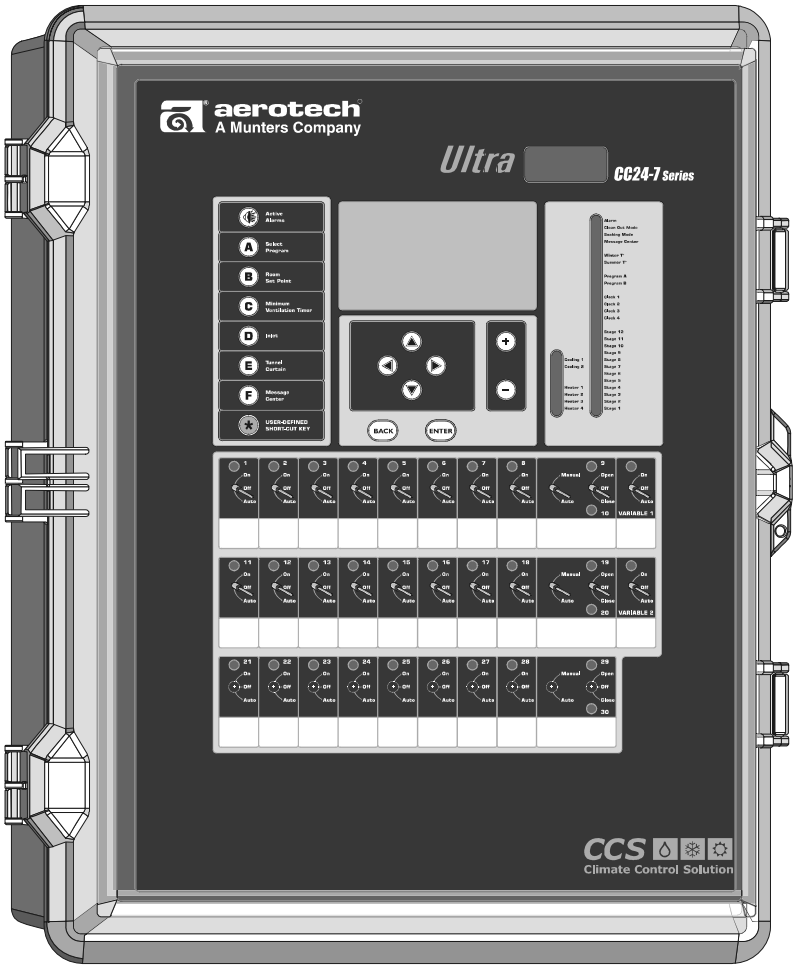
Temperature Controller

CC24-7 *ULTRA*

USER'S MANUAL



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FORM: QM1387
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FOR CUSTOMER USE

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

Model number: CC24-7 ULTRA

Serial number: _____

NOTICE

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.

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1. INTRODUCTION

1.1 Precautions

We strongly recommend installing supplementary natural ventilation as well as a backup thermostat on at least one cooling stage (refer to the relay panels' wiring diagram to connect the thermostat).

Although fuses at the input and outputs of the controller protect its circuits in case of an overload or overvoltage, 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).
For indoor use only.

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

DO NOT SPRAY WATER ON THE CONTROLLER

1.2 Symbols of the Manual

Caution. Read the following text carefully; it contains important pieces of information which, if ignored, may cause the controller to operate improperly.

Pay attention. The following text contains very useful information.

The function/parameter must be set separately for both seasons (winter & summer).

1.3 Controller's Overview

The CC24-7 ULTRA is an electronic device used for environmental control in livestock buildings. It allows to maintain a specified target temperature by controlling the operation of ventilation and heating equipment. The controller can operate the following inputs & outputs:

OUTPUTS:

30 Up to 30 internal On/Off relays to control:
- 4 heating stages;
- 12 fan stages;
- 4 clock outputs;
- 1 tunnel curtain;
- 2 natural ventilation curtains;
- 1 stir fan output;
- 2 cooling outputs;
- 1 air inlet;
- 1 soaking output.

- 2 variable fan outputs;
- 2 0-10V outputs to control heat mats, fans and/or lights.

INPUTS:

- 8 inside temperature probes;
- 1 outside temperature probe;
- 1 static pressure sensor;
- 1 potentiometer;
- 1 humidity sensor;
- 2 water meters;
- 3 dry contact inputs to monitor:
  - 2 feeders;
  - 1 device in the message center.

Refer to the wiring diagram enclosed at the end of this manual to connect the various devices to the controller's inputs & outputs.

MAIN FEATURES OF THE CONTROLLER:

VERY LARGE LCD DISPLAY
A large screen provides an efficient interface for displaying, monitoring and adjusting the parameters.

2 CONTROLLER PROGRAMS
The controller has two programs to control the room temperature. You can thus choose a program that suits the current age of the animals for instance.

STATUS LEDS
Pilot lights indicate the status of the controller's outputs, allowing you to monitor the system's operation without having to enter the building.

REMOVABLE CONNECTORS
You can remove the connectors from the main board to make the connections.

MINIMUM VENTILATION CYCLE
When ventilation is not required to reduce the room temperature, the fan outputs can run either continuously or intermittently to reduce the humidity level and supply oxygen to the room.

PROBE READINGS RECORDED FOR PAST DAYS
The controller keeps a daily record of the minimum and maximum readings of the static pressure and humidity probes for the past 75 days. The minimum and maximum readings of each individual temperature probe is also recorded daily for the past 7 days.

WATER MONITORING
Ten pulse inputs are provided to monitor the water consumption. The controller keeps a daily record of the water consumption for the past 60 days.

ALARM MANAGEMENT
Alarms are provided for high-low temperatures, defective sensors and other system failures. The controller keeps in memory the 25 previous alarm conditions.

EIGHT INDEPENDENT TEMPERATURE PROBE INPUTS
Eight inside temperature probes can be connected to the controller in order to obtain an accurate reading of the average house temperature and a faster reaction time.

HUMIDITY COMPENSATION
The controller has three ways to compensate for high humidity levels:
1. It can increase the ventilation level in minimum ventilation;
2. It can stop all mist units;
3. It can activate heating units in timer mode.

0-10V OUTPUTS
Two 0-10V outputs can be used to activate additional fans, heating devices or lights.

CONTROL OF THE AIR INLET MOVEMENT
The controller can coordinate the movement of the air inlet with the operation of the fans, using potentiometer located on the panel drive or a timer. This allows the air inlet to be adjusted correctly, without the influence of uncontrollable factors such as wind or air from adjoining rooms. The controller can also control the movement of the inlet according to the static pressure level in the room.

NATURAL VENTILATION
The controller can control up to two curtains located in different zones.

TUNNEL CURTAIN CONTROL
An endwall curtain can be controlled according to the room temperature or according to the static pressure level in the house.

PASSWORD PROTECTION
A password is used to restrict access to some of the controller 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.

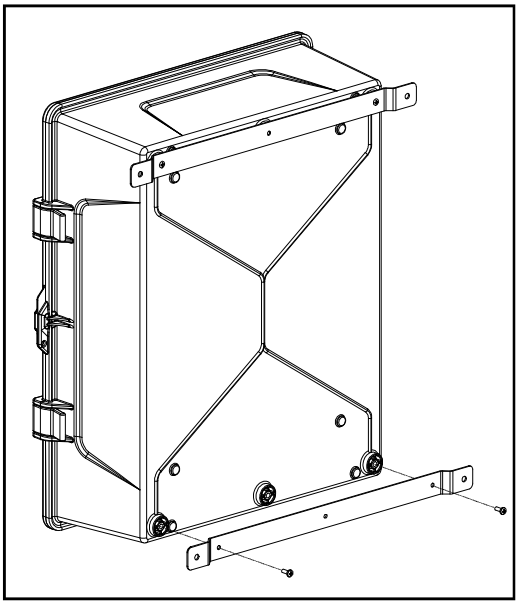
COMPUTER CONTROL
The controller can be connected to a computer, thus making it possible to centralize the management of information and diversify control strategies.

TEST MODE
The test mode allows the user to simulate temperature changes and verify the performances of the controller.

2. MOUNTING INSTRUCTIONS

2.1 Installing the Controller on the Wall

Fasten the two metal brackets on the mounting holes located behind the controller using four screws. Then, mount the enclosure on the wall using four other screws. 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

Input connectors can be removed from the main board. Pull out the input terminal block to take it off. This will help you connecting sensors to the terminals.

2.2.1 Controller's Main Wiring

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. Watertight connectors must also be installed 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. Be sure power is off before doing any wiring to avoid electrical shocks and equipment damage.

2.2.2 Probe Inputs

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

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

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

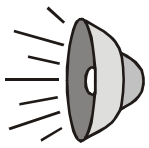
It is preferable to solder the cable joint to ensure a proper contact between the two cables.

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

DEFECTIVE TEMPERATURE PROBE:
An alarm is generated when a defective probe is detected. The defective probes are identified in the **"20. Alarm Log"** menu. Refer to chapter 12 for further information on the alarms.

2.2.3 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.



2.2.4 0-10V Output Connection

It is recommended to use a 18 to 22 AWG wire to connect the devices to the 0-10V outputs. This type of output can be used to connect various devices such as heat mats or fans.

3. USER INTERFACE

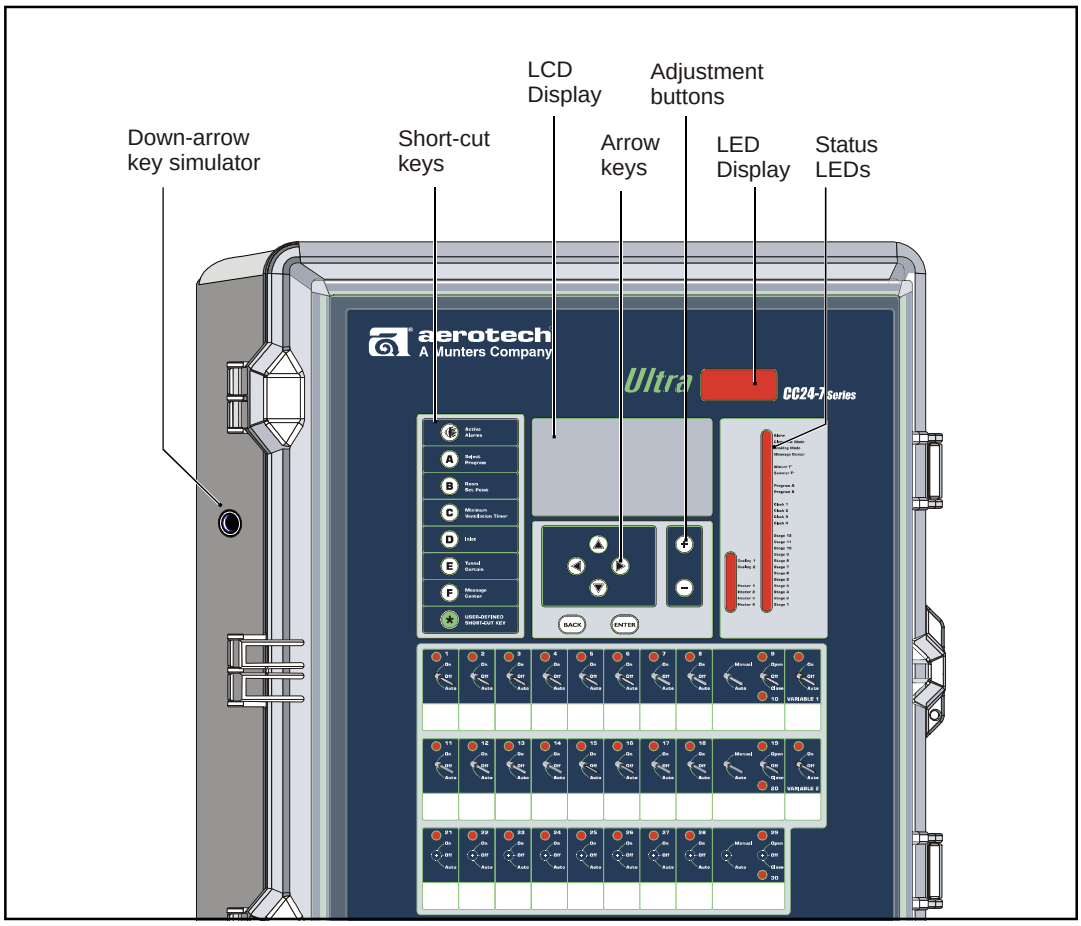
3.1 Location of the Controls

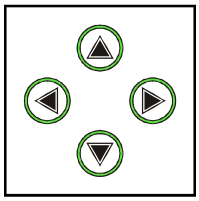
MAIN LCD SCREEN
The large LCD screen is used to display the various parameters and menus. The Current Conditions menu is automatically selected after 4 minutes of inactivity. Refer to the transfer menu in chapter 14 to adjust the screen contrast.

DOWN-ARROW KEY SIMULATOR:
This button has the same function as the down-arrow key. Use it to scroll down the current condition menu while the controller's cover is closed.

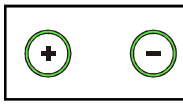
LED DISPLAY:
This display either shows the current average room temperature and/or the static pressure level.

STATUS LEDS:
The status pilot lights indicate the current status of the different stages and outputs. Refer to section 3.3 for further information about these LEDs.





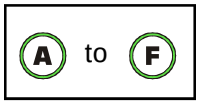
ARROW KEYS:
Use the arrow keys to navigate in the controller's menus.



ADJUSTMENT BUTTONS:
Press + or - to modify the value of a parameter.

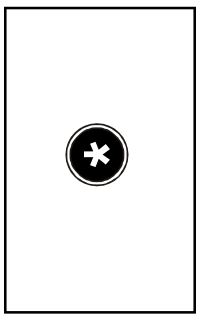
ENTER:
Press Enter to access the selected menu.

BACK:
Press BACK to return to the previous menu.



SHORTCUT KEYS:
"A" to "F" shortcut keys allows to quickly step to the controller's predefined menus.

ALARM LOG:
Press this key to quickly access the "**Alarm Log**" menu.

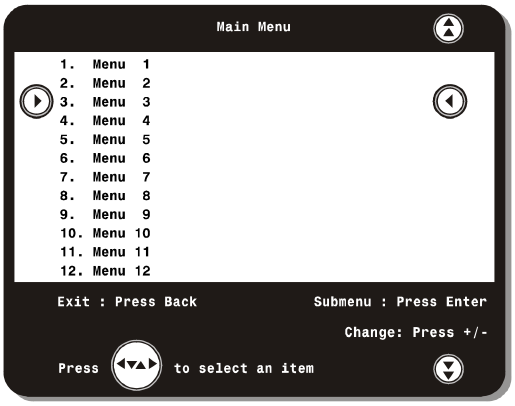


USER-DEFINED SHORTCUT KEY
This shortcut key is defined by the user. Define the key's destination menu as follows:

Select the desired menu then press and hold this key for 3 seconds to save the destination. The LCD screen turns off for a second; the destination is now saved. Note that the destination of this key can be changed anytime.

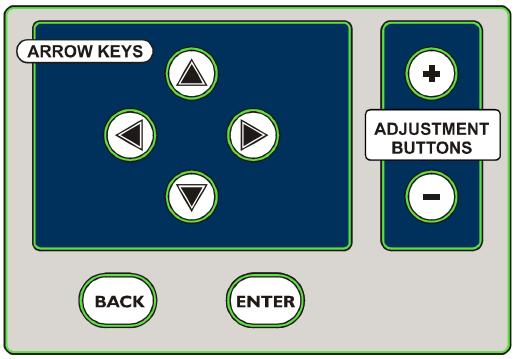
3.2 How to Select & Modify the Parameters

▶ ◀	These arrows indicate which menu is currently selected.
▼ ▲	These arrows indicate the presence of additional menus beyond the displayed menus. Use the arrow keys to scroll the display.
◀▼▲▶	Use the arrow keys to select the desired item on screen.
Exit	Press **"BACK"** to return to the previous menu.
Submenu	Press **"ENTER"** to access the selected menu.
Change	Use the adjustment buttons + / - to edit a parameter.



PARAMETER ADJUSTMENT:

- Use the arrow keys to select the desired parameter. When an adjustable parameter is selected, it flashes on the display and the message "**Change: Press + /-**" is shown at the bottom of the display.
- Use the adjustment buttons to modify the selected parameter.



3.3 Status LEDs

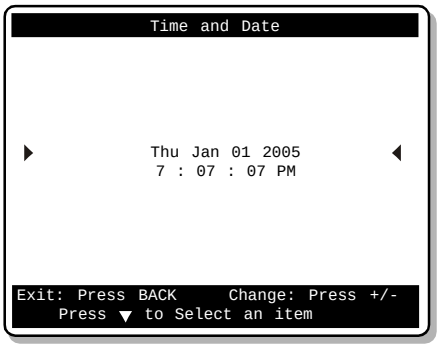
LED	MEANING
ALARM	TURNS ON WHEN AN ALARM CONDITION IS DETECTED. FLASHES WHEN AN ALARM CONDITION OCCURED AND HAS BEEN RE-ESTABLISHED BY ITSELF.
CLEAN OUT MODE	TURNS ON WHEN THE CONTROLLER IS IN CLEAN OUT MODE.
SOAKING	TURNS ON WHEN THE SOAKING OUTPUT IS ACTIVE (ON TIME OF THE SOAKING TIMER).
MESSAGE CENTER	TURNS ON WHEN AN A MESSAGE IS SIGNALED IN THE MESSAGE LOG MENU.
SUMMER / WINTER T°	INDICATES WHICH SEASONAL PARAMETERS ARE CURRENTLY IN USE.
PROGRAM A-B	INDICATES WHICH PROGRAM IS CURRENTLY IN USE.
CLOCK 1-4	TURNS ON WHEN A CLOCK OUTPUT IS CURRENTLY ACTIVE.
STAGE 1-12	TURNS ON WHEN THE SELECTED FAN STAGE IS ACTIVE.
HEATER 1-4	TURNS ON WHEN THE HEATING OUTPUT IS ACTIVE.
COOLING 1-2	TURNS ON WHEN THE SELECTED COOLING OUTPUT IS ON.

4. CONTROLLER SETUP

4.1 Setting the Time & Date

Select:

- **23. Controller Setup**
- **4. Time and Date**



- Press *Enter* to edit the time and date. The current day of the week starts flashing on the display.
- Use the adjustment buttons to set the day of the week.
- Press *Enter* to step to the next item.
- Proceed in similar fashion to set the whole time and date.

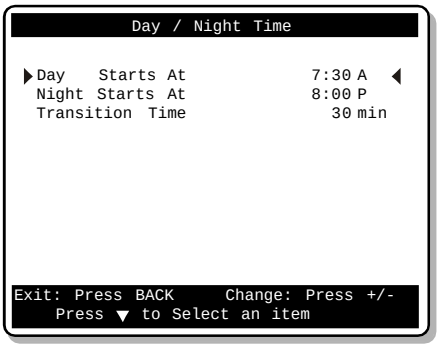
4.1.1 Day / Night Times

If night functions are used, you must specify at what time the day and night start and what is the transition time between both of them. The transition time is the interval of time over which the controller gradually switches from daytime to nightime settings.

Select

- **23. Controller Setup**
- **6. Day / Night Time***

* *Available if night functions are enabled (s. 4.5).*



- Set the day and night's start times and the transition time between both of them.

4.2 Password

This function allows to identify 2 different user types. It is used to restrict access to certain functions of the controller. The password is made up of 4 digits. When a correct password is entered, the current user is identified.

Installer Password:
The installer password gives full access to all controller functions. This password can be modified as explained below.

User Password:
The user password gives access to the basic functions of the controller. It is automatically selected after 15 minutes of inactivity and cannot be modified.

Default installer password
0 - 6 - 1 - 0

User 1 Password
1 - 1 - 1 - 1

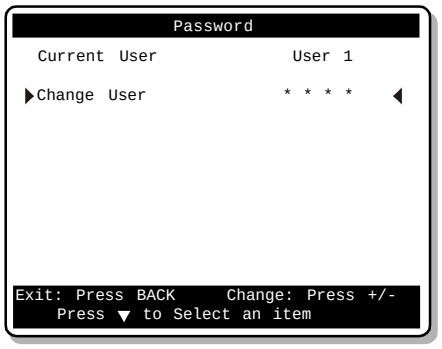
User 2 Password
2 - 2 - 2 - 2

4.2.1 Entering a Password

Select

- **23. Controller Setup**
- **7. Password**

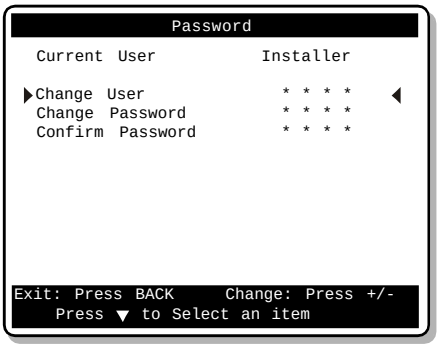
- Press *Enter* once. The first digit of the password starts flashing.
- Use the adjustment buttons to enter the first digit of the password then press *Enter* once again.
- Proceed in similar fashion to enter the 4 digits of the password then press *Enter* to validate. The user is then identified.



4.2.2 Changing the Installer's Password

Select

- **23. Controller Setup**
- **7. Password**



- The installer password must first be entered as shown above in order to be modified. The prompt "**Change Password**" appears on screen once the Installer password is entered correctly. Proceed as explained above to enter the new installer password.

IMPORTANT
Choose an easy-to-remember password and write it down in a safe place!

- **Confirm the new installer password:**
  Once the new installer password is entered, the prompt "**Confirm Password**" is displayed. Enter the new password once again to confirm then press *Enter* to validate.

4.3 Controller Programs & Seasonal Settings

PROGRAMS:
The controller has 2 programs of temperature settings. Each program has its own probe and relay assignment to run fan stages 1-6 and heating stages (optional). Using programs is useful when different sections of the room are occupied in the course of a batch. Refer to section 4.5 to enable the programs.

SEASONS:
The temperature at which fan and cooling stages are activated can be set separately for summer and winter. You must select the current season as explained below.

This symbol indicates a parameter that needs to be set separately for both seasons (winter & summer).

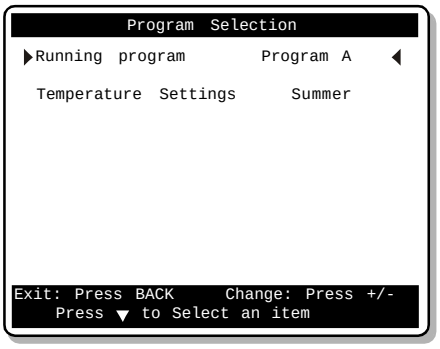
Make sure the proper program and season are selected before adjusting the controller's parameters!

4.3.1 Selecting a Program

Select

▶ **6. Program Selection–or press A**

- Select the desired program. Only programs that have been enabled during the installation are available (s. 4.5).
- Select the current season. The ventilation and cooling outputs will run according to the parameter settings associated with the chosen season.



4.3.2 Copying / Pasting a Program Configuration

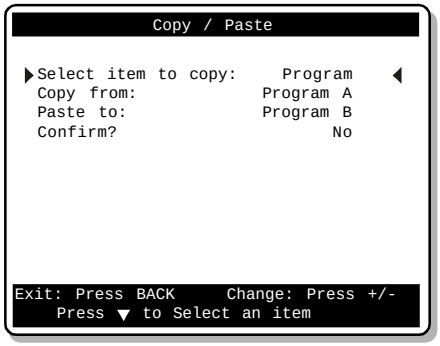
The copy-paste function allows copying specific parameters from one controller program to another. This avoids repeating the same programming sequence over and over again. Here's a list of the parameters that are duplicated when using the copy/paste function.

- The selection of probes used to measure the average room temperature;
- The probe assignment of heating units (only if heater programs are enabled);
- The relay assignment of fan stages 1 to 6;
- The relay assignment of heaters (only if heater programs are enabled);

Select

- **22. Relay and Probe Assignment***
- **18. Copy Paste**

* *Available from the installer mode (s. 4.2).*



- The prompt "Select item to copy" is displayed. Choose the "**Program**" option.

  Copy From:
  This is the initial program. The one that will be duplicated.

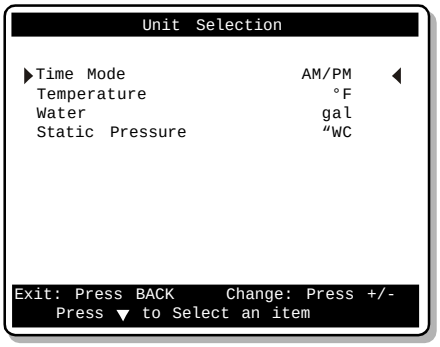
  Paste to: This is the target program. The one on which the initial program will be pasted.

- Once the source and the target programs have both been defined, the message "**Confirm**?" appears on the display. Select "**Yes**" to confirm the program duplication. The message " **Copy in progress…. please wait..** " is displayed. Wait until the process is over.

4.4 Measuring Units

Select

- **23. Controller Setup**
- **8. Units**



Select the desired measuring units:

Time mode: AM/PM / 24 hours;
Temperature: Celsius / Fahrenheit;
Water: Gallons / Liters;
Static Pressure:
Inches of water ("WC) / Pascal.

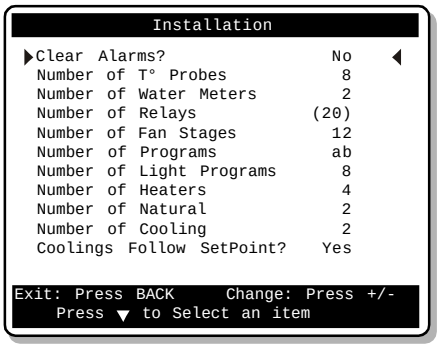
4.5 Installation Setup

The following section shows how to set up the controller for your particular application. Normally, this programming process only needs to be done once.

Select

- **23. Controller Setup**
- **2. Installation***

* *Available from the installer mode (s. 4.2).*



- **Clear Alarms?**
  Select "Yes" to reset the Alarm Log.

- **Number of Inside T° Probes:**
  Select the number of temperature probes that are connected to the controller. Adjustable from 1 to 8 probes.

- **Number of Water Meters:**
  Select the number of water meter that are connected to the controller. Adjustable from 0 to 2 water meters.

- **Number of Relays:**
  Select the number of relays in use: 20 or 30. Note that relays 21 to 30 are optional.

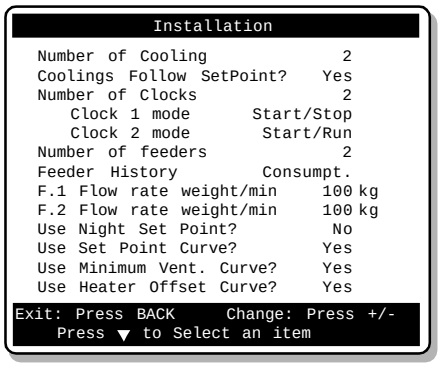
- **Number of Fan Stages:**
  Select the number of fan stages. Adjustable from 1 to 12 stages.
  The minimum number of fan stage is limited by the stage that is used to enter in tunnel ventilation. Refer to section 6.3.1 to select the first tunnel stage.

- **Number of Programs:**
  Select the number of controller programs. **None** = 1 program; **ab =** 2 programs.

- **Number of Light Programs**
  Enable the desired number of light programs (from 0 to 8 programs).

- **Number of Heaters:**
  Select the number of heating stages. Adjustable from 0 to 4 stages.

- **Number of Naturals:**
  Select the number of natural ventilation zones. Adjustable from 0 to 2 zones.



- **Number of Cooling Outputs (mist):**
  Select the number of cooling outputs. Adjustable from 0 to 2 outputs.

- **Coolings Follow Set Point?**
  Operating temperatures of cooling outputs can either be related to the set point – which means the controller automatically adjusts them when the set point changes – or they can be set as absolute values. Select **"Yes"** if operating temperatures of cooling outputs follow the set point or select **"No"** if to set them as absolute values.
  Accessible if cooling outputs are enabled above.

- **Number of Clocks:**
  Select the number of clock outputs. Adjustable from 0 to 4 outputs.

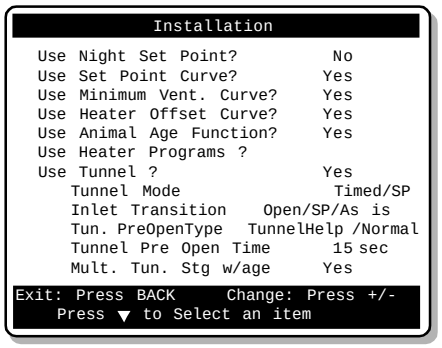
  Clock Mode
  Select the operating mode of each clock output:

  - Start/Run: the output stops after a user-defined run time;
  - Start/Stop: the output stops at a specific time of day;
  - Start/Repeat: the clock output operates according to a timer which is repeated at regular intervals.

- **Number of Feeders:**
  Enable the desired number of feeder inputs (0-2 inputs).

  Feeder History
  The controller has an history menu in which daily run times of each feeder are displayed for the past 50 days. In addition, the controller can present run times values as is or it can convert them into the corresponding amount of feed that was distributed. Select the desired type of history: run time or consumption history.

  Feeder Flow Rate
  If the consumption history is enabled above, specify the flow rate of each feeder. This value is expressed as a weight of feed per minute (in kg/min or lbs/min).



- **Use Night Set Point?**
  Select "Yes" to enable night settings.

- **Use Set Point Curve?**
  Select "Yes" to enable a curve to get an automatic adjustment of the set point over time.

- **Use Minimum Vent. Curve?**
  Select "Yes to enable a curve to get an automatic adjustment of the minimum ventilation fan speed (or fan On Time) over time.

- **Use Heater Offset Curve?**
  Select "Yes to enable a curve to get an automatic adjustment of heaters' start temperatures over time.

- **Use Animal Age Function?**
  Select "Yes" to use functions that are based on the age of the animal age (curves, tunnel curtains, etc.)
  Available if all curves are disabled above.

- **Use Heater Programs?**
  Select "Yes" to use separate heat settings for each program (probe and relay assignment); select "No" if these settings are common to all programs.
  Available if heaters & programs are enabled above.

- **Use Tunnel?**
  Select "Yes" to enable the tunnel curtain.

  Tunnel Mode:
  The tunnel curtain operates according to the static pressure level or uses a timer?
  Available if the static pressure probe is enabled below.

  Inlet Transition:
  Select the transition mode between lateral and tunnel ventilation:
  Available if the tunnel curtain is enabled and if the inlet opening is defined as a function of the static pressure level (inlet mode parameter = SP).

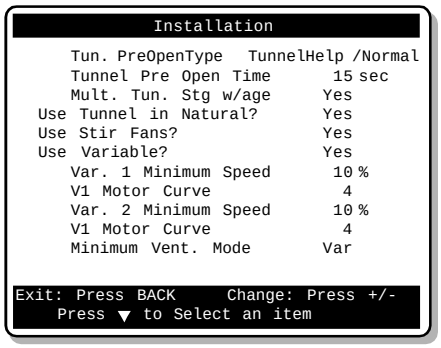
  Open: the air inlet fully opens at the start-up of the first tunnel stage.

  As is: the air inlet remains in position at the start-up of the first tunnel stage (only available if the curtain operates according to the static pressure level).

  SP: the air inlet keeps being controlled by the static pressure level during the transition (only available if the curtain operates in timer mode).

Tunnel PreOpen Type (Normal / Tunnel Help):

Specify when the tunnel curtain starts being controlled by the static pressure level: right after the pre-opening delay (Normal Pre-Opening), or at the start-up of the second tunnel stage (Tunnel Help mode). In tunnel help mode, the curtain opens during the pre-opening delay then remains in position; it starts being controlled by the static pressure when the following stage starts.



Available if the tunnel curtain's operation is based on the static pressure and if the curtain is not used in natural ventilation (see below).

Tunnel PreOpen Time:

This delay is used to open the curtain before activating the fans when the controller enters in tunnel ventilation. Adjustable from 0 to 60 seconds.

Available if the tunnel curtain's operation is based on the static pressure and if the curtain is not used in natural ventilation (see below).

Multiple Tunnel Stages with age:

This feature limits the use of tunnel stages according to the animal age. It allows specifying the maximum tunnel stage that can be performed at three different ages.

Available if the tunnel curtain and animal age functions are enabled.

- **Use Tunnel in Natural?**
  Select "Yes" to keep using the tunnel curtain while the controller is in natural ventilation (s. 6.6.2).
  Accessible if natural zones are enabled above.

- **Use Stir Fans?**
  Set to "Yes" to use stir fan relays on stage 1 (s. 4.7.3).

- **Use Variable?:**
  Select "Yes" to enable 2 variable outputs.

Variable Outputs' Min Speeds:

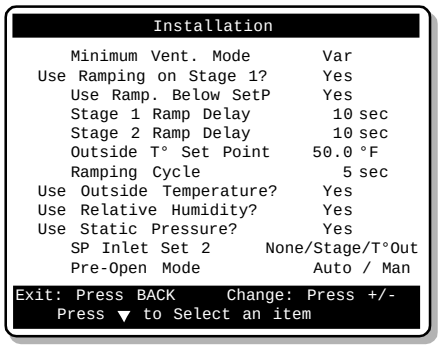
Set the absolute minimum speed of both variable outputs.

Motor Curve:

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. Select the proper motor curve to ensure that the controller supplies the correct voltages according to the type of fan motors used.

Minimum Ventilation Mode

Variable outputs can be used in minimum ventilation two different ways:



Variable mode: minimum ventilation is provided exclusively by variable outputs. During minimum ventilation cycles, the speed of variable-speed fans alternates between 0% and a user-defined fan speed.

On/Min mode: minimum ventilation is provided by variable outputs and by stage 1 fans. In minimum ventilation, the speed of the variable outputs alternates between a user-defined minimum speed and 100%.

- **Use Ramping on Stage 1?**

  This function allows to smooth out the transition from the minimum ventilation cycles to the full operation of stage 1. Select "Yes" to enable this option.

  Available if variable outputs are disabled. Refer to section 6.1.3.1 for further information.

  Use Ramping Below Set Point?

  With this function, the controller automatically adjusts the run time of stage 1 fans in minimum ventilation according to the outside temperature: as the weather gets colder, the fan run time decreases gradually to compensate for the change. Refer to section 6.1.3.2 for further information.

  Ramping Delay 1

  (Advanced Setting):

  This delay is used when the outside temperature is greater than the outside set point (or if no outside temperature sensor is used). If the difference between the current On Time of stage 1 and the On Time calculated by the ramping algorithm is greater than this delay, the On Time becomes the new calculated value (s. 6.1.3).

  Available from the factory mode and if variable outputs are disabled.

  Ramping Delay 2

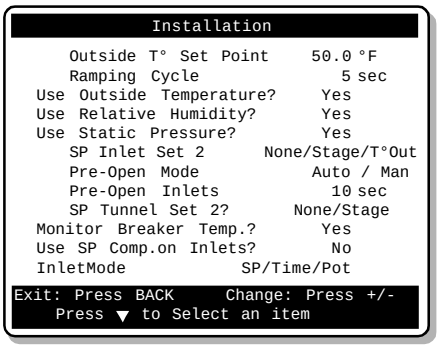
  (Advanced Setting):

  This delay is used when the outside temperature is lower than the outside set point. If the difference between the current On Time of stage and the calculated On Time value is greater than this delay, the On Time becomes the new calculated value (s. 6.1.3).

  Available from the factory mode, if the ramping on stage 1 function is enabled above, and if the outside temperature probe is enabled below.

Outside Temperature Set Point
(Advanced Setting):
The controller uses this value to calculate the ramping delay (s. 6.1.3).

Available from the factory mode (dealer), if the ramping function on stage 1 is enabled, and if the outside temperature sensor is enabled below.



Ramping Cycle:
(Advanced Setting):
Frequency at which the ramping cycle is calculated (s. 6.1.3).

Available from the factory mode (dealer), and if the ramping function on stage 1 is enabled above.

- **Use Outside Temperature Probe?**
  Select "Yes" if an outside temperature probe is connected to the controller.

- **Use Relative Humidity?:**
  Select "Yes" if a humidity sensor is connected to the controller.

- **Use Static Pressure (SP)?**
  Select "Yes" if a static pressure sensor is connected to the controller.

SP Inlet Set 2:
Select at what moment the second set of pressure set points start being used: Select “Stage” to start using the second group of set points at the start-up of a specific fan stage; select “Out T°” to start using it as the outside temperature decreases; select “None” to disable this function. Refer to section 6.4.2 for further information.

Available if the air inlet operates according to the static pressure level.

Pre-Opening Mode:
In minimum ventilation, if no variable outputs are used, the controller slightly opens the inlet before activating the fans. Select “Auto” to use an automatic pre-opening delay or select “Man” to set this delay.

Available if the the air inlet operates according to the static pressure level and if variable outputs are disabled above.

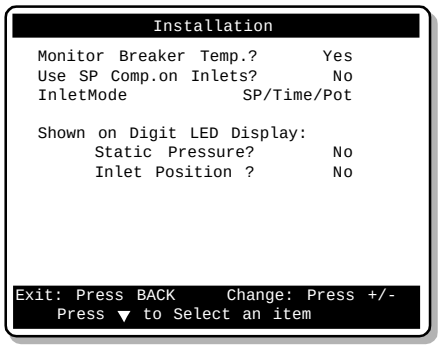
Pre-Opening Air inlet:
The pre-opening of the air inlet can be adjusted from 0 to 60 seconds.

Available if the air inlet operates according to the static pressure, if variable outputs are disabled and if the pre-opening mode is set to “Man” above.

SP Tunnel Set 2:
Select “Stage” if the tunnel curtain starts using a second group of static pressure set points at the start-up of a specific ventilation stage; select “None” if the tunnel curtain does not use a 2nd group of pressure settings.

Available if the tunnel operates according to the static pressure (see sec. 6.3.1).

- **Monitor the Breaker Temperature?**
  Select "Yes" to monitor the temperature of the main breaker. When this function is enabled, the controller sounds an alarm if the temperature of the sensor located near the breaker gets too high.



Install the breaker probe close to the breaker box, not inside the box!

- **Use SP Comp. on the Inlet?**
  Select "Yes" to use the static pressure compensation with the air inlet.
  Available if the air inlet uses a potentiometer and the static pressure sensor is enabled.

- **Inlet Mode:** Select the proper operating mode of the air inlet:
  - SP: the air inlet operates according to the static pressure level;
  - Pot: the air inlet operates according to the room temperature and the position of its actuator is determined by a potentiometer;
  - Timer: the air inlet operates according to the room temperature and the position of its actuator is determined by a timer;
  - None: Select "none" to disable the air inlet.

- **Shown on Display:**
  Select the piece of information to be displayed on the red LED display along with the room temperature:

  Static Pressure:

  Select "Yes" if you want to see the current pressure level on the red LED display of your controller.

  Available if the static pressure sensor is enabled above.

  Inlet Position:

  Select "Yes" if you want to see the current position of the air inlet on the red LED display of your controller.

  Available if the air inlet is enabled above.

- **Vent Door Hysteresis (advanced setting):**
  A certain minimum opening of the actuator (% difference) must occur between 2 consecutive stages. The hysteresis allows increasing this minimum opening percentage in case the actuator tends to oscillate. By default, the hysteresis is set to 0 second. **Do not change this default setting** unless your actuator has this tendency to oscillate. In this case, contact your dealer or the Aerotech office. Refer to section 6.4.3.2 to see how the hysteresis influences the minimum opening between the stages.
  Available if the inlet works in timer mode.

4.6 Probe Settings

4.6.1 Temperature Probe Assignment

Select temperature probes that are used to control/ monitor:

- **Fan Stages (or Room Temperature)**
  All fan stages operate according to the average room temperature. This temperature is defined by a selection of user-defined probes.

- **Heaters**
  Each regular heating output operates according to the average reading of its assigned temperature probes.

- **Cooling Outputs**
  Each cooling output operates according to the average reading of its assigned temperature probes. Note that the outside temperature probe (probe 0) can be part of the average temperature for the operation of cooling outputs. This way, cooling outputs only run when the outside temperature is sufficiently warm.

- **Natural Zones**
  Select the temperature probes that are located in each natural ventilation zone. When the controller is in natural ventilation, sidewall curtains operate according to the average temperature of their respective zone. Note that the outside temperature probe (probe 0) can be part of the average temperature reading of natural zones. This way, natural ventilation curtains only open when the outside temperature is sufficiently warm.

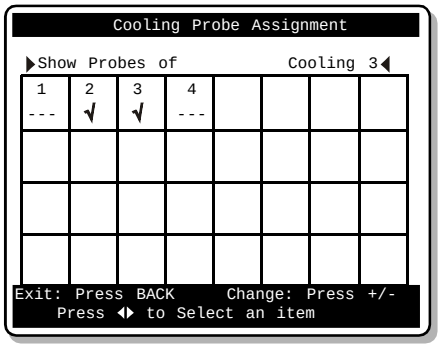
- **0-10V Outputs**
  Each 0-10V output operates according to the average reading of its assigned temperature probes.

- **Main Breaker**
  A probe can be used to monitor the temperature of the main breaker so that the controller can sound an alarm if the breaker's temperature gets too high.

Select

- **22. Relay and Probe Assignment***
- **Select the desired probe assignment menu:**

  12. Probes for Stages
  13. Probes for Heaters
  14. Probes for Coolings
  15. Probes for Naturals
  16. Probes for 0-10V Outputs
  17. Probes for Main Breaker



* *Available from the installer mode (s. 4.2).*

- Put a check mark "√" to assign a probe:

Fan Stages (or Room Temperature):
Select the probes that are used to define the average room temperature. If several programs are enabled in section 4.5, make the probe selection separately for each program.

Heaters: Assign temperature probes to each heating stage. If heater programs are enabled in section 4.5, assign heaters' probes separately for each program in use.

Cooling Outputs: Assign temperature probes to each cooling output (probe 0 refers to the outside temperature probe).
Available if cooling outputs are enabled in the installation setup (s. 4.5).

Natural Zones:
Assign temperature probes to each natural zone (probe 0 refers to the outside temperature probe).
Available if natural zones are enabled in the installation setup (s. 4.5).

0-10V Outputs:
Assign temperature probes to each 0-10V ventilation or heating output.

Main Breaker:
Select which probe(s) are used for monitoring the main breaker's temperature.

A template is available at the end of this manual to write down the probe assignment of each program.

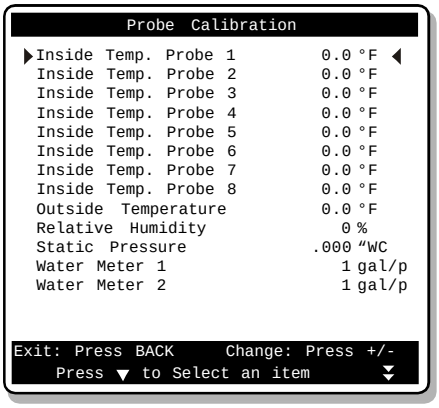
4.6.2 Probe & Water Meter Calibration

You can slightly adjust the reading of each input to obtain accurate and uniform readings of all probes. This probe calibration can only be preformed from the installer mode (s.4.2).

Select

- **23. Controller Setup**
- **3. Probes Calibration***

* *Available from the installer mode (s. 4.2).*



- Adjust the reading for each of the activated probes (if required):

Inside Temperature Probe:
The reading of the inside and outside temperature sensors can adjusted of ± 5 °F (± 2.3 °C).

Relative Humidity Probe:
The reading of the humidity sensor can adjusted of ± 3%.

Static Pressure Probe:
The reading of the static pressure probe can adjusted of ± 0.030"WC (± 7Pa).

Water Meters:
Enter the water flow per pulse of each water meter. It can be adjusted from 1 to 100 gallons (or liters) per pulse.

4.7 Relay Assignment

4.7.1 Principle of Operation

RELAY PANELS
The controller has 30 internal relays (relays 21 to 30 are optional), and 2 variable outputs.

The following procedure shows how to link up the relays with the various stages and outputs. Refer to the wiring diagram enclosed with this manual to wire the loads. Note that the relay assignment can only be done from the installer mode.

Use the arrow keys to navigate within the relay assignment window.

Templates are available at the end of this manual to write down the relay assignment.

4.7.2 Heaters' Relay Assignment

Assign relays to all heating outputs. If heater programs are enabled in section 4.5, make the relay assignment separately for each program in use.

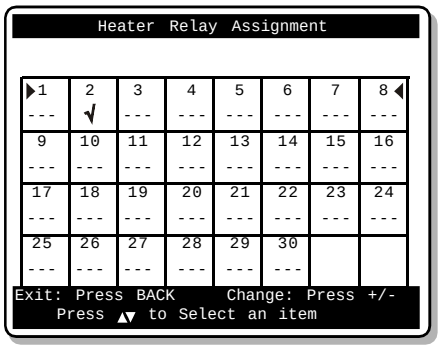
Select

- **22. Relay and Probe Assignment***
- **2. Relays for Heaters****

* *Available from the installer mode (s. 4.2).*

** *Available if heaters are enabled (s. 4.5).*

- Select the proper heating output amongst the ones that have previously been enabled (s. 4.5).
- Put a check mark "√" to assign a relay.



If heater programs are used, assign heater relays separately for each program.

4.7.3 Fan Stages' Relay Assignment

This section shows how to assign relays to fan stages, how to use variable outputs, and how to enable stir fans and timer-based relays in the stages.

4.7.3.1 Principle of Operation

TIMER-BASED RELAYS ON FAN STAGES
Timer-based relays run according to a timer as long as their associated fan stage is on. They are useful to run devices that need to follow the same progression as fan stages in timer mode. Refer to the following section to set the timer.

STIR FAN RELAYS ON FAN STAGE 1:
Stir fan relays of stage 1 run continuously in minimum ventilation and during stage 1. Using this type of relay allows activating stir fan outputs without interruption while minimum ventilation cycles are performed.

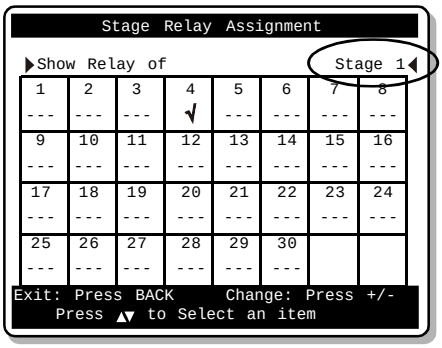
VARIABLE OUTPUTS:
Each fan stage can use two variable fan outputs. Specify the operating mode of the variable outputs for each fan stages as follows:

Var.:
When the fan stage starts, the variable outputs starts at its minimum intensity then gradually increases in speed as the fan stage progresses.

ON:
The variable output acts as an ON/OFF output: it is activated at its full capacity when its associated fan stage is on.

OFF:
The variable output is not activated.

4.7.3.2 Fan Stages' Relay Settings



Select

- **22. Relay and Probe Assignment***
- **1. Relays for Stages ****

* *Available from the installer mode (s. 4.2).*

** *Ref. s. 4.7.3.1 for further information on these parameters.*

- Select a fan stage.
- Select a relay then set its status as follows:

√	The relay is assigned to the output;
- - -	The relay is not assigned to the output;
TMR:	The load connected to the relay will run in timer mode (available on fan stage outputs only);
STR	Stir fan relay.

ASSIGN A RELAY TO ALL FAN STAGES !
The controller sounds an alarm when a fan stage that does not activate any relay starts. When this happens, the controller keeps using the relays of the previous fan stage (except if the fan stage is a natural ventilation stage).

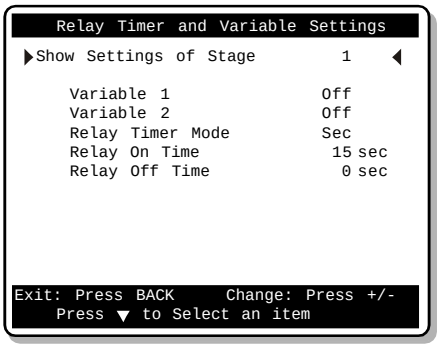
The relay assignment of fan stages 1 to 6 must be done separately for each program in use.
Press (A) to select a program.

4.7.3.3 Variable Outputs & Timer Settings

The following procedure shows how to enable variable outputs within fan stages. It also shows how to adjust the On and Off times of fan stages' timer-based relays.

Select

- **22. Relay and Probe Assignment***
- **9. Relay Timer/Variable Settings****



* *Available from the installer mode (s. 4.2).*

** *Ref. s. 4.7.3.1 for further info. on these parameters.*

- Select a fan stage.

Variable 1-2:
Set the status of variable outputs separately for each fan stage:
Available if variable outputs are enabled (s. 4.5).

Var: The variable fan output is assigned to the fan stage and operates in **variable mode:** when the stage starts, the variable fan starts running at its minimum intensity. The fan intensity gradually increases as the room temperature increases.

On: The variable fan output is assigned to the fan stage and operates in **on/off mode**: the fan runs at 100% when the fan stage is on and stops when the stage is off.

Off: The variable output is not assigned.

Relay Timer Mode: Select "sec" to display the relay timer in seconds; select "Hr" to display the timer in hours and minutes.

Relays' On Time: This is the run time of timer-based relays for the selected fan stage. Adjustable from 0 to 900 seconds (or 0 to 9:00 hh:mm).

Relays' Off Time: This is the rest time of timer-based relays for the selected fan stage. Adjustable from 0 to 900 seconds (or 0 to 9:00 hh:mm).

ASSIGN A RELAY TO ALL FAN STAGES !
The controller sounds an alarm when a fan stage that does not activate any relay starts. When this happens, the controller keeps using the relays of the previous fan stage (except if the fan stage is a natural ventilation stage).

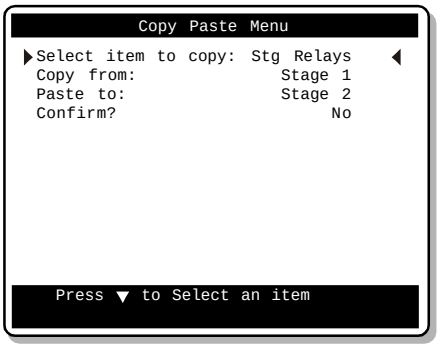
4.7.3.4 Copying / Pasting Fan Stages' Relays

It is possible to duplicate the relay selection of a fan stage onto another stage by using the copy and paste function. This avoids repeating the same programming sequence several times.

Select

- **22. Relay and Probe Assignment***
- **18. Copy Paste**

* *Available from the installer mode (s. 4.2).*



- The prompt "Select item to copy" is displayed. Choose the "**Stg Relay**" option.

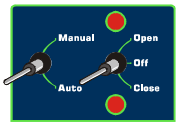
  Copy From: This is the source fan stage. The one that will be duplicated.

  Paste to: This is the target fan stage. The one on which the copied relays will be pasted.

- Once the source and the target stages have both been defined, the message "**Confirm**?" appears on the display. Select "**Yes**" to confirm the stage relays' duplication. The message " **Copy in progress…. please wait..** " is displayed. Wait until the duplication process is over.

4.7.4 Curtains & Air Inlet's Relay Assignment

Assign the open and close relays of all actuators (air inlet, natural curtain, tunnel curtain). Be sure to use built-in relays that are designed to open and close actuators.

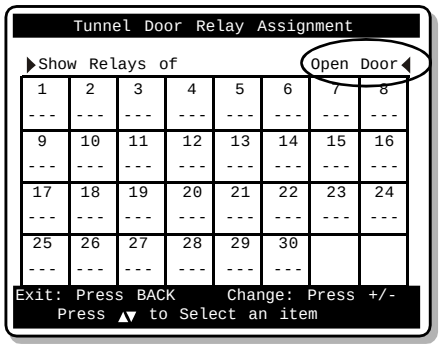


Select

- **22. Relay and Probe Assignment***
- **Select the relay assignment menu ****:
  - **3. Tunnel Curtain**
  - **4. Inlet**
  - **8. Naturals**

* *Available from the installer mode (s.4.2).*

** *Available if these outputs are enabled (sec. 4.5).*



- Select the output's open or close relay.
- Put a check mark "√" to assign the open or close a relay.

4.7.5 Clock Outputs' Relay Assignment

The following procedure shows how to assign clock outputs relays. It also explains the principle of operation of the common relays.

Common Relays:
It is possible to match the activation of some outputs with the activation of clock outputs; i.e. all outputs that share a common relay must be activated simultaneously for the relay to switch. This function may be used to deactivate an output during night or on specific days of the week for instance. Devices that share common relays with clock outputs are thus stopped when the clock output is off. This is true for all type of outputs except for fan stages and cooling outputs: these outputs' relays are not affected by common relays.

Example:
How to deactivate an output during night:

1. Heater 2 uses relay 6;
2. Relay 2 is also used by clock output 1 and is a common relay.
3. Clock output 1 is disabled during night.

   Result :
   Heater 2 operates normally as long as clock output 1 is active but cannot be enabled during night while the clock output is off.

OUTPUTS / RELAYS	5	6	7
Heater 2		X	
Clock output 1		X	
Common relays		X	

4.7.5.1 Clock Output Relays

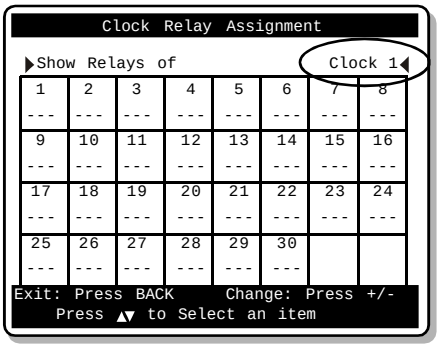
Select

- **22. Relay and Probe Assignment***
- **5. Relays for Clocks****
- **1. Relay Assignment**

* *Available from the installer mode (s. 4.2).*

** *Available if clock outputs are enabled (s. 4.5).*

- Select a clock output.
- Put a check mark to assign a relay.



4.7.5.2 Selecting Common Relays

When a common relay is assigned to a clock output and to any other output, all outputs that use that same relay must be activated simultaneously for the relay to switch (except for fan stage and cooling output relays).

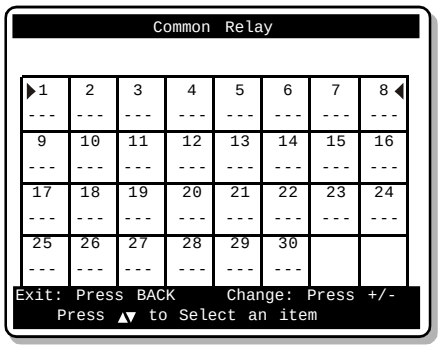
Select

- **22. Relay and Probe Assignment***
- **5. Relays for Clocks****
- **2. Common Relays**

* *Available from the installer mode (s.4.2).*

** *Available if clock outputs are enabled (s. 4.5).*

- Put check marks to identify common relays "√".



4.7.6 Cooling Outputs' Relay Assignment

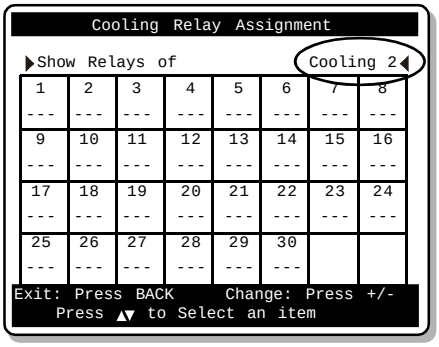
Select

- **22. Relay and Probe Assignment***
- **6. Relays for Cooling****

* *Available from the installer mode (s. 4.2).*

* *Available if cooling outputs are enabled (s. 4.5).*

- Select a cooling output.
- Put a check mark to assign a relay.



4.7.7 Backup Box Relay Assignment

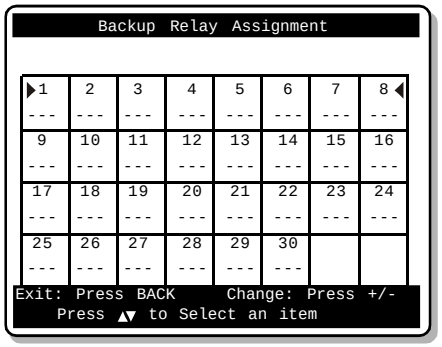
Select the backup box relay. This normally closed relay opens when a controller or power failure occurs.

Select

- **22. Relay and Probe Assignment***
- **7. Relays for Backup**

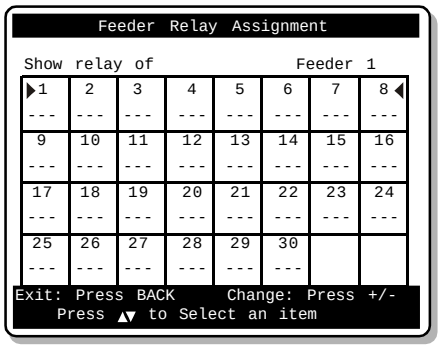
* *Available from the installer mode (s. 4.2).*

- Put a check mark to assign a relay.



4.7.8 Feeders' Relay Assignment

Feeder are using normally closed contact. This type of contact opens when a feeder run time alarm occurs in order to stop the feeder motor.



Select

- **22. Relay and Probe Assignment***
- **10. Relays for Feeder****
- **x. Select the desired Feeder**

* *Available from the installer mode (s. 4.2).*

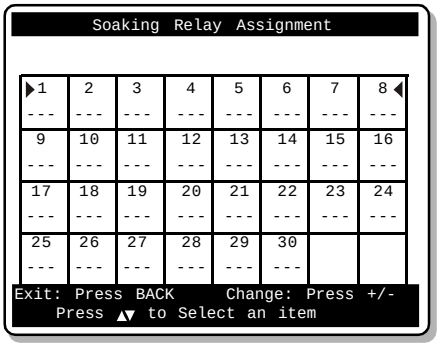
* *Available if feeders are enabled (s. 4.5).*

- Put a check mark to assign a relay.

4.7.9 Soaking Output Relay Assignment

Select

- **22. Relay and Probe Assignment***
- **11. Relays for Soaking****



* *Available from the installer mode (s. 4.2).*

* *Available if the soaking option is enabled (see chapter 11).*

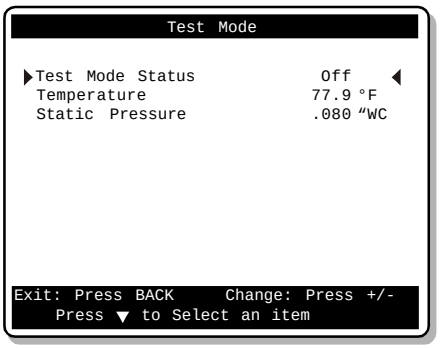
- Put a check mark to assign a relay.

4.8 Test Mode

The test mode is used to simulate temperature and static pressure changes to verify the controller's performance. The temperature probe and static pressure inputs are turned off while the test mode is on. This mode is automatically deactivated after 15 minutes of inactivity or when you disable it.

Select

- **23. Controller Setup**
- **9. Test Mode**



- Set the following parameters:

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

Temperature:
Enter the simulated room temperature.
This parameter can only be changed if the test mode status is enabled above.

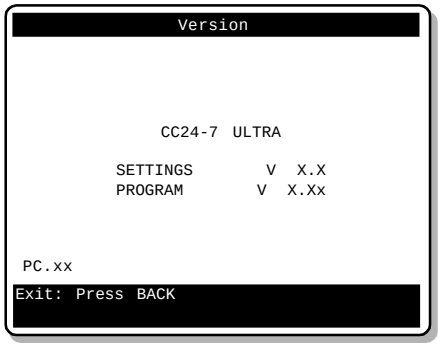
Static Pressure:
This is the current static pressure level in the room. This value is shown as a reference only; it cannot be modified.
This parameter is only shown if the static pressure sensor is enabled (s. 4.5).

4.9 Version

This menu shows your controller's version number. This piece of information is useful to get technical support.

Select

- **23. Controller Setup**
- **10. Version**



4.10 Clean Mode

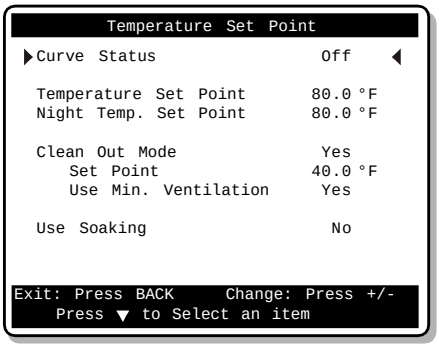
The clean mode is used to interrupt regular operations of the controller when the room is empty. When this mode is enabled, the controller simply provides a minimum level of heat and a minimum level of ventilation (optional).

Cleaning the room
A soaking output can be activated to clean up the room. If this output is used, soaking cycles automatically start when the clean mode is on. Refer to chapter 11 of this manual to get further information about the soaking output.

Clean mode set point
When the clean mode is on, the controller ativates heating outputs when the room temperature falls below the clean mode set point.

Select

▸7. Temperature Set Point–or press B



Clean Out Mode Status:
Select “Yes” to enable the clean mode; select “No” to disable it.

Clean Out Set Point:
Set the clean out set point to the desired value.
Adjustable from -40°F to 100 °F (-40.0°C to 37.8°C).

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

5. TEMPERATURE SETTINGS

5.1 Temperature Set Point

The set point is a target temperature; the activation and deactivation of the various stages is based on this reference temperature.

NIGHT SET POINT
A night set point can be enabled to lower the target room temperature during night. This set point is relative to the regular temperature set point, which means that if the regular set point changes with time, the night set point is adjusted accordingly. To use a night set point, enable the night set point function in the installation in section 4.5 and set the time at which the night begins in section 4.1.1.

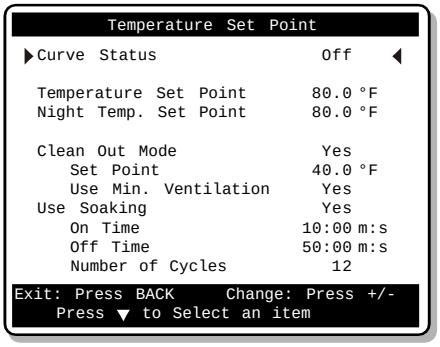
SET POINT CURVES
Use a temperature curve to get an automatic adjustment of the set points over a given period of time. The target temperature is thus always adapted to the animals' needs as they grow. Refer to section 5.1.2 for further information about the curves.

5.1.1 Adjusting the Temperature Set Point

Select

▶ **7. Temperature Set Point–or press B**

Set points can only be modified while the curve is off.



- Set the following parameters:

Curve Status:
Shows the current status of the set point curve. This piece of information cannot be modified. Refer to section 5.1.2 to modify the curve status.
Available if the set point curve option is enabled (s. 4.5).

Temperature Set Point:
Adjustable from -40°F to 100 °F (-40.0°C to 37.8°C).
Can only be modified when the curve status is Off (s. 5.1.2).

Night Set Point:
Adjustable from -40°F to 100 °F (-40.0°C to 37.8°C).
Available if the night set point function is enabled (s. 4.5).
This value can only be modified while the curve status is Off (s. 5.1.2).

Clean Out Mode: see section 4.11

Soaking: see chapter 11.

5.1.2 Set Point Curve

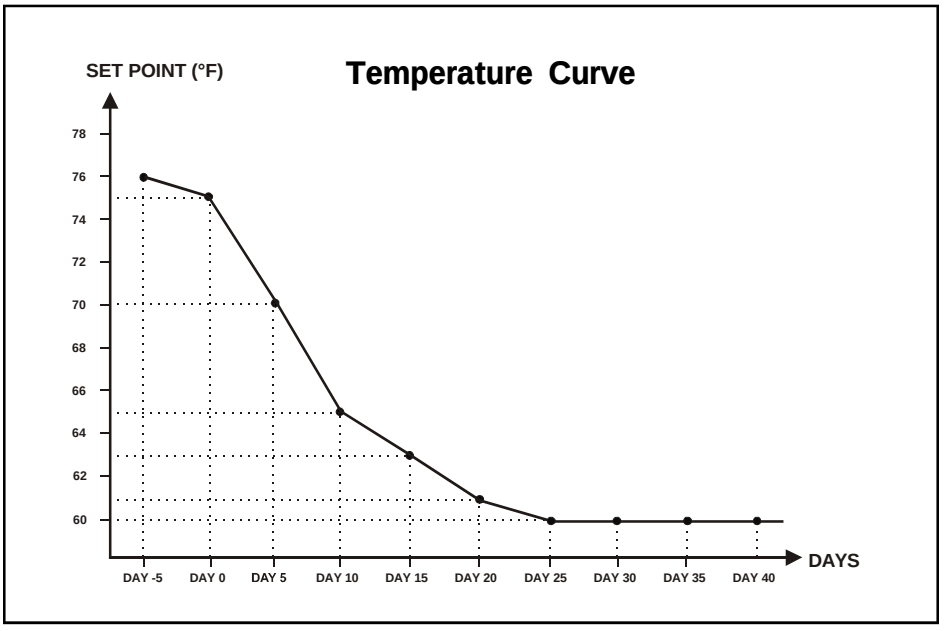
The set point curve allows an automatic adjustment of the target room temperature over time.

The set point changes using 10 steps. Each step specifies a day number and a target temperature for that day. These steps are based on the animal age. Once all steps are defined, the curve must be activated. The controller then starts changing the temperature set point every hour in a linear fashion between consecutive steps of the curve. When the last step is reached, the temperature set point for that day is maintained until a new animal batch starts.

Night set point:
If a night set point is used, the set point curve stops being used at night.

NOTE: Certain restrictions apply to reduce the risk of errors:

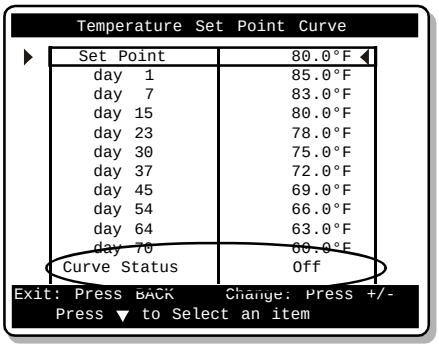
- The highest possible day number is 450.
- Decreasing day numbers is not allowed.
- Increasing the temperature over time is not allowed.
- All ten steps must be specified. If you don't need ten different steps, repeat the last temperature for each unnecessary step.



Select

- **9. Curve Settings***
- **1. Temperature Set Point**

* *Available if the set point curve option is enabled in section 4.5.*



- Set the following parameters:

Curve steps can only be modified while the curve is off.

Day Number:
Set the day for each of the 10 steps. This number corresponds to the animal age and is adjustable from -5 to 450 days. Negative values are used to prepare the house before the arrival of the animals.
Can only be modified while the curve is disabled.

Temperature:
Set the temperature associated with each step of the curve.
Can only be modified while the curve is disabled.

Curve Status:
Select **"Yes"** to activate the curve. Once it is enabled, the set point automatically becomes adjusted between consecutive points of the curve; for this reason, the set point and curve steps cannot be modified while the curve is on.

6 VENTILATION & COOLING SETTINGS

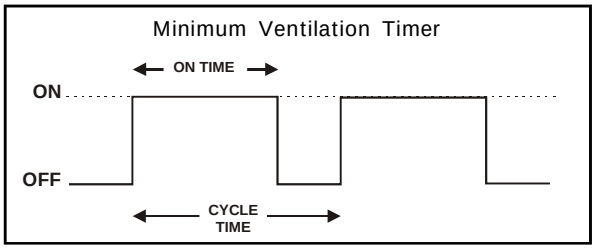
6.1 Minimum Ventilation

6.1.1 Minimum Ventilation Cycles

6.1.1.1 Principle of Operation

Minimum ventilation cycles are used below fan stage 1. Running the fans even though ventilation is not required for reducing the room temperature is useful to reduce the humidity level and supply oxygen to the room. It also prevents the fans from freezing in winter.

Minimum ventilation timer
The minimum ventilation timer is composed of an ON TIME and of a CYCLE TIME. Minimum ventilation fans turn on during the ON TIME and then turn off until the end of the CYCLE TIME.



• What fans are used in minimum ventilation?
Depending on chosen installation options, the controller can use different combination of fans in minimum ventilation (refer to section 4.5 to enable proper minimum ventilation options). The controller can also activate stir fans continuously if stir fan relays are assigned to stage 1 (s. 4.7.3.2).

OPTION A: Variable outputs = enabled & Ventilation mode = Variable
If these options are chosen, the controller only use variable-speed fans in minimum ventilation. Variable-speed fans are off during the Off Time portion of the cycle and run at a user-defined speed during the On Time (this speed can also be adjusted over time by using a curve).

OPTION B: Variable outputs = enabled & Ventilation mode = "On/Min"
If these options are chosen, the controller uses both variable-speed fans and stage 1 fans in minimum ventilation. During the Off Time portion of a cycle, stage 1 fans are off and variable fans run at their minimum speed . During the On Time, stage 1 fans and variable fans run at 100%. The "On Time" portion of minimum ventilation cycles can also be adjusted over time by using a curve.

OPTION C: Variable outputs = disabled
If variable outputs are disabled, the controller only uses stage 1 fans in minimum ventilation. Note that the "On Time" portion of the minimum ventilation cycle can be adjusted over time by using a curve.

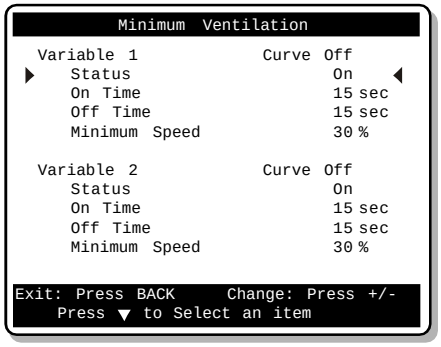
6.1.1.2 Settings

Minimum ventilation parameters are set differently depending on the options that were chosen in the Installation Setup (s. 4.5). Refer to the previous section to get more details on each option.

- **OPTION A:**
  If variable fans are enabled and the minimum ventilation mode is set to "Variable" in the Installation Setup (s. 4.5):

Select

▶ **8. Minimum Ventilation – or press C**



Curve Status:
The status of the minimum ventilation curve is displayed but cannot be modified. Refer to section 6.1.2 to modify it.

On / Off Times:
Set the minimum ventilation timer's On and Off times for both variable outputs. Adjustable from 0 to 900 seconds.

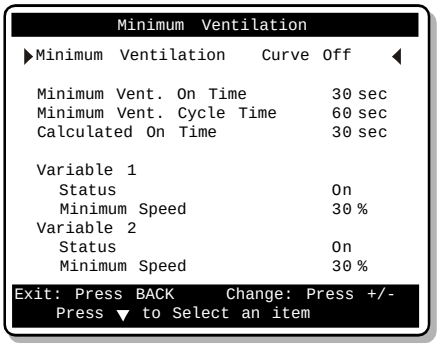
Minimum Speeds:
Set the speed of both variable outputs. The fans run at this speed during the On Time portion of minimum ventilation cycles.
Can only be modified if the curve is disabled (s. 6.1.2).

• **OPTIONS B & C**

If variable fans are enabled and the minimum ventilation mode is set to “On/Min” in the Installation Setup (s. 4.5), or if variable outputs are disabled:

Select

▶ **8. Minimum Ventilation – or press C**



On / Cycle Times

Set the On Time and the Cycle time of the minimum ventilation timer. Adjustable from 0 to 900 seconds. The Cycle time must be set to a greater value than the On Time. In addition, if variable outputs are not used, the Cycle Time becomes limited by the air inlet’s pre-opening delay, the Cycle Time must be greater than twice the **pre-opening delay**.

These values can only be modified if the curve is disabled (s. 5.1.2).

Calculated On Time

If the minimum ventilation curve is enabled, the On Time portion of the cycle can automatically be adjusted over time. The calculated On Time represents the current On Time, as defined by the curve. It cannot be modified.

Variable outputs 1-2:

Status

Select which variable fan outputs are used in minimum ventilation.

Minimum Speeds

Set the minimum ventilation speed of variable fans. The fans run at this speed during the Off Time portion of minimum ventilation cycles.

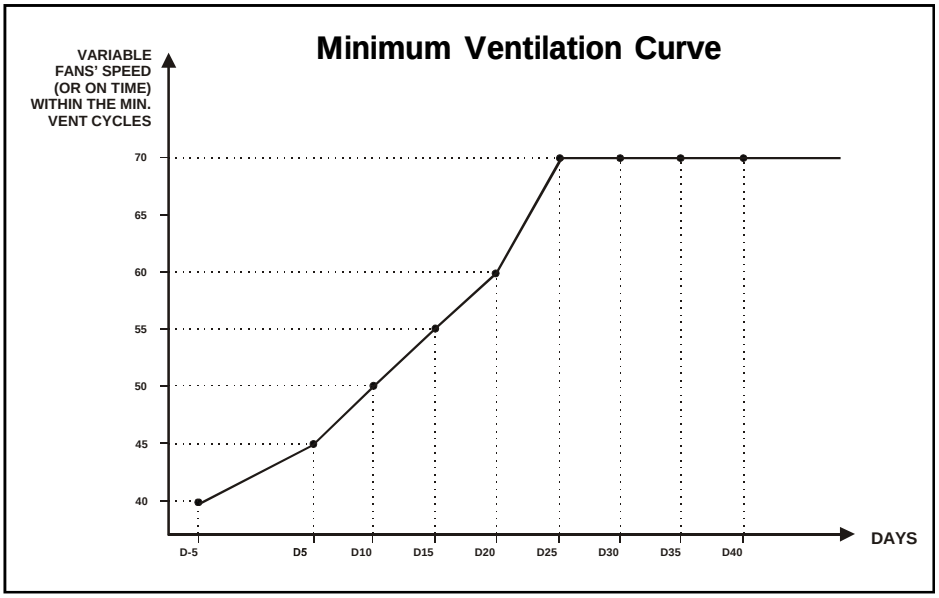
6.1.2 Minimum Ventilation Curve

6.1.2.1 Principle of Operation

Curve definition:
This curve allows to increase the level of ventilation of the minimum ventilation cycles using 10 steps. Each step specifies a day number and a fan speed (or On Time) for that day. The animal age determines which day the curve uses. Once all 10 steps are defined, the curve must be activated. The controller then changes the fan speed (or the run time of the fans) every hour in a linear fashion between consecutive steps of the curve. When the last step is reached, the speed (or the On Time) for that day is maintained until a new batch starts.

- If variable fans are enabled and the minimum ventilation mode is set to "Variable" in the Installation Setup (s. 4.5), the fan speed can be adjusted over time with the curve. Refer to the previous section to get more information about minimum ventilation options.

- If variable fans are enabled and the minimum ventilation mode is set to "On/Min" or if variable outputs are disabled in the Installation Setup (s. 4.5), the "On Time" portion of the minimum ventilation cycle can be adjusted over time with the curve. Refer to the previous section to get more information about minimum ventilation options.



NOTE: Certain restrictions apply to reduce the risk of errors:
- The highest possible day number is 450.
- Decreasing day numbers is not allowed.
- All ten steps must be specified. If you don't need 10 different steps, repeat the last speed for each unnecessary step.

6.1.2.2 Minimum Ventilation Curve Settings

Min Ventilation Curve using Variable Fans

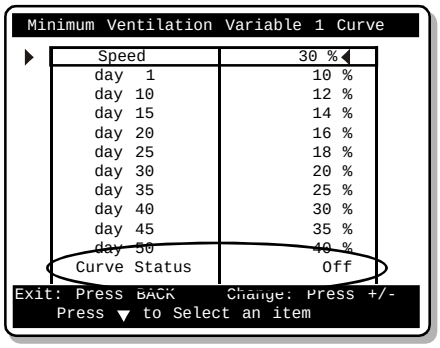
The min ventilation mode must be set to "Var." in the Installation Setup (s. 4.5).

Select

- **9. Curve Settings**
- **2. or 3. Variable 1 or 2***

* *Available if the minimum ventilation curve and variable outputs are enabled (s. 4.5).*

* *Available if the minimum ventilation mode is set to "Variable" in the Installation (s. 4.5).*



- Set the following parameters:

Curve steps can only be modified while the curve is off.

Day Number:
Set the day for each of the 10 steps. This day number corresponds to the animal age, and is adjustable from -5 to 450 days. Negative values are used to prepare the house before letting animals enter.
Can only be modified while the curve is disabled.

Speed:
Set the fan speed associated with each step of the curve.
Can only be modified while the curve is disabled.

Curve Status:
Select **"Yes"** to activate the minimum ventilation speed curve. Once it is enabled, the minimum ventilation fan speed automatically becomes adjusted between consecutive steps of the curve; for this reason, curve steps cannot be modified while the curve is on.

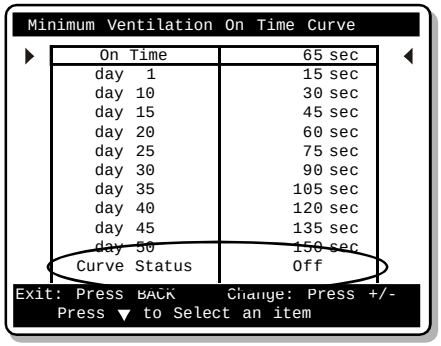
Minimum Ventilation Curve without Variable Fans or with On/Min Variable Fans

The variable output status must be disabled or its minimum ventilation status must be set to "On/Min" in the Installation Setup (s. 4.5):

Select

- **9. Curve Settings**
- **2. Minimum Ventilation On Time**

* *Available if variable outputs are enabled and the minimum ventilation mode is set to "On/Min" or if variable outputs are disabled in the Installation Setup (s. 4.5)*



- Set the following parameters:

Curve steps can only be modified while the curve is off.

Day Number:
Set the day for each of the 10 steps. This day number corresponds to the animal age, and is adjustable from -5 to 450 days. Negative values are used to prepare the house before letting animals enter.
Can only be modified while the curve is disabled.

On Time:
Set the On Time portion of minimum ventilation cycles for each step of the curve.
Can only be modified while the curve is disabled.

Curve Status:
Select **"Yes"** to activate the minimum ventilation curve. Once it is enabled, the fan run time in minimum ventilation automatically becomes adjusted between consecutive steps of the curve; for this reason, curve steps cannot be modified while the curve is on.

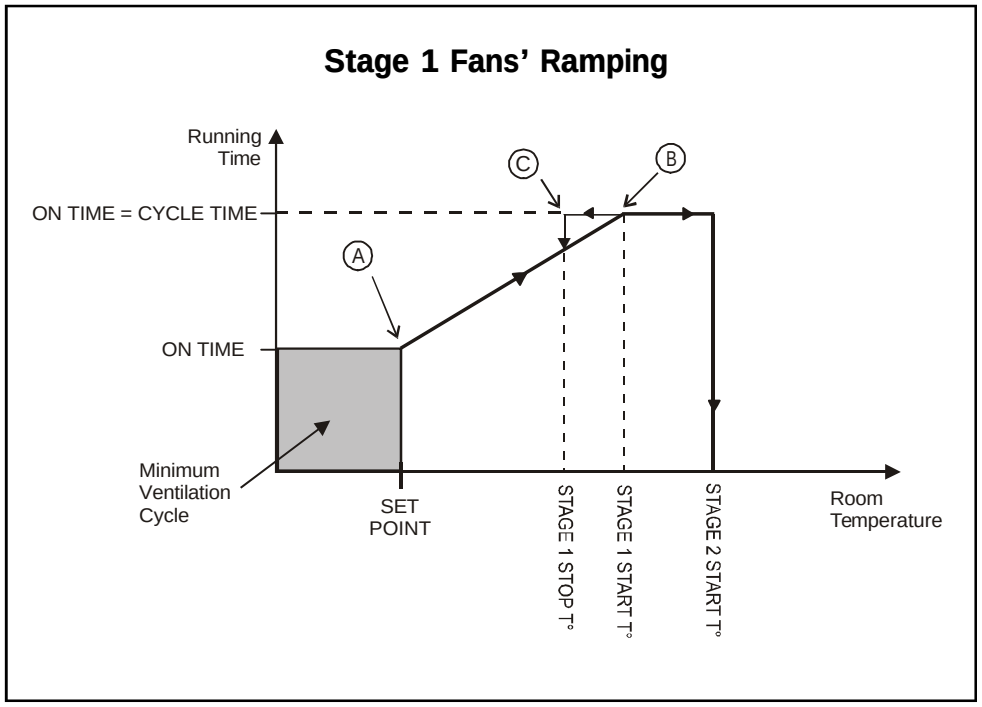
6.1.3 Minimum Ventilation Ramping & Compensation

6.1.3.1 On Time Ramping from Set Point to Stage 1

The controller has a ramping function to smooth out the transition from minimum ventilation to the full operation of the stage 1 fans; the fans' running time can be automatically adjusted to achieve a gradual increase or decrease in the ventilation level. This function is used when stage 1 does not use variable fans.

When the room temperature is at or below the set point, the fans of stage 1 operate according to the minimum ventilation cycles. When the room temperature increases above the set point, a new On Time is calculated periodically as the temperature increases to allow a smooth progression (from point A to point B) up to full operation of the fans when the start temperature of stage 1 is reached. If the room temperature decreases to the stop temperature of stage 1, the ON TIME value of the minimum ventilation cycle decreases gradually from a value equal to the total cycle time (point C) to the value defined by the ramping function.

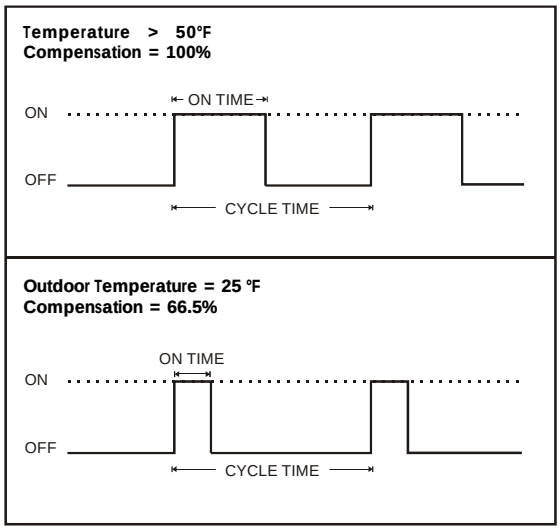
The controller uses two user-defined ramping delays to determine when to adjust the ramping cycle. Ramping delay 1 is used when the outside temperature is greater than the outside set point (it is also used permanently if no outside temperature probe is used); ramping delay 2 is used when the outside temperature is below the outside set point. If the difference between the current on time value and the on time value calculated by the ramping algorithm is greater than the ramping delay, the on time value becomes the calculated value.

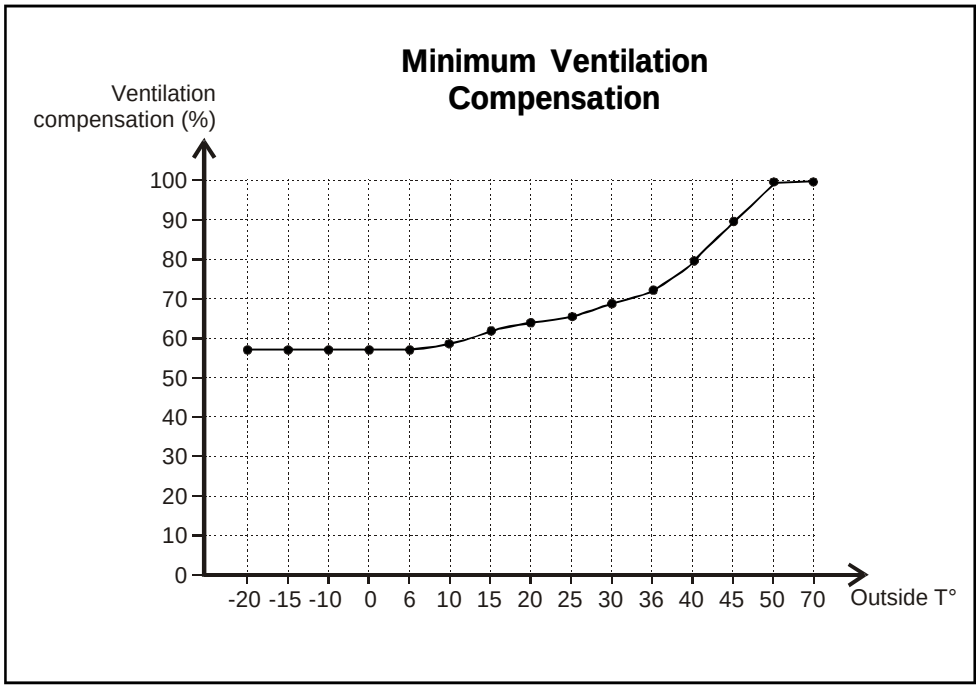


6.1.3.2 On Time Compensation Below the Set Point

The controller has the capability of automatically adjusting the running time of the minimum ventilation fans as a function of outside temperature. As the weather gets colder, the on time is decreased gradually to compensate for the change. This can help reduce costs by reducing the ventilation when it is not required. A curve is used to calculate the required compensation as a percentage of current on time (see graphic below). Only the running time is adjusted; the total cycle time remains unchanged.

Example:
In the first example, compensation is not needed when the outside temperature is greater than 50 °F. The fans operate according to their full running time. In the second example, the running time is decreased to 66.5% to compensate for the colder outdoor temperature. The cycle time remains unchanged.



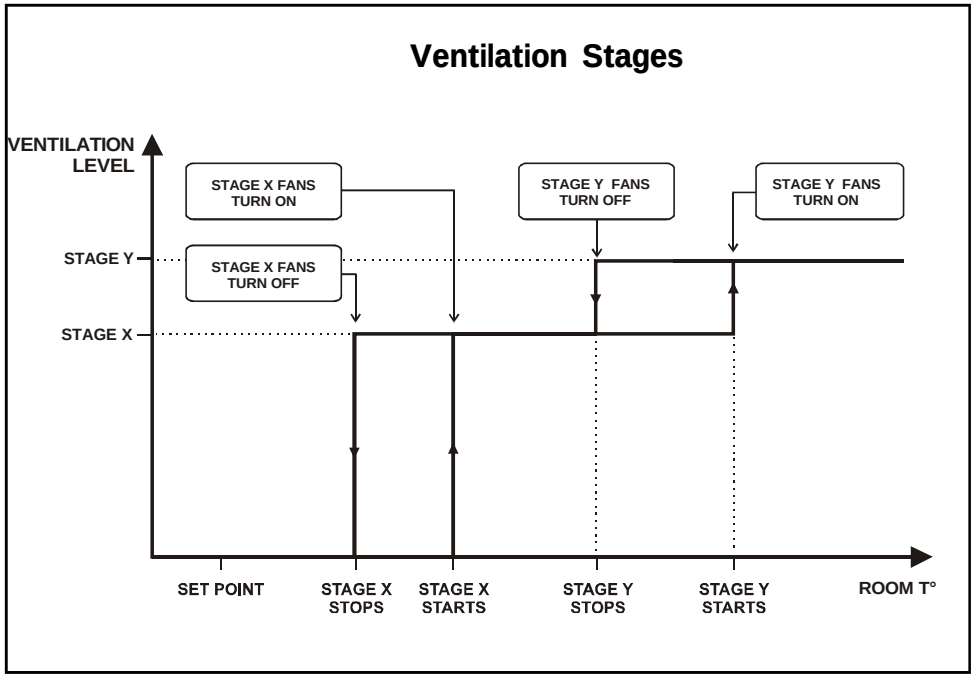


6.2 Fan Stages

6.2.1 Principle of Operation

6.2.1.1 Main Operation of the Fan Stages

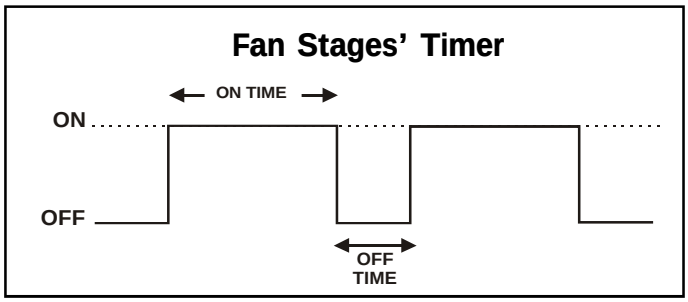
The controller has 12 On/Off fan stages which operate in a sequence to increase the level of ventilation as the room temperature increases. Each stage can activate two variable outputs and a combination of timer relays for cooling purposes. A fan stage is activated when the room temperature reaches its start temperature; it is disabled when the room temperature decreases to its stop temperature.



Fan stages' start temperatures 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.

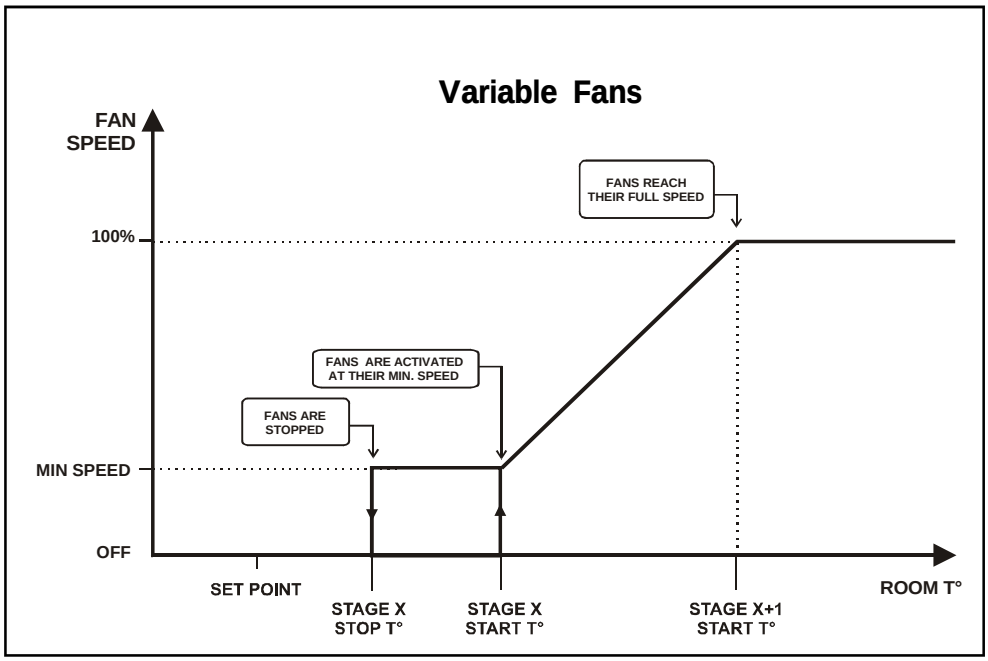
Start and stop temperatures of all fan stages are set separately for summer and winter. Press (A) to select a season.

Timer Relays for Cooling Devices:
Fan stages can activate relays that operate following a timer. This is useful to activate any kind of device that needs to follow the same progression as ventilation stages. The timer is made of an On Time and an Off time. Refer to section 4.7.3 to activate timer-based relays.



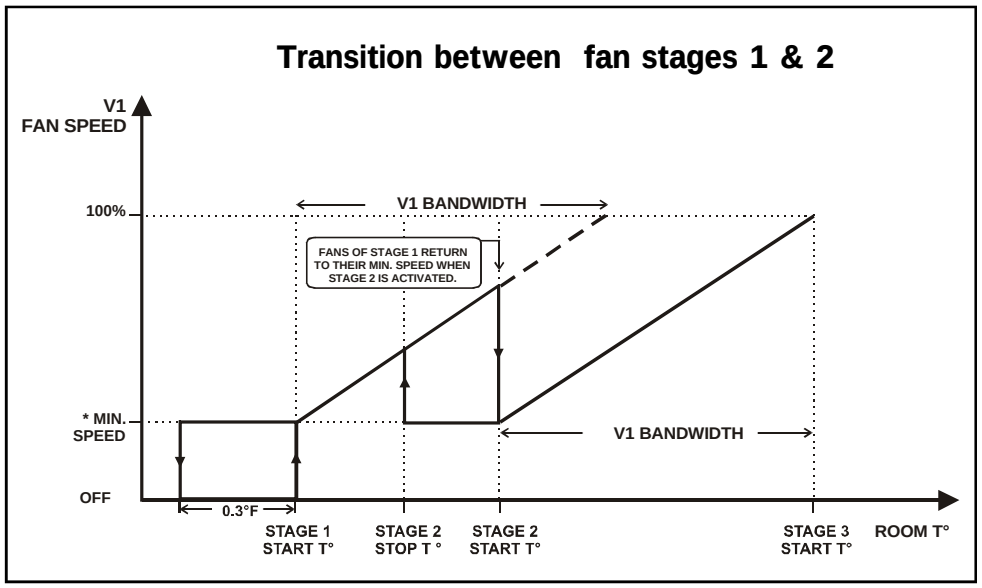
6.2.1.2 Operation of Variable Outputs

Variable outputs are activated when their associated fan stage starts (s. 4.7). They are enabled at their minimum speed, as defined in section 4.4, and gradually increase in speed as the room temperature increases. They reach their full speed when the start temperature of the following fan stage is attained.



Transition between fan stages 1 and 2 :

If the next stage is an ON/OFF fan stage, the variable output is deactivated when the new stage starts. If the next stage is another VARIABLE fan stage, the speed of the first variable fan stage is reduced to minimum when the second variable fan stage starts. This allows a smooth transition between both stages. The following graphic sums up the situation:



*** Starting Speed:**

- The variable outputs used in VAR (variable) in stage 1 or 2 start at the same speed as defined for the minimum ventilation cycles (s. 6.1.1.2).

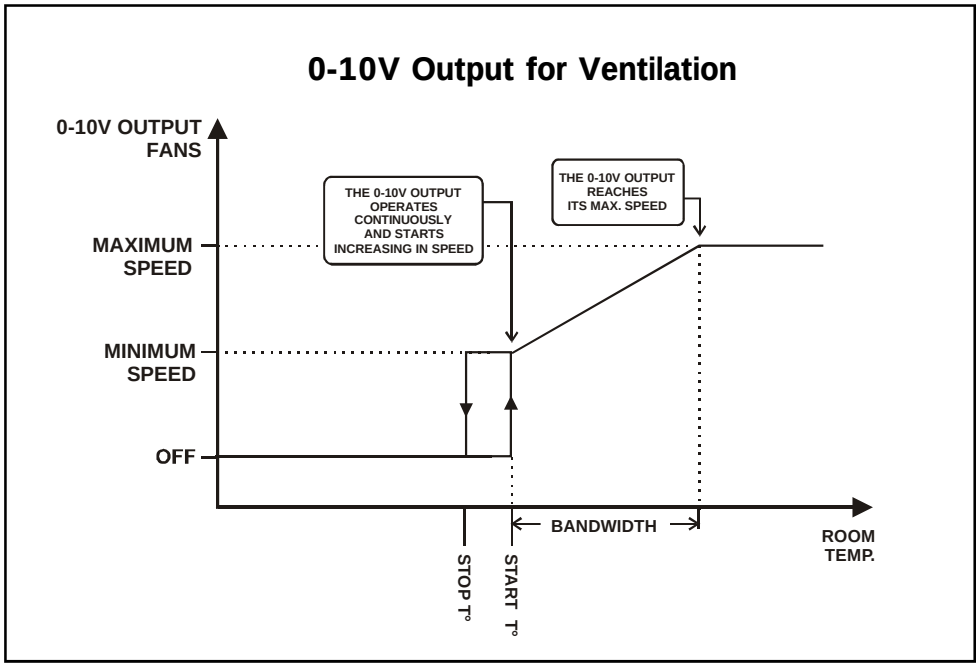
- The variable outputs used in VAR (variable) within Stage 3 and higher start at their absolute minimum speed (as defined in section 4.5).

The **bandwidth** defines the interval over which the variable output goes from its minimum to its full speed. This is true even if full speed is never reached as in the example above. When the start temperature of stage 2 is reached, the variable output decreases to its minimum speed. V1 bandwidth is then used to increase the fan speed as the temperature increases. When the temperature decreases below the start temperature of stage 2, the minimum fan speed is maintained until the stage's stop temperature is reached.

The last fan stage must not be configured in variable mode. if the last fan stage uses a variable output, it must be used as an on/off output (s. 4.7).

6.2.1.3 0-10V Outputs used for Ventilation (Cooling)

The controller has two 0-10V outputs to control supplementary variable fan stages or heating devices. The following procedure shows how to use 0-10V outputs for the activation of independent variable fans.



At and below the Stop T°: The output is deactivated.

At the Start T°: The output operates continuously at its minimum speed, and starts increasing in speed as the temperature increases;

At Start T° + Bandwidth: The fans reach their maximum speed;

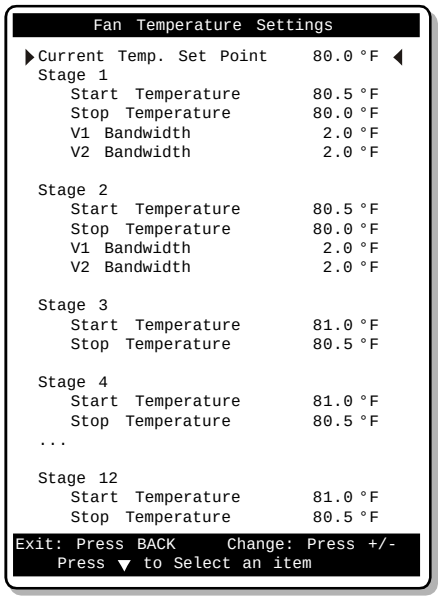
6.2.2 Settings

6.2.2.1 Fan Stage Settings

If seasonal settings are used, set the fan stage parameters separately for both seasons. Press (A) to select a season.

Select

- **13. Fan/Cool./Nat. Temp. Settings**
- **1. Fan Temperature Settings**



- Set the following parameters:

  Refer to section 6.2.1 for further information on these parameters.

Current Temp. Set Point:
This is the current temperature set point. It is displayed for consultation only and cannot be modified.

Refer to s. 5.1 for further information.

Start & Stop Temperatures:

Set the start and stop temperatures of each fan stage. The minimum temperature difference between two consecutive start temperatures is of 0.5 °F (0.3 °C).

V1-V2 Bandwidths:

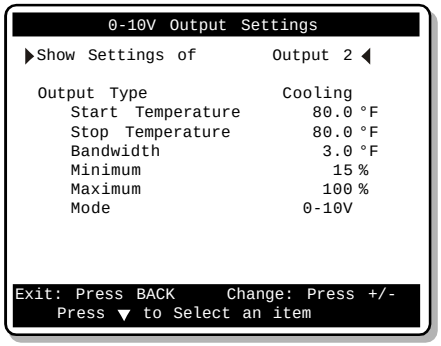
Set the number of degrees that is required for variable outputs to reach their full speed (s. 6.2.1.2). Adjustable from 0.5 to 20.0 °F (0.3 to 11.1 °C).

Available if variable outputs are enabled (s. 4.5) and if they operate in a variable way (s. 4.7.3.3).

6.2.2.2 0-10V Outputs' Ventilation Settings

Select

▶ **21. 0-10V Output Settings**



- Set the following parameters:

  Refer to section 6.2.1.3 for further information on these parameters)

Show Settings of:
Select the proper 0-10V output. One that will be used for ventilation or cooling purpose.

Output Type:
Select **"Cooling"** for the output to operate as an independent fan stage. Press **Enter** to validate the status. The following menus are then displayed:

Start temperature:
This is the temperature at which the 0-10V output starts operating continuously at minimum speed. The start temperature can be adjusted of +/- 40°F (22.2°C) from the set point.

Stop Temperature:
Temperature at which the 0-10V output is deactivated when the room temperature decreases. It can be adjusted from 0.5°F (0.3°C) below the start temperature to -40°F (22.2°C).

Bandwidth:
Temperature interval over which the output goes from its minimum speed to its maximum speed (refer to the previous graphic). The bandwidth can be adjusted from 0.5 to 10°F (0.3 to 11.1°C).

Min/Max Speeds:
Minimum and maximum speeds of the selected 0-10V output. Adjustable from 0 to 100%. The maximum speed must be greater than the minimum speed.

Mode:
Select the proper signal used by the selected output : 0-10V or 10-0V.

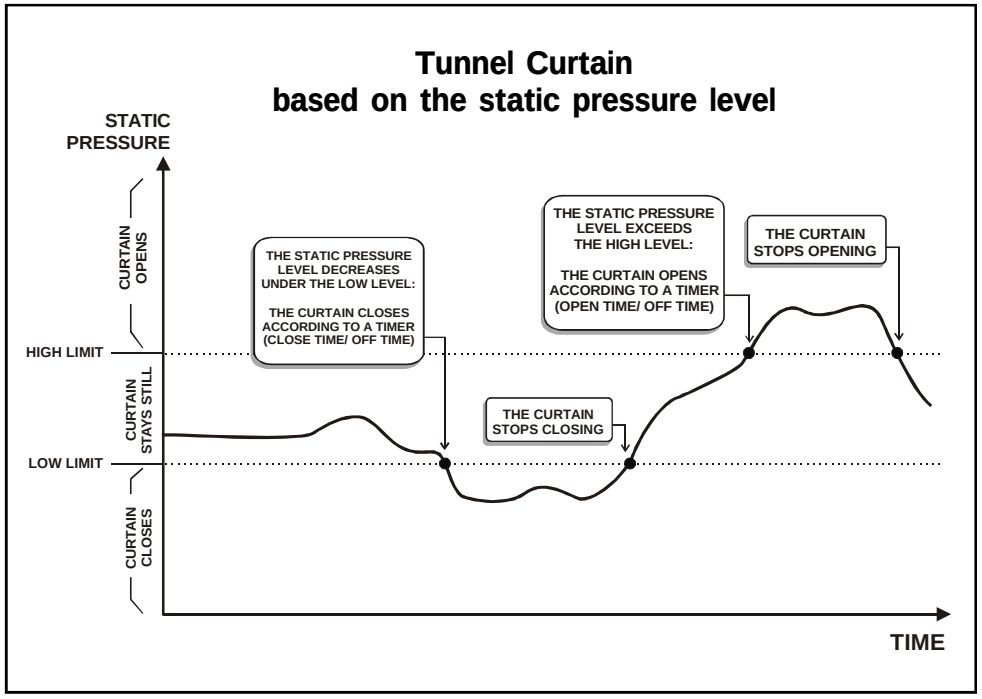
6.3 Tunnel Ventilation

The controller can control an endwall curtain for tunnel ventilation. This curtain is either controlled by the static pressure (SP) level or it can open and close according to a timer. Refer to section 4.5 to select the proper operating principle (Timed/SP).

6.3.1 Static Pressure Curtains

6.3.1.1 Principle of Operation

The activation of tunnel ventilation stages is linked with the activation of a user-defined fan stage. When the start temperature of this stage is reached, the tunnel curtain starts to be adjusted according to the static pressure level.



The tunnel curtain can start opening at stage 1 if no natural ventilation curtain is used. Refer to section 4.5 to enable/disable the curtains.

Timer:
When the static pressure level exceeds the high pressure limit, the curtain opens during the *Open Time* then stays still during the *Off Time*. This process is repeated up until the static pressure level goes back into the acceptable pressure range. The reversed process is performed when the static pressure decreases below the low pressure limit; the curtain closes during the *Close Time* then stays still during the *Off Time*. The *Off Time* is common for both the closing and opening cycles.

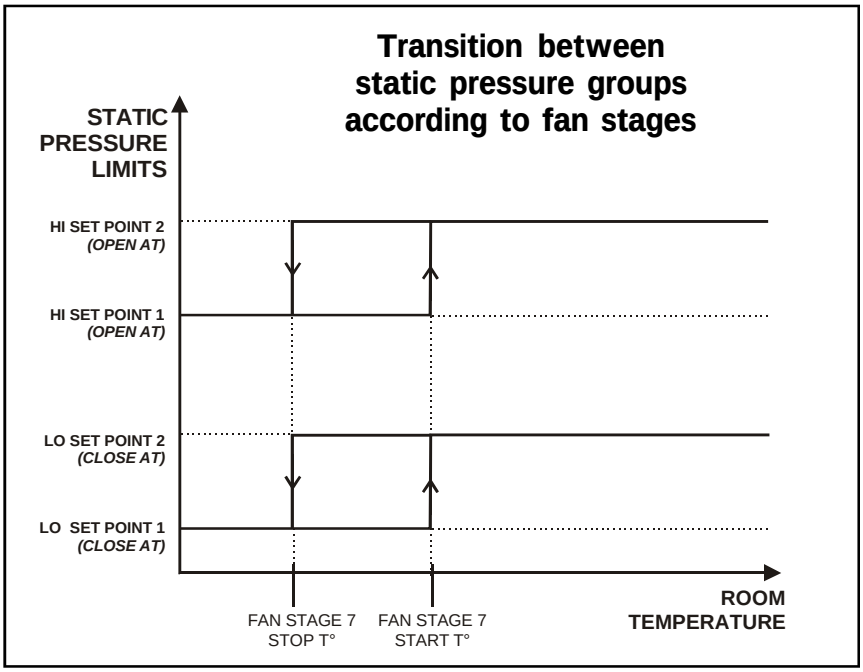
Animal Age:
It is possible to limit the use of the tunnel ventilation stages according to the age of the animals: you can either specify the minimum age at which tunnel ventilation is allowed, or you can specify the maximum allowable tunnel stage associated with three different ages (refer to section 4.5 to enable/disable the *Multiple Tunnel w/ Age* function).

High / Low Pressure Limits:
The curtain opens according to a timer *(Open Time & Off Time)* when the pressure exceeds the high pressure limit. It closes according to another timer *(Close Time & Off Time)* when the pressure decreases below the low pressure limit.

Static Pressure Alarm:
Alarms can be set off if the static pressure level exceeds certain user-defined pressure limits. Refer to section 11.2.2 to set this type of alarm.

Static pressure Groups:
Two groups of static pressure settings can be defined for the tunnel curtain. These groups allow using different high/low pressure limits as the room temperature changes. The second group of pressure settings starts being used at the start-up of a user-defined fan stage.

Example:
When the start temperature of stage 7 is reached, the tunnel curtain starts using the second group of static pressure settings; in other words, new high and low pressure limits start being used. The initial group of parameters are used once again when the room temperature decreases below the stop temperature of stage 7.



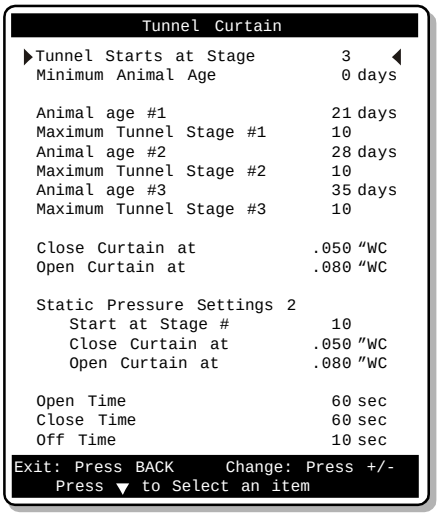
6.3.1.2 Settings

The following settings are only available if the tunnel curtain operates according to the pressure level. Refer to section 4.5. to select this operating mode.

Select

▶ **11. Tunnel Curtain – or press E ***

* *Available if the tunnel curtain is enabled (s.4.5).*



- Set the following parameters:

  Refer to the previous section to get further information on these parameters.

Tunnel Curtain starts at Stage:
The curtain starts being used when the start temperature of this fan stage is reached.

Minimum Age:
Animal age below which the tunnel curtain remains closed. Tunnel ventilation can only be enabled when this age is reached. Adjustable from 1 to 450 days. Decrease the value to Off if you want to disable this function.

Accessible if the "Multiple Tunnel Stage w/ Age" function is disabled (s. 4.5).

Animal Age #1-3:
This is the animal age below which tunnel ventilation is limited to the specified maximum tunnel stage. Adjustable from -5 to 450 days. Negative day values are used to prepare the room before the animals' arrival. Decrease the value to Off if you want to disable this function.

Accessible if the "Multiple Tunnel Stage w/ Age" function is enabled (s. 4.5).

Maximum Tunnel Stage #1-3:
This is the maximum tunnel stage that can be performed when the animals are younger than the specified age. Note that maximum tunnel stage #3 is automatically set to the highest fan stage.

Accessible if the "Multiple Tunnel Stage w/ Age" function is enabled (s. 4.5).

Open / Close Curtain at:
Set the static pressure limits below/above which the tunnel curtain opens and closes according to a timer. Adjustable from 0 to 0.2 inches of water (0 to 50Pa).

Static Pressure Settings 2:

The following procedure shows how to set the tunnel curtain's second group of pressure settings.

Refer to the previous section for further information on these parameters. Note that the following menus are only accessible if the second group of pressure settings is enabled (s. 4.5).

Start at stage:

Select the fan stage at which the controller switches from its regular pressure settings to the second group of pressure settings. This menu only is only shown if the **"Stage"** transition method between groups of pressure settings is selected (s. 4.5).

Open/Close Limits (second settings):

Set the static pressure level below which the curtain closes and above which it opens when the second groups of static pressure settings is used. Adjustable from 0 to 0.2 inches of water (0 to 50Pa).

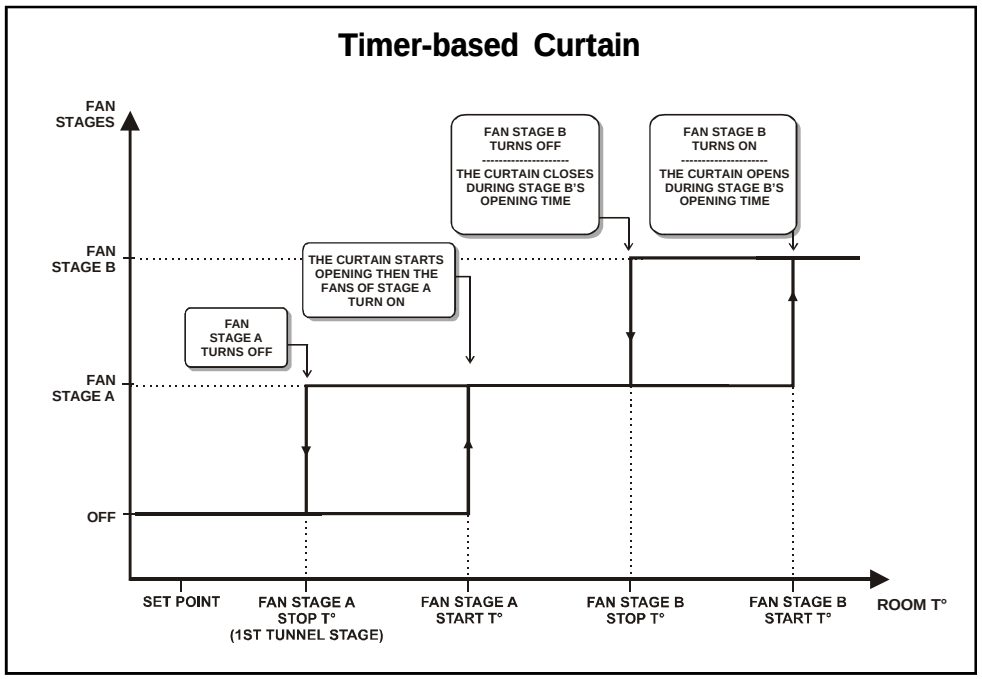
Open / Close / Off Times:

Set the curtain's opening and closing times to the desired value. This timer is used when the static pressure level exceeds the high or low pressure limits and are common to both static pressure groups. Adjustable from 0 to 30 minutes.

6.3.2 Timer-Based Curtain

6.3.2.1 Principle of Operation

The activation of the tunnel ventilation is linked with the activation of a user-defined fan stage. When the room temperature reaches the start temperature of that stage, the curtain opens according to the opening time that is associated with the stage. When half of the curtain's opening time has elapsed, the stage's fans are activated. The activation of every consecutive fan stage causes the curtain to open further.



Animal Age:
It is possible to limit the use of tunnel ventilation according to the age of the animals: you can either specify the minimum age at which tunnel ventilation can start being used, or you can specify the maximum allowable tunnel stage associated with three different ages (refer to section 4.5 to enable/disable the *Multiple Tunnel w/ Age* function).

Opening Times:
The curtain's opening times are associated with the activation of the fan stages. When the start temperature of a stage is reached, the curtain opens according to the opening time associated with the stage.

6.3.2.2 Settings

The following settings are only available if the tunnel curtain operates in timer mode. Refer to section 4.5 to enable this operating mode.

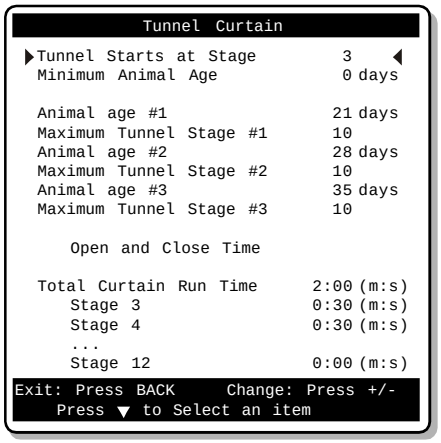
Select

▶ **11. Tunnel Curtain – or press E ***

* *Available if the tunnel curtain is enabled (s.4.5).*

- Set the following parameters:

  Refer to the previous section to get further information on these parameters.



Tunnel Curtain starts at Stage:
The tunnel curtain starts opening when the start temperature of this fan stage is reached.

Minimum Age:
Animal age below which the tunnel curtain remains closed. Tunnel ventilation can only be enabled when this age is reached. Adjustable from 1 to 450 days. Decrease the value to Off if you want to disable this function.

Accessible if the "Multiple Tunnel Stage w/ Age" function is disabled (s. 4.5).

Animal Age #1-3:
This is the animal age below which tunnel ventilation is limited to the specified maximum tunnel stage. Adjustable from -5 to 450 days. Negative day values are used to prepare the room before the animals' arrival. Decrease the value to Off if you want to disable this function.

Accessible if the "Multiple Tunnel Stage w/ Age" function is enabled (s. 4.5).

Maximum Tunnel Stage #1-3:
This is the maximum tunnel stage that can be performed when the animals are younger than the specified age. Note that maximum tunnel stage #3 is automatically set to the highest fan stage.

Accessible if the "Multiple Tunnel Stage w/ Age" function is enabled (s. 4.5).

Total Curtain Run Time:
Set the total time that is required for the tunnel curtain to open totally. The sum of all opening times below cannot exceed this time limit. Adjustable from 0 to 15 minutes.

Curtain Opening Times:
Select the opening time that is associated with the activation of each fan stage. Adjustable from 0 to 15 minutes.

6.4 Air Inlet

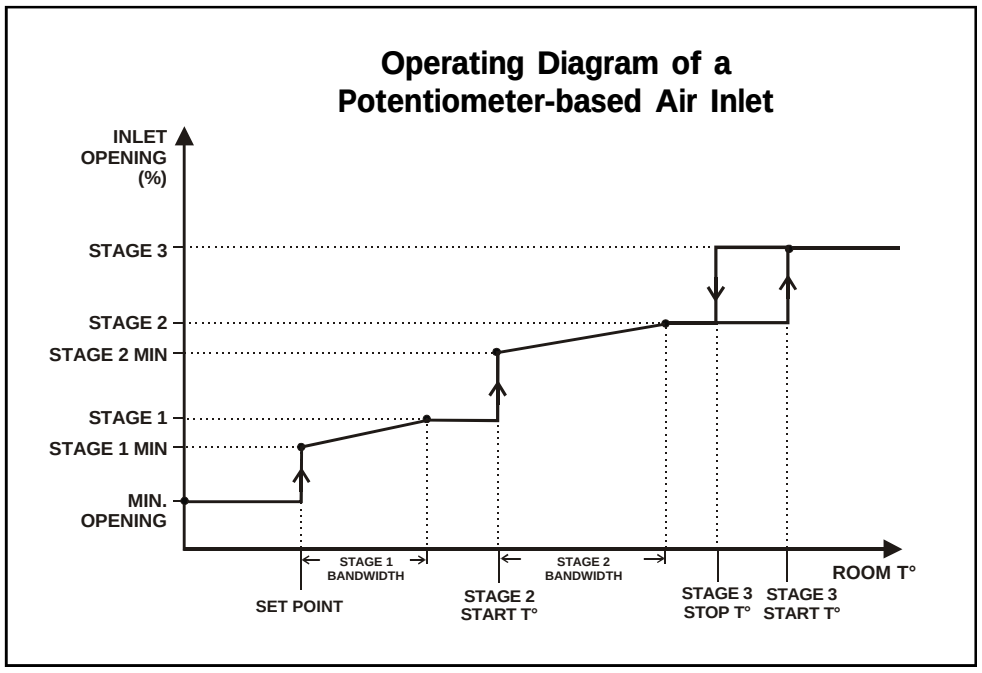
The air inlet can either be used to control the pressure level or it can open or close as a function of room temperature. If it operates according to the room temperature, the inlet position can either be defined by a timer or with a potentiometer. Enable the proper operating mode of the air inlet in the Installation Setup menu (see sec. 4.5).

6.4.1 Potentiometer-based Air Inlet

6.4.1.1 Priniple of Operation

When a potentiometer-based inlet is used, you must associate an inlet opening with the start-up of each fan stage. As the room temperature increases and new stages are activated, the inlet will open or close accordingly.

If variable stages are used, two inlet openings must be set: an inlet opening corresponding to the beginning of the fan stage (stage on temp) and an inlet opening that is reached when the variable fan stage reaches maximum speed.

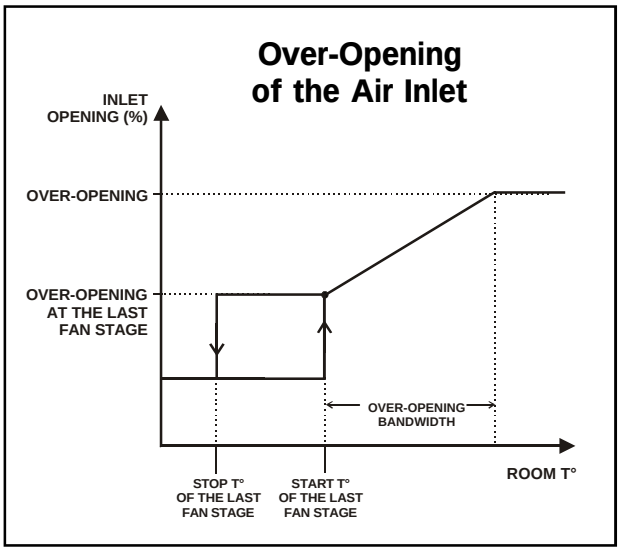


Inlet Operation in Minimum Ventilation

In minimum ventilation, when the fans are not running, the inlet is at its *Minimum Opening* position. This position is defined by the user and is not necessarily set to 0%. When the fan speed is lower than the *Min Fan Speed*, the inlet is at the minimum opening position of stage 1 *(Stage 1 Min)*; when the fan speed increases beyond the *Min Fan Speed*, the inlet gradually opens towards the full opening of stage 1. The full opening of stage 1 is reached when the fans run at full speed.

Over-opening

A supplementary stage can be programmed in order to continue opening the 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. When all reference points of ventilation stages are defined, the user can specify the temperature at which the inlet reaches its over-opening position (Start T° of the last stage + over-opening bandwidth).

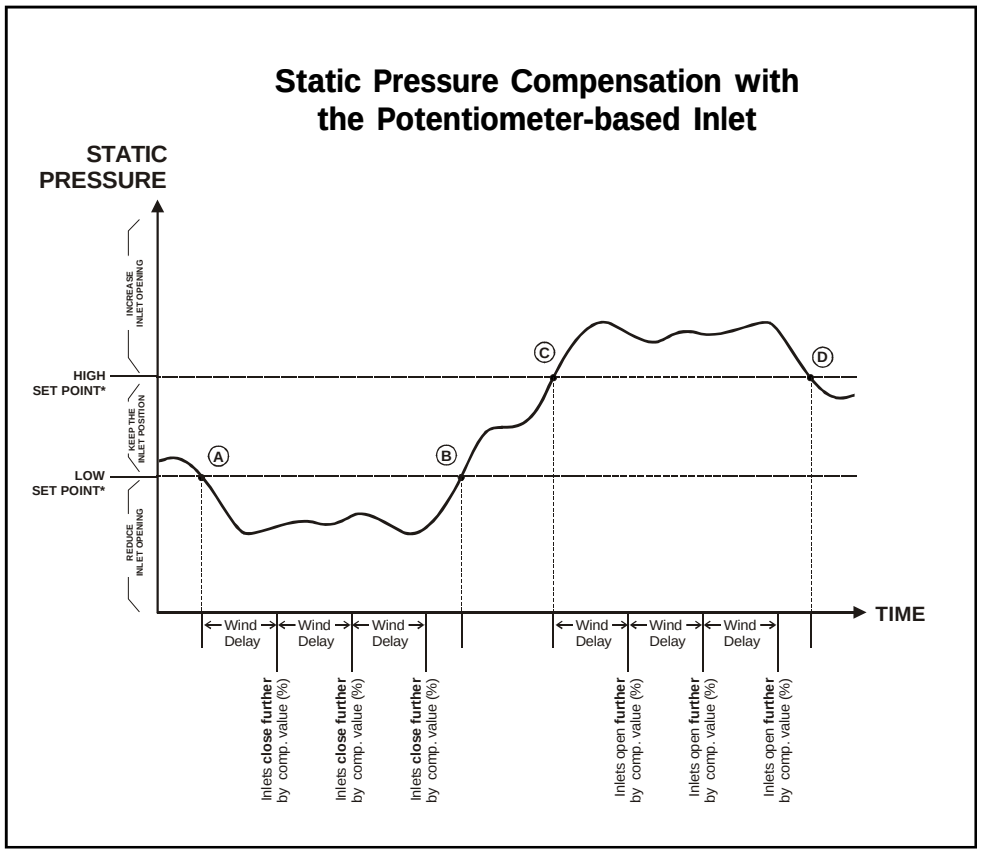


If the potentiometer is defective, the controller will operate in security mode: when the room temperature is 2°F (1.1°C) above the set point, the inlet opens according to the following cycle: 5 seconds ON, 120 seconds OFF. When the room temperature is 2°F (1.1°C) below the set point, the inlet closes according to the same cycle.

Static Pressure Compensation with a Potentiometer-based 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 the air inlet further when the static pressure level is out of range.

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

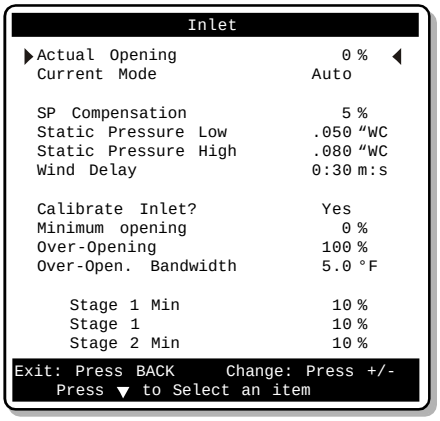


6.4.1.2 Inlet Settings

Select

▶ **10. Inlet ***

* *Available if the inlet is enabled (s. 4.5).*



- Set the following parameters:

  These parameters are only displayed if the inlet mode is set to "potentiometer" in the installation setup (see sec. 4.5).

Actual Opening:
This is the current opening of the air inlet.

Current Mode:
Select "Auto" for the controller to control the air inlet output or select "Man" to control the inlet position yourself using the controller's relay switches. Note that inlet alarms are disabled when the inlet is controlled manually.

SP Compensation:
Select the opening that must be added or removed to the inlet position when the static pressure level is out of range. The opening compensation can be adjusted from 0 to 10%
Available if the static pressure compensation function is enabled in section 4.5.

Low Static Pressure Set Point: The low pressure compensation starts when the pressure level decreases below this level. Adjustable from 0 to 0.40"WC.
Available if the static pressure compensation function is enabled in section 4.5.

High Static Pressure Set Point: The high pressure compensation starts when the pressure level increases beyond this level. Adjustable from 0 to 0.40"WC. Note that the high pressure limit must be greater than the low limit.
Available if the static pressure compensation function is enabled in section 4.5.

Wind Delay: the static pressure compensation on the inlet opening is applied each time the "Wind delay" elapses and the pressure level is out of range. Adjustable from 30 seconds to 15 minutes.
Available if the static pressure compensation function is enabled in section 4.5.

Calibrate Air Inlet ?
Refer to the following section of this manual to calibrate the inlet.

Minimum Opening:
The minimum opening represents the position of the inlet when the fans are not running in a minimum ventilation cycle. It can be adjusted from 0 to 100%.

Over-Opening:
Select the inlet opening reached during the over-opening stage (0 to 100%).

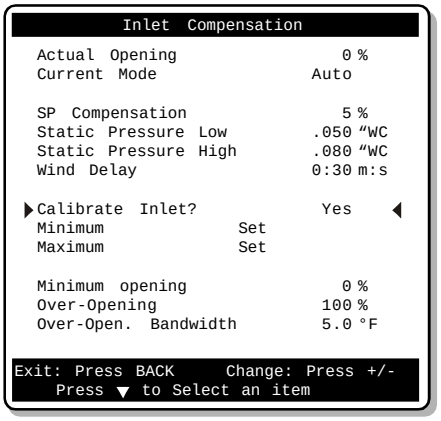
Over-Opening Bandwidth:
Select the temperature interval over which the inlet opens from the opening associated with the last ventilation stage towards the opening of the over-opening stage.

Stage #X Min:
Assign an inlet opening with the startup of each variable fan stage (0 to 100%).
Accessible if variable fan stages are used.

Stage #X:
Assign an inlet opening with each fan stage (0 to 100%).

6.4.1.3 Inlet Calibration

The inlet calibration tells the controller what are the minimum and maximum positions of the actuator: minimum calibrated position = opening of 0%, maximum calibrated position = opening of 100%



Select

- **10. Inlet ***

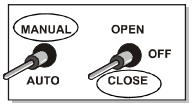
* *Available if the inlet is enabled (s. 4.5).*

Set the following parameters:

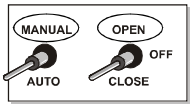
These parameters are only displayed if the inlet mode is set to "potentiometer" in the installation setup (see sec. 4.5).

Calibrate Inlet ?
Select "Yes" to start the calibration.

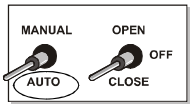
Minimum:
Use the "Close" switch to close the inlet to its minimum position. Once it is reached, set the switch to "Off" to stop the actuator. Press " + " to save the position.



Maximum:
Use the "Open" switch to open the inlet to its maximum position. Once it is reached, set the switch to "Off" to stop the actuator. Press " + " to save the position.



- Once the calibration is completed, select the "Auto" position with the switch to enable the automatic control of the inlet.



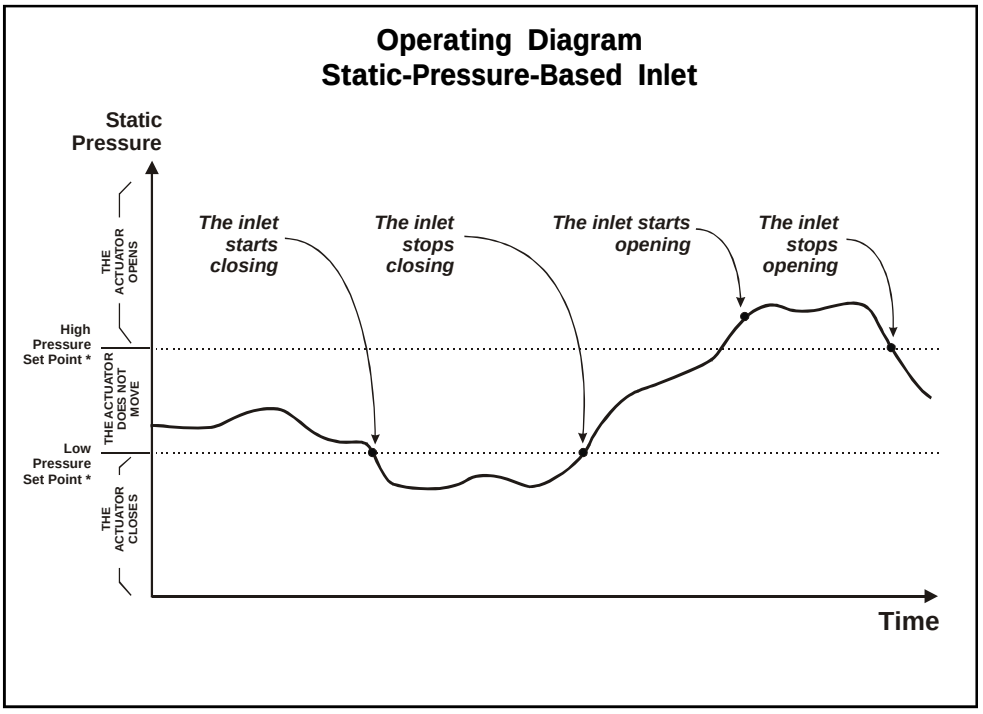
For best results, make sure at least 12 inches (30 cm) separates the minimum actuator's position from its maximum position.

6.4.2 Pressure-based Inlet

6.4.2.1 Principle of Operation

When the air inlet's operation is based on the static pressure, the panels close according to a timer when the pressure level decreases below the low pressure set point. Likewise, they open according to a timer when the pressure increases above the high pressure set point. Refer to section 4.5 to enable the pressure-based inlet.

In minimum ventilation, if no variable output is used, the air inlet opens during a pre-opening delay before fans start running. Refer to section 4.5 to set the inlet's pre-opening delay.



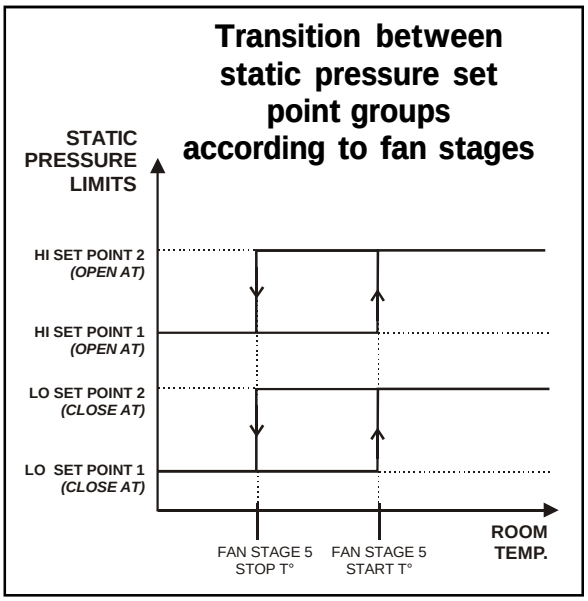
Static pressure alarms:
The controller can sound the alarm if the static pressure level goes out of range. Refer to section 11.2.2 to set this type of alarm.

Groups of static pressure settings:

Two groups of static pressure settings can be defined. The second group of settings allows using different high/low pressure limits. This second group of settings either starts being used at the start-up of a chosen fan stage starts or when the outside temperature reaches a user-defined value. The following graphs sum both cases.

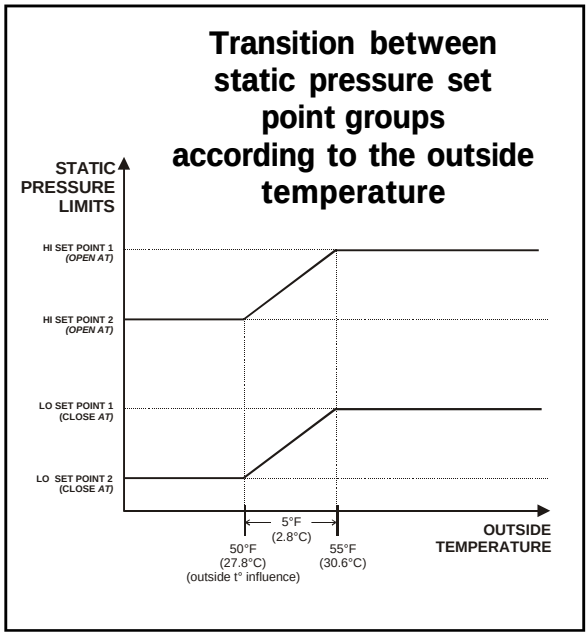
1. Transition between static pressure settings – based on ventilation stages:

When the start temperature of stage 5 is reached, the air inlet starts operating according to the second group of static pressure settings; therefore, new high and low pressure limits are used. The initial settings become used once again when the room temperature decreases below the stop temperature of stage 5.



2. Transition between static pressure settings – based on the outside temperature:

When the outside temperature falls and reaches the outside temperature influence parameter value + 5°F (2.8°C), a gradual transition between the two groups of static pressure settings starts being done. The second group of settings is fully used when the outside temperature reaches the "outside influence temperature" value.



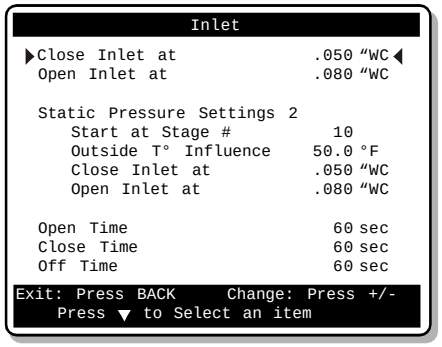
6.4.2.2 Settings

This procedure shows how to set a pressure-based air inlet. Refer to section 4.5 to enable this inlet operating mode.

Select

▶ **10. Inlet (D) ***

* *Available if the inlet is enabled (s. 4.5).*



- Set the following parameters:

  These parameters are only displayed if the inlet mode is set to "static pressure" in the installation setup (see sec. 4.5).

Open/Close Limits:
Set the pressure level below which the inlet closes and above which it opens. Adjustable from 0 to 0.2 inches of water (0 to 50Pa).

Static Pressure Settings 2
The following procedure shows how to set the second group of pressure settings.
Accessible if the second group of pressure settings is enabled (s.4.5). Refer to the previous section for further information on these parameters.

Start at stage:
Select the fan stage at which the controller switches from its regular static pressure settings to the second group of static pressure settings.
*This menu is only shown if the **"Stage"** transition method is used (s. 4.5).*

Outside T° Influence:
Set the outside temperature below which the controller fully switches to the second group of pressure settings.
*This menu only is only shown if the **"Out T°"** transition method is used (s. 4.5).*

Open/Close Limits (second settings):
Set the static pressure level below which the inlet closes and above which it opens when the second group of static pressure settings is used. These pressure limits can be adjusted from 0 to 0.2 inches of water (0 to 50Pa).

Open Time:
The inlet opens during this amount of time when the pressure level exceeds the Hi pressure set point. Adjustable from 0 to 900 seconds.

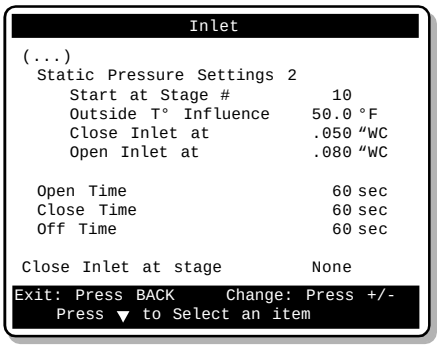
Close Time:
The inlet closes during this delay when the pressure level gets lower than the Lo pressure set point. Adjustable from 0 to 900 seconds.

Off Time:

Once the inlet has opened or closed (depending on the situation), it then stay still during the Off time. This delay ranges from 0 to 900 seconds.

Close Inlet at Stage:

Select the fan stage above which the inlet must remain closed. This feature is useful to close the inlet at the beginning of tunnel ventilation for instance. Select **"None"** to disable this function.

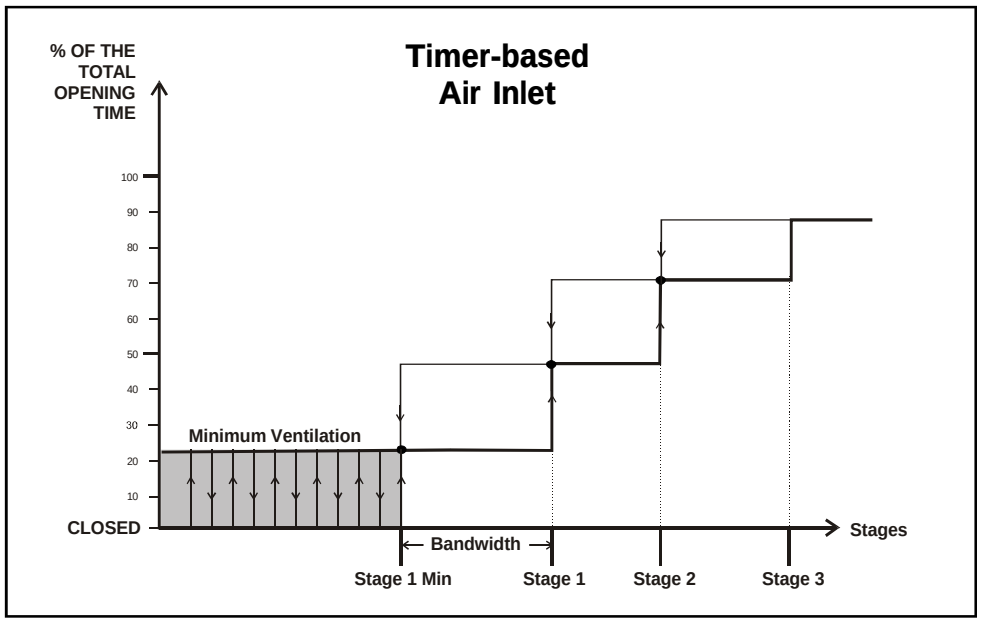


6.4.3 Timer-Based Inlet

6.4.3.1 Principle of Operation

When the inlet position is based on a timer, you must specify the total time required to fully open the actuator. You must then associate an inlet opening with the start-up of each fan stage (the inlet opening is defined as a percentage of the total opening time). As the temperature increases and new stages are activated, the inlet opens or closes accordingly.

The following diagram shows the operation of a timer-based inlet.



An opening is added when a variable fan stage starts (for stages 1 and 2 only). This step is called " Stage x Min ". In the example above, Stage 1 Min defines the point where Stage 1 fans start running at their minimum intensity. The regular opening of stage 1 is reached when the fans reach their full intensity.

In minimum ventilation, the inlet is at the position defined for stage 1 (or Stage 1 Min – if variable fans are used) when the fans are running; it closes when the fans are off.

Automatic Reset of the Inlet Position

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

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

- **Reset toward the nearest position *(Open/Close mode)***
  To reset the actuator's position, the controller either fully opens or closes the air inlet. If the inlet opening is already higher than 25% at the beginning of a reset, the controller opens the actuator; otherwise, it closes it. 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 acutators when using this resetting method.

6.4.3.2 Settings

This procedure shows how to set a timer-based air inlet. Refer to section 4.5 to enable this inlet operating mode.

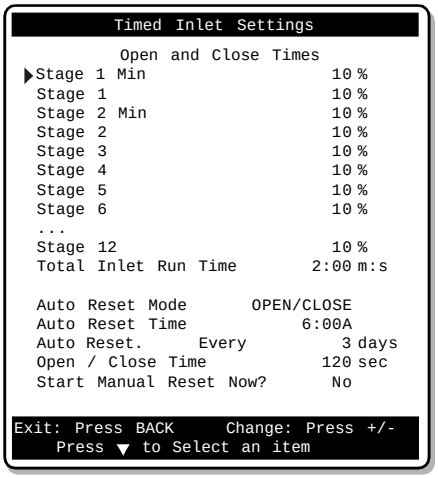
Select

▶ **10. Inlet***

* *Available if the inlet is enabled (s. 4.5).*

- Set the following parameters:

  These parameters are only displayed if the inlet mode is set to "timer" in the installation setup (see sec. 4.5).



Stage #X Min:
Assign an inlet opening with the startup of each variable fan stage (0 to 100%).
Accessible if variable fan stages are used.

Stage #X:
Assign an inlet opening with each fan stage (0 to 100%)*.

***IMPORTANT:** A certain minimum opening of the actuator (% difference) must occur between 2 consecutive stages. This minimum opening percentage is defined as a function of your actuator's run time and according to the chosen hysteresis (see Installation Setup in section 4.5). Please fill-in the table below to find out what is the minimum opening percentage of your actuator and be sure to respect it when assigning the inlet positions between 2 consecutive stages.

Hysteresis	Minimum Opening (%) between 2 consecutive stages
0 sec.	_____% = 200 ÷ Total run time of the actuator
1 sec.	_____% = 300 ÷ Total run time of the actuator

NB. Round-up the result to the next highest integer (for instance, a result of 6.05 should be rounded up to 7%).

Example 1. Total run time of actuator is 89 seconds
If hysteresis = 0 sec. : 200 ÷ 89 = 2.25%, round up to 3% min. between stages.
If hysteresis = 1 sec.: 300 ÷ 89 = 3.37%, round up to 4%

Example 2. Total run time of actuator is 45 seconds
If hysteresis = 0 sec. : 200 ÷ 45 = 4.44%, round up to 5%
If hysteresis = 1 sec. : 300 ÷ 45 = 6.66%, round up to 7%

Inlet Run Time:
Enter the **exact amount of time** required to reach the actuator's maximum limit switch. The controller limits the opening of the actuator accordingly.

Auto Reset Mode:
Select the desired reset mode: choose *"Open/Close"* to reset the actuator toward its nearest position; select *"Close"* to close the actuator in order to reset its position; select "Off" to disable the auto-reset function. Refer to the previous section for further information about resets.

Auto Reset Time: Select the time at which the reset is performed.

Auto Reset Every:
Select the frequency at which the actuator is reset (once every 1 to 7 days).

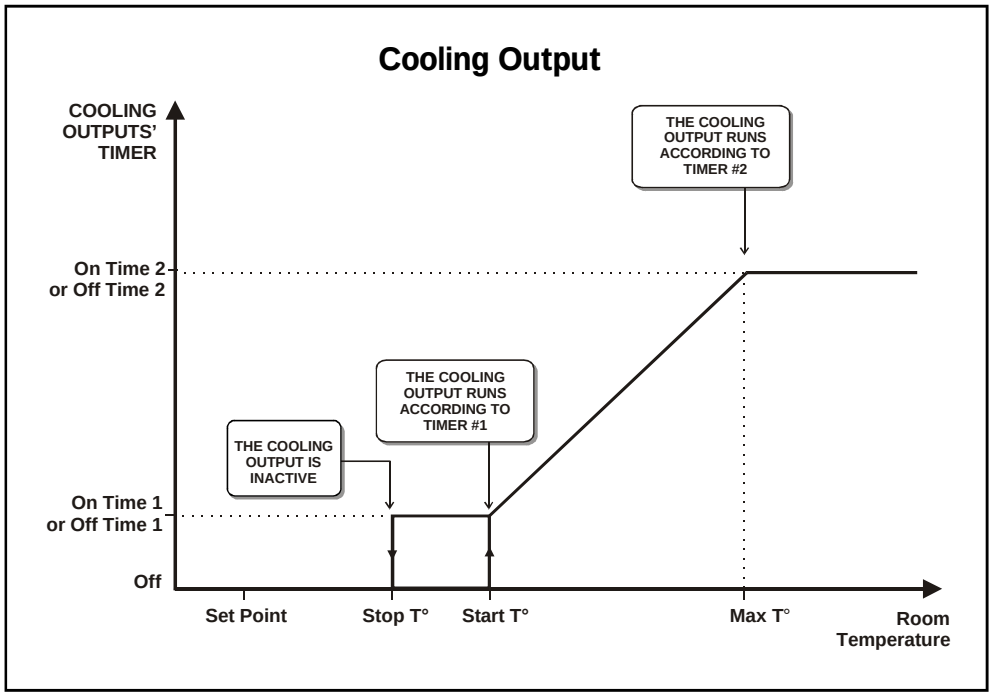
Open / Close Time (Advanced):
During a reset, the controller opens or closes the inlet during this delay or up until a limit switch is reached. By default, this value is the same as the total run time of the acutator.
Accessible from the factory mode only.

Start Manual Reset Now? Select "Yes" to reset the inlet now.

6.5 Cooling Outputs

6.5.1 Principle of Operation

The controller has two cooling outputs to control misters. The intensity of these outputs increases gradually as the room temperature increases. The following diagram shows how a cooling ouptut operates.



When they start running, cooling outputs use their first timer (On Time 1 & Off Time 1). The timer then gradually changes as the temperature increases. The second timer (On Time 2 & Off Time 2) becomes fully used when the room temperature reaches the outputs' *Maximum Temperature*.

You can specify an operating time range in order to stop cooling outputs at night.

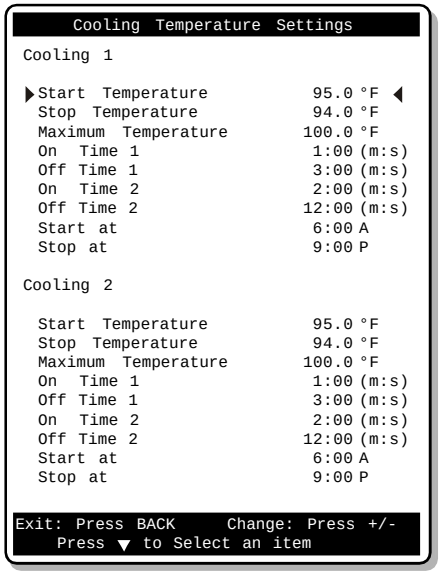
Operating temperatures of cooling outputs can either be related to the set point – which means the controller automatically adjusts them when the set point changes – or they can be set as absolute values. Refer to the Installation Setup section of this manual to choose whether cooling outputs follow the set point or not (section 4.5)

6.5.2 Settings

Select

- **13. Fan/Cool./Nat. Temp. Settings**
- **2. Cooling Temperature Settings***

* *Available if cooling outputs are enabled (s. 4.5).*



- Set the following parameters:

  Refer to the previous section to get further information on these parameters.

Start Temperature:
Set the temperature at which the cooling output starts operating using the first timer. Adjustable from the set point to 120°F (48.9°C).

Stop Temperature:
Set the temperature below which the cooling output stops. Adjustable from 0.5°F (0.3°C) below the start temperature to -40°F (-40°C).

Maximum Temperature:
Set the temperature at which the cooling output switches to the second timer. Adjustable from 0.5°F (0.3°C) above the start temperature to 120°F (48.9°C).

On Time 1 & 2:
Set both timers' On and Off times to the desired values. Adjustable from 0 to 30 minutes.

Start / Stop at:
The cooling output can only be activated over this period of time. This allows deactivating the cooling output at night for instance.

6.6 Natural Ventilation

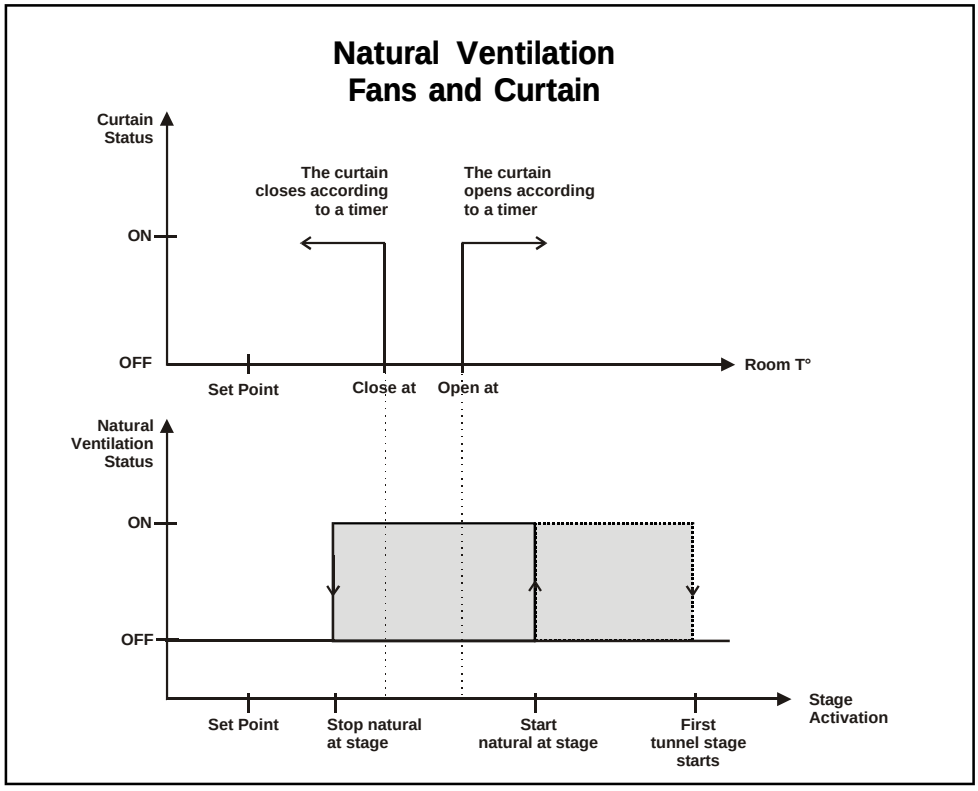
6.6.1 Principle of Operation

The curtains operate according to the average temperature in their respective zones. Their opening and closing temperatures are related to the room set point, which means they are adjusted consequently when a change in the set point occurs. Refer to section 4.6.1 to assign the temperature probes located in each natural zone.

- Natural ventilation begins when the room temperature reaches the start temperature of a user-defined fan stage *(Start Natural at Stage)*. At that moment, the controller opens all natural ventilation curtains during their respective *Initial Opening Time*.

- Once the controller is in natural ventilation, the curtains start operating in timer mode: they open according to an opening cycle *(Open Time & Off Time)* when the average temperature in their respective zone is above the *Open At* temperature; they close according to the closing cycle *(Close Time & Off Time)* when the temperature in their zone is lower than the *Close At* temperature.

Using the Tunnel Curtain in Natural Ventilation
The tunnel curtain can be used in combination with the natural ventilation curtain during natural ventilation stages. When the tunnel curtain is used in natural ventilation, it operates exactly as the natural ventilation curtain of zone 1 (same timer and temperature settings).



6.6.2 Transition Between Natural & Tunnel Ventilation

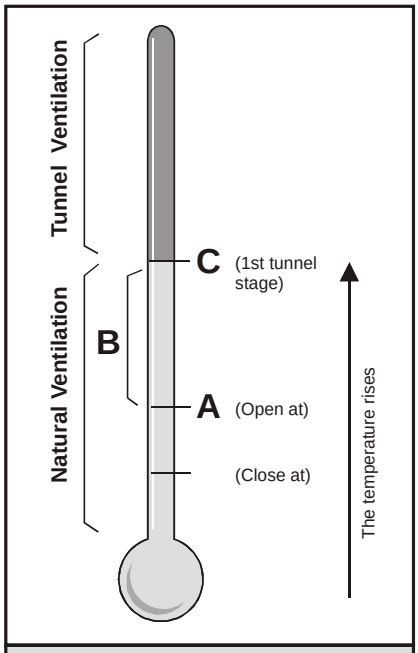
1. NATURAL VENTILATION – > TUNNEL VENTILATION:

As the room temperature increases and reaches the *Open at* temperature of the natural ventilation curtain *[A]*, the natural ventilation curtain opens in timer mode *[B]*. If the tunnel curtain is also used in natural ventilation, it will open following the same timer. When the room temperature reaches the start temperature of the first tunnel stage *[C],* the natural ventilation curtain stays still during the *Natural Close Delay* (5 minutes by default) then fully close. Here is what happens to the tunnel curtain when the first tunnel stage is reached:

- **If the tunnel curtain is based on a timer:**

  If the tunnel curtain **is not** used in natural ventilation:
  The tunnel curtain opens to the position associated with the first tunnel stage. When it reaches half the opening of that stage, the controller starts the fans.

  If the tunnel curtain **is** used in natural ventilation:
  The tunnel curtain opens during its *Total Run Time* parameter value (sec. 6.3.2.2) then repositions itself to the opening associated with the first tunnel stage. This allows resetting the curtain's position before moving on to the tunnel ventilation mode.



GRAHPIC 1
From natural to tunnel ventilation

- **If the tunnel curtain is based on the static pressure:**

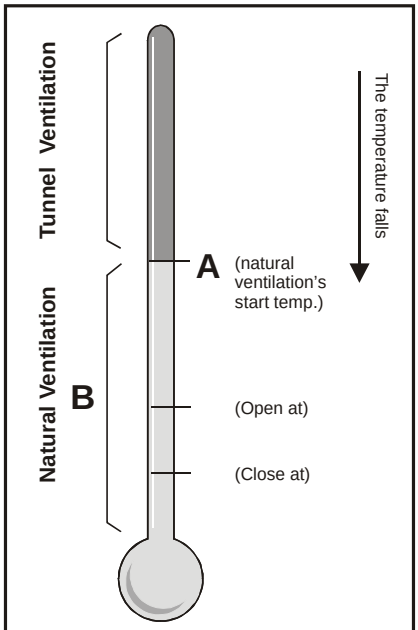
  If the tunnel curtain **is not** used in natural ventilation:
  The tunnel curtain opens during its *Pre Open Time* parameter value. When this delay has elapsed, the controller starts the fans and the opening of the curtain becomes based on the static pressure settings.

  If the tunnel curtain **is** used in natural ventilation:
  The opening of the curtain becomes based on the static pressure settings at the start-up of the first tunnel stage.

2. TUNNEL VENTILATION – > NATURAL VENTILATION:

If the tunnel curtain **is not** used in natural ventilation:
When the room temperature falls and reaches the start temperature of natural ventilation [A], the natural ventilation curtain opens during the *Natural Open Delay* (5 minutes by default) and the tunnel curtain closes. When this delay has elapsed, the natural curtain starts operating according to the natural ventilation timer [B].

If the tunnel curtain **is** used in natural ventilation:
When the room temperature falls and reaches the start temperature of natural ventilation [A], the tunnel and natural ventilation curtains open during the *Natural Open Delay* (5 minutes by default). When this delay has elapsed, both curtains starts operating according to the natural ventilation timer [B].



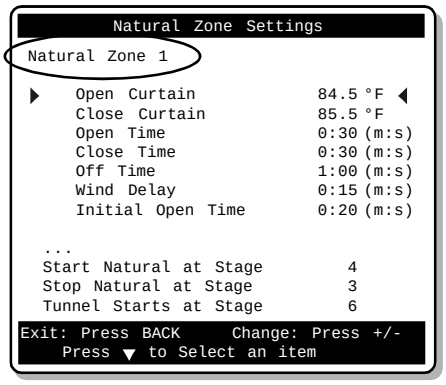
GRAPHIC 2
From tunnel to natural ventilation

6.6.3 Settings

Select

- **13. Fan/Cool./Nat. Temp. Settings**
- **3. Natural Temperature Settings**

* *Available if natural zones are enabled (s. 4.5).*



- Set the following parameters:

  Refer to the previous section to get further information on these parameters.

Make sure to select the right zone before adjusting these parameters. Press the down-arrow key to scroll the display and select the desired natural ventilation zone.

Open Curtain
Set the temperature above which the curtain opens according to a timer when the controller is in natural ventilation. Adjustable from the set point to 120°F (48.9°C).

Close Curtain
Set the temperature below which the curtain closes according to a timer when the controller is in natural ventilation.

Open / Close / Off Times
Set the timer that is used to open and to close the curtains in each natural zone (the Off time is common to both the opening and closing cycles). Adjustable from 0 to 15 minutes.

Wind Delay
When the controller is in natural ventilation and the temperature in a natural zone decreases below the "Close At" temperature or increases above the "Open At" temperature, the curtain in that zone only starts moving after the wind delay has elapsed. This way, the controller does not open or close curtains when wind drafts cause temporary temperature variations. Set the wind delay to the desired value. Adjustable from 0 to 15 minutes.

Initial Open Time
Curtain in all natural zones open during their respective Initial Open Time when the controller enters in natural ventilation. Adjustable from 0 to 15 minutes.

Start Natural at Stage

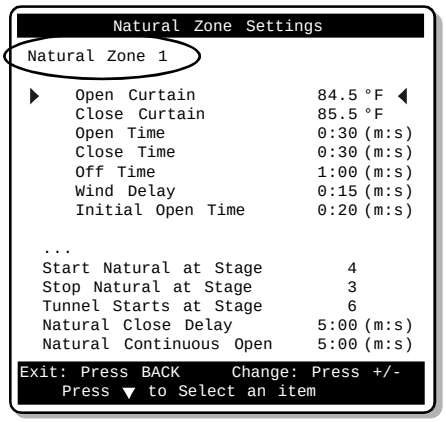
Select the fan stage at which the controller enters in natural ventilation.

Stop Natural at Stage

Select the fan stage at which the controller exits from natural ventilation.

Tunnel Starts at Stage

This is the fan stage at which the controller enters in tunnel ventilation. This menu is shown for consultation only and cannot be changed. Refer to the tunnel ventilation chapter to modify the first tunnel stage.



Natural Close Delay

(Advanced)

This delay is launched at the beginning of the first tunnel stage. Once it has elapsed, the controller closes all curtains in natural zones.

Factory setting.

Natural Open Delay

(Advanced)

All natural ventilation curtains open during this delay when the controller switches from the tunnel mode to natural ventilation.

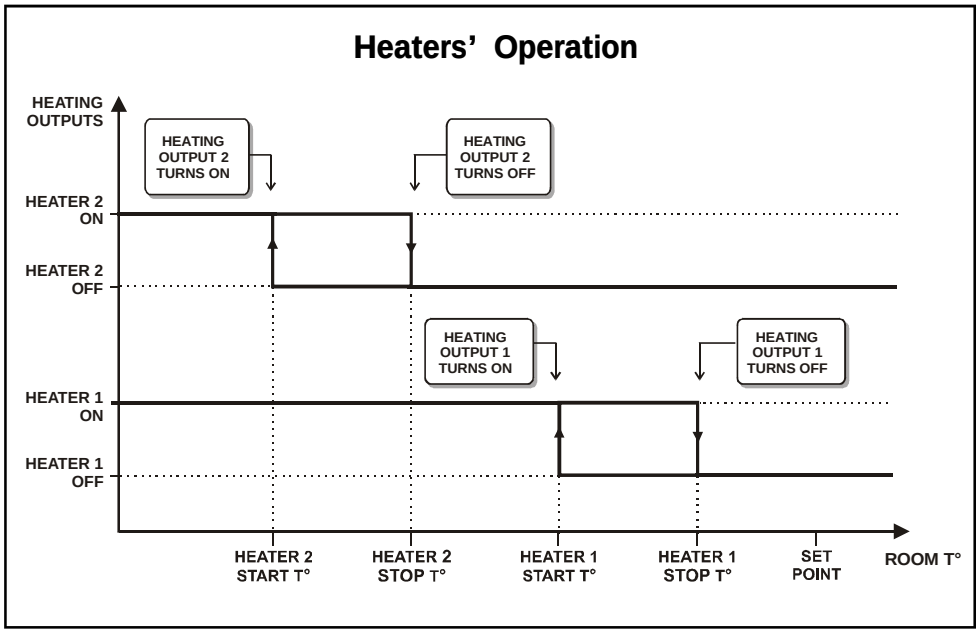
Factory setting.

7. HEATERS

7.1 Heating Stages

7.1.1 Principle of Operation

The controller can operate up to 4 independent heating outputs. These outputs operate according to their start and stop temperature as illustrated below. The heaters' start/stop temperatures are related to the set point. This means that if the set point changes, their start/stop temperatures are adjusted consequently. Refer to section 4.5 to activate the heating outputs.



Operating Temperatures of Heating Outputs:

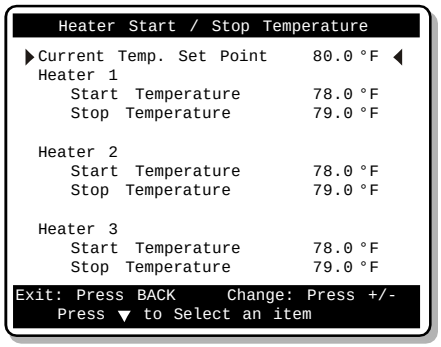
- **Start Temperature:**
  The start temperature of each heating output is related to the set point. This means that if the set point changes, the start temperature is adjusted consequently.

- **Stop Temperature:**
  If the heating curve is not used, the stop temperature of each heating output is related to the set point (this means that if the set point changes, the stop temperature is adjusted consequently). If the heating curve option is enabled, the stop temperature for a given heating output becomes based on the start temperature of the output (this means that if the start temperature of the output changes, the stop temperature is adjusted consequently).

7.1.2 Settings

Select

▶ **12. Heater Start / Stop Temperature**



- Set the following parameters.

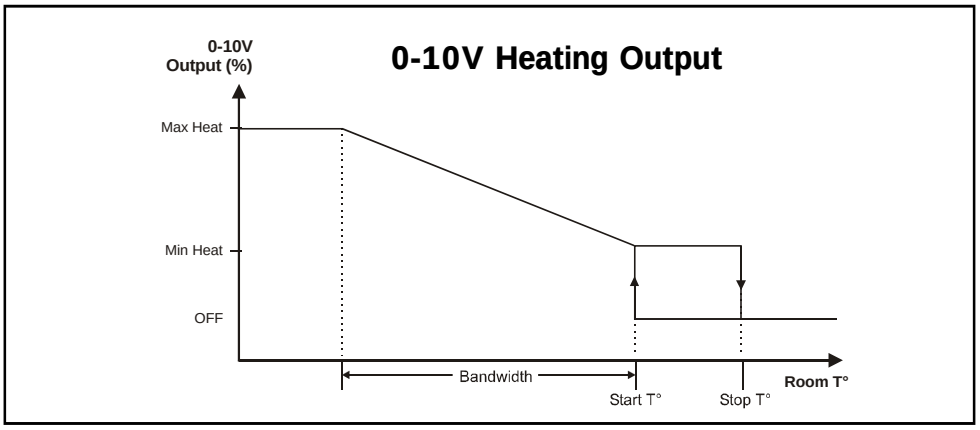
  Refer to the previous section to get further information on these parameters.

Heaters' Start / Stop Temperatures:

The start temperature of a heating stage can be adjusted from 40°F (22.2°C) below the set point to 39.5°F (21.9°C) above the set point; its stop temperature can be adjusted from 0.5°F above the start temperature to 40°F (22.2°C) above the set point. Using a start temperature that is greater than the set point can be used to control heat mats for instance.

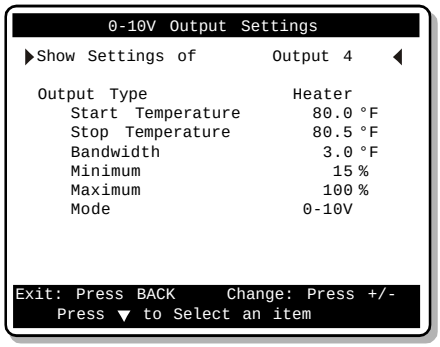
7.2 Heat Mats (0-10V Heating Outputs)

The controller has two 0-10V outputs to control supplementary variable fan stages or heating devices. The following procedure shows how to use 0-10V outputs to control heating units. This type of output is activated at its minimum intensity when its *Start Temperature* is reached. It increases in intensity as the room temperature decreases and reaches its maximum intensity when the temperature decreases below the *Max. Heat.* temperature. It stops operating when the room temperature increases above the output's *Stop Temperature*.



Select

▶ **21. 0-10V Output Settings**



- Set the following parameters:

  Show Settings of: Select the proper 0-10V output.

  Output Type: Choose "**Heater**" to use the 0-10V output as an heating output.

  Start temperature: Set the temperature at which the 0-10V output starts operating continuously at its minimum speed. It can be adjusted of +/- 40°F (22.2°C) from the set point.

  Stop Temperature: Select the temperature at which the output stops. It can be adjusted from 0.5°F (0.3°C) above the start temperature to 40°F (22.2°C).

  Bandwidth: Specifiy the temperature interval existing between the moment the 0-10V heat output starts and the moment it reaches its maximum intensity.

  Minimum & Maximum Intensity: Select the minimum and maximum intensity of the 0-10V heat output.

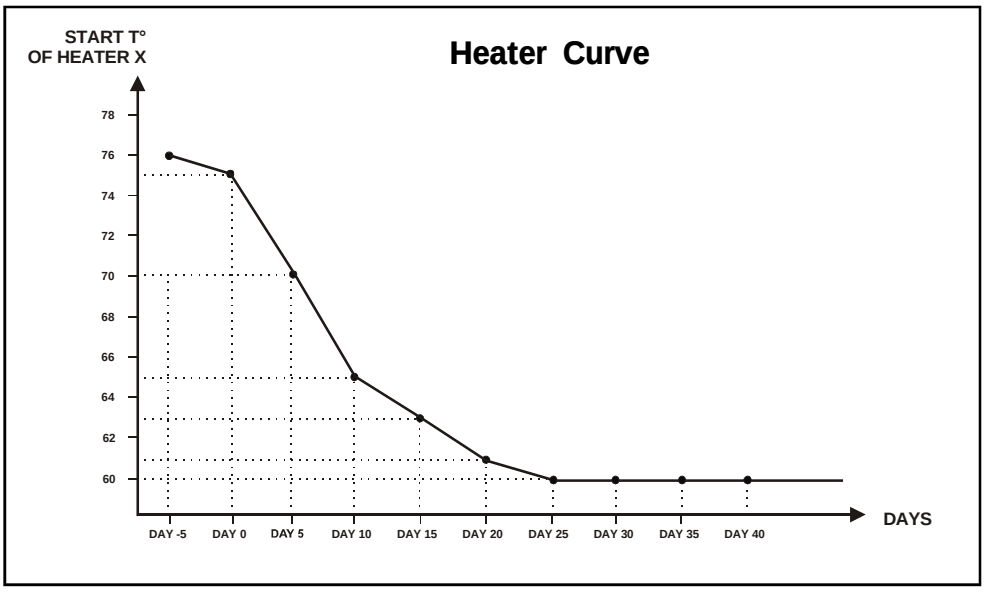
  Mode: Select the type of signal used by the output (0-10V or 10-0V).

7.3 Heater Curve

7.3.1 Principle of Operation

This curve allows an automatic adjustment of the heaters' start temperature over time.

The heaters' start temperature changes using 10 steps. Each step specifies a day number and a start temperature for that day. The day number is based on the animal age. Once the 10 steps are defined, the curve must be activated. The controller then starts changing the heaters' start temperature every hour in a linear fashion between consecutive steps of the curve. When the last step is reached, the start temperature of the heaters for that day is maintained until a new batch starts.



NOTE: Certain restrictions apply to reduce the risk of errors:
- The highest possible day number is 450.
- Decreasing day numbers is not allowed.
- Increasing the start temperature over time is not allowed.
- All ten steps must be specified. If you don't need ten different steps, repeat the last temperature for each unnecessary step.

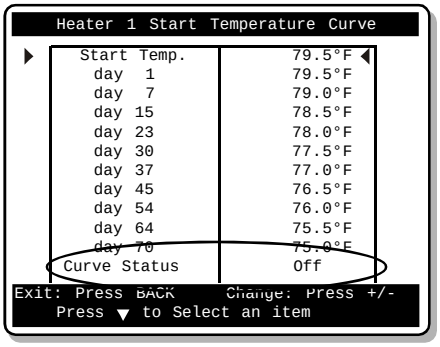
Use the copy/paste function to program several heating output that use the same curve. Refer to section 7.3.3.

7.3.2 Settings

Select

- **9. Curve Settings**
- **x. Heater x Start Temperature***

* *Available if the heaters' Offset curve is enabled (s. 4.5).*



- Set the following parameters:

The curve steps can only be modified while the curve is off.

Day Number:
Set the day for each of the 10 steps. This number corresponds to the animal age and is adjustable from -5 to 450 days. Negative values are used to prepare the house before letting animals enter.

Start Temperature:
Set the heater's start temperature for each step.

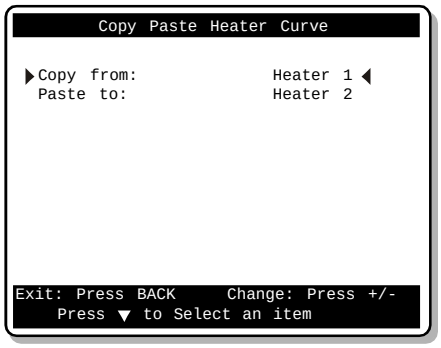
Curve Status:
Select **"Yes"** to activate the curve. Once it is enabled, the heater's start temperature becomes automatically adjusted between consecutive points of the curve; for this reason curve steps cannot be modified while the curve is on.

7.3.3 Copying & Pasting Heaters' Curves

Select

- **9. Curve Settings**
- **8. Copy Paste Heater Curve***

* *Available if the heaters' offset curve is enabled (s. 4.5).*



- Select the heating curve that needs to be duplicated and the target curve as follows:

  Copy From:
  This is the source curve. The one that will be duplicated.

  Paste to:
  This is the target curve. The one on which the copied curve will be pasted.

- Once the source and the target curves are defined, the message "**Confirm**?" appears on the display. Select "**Yes**" to confirm the duplication. The message " **Copy in progress…. please wait..** " is then displayed. Wait until the duplication process is over.

8. CLOCK OUTPUTS

The controller has 4 clock outputs to control various devices using the real-time clock. These outputs can operate 3 different ways:

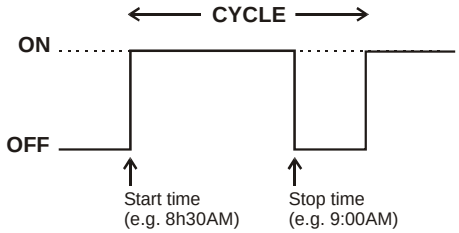
1. **Start/Stop mode**
   With the Start/Stop mode, clock outputs can operate according to 10 different start and stop times.

2. **Start/Run mode**
   With the Start/Run mode, clock outputs can operate according to 10 different start and run times.

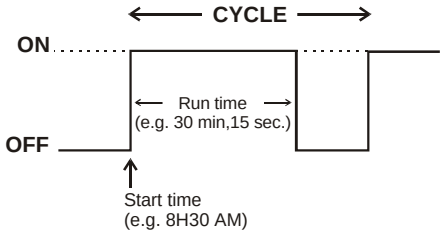
3. **Start/Repeat mode**
   With the Start/Repeat mode, a clock output operates according to a timer which is repeated at regular intervals. This timer is made of a start and run time.

Refer to section 4.5 to enable clock outputs and to set their operating mode (start/stop, start/run or start/repeat)

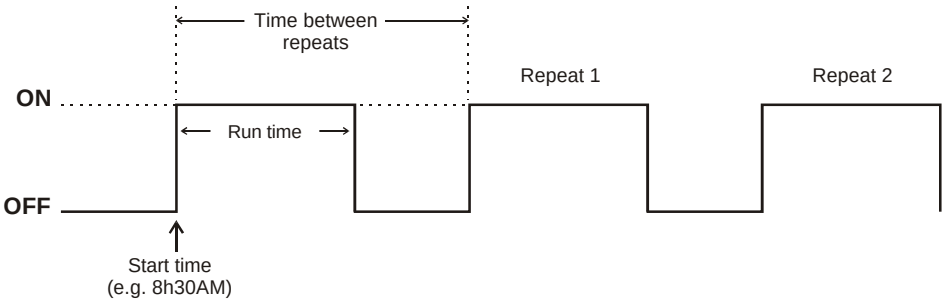
Time Clock Operating mode: Start / Stop



Time Clock Operating mode: Start / Run



Time Clock Operating mode: Start / Repeat

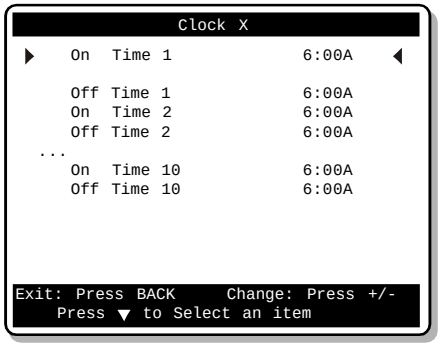


TIMER SETTINGS

Select

- **15. Clock Time***
- **x. Clock #x**

* *Available if clock outputs are enabled (s. 4.5).*



- Set the following parameters:

  On / Off / Run Times:
  Set the start time and the stop time / or run time of each cycle. If 10 cycles are not required, set the start and stop times of unused cycles to the same value (other than 12:00AM) or set the run time to 0 min and 0 sec.

  Number of repeats:
  If the chosen clock output uses the Start/Repeat operating mode, select the number of times the cycle must be repeated over the day. The controller activates the clock output at its start time, performs the first cycle and then repeats it as required.

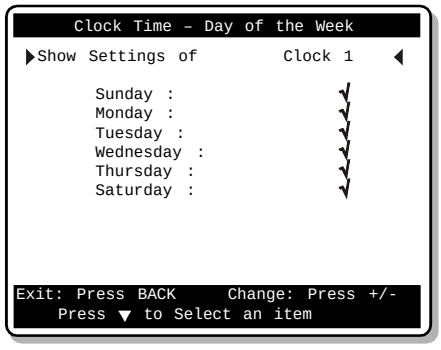
  Time between repeats:
  If the chosen clock output uses the Start/Repeat operating mode, specify the period of time existing between cycles (the run time must be included).

DAYS OF OPERATION

Select

- **15. Clock Time***
- **5. Day of the Week**

* *Available if clock outputs are enabled (s. 4.5).*



- Set the following parameters:

  Show Settings of:
  Select a clock output. The operating days of the selected clock output are displayed.

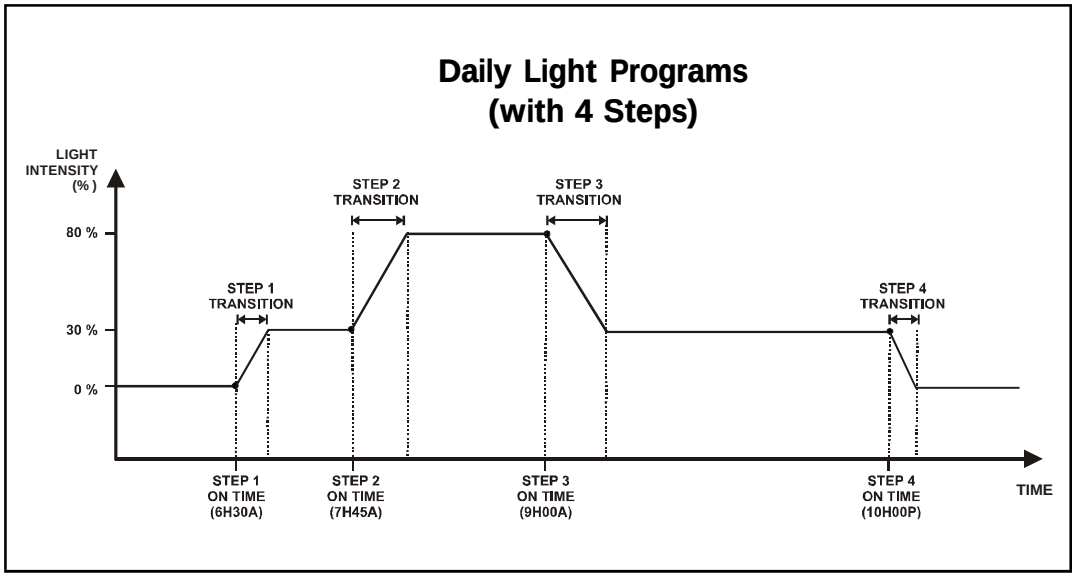
  Days: Put a check mark to identify on which day(s) the clock output must be used.

9. LIGHTS

9.1 Principle of Operation

LIGHT PROGRAMS :
The controller has 8 daily light programs to control the light intensity on a daily basis. Each program is composed of up to 30 steps to vary the light intensity in the day and their activation is related to the animal age.

The following graph illustrates a 4-step light program.

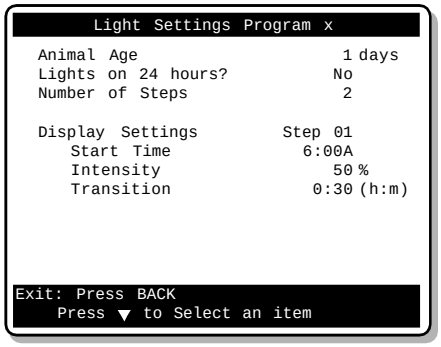


9.2 Light Program Settings

Select

- **14. Light Settings***
- **x. Program x**

* *Available if light programs are enabled (s. 4.5).*



- Set the following parameters:

  Refer to the previous section to get further information on these parameters.

Animal Age:
This age is the day at which the selected light program starts being used.

Lights on 24 Hours:
When this function is enabled, lights remain lit all the time, as long as the program is active.

Number of Steps:
Select the number of steps performed within the selected program.
Available if the "Lights on 24 Hours" function is disabled above.

Settings for Step #x:
Select the proper step then set the following parameters:
Available if the "Lights on 24 Hours" function is disabled above.

Start Time:
Select the time at which the selected step starts.

Intensity:
Select the intensity that is reached during the selected step.

Transition:
Select the amount of time required for lights to reach their specified intensity.

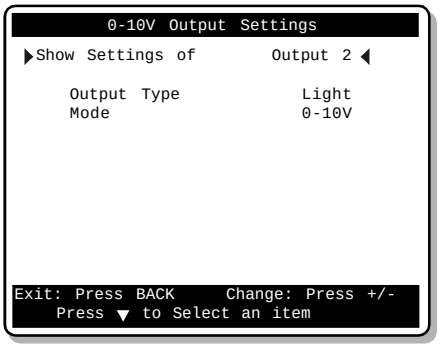
9.3 Activating Additional 0-10V Light Outputs

The controller has two 0-10V outputs to control supplementary variable fan stages, lights, or heating devices. The steps below show how to use the second 0-10V output as a light output.

Select

▶ **21. 0-10V Output Settings***

* *Accessible if 0-10V outputs are enabled (s. 4.5).*



- Set the following parameters:

  Show Settings of:
  Select the second 0-10V output.

  Output Type:
  Select "**Light**" if lights are connected to the second 0-10V output.

  Mode:
  Select the type of signal used by the selected output: 0-10V or 10-0V.

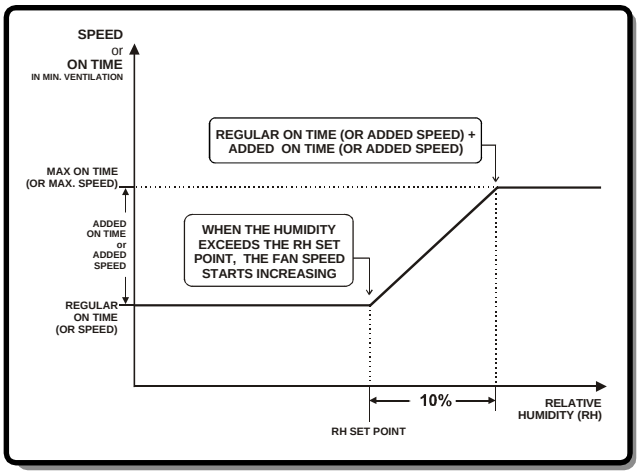
10. RELATIVE HUMIDITY (RH) CONTROL

10.1 Principle of Operation

The controller offers different options to compensate for high/low humidity levels in the room. This section describes the operation of each humidity control method.

10.1.1 RH Compensation – on the Minimum Ventilation Speed / On Time

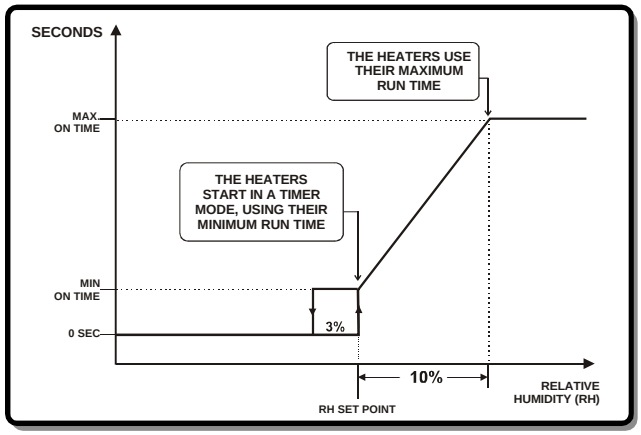
The humidity level can be decreased by increasing the fans' running time (or the fan speed) in minimum ventilation. If variable fans are used, their speed increases during the minimum ventilation cycles as the humidity level increases; if On/Off fans are used, their running time increases as the humidity level increases. The added fans' on time (or speed) is fully added when the humidity level exceeds the RH set point by 10%.



GRAPHIC: RH Compensation on the minimum ventilation fan speed

10.1.2 RH Compensation – with Heating Outputs

The controller can activate heating units in timer mode to decrease the humidity level. As the humidity level increases, the heaters' On-Time increases proportionally to compensate for the change. They reach their full On-Time when the humidity is at or above RH Set Point + 10% as shown beside.



GRAPHIC: RH Compensation using heating outputs

10.1.3 RH Compensation – Mist Shutoff

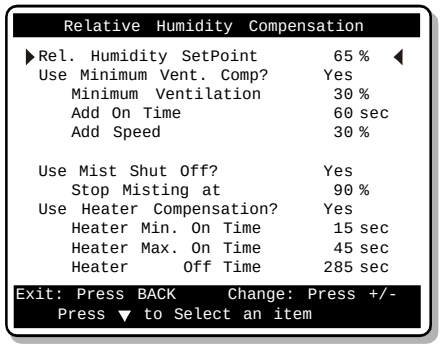
The controller can stop mist units when the humidity level is too high. This applies to fan stages with timer-based relays and cooling stages. The mist shutoff occurs when the humidity level increases above the mist shutoff limit.

10.2 Settings

Select

- **23. Controller Setup**
- **1. Relative Humidity Compensation***

* *Available if the humidity probe is enabled (s. 4.5).*



- Set the following parameters:

  Refer to the previous section to get further information on these parameters.

Relative Humidity Set Point:
Set the humidity level above which RH compensation starts (adjustable from 25 to 99%). Increase the value to "Off" to disable all RH compensation functions.

Use Minimum Ventilation Compensation? The controller can compensate for high humidity levels by enhancing the minimum ventilation rate. Select "Yes" to use this compensation method.

Added Speed: Set the speed added to variable fans in minimum ventilation. Adjustable from 1 to 100%. Select "Off" to deactivate this function.
Available if variable outputs are enabled (s. 4.5).

Added On Time: Time that is added to the fans' run time during the minimum ventilation cycles. Adjustable from 0 to 900 seconds.
Available if the variable outputs are disabled (s. 4.5).

Use Mist Shut Off? Select **"Yes"** to disable mist units (fan stages' timer-based relays & cooling outputs) when the humidity level is too high.

Stop Misting at: Set the humidity level above which the stages' timer-based relays and cooling stages stop. Adjustable from 25% to 99%. Increase the value to "Off" if you want to disable this function.

Use Heater Compensation? The controller can compensate for high humidity levels by activating heating outputs in timer mode. Select "Yes" to use this compensation method.

Min / Max On Time:
Set the minimum and maximum run times of the heaters' timer (from 0 to 900 seconds).

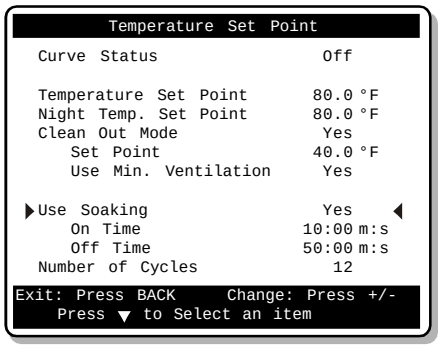
Off Time: Set the off time of the heating cycle (from 0 to 900 seconds).

11. SOAKING

The controller can control one soaking output to operate cleaning instruments. This output automatically starts running in timer mode when the controller enters in clean mode. You can specify the number of soaking cycles to be performed in clean mode or choose to enable them continuously.

Select:

7. Temperature Set Point



- Set the following parameters:

Use Soaking
Select "Yes" to enable the soaking output; select "No" to disable it.

On & Off Times
The soaking timer is made of an On and Off Time. The On Time can be adjusted from 0 to 60 minutes; the Off Time can be adjusted from 0 to 240 minutes (4 hours). Set these parameters to the desired value.

# of Soaking Cycles
Select the number of soaking cycles that need to be performed. To activate these cycles continuously, increase the number of soaking cycle until you reach the continuous mode "cont."

12. ALARMS

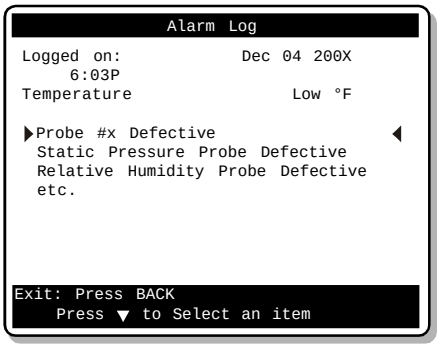
12.1 Alarm Log

When an alarm occurs, the alarm led is turned on and the alarm is stored in the alarm log menu, along with the time and date. The controller keeps in memory the last 25 alarm conditions.

Select

- **20. Alarm Log – or press** 

- Use the arrow keys to select an alarm. The date and the time at which the selected alarm condition occurred are displayed at the top of the display.



12.2 Alarm Conditions & Settings

The following sections describe how the alarms are set off and how to adjust the alarm limits. Refer to the table beside to see all possible alarm conditions.

Another alarm situation occurs in case of a power failure. In this case, the alarm relay is activated. When the alarm relay is activated, the normally open contact () closes.

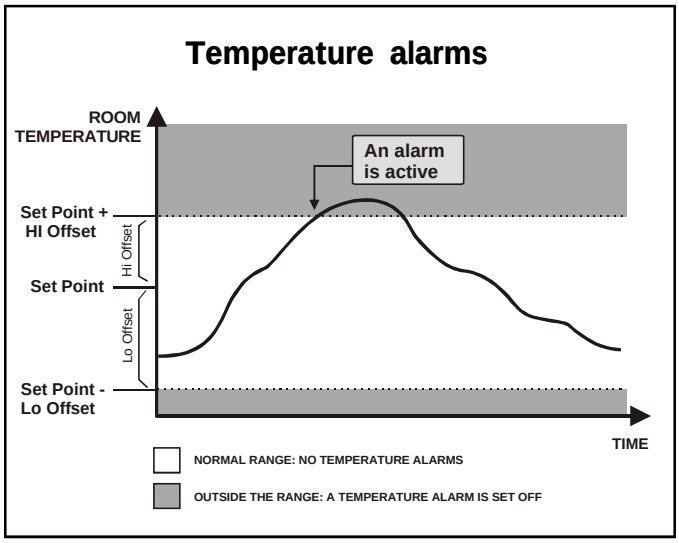
Alarm Conditions
Low Temp Alarm
High Temp Alarm
Low Pressure Alarm
High Pressure Alarm
Inlet communication
Relay Programmation Fault
Probe #x Defective
Outside Probe Defective
Relative Humidity probe Defective
Static Pressure Probe Defective
Water Spill
Feeder run time
Hi Breaker Temperature
Power Failure

12.2.1 Temperature Alarms

The following diagrams explain how temperature alarms are detected:

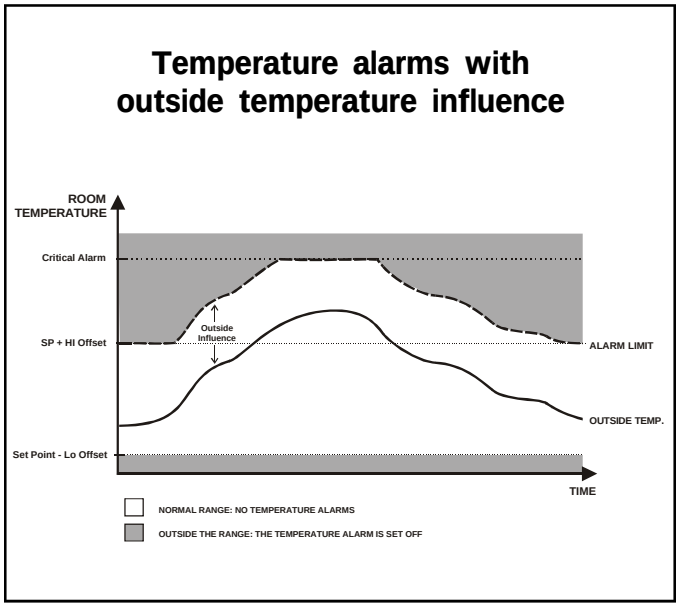
When the average room temperature exceeds the high temperature alarm setting (Set Point + Hi Offset), a high temperature alarm is set off. When the average room temperature decreases below the low temperature alarm limit (Set Point - Lo Offset), a low temperature alarm is set off.

The critical temperature is the absolute maximum allowable temperature in the room.



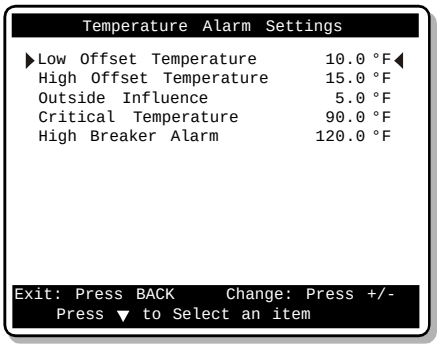
Outside Temperature Influence on Alarms:

This feature avoids false alarms due to warm weather: the room temperature can exceed the Hi temperature limit in the case where the outside temperature is warm enough. The room temperature must remain equal or lower than ***Outside T° + Outside Influence*** or lower than the ***Set Point + Hi Offset***, whichever is higher but in every case, it must remain below the critical temperature, no matter what the outside temperature is.



Select

- **23. Controller Setup**
- **5. Alarm Settings**
- **1. Temperature**



- Set the following parameters:

Low High Offset Temperature
The Hi and low offsets are the number of degrees below and above the set point at which a temperature alarm is set off. The low temperature limit can be adjusted from 50°F to 0.5°F (27.8 to 0.3°C) below the set point *(Lo Offset)*. The high alarm temperature can be adjusted from 0.5°F to 50°F (0.3 to 27.8°C) above the set point *(Hi Offset)*.

Outside Influence
The outside temperature influence is the number of degrees that are added to the outside temperature to avoid false alarms on warm days. Refer to the previous diagram.

Critical Temperature
The critical temperature is the absolute maximum temperature that is allowed in the room.

High Breaker Alarm*:
If the temperature of the main breaker is monitored by a probe, set the probe temperature over which a breaker temperature alarm must be set off.

* *Accessible if the breaker's monitoring function is enabled in section 4.5.*

Install the breaker probe close to the breaker box, not inside the box!

12.2.2 Static Pressure Alarms

The controller can generate an alarm if the static pressure decreases below the low pressure limit or if it exceeds the high pressure limit. The alarm condition must be maintained during a user-defined delay before the alarm sets off.

Lo Static Pressure Alarm:
You can assign a relay that will be activated if a Low Static Pressure Alarm occurs. This relay may be used to activate a fan for instance. When a low static pressure alarm occurs, this relay turns on for a 15 minutes. If the static pressure level is still below the Low Pressure Limit after this delay has elapsed, the relay keeps running for another 15 minutes, up until the pressure level returns in the normal range.

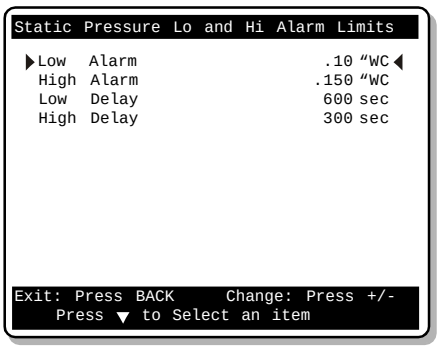
HI Static Pressure Alarm:
When a high static pressure alarm occurs, the controller can open the air inlet and the tunnel curtain. The curtain or air inlet opens during a user-defined delay *(Open-Time)* and then stays still for 15 minutes (this time includes the Open-Time). If the pressure level still exceeds the Hi Static Pressure Limit after 15 minutes, the same cycle starts over again, up until the pressure level goes back in the normal range.

12.2.2.1 Main Static Pressure Alarm Settings:

Select

- **23. Controller Setup**
- **5. Alarm Settings**
- **2. Static Pressure***
- **1. Low and High Limits**

* *Available if the SP sensor is enabled (s. 4.5).*



- Set the following parameters:

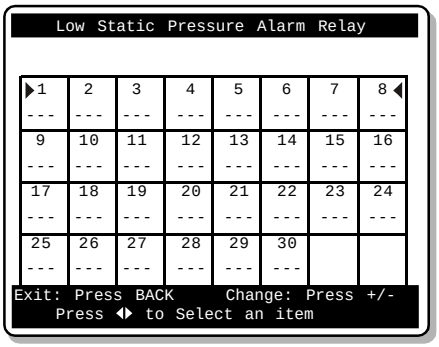
Low /High Pressure Alarm:
Set the pressure limits to the desired value. Adjustable from 0.00 to 0.40"WC. Select "Off to disable the low pressure alarm.

Low/High Delay:
Set the delay over which the alarm condition must be maintained for an alarm to set off. Set this delay separately for the Hi and Lo static pressure alarms.

12.2.2.2 Assignment of the Low Static Pressure Alarm Relay

Select

- **23. Controller Setup**
- **5. Alarm Settings**
- **2. Static Pressure***
- **2. Low Alarm Relay**



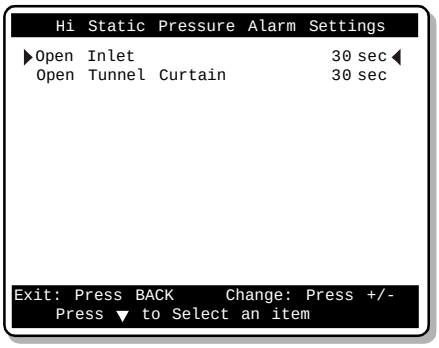
* *Available if the SP sensor is enabled (s. 4.5).*

- Put a check mark to identify the relay to activate in case of a low pressure alarm.

12.2.2.3 Hi Static Pressure Alarm Settings

Select

- **23. Controller Setup**
- **5. Alarm Settings**
- **2. Static Pressure***
- **3. High Alarm**



* *Available if the sP sensor is enabled (s. 4.5).*

- Select the moving time of the curtain and/or inlet* when a static pressure alarm occurs: when the alarm situation is present, the curtain or inlet opens or closes during this delay every 15 minutes, up until the static pressure returns in the normal range.

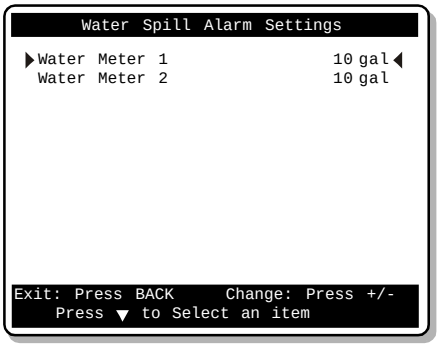
  For static pressure-based inlet and curtain only.

12.2.3 Water Spill Alarms

A water spill alarm is triggered when the water consumption exceeds a user-defined limit. This limit can be adjusted from 0 to 10,000 gallons or liters per 15 minutes. The alarm is activated if the water consumption exceeds this limit.

Select

- **23. Controller Setup**
- **5. Alarm Settings**
- **3. Water Spill***



* *Available if water meters are enabled (s. 4.5).*

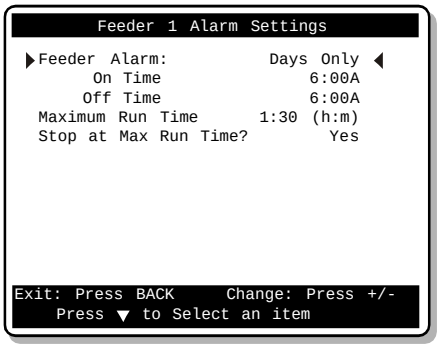
- Set each the maximum water consumption per period of 15 minutes of each water meter.

12.2.4 Feeder Alarms

An alarm can sound if the run time of a feeder exceeds a user-defined limit. When this type of alarm occurs, the controller switches the alarm relay and opens the feeder relay in order to stop the feeder.

Select

- **23. Controller Setup**
- **5. Alarm Settings**
- **4-5. Feeder 1 or Feeder 2**



- Set the following parameters:

Feeder Alarm
The controller can monitor feeder run time alarms all the time or over a defined period of time. Restricting the monitoring period allows disabling feeder alarms at night for instance. Select "All Time" for the controller to monitor feeder alarms all the time or select "Days only" to set a monitoring period.

On/Off Time
If feeder alarms are restricted to a certain range of time, set the time of day at which the controller starts and stops monitoring them.

Maximum Run Time
Set the maximum consecutive run time of the feeder motor (0:00 to 23:59 h:m).

Stop at Max Run Time?
Select "Yes" for the controller to stop the feeder when a run time alarm occurs (the feeder relay opens).

Restart Feeder
If a feeder alarm is currently active, the message "Restart Feeder" is displayed. Select "Yes" to reset the feeder alarm and to restart the feeder.

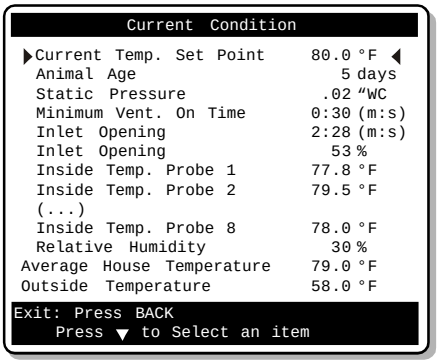
13. MONITORING FUNCTIONS

13.1 Current Conditions

The current condition menus give a quick view of the actual conditions in the barn:

Select

- **1. Current Conditions**



Select the desired condition menu:

- **1. Current Condition**
  To see the probes' current readings, and to see other useful pieces of information. The controller automatically selects this menu after 4 minutes of inactivity.

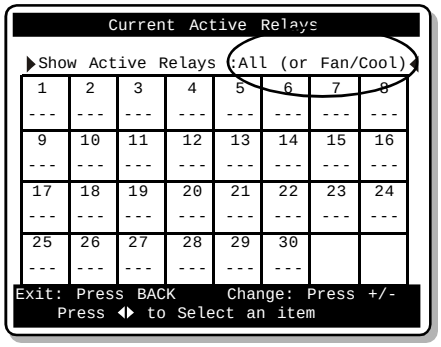
- **2. Active Sensors**
  To see what temperature sensors are currently in use.

- **3. Stage Start/Stop Temperature**
  To see the current start and stop temperatures of fan stages.

- **4. Cooling Start/Stop Temperature**
  To see the current start and stop temperatures of cooling stages.

- **5. Heater Start/Stop Temperature**
  To see the current start and stop temperatures of heating stages.

- **6. Current Active Relays**
  To see what relays are currently active. Select "All" to view all active relays; select "Fan/Cool" to see the relays of fan and cooling stages only.



13.2 History

The input readings are logged in the history menus at midnight every day and they are reset when a new batch starts.

Average House T° / Outside T° probe/ Relative Humidity probe

The daily min & max readings of the average room temperature, outside temperature probe and relative humidity probe are displayed for the past 75 days.

Select

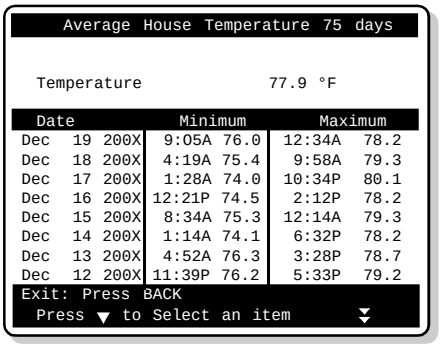
- **2. Average House Temperature**

  or
- **4. Outside Temperature***

  or
- **5. Relative Humidity**

* *Available if the outside T° sensor is enabled (s. 4.5).*

* *Available if a humidity sensor is enabled (s. 4.5).*

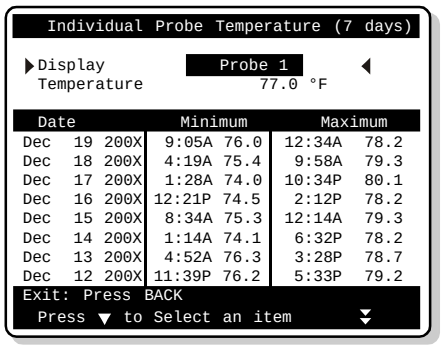


Individual Probe Temperature:

The daily minimum and maximum temperature readings of each individual probe are displayed for the past 7 days.

Select

- **3. Individual Probe Temperature**



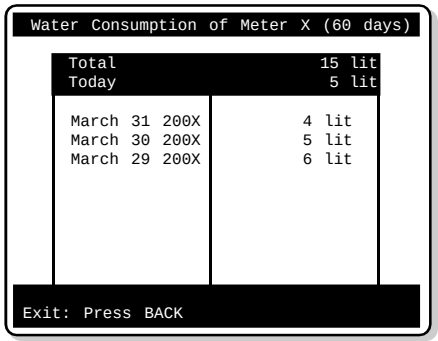
Water Consumption:

The daily water consumption of each water meter is displayed for the past 60 days. The total consumption is displayed as well.

Select

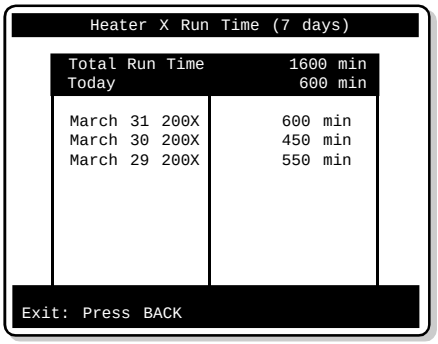
- **17. Water Consumption***
- **Select the desired water meter**

* *Available if water meters are enabled (s. 4.5).*



Heater Run Time:

The daily run times of each heating outputs are displayed for the past 7 days. The total run time is displayed as well.

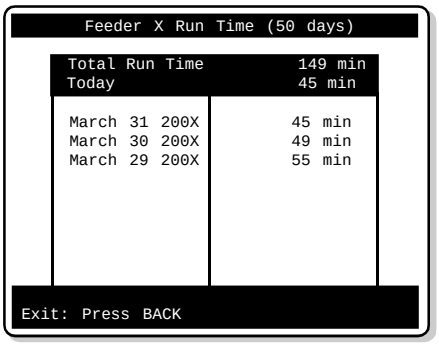


Select

- **18. Heater Run Time**
- **Select the desired heating stage**

Feeder Run Time / Consumption

The controller has an history menu in which the daily run times of each feeder are displayed for the past 50 days. In addition, the controller can present run times values as is or it can convert them into the corresponding amount of feed that was distributed. Refer to the Installation Setup section of this manual to enable the desired type of history : run time or consumption history (sec. 4.5).



Select

- **19. Feeder**
- **Select the run time or consumption history of the desired feeder.**

13.3 Monitoring the Animal Age & Number

Animal Age: The controller uses the animal age as a reference to find its position in the various curves (minimum ventilation and set point curves). It also uses this age to limit the tunnel ventilation level. Using the animal age is optional, refer to section 4.5 to enable or disable animal age functions.

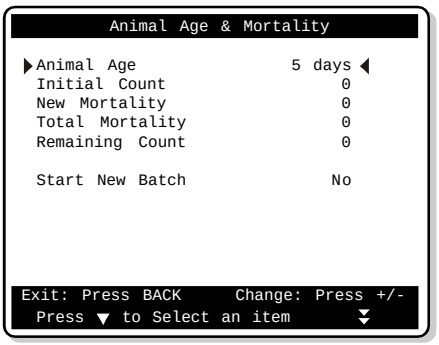
Number of animals: At the beginning of a batch, you must specify what is the initial number of animals in the room. You must then post up every variation in the number of animals (mortalities & culled animals). This way, the controllers keeps track of the number of remaining and dead animal within a batch.

ALL histories are reset when a new batch starts.

Entering the Age, Mortalities & Culled ; Starting a Batch

Select

▶ **16. Animal Age and Mortality**



- Set the following parameters:

Animal Age:
The animal age can be adjusted from -5 days to 450 days. Negative day values are used to prepare the house before letting the animals in.

Available if the animal age function is enabled in section 4.5.

Initial Count:
Enter the initial number of animals at the beginning of the batch.

New Mortality:
Post the number mortalities as mortality occurs. Once it is validated, the parameter value automatically goes back to "0". The posted value is added to the total mortality count and removed from the remaining animal count.

Total Mortality:
This is the total number of mortalities since the beginning of the batch. This value is displayed as a reading and cannot be modified.

Remaining Count:
This is the total number of animals remaining in the house.
Initial Count - Total Mortality.

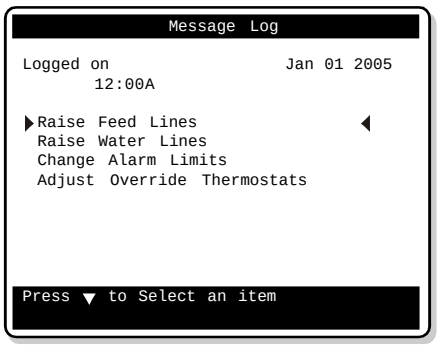
Start New Batch:
When a new batch starts the controller **resets all histories.** The remaining count becomes identical to the initial count and the total mortality returns to zero. Once you have answered "Yes" to the Start New Batch question, the controller validates the answer then shows the "No" answer once again. The new batch has now been started.

13.4 Message Center

Use the message center as a reminder for the maintenance of your equipment. You must first enter the frequency at which your various servicing activities must be performed. The controller will then advise you when the servicing time has elapsed. When this happens, the controller turns on the Message Center status led and posts a message telling the nature of the servicing activity that needs to be executed in the Message Center menu.

13.4.1 Message Log

The Message Log menu tells which servicing activity need to be done. When the Message Center status led is lit when a message is present in the Message Log menu. The controller keeps in memory the last 25 events.

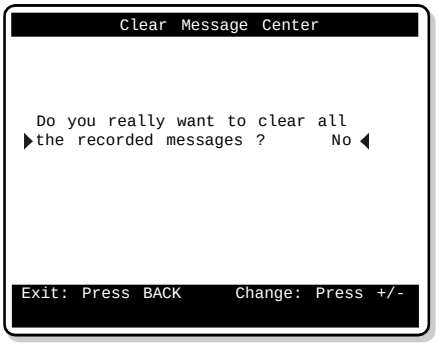


Select

- **24. Message Center**
- **1. Message Log – or press F**

13.4.2 Clearing the Message Log

Once you have completed the servicing activities, clear the message logs as follows:



Select

- **24. Message Center**
- **4. Clear Message Center**

- Select **"Yes"** to clear the messages that are currently present in the Message Log menu.

13.4.3 Servicing Schedule

Specify the frequency at which your servicing activities must be performed :

Select

- **24. Message Center**
- **3. Message Settings**

- Set the following parameters:

Decrease the parameters' value up until the word "Off" appears for operations that do not need to be monitored.

- **Adjust Fan Belts /**

  Clean Cooling Pads /

  Flush Cooling Sump /

  Flush Distribution Pads:

  Select after how many hours of operation each of these operations needs to be performed. The controller monitors the run time of the relays associated with each of these outputs. Refer to the next section to assign the relays.

- **External Input:**

  Select after how many hours of operation the external input must be checked.

- **Other servicing activities:**

  Follow the prompts on screen and set the frequency at which each maintenance activity must be performed. The countdown starts from the moment the controller is powered up.

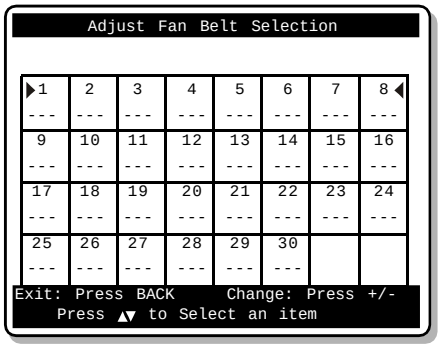
```
        Message Center Settings

▶Adjust Fan Belts            500 hours◀
 Clean Cooling Pad           300 hours
 Flush Cooling Sump Tank     300 hours
 Flush Distribution Pipe     600 hours
 External Input              500 hours

 Adj. Override Thermostats     7 days
 Change Alarm Limits           7 days
 Check Water                   7 days
 Check Feeders                 7 days
 Replace Fan Belt             12 month
 Grease Fan Bearings           6 month
 Clean Fan Motor               1 month
 Tighten Fan Bolts            12 month
 Grease Actuator               6 month
 Run Test Mode Soon            6 month
 Check Ctrl Alarm Output       3 month
 Cal. Override Thermostats     6 month

 Check Cooling System
      (1) Day   :              1
      (1) Month :          March
      (2) Day   :              1
      (2) Month :      September

 Check Heating System
      (1) Day   :              1
      (1) Month :          March
      (2) Day   :              1
      (2) Month :      September

 Adjust Air Inlet
      (1) Day   :              1
      (1) Month :          March
      (2) Day   :              1
      (2) Month :      September

 Verify Actuator Limit Switch Adj.
      (1) Day   :              1
      (1) Month :          March
      (2) Day   :              1
      (2) Month :      September

 Drain Mist System
          Day   :              1
          Month :      September

Press ▼ to Select an item
```

13.4.4 Relay Selection for the Servicing Activities

Some servicing activities are signalled after a defined run time of their associated devices, e.g. fans, cooling pads, cooling sumps & distribution pipes. You must thus specify what relay the devices are using.

Select

- **24. Message Center**
- **2. Relay Selection**
- **x. Select a device:**
  - **Fan Belt;**
  - **Cooling Pad;**
  - **Cooling sump;**
  - **Distribution pipe.**



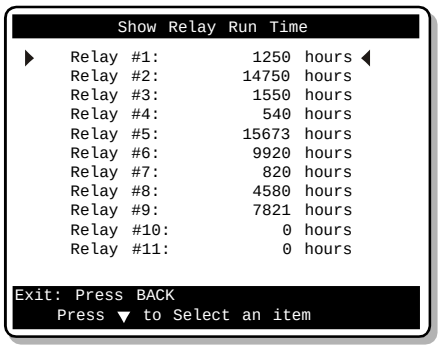
- Put a check mark to identify the relay(s) that are used for the activation of the selected device.

13.5 Relay Run Time

The controller keeps in memory the running time of all relays. Follow this procedure to see the relays' run times.

Select

- **23. Relay Run Time**
- **2. Show Relay Run Time**

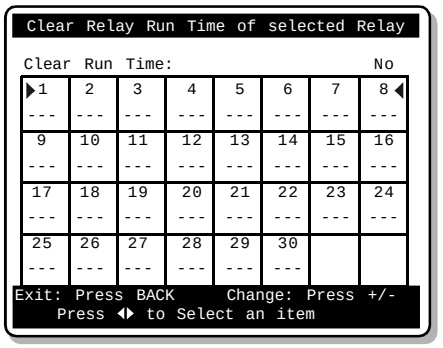


Clearing the Relay Run Time

Follow this procedure to clear the run time of a specific relay.

Select

- **25. Relay Run Time**
- **1. Clear Relay Run Time**



- Put a check mark to clear the run time history of a relay then answer "Yes" to the "Clear Run Time" question.

14. TECHNICAL SPECIFICATIONS

Type	CC24-7 ULTRA
Main supply fuse F1	4A, slow-blow
Main supply/frequency	85-250V, 50/60Hz
0-10V outputs #1-4	0-10Vdc, 30mA source max.
Precision on 0-10V outputs	± 1 %
14Vdc Outputs	14 Vdc ± 10%,regulated, 250mA max.
Pot + output	3.0V, 20mA max.
Potentiometer inputs	1-20K pot., linear
Relays 1-30	Dry contact, 15A resistive Max Motor Load: 1HP @ 120 VAC, 2HP @ 240VAC Tungsten (Light Bulb): 8.3A max at 120VAC
Alarm Contact	ON/OFF output, 24VDC or AC, 0.15A.
Enclosure	ABS, moisture and dust-tight.
Operating temperature	32 to 104°F (0 to 40°C). Indoor use only.
Storage temperature	5 to122°F (-15 to 50°C)
Ambient relative humidity	max. 95%
Relative humidity input	4-20mA
Pressure input	4-20mA
Temperature inputs	1K @ 77°F (25°C), NTC
Feeders 1-2	Dry contact
Water meters 1-2	Input pulse width > 12ms, 60Hz max
Variable outputs 1-2	10A mot. max, 250VAC
Fuse on variable outputs	15A slow blow

15. TRANSFER MENU

15.1 Screen Contrast

1. Simultaneously press and hold the right and left arrow keys for 5 seconds to display the transfer menu.

2. Choose **6. Contrast** and press Enter.

3. Set the screen contrast to the desired intensity then press Enter to validate.

4.Simultaneously press and hold the right and left arrow keys for 5 seconds to exit from the transfer menu.

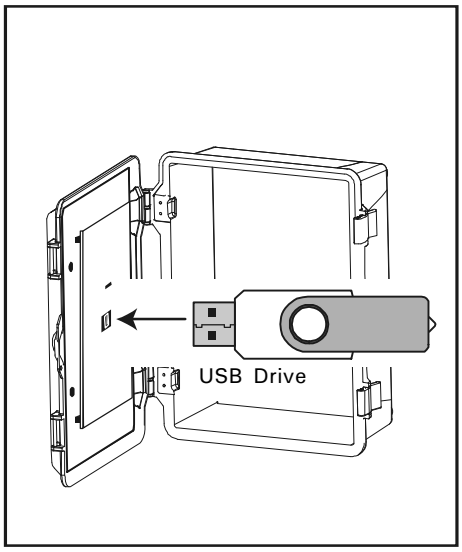
15.2 Communication Speed

1. Simultaneously press and hold the right and left arrow keys for 5 seconds to display the transfer menu.

2. Choose **5. Comm Speed** and press Enter.

3. Set the communication speed to the desired value: select the high speed mode if the controller uses the A-BOX communication system or select the low speed if it uses AGNET.

4. Simultaneously press and hold the right and left arrow keys for 5 seconds to exit from the transfer menu.



15.3 Update/Backup Process with a USB Drive

The USB drive allows upgrading the firmware or software of your controller. It can also be used to make a backup of your controller settings or to copy these settings on another controller of the same type.

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

1. Turn off power to the controller.

2. Lift the latches to open the front cover of the controller.

3. If a metal plate is located behind the front cover, use a flat head screwdriver to loosen the two locks and lift it.

4. Insert the USB drive in the connector behind the front door.

5. Close the front cover (and/or plate) and reapply power to the controller.

6. Simultaneously press and hold the right and left arrow keys for 5 seconds to display the transfer menu.

7. Select the desired option:

1. MemoryCard -> Control

Transfer menu
1. MemoryCard -> Control
2. Control -> MemoryCard
3. Update Firmware
4. Save Event Buffer
5. Comm Speed
6. Contrast

Choose **1. MemoryCard -> Control** to load a new configuration file into your controller. This transfer will update your controller's software and parameter settings.

When selecting this option, a list of all configuration files located on the card is displayed (*.DMP files). Select the desired file and then simultaneously press the right and left arrow keys to start the transfer.

Note that the controller can only read the files that are located at the root of the USB drive. It cannot access any sub-directory!

2. Control -> MemoryCard

Choose **2. Control -> MemoryCard** to save your controller settings on the USB drive. The saving process will start as soon as you enter this menu.

The controller will create a new CONTROLLER~1.DMP file at the root of the USB drive. If this file name already exists, it will be saved under a different name ("CONTROLLER~2.DMP" for instance). This way, the controller will never erase a file on the card.

3. Update Firmware

Choose **3. Update Firmware** to download a new firmware file into your controller. This process will not affect your parameter settings.

When selecting this option, a list of all firmware files located on the USB drive is displayed (*.PKG files). Select the desired file and then simultaneously press the right and left arrow keys to start the transfer.

Note that the controller can only read the files that are located at the root of the USB drive. It cannot access any sub-directory!

4. Save Event Buffer

Choose **4. Save Event Buffer** to save the event buffer of the controller on your USB card. The file will have a *.txt extension. (USB card only!)

Simultaneously press and hold the right and left arrow keys for 5 seconds to exit from the transfer menu.

Remove the USB drive from the connector when the transfer is over!

16. INSTALLATION REPORT

CLIENT

Name: _____

Address: _____

_____

_____

City: _____

Phone: _____

Fax: _____

E-mail: _____

INSTALLER

Name: _____

Address: _____

_____

_____

City: _____

Phone: _____

Fax: _____

E-mail: _____

Installation Setup Template (s. 4.5).

PARAMETER	SETTING
Clear Alarms	_____Yes _____No
Numbre of T° Probes	_____1 to 8
Number of Water Meters	_____0 to 2
Number of Relays	_____20 or 30
Number of Fan Stages	_____1 to 12
Number of Programs	_____None _____ab
Number of light programs	_____0 to 8
Number of Heaters	_____0 to 4
Number of Natural Zones	_____0 to 2
Number of Cooling	_____0 to 2
Cooling outputs follow set point ?	_____Yes _____No
Number of Clocks	_____0 to 4
Clock Output 1 Mode	_____Start/Stop _____Start/Run _____Start/Repeat
Clock Output 2 Mode	_____Start/Stop _____Start/Run _____Start/Repeat
Clock Output 3 Mode	_____Start/Stop _____Start/Run _____Start/Repeat
Clock Output 4 Mode	_____Start/Stop _____Start/Run _____Start/Repeat
Number of Feeders	_____0 to 2
Feeder History	_____Run Time _____Consumption
Feeder 1 Flow rate	_____kg/minute (or lbs/minute)
Feeder 2 Flow rate	_____kg/minute (or lbs/minute)
Use Night Set Point ?	_____Yes _____No
Use Set Point Curve ?	_____Yes _____No
Use Minimum Ventilation Curve ?	_____Yes _____No
Use heater offset curve ?	_____Yes _____No
Use Animal Age function ?	_____Yes _____No
Use Heater Programs ?	_____Yes _____No
Use Tunnel ?	_____Yes _____No
Tunnel Mode :	_____Timed _____Static Pressure
Inlet Transition mode :	_____Open _____Static Pressure _____As is
Tunnel Pre-opening Type	_____Normal _____Tunnel Help
Tunnel Pre-opening Time	_____seconds
Multiple tunnel stages with age ?	_____Yes _____No
Use tunnel curtain in natural vent.?	_____Yes _____No
Use Stir Fans ?	_____Yes _____No

... Installation Setup Template (s. 4.5).

PARAMETER	SETTING
Use Variables ?	_____Yes _____No
Variable 1 Minimum Speed :	_____%
Variable 1 Motor Curve:	_____(1 to 10)
Variable 2 Minimum Speed :	_____%
Variable 2 Motor Curve:	_____(1 to 10)
Minimum ventilation mode	_____Variable _____On/Min
Use Ramping on Stage 1 ?	_____Yes _____No
Use Ramping below Set Point ?	_____Yes _____No
Stage 1 Ramping Delay (advanced)	_____seconds
Stage 2 Ramping Delay (advanced)	_____seconds
Outside T° Set Point (advanced)	_____degrees
Raming cycle (advanced)	_____seconds
Use Outside Temperature ?	_____Yes _____No
Use Relative Humidity Probe ?	_____Yes _____No
Use Static Pressure (SP) Probe ?	_____Yes _____No
SP Set 2 for air inlets	_____None _____Stage _____Outside T°
Inlet Pre-opening Mode	_____Auto _____Manual
Pre-opening delay for air inlets	_____seconds
SP Set 2 - Tunnel Curtain	_____None _____Stage
Monitor the breaker's temperature ?	_____Yes _____No
Use SP Compensation on Inlets?	_____Yes _____No
Inlet Mode	___None ___ Time ___ Potentiometer ___ Pressure
Shown on LED Display = Room Temperature and :	Static pressure : _____Yes _____No Inlet Position: _____Yes _____No
Vent Door Hysteresis	_____0 sec. _____1 sec.

Probe Assignment Template (s. 4.6).

	PROBE SELECTION								
OUTPUT	1	2	3	4	5	6	7	8	0
Avg Room T a									
Avg Room T b									
Heater 4 a									
Heater 4 b									
Heater 3 a									
Heater 3 b									
Heater 2 a									
Heater 2 b									
Heater 1 a									
Heater 1 b									
0-10V Output 1									
0-10V Output 2									
T° of the main breaker									
Natural Zone 1									
Natural Zone 2									
Cooling 1									
Cooling 2									
	1	2	3	4	5	6	7	8	0

Relays' Description

RELAYS' DESCRIPTIONS		
1 _____	11 _____	21 (optional) _____
2 _____	12 _____	22 (optional) _____
3 _____	13 _____	23 (optional) _____
4 _____	14 _____	24 (optional) _____
5 _____	15 _____	25 (optional) _____
6 _____	16 _____	26 (optional) _____
7 _____	17 _____	27 (optional) _____
8 _____	18 _____	28 (optional) _____
9 _____	19 _____	29 (optional) _____
10 _____	20 _____	30 (optional) _____

Relay Assignment Template

		RELAYS																			OPTIONAL RELAYS										VAR	
OUTPUT		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**V1**	**V2**
Heater 4	a																																
Heater 4	b																																
Heater 3	a																																
Heater 3	b																																
Heater 2	a																																
Heater 2	b																																
Heater 1	a																																
Heater 1	b																																
Fan 1	a																																
Fan 1	b																																
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Fan 5	a																																
Fan 5	b																																
Fan 6	a																																
Fan 6	b																																
Fan 7																																	
Fan 8																																	
Fan 9																																	
Fan 10																																	
Fan 11																																	
Fan 12																																	
Cooling 1																																	
Cooling 2																																	
Soaking																																	
Nat. Curtain Zone 1	OPN																																
Nat. Curtain Zone 1	CLO																																
Nat. Curtain Zone 2	OPN																																
Nat. Curtain Zone 2	CLO																																
Tun. Curtain	OPN																																
Tun. Curtain	CLO																																
Inlet	OPN																																
Inlet	CLO																																
Clock 1																																	
Clock 2																																	
Clock 3																																	
Clock 4																																	
Lo Pressure Alarm																																	
Backup Relay																																	
Feeder 1																																	
Feeder 2																																	
OUTPUT		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**V1**	**V2**

MAIN MENU	SUB-MENUS
1 Current Conditions	1 Current Conditions
	2 Active Sensors
	3 Stage Start / Stop Temperature
	4 Cooling Start / Stop Temperature
	5 Heater Start / Stop Temperature
	6 Current Active Relays
2 Average House Temperature	
3 Individual Probe Temperature	
4 Outside Temperature	
5 Relative Humidity	
6 Program Selection	
7 Temperature Set Point	
8 Minimum Ventilation	
9 Curve Settings	1 Temperature Set Point
	2 Minimum Ventilation (Var./On Time)
	3 Minimum Ventilation Variable 2
10 Inlet	
11 Tunnel Curtain	
12 Heater Start/Stop Temperature	
13 Fan/Cool./Nat. Temp. Settings	1 Fan Temperature Settings
	2 Cooling Temperature Settings
	3 Natural Temperature Settings
14 Light settings	x Light program 1-8
15 Clock Time	1 Clock 1
	2 Clock 2
	3 Clock 3
	4 Clock 4
	5 Day of the week
16 Animal Age & Mortality	

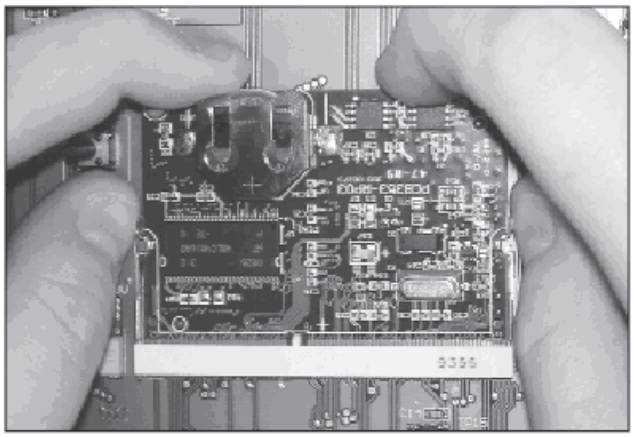
MAIN MENU	SUB-MENUS
17 Water Consumption	1 Water Meter 1
	2 Water Meter 2
18 Heater Run Time	1 Heater 1
	2 Heater 2
	3 Heater 3
	4 Heater 4
19 Feeder	1 Feeder 1 Run Time
	2 Feeder 1 Consumption
	3 Feeder 2 Run Time
	4 Feeder 2 Consumption
20 Alarm Log	
21 0-10V Output Settings	
22 Relay and Probe Assignment	1 Relays for Stages
	2 Relays for Heaters
	3 Relay for Tunnel Curtain
	4 Relays for Inlet
	5 Relays for Clocks
	6 Relays for Coolings
	7 Relays for Backup
	8 Relays for Naturals
	9 Relay Timer/Variable Settings
	10 Relays for Feeder
	11 Relays for Soaking
	12 Probes for Stages
	13 Probes for Heaters
	14 Probes for Coolings
	15 Probes for Naturals
	16 Probes for 0-10V Outputs
	17 Main breaker's temperature
	18 Copy Paste
23 Controller Setup	1 Relative Humidity Compensation
	2 Installation
	3 Probe Calibration
	4 Time and Date
	5 Alarm Settings
	6 Day / Night Time
	7 Passw ord
	8 Units
	9 Test Mode
	10 Version
24 Message Center	
25 Relay Run Time	

ANNEX 1: CORE CARD

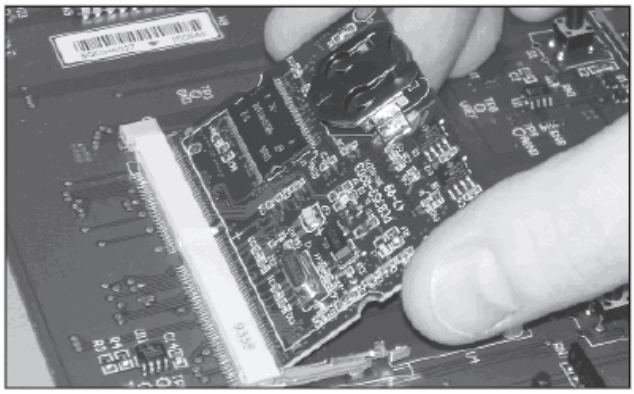
Removing a Core Card

Before proceeding, 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. Use your thumbs to move away the two metal arms that are retaining the card. While doing so, lift the card upwards with your index fingers.



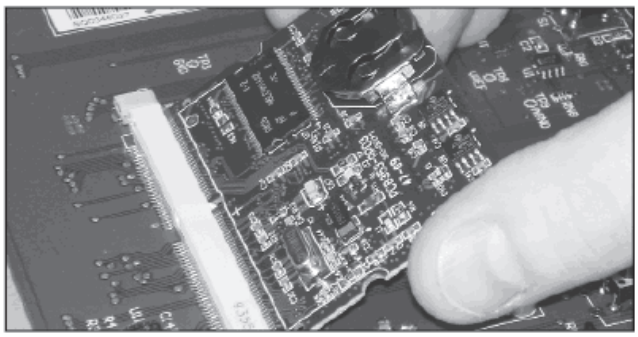
2. Pull the card out of its connector.



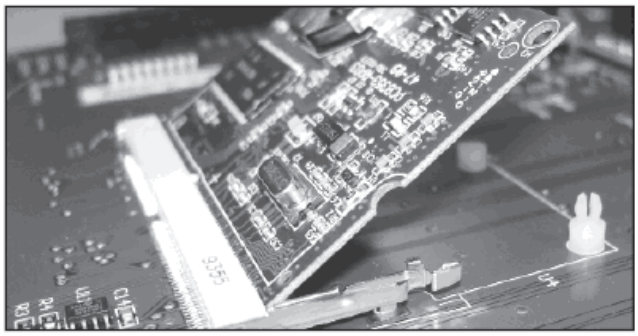
Inserting a Core Card

Before proceeding, 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.

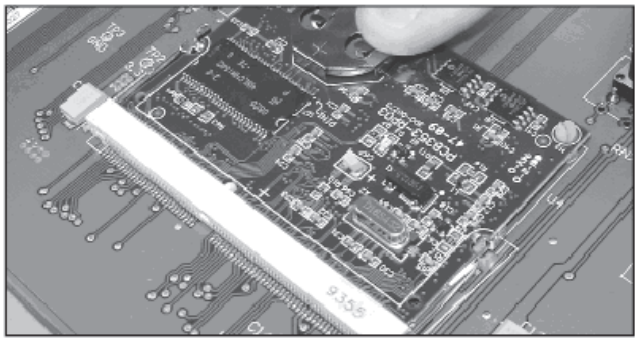
1. Give the card a 45-degree angle before inserting it in the connector.



2. Once it is inserted, the card wil stand at the 45-degree position.



3. Push down the card and make it clip to the main board.



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