min speed	____%
Low T° Override Inlet position	____%
Use set point curve	___Yes ____No
Min speed curve?	___Yes ____No
Display	___T° ___T° & SP ___T°&Inlet ___All

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NOTES

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