Tunnel Ventilation Controller

TC5-T6A

USER'S MANUAL

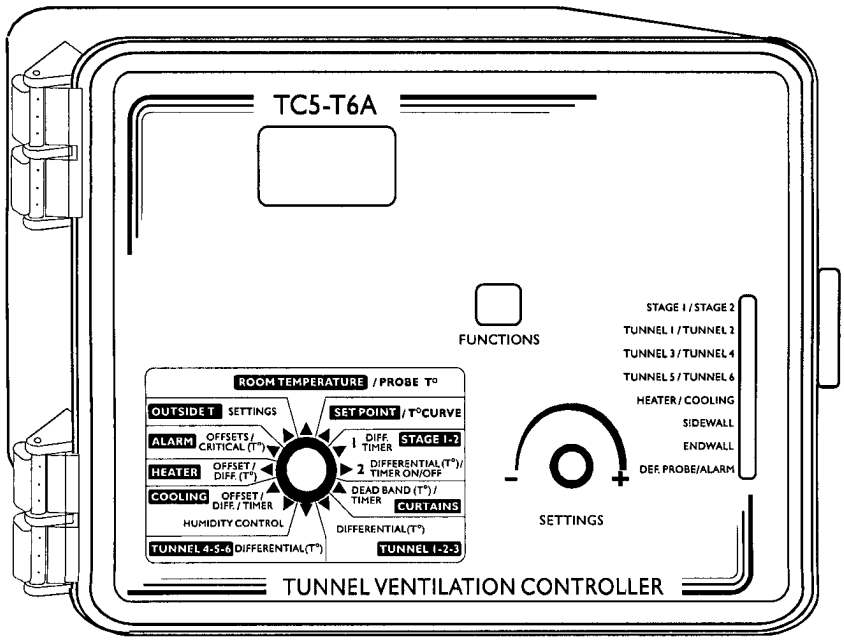


TABLE OF CONTENTS

PRECAUTIONS

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

Although fuses on the 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).

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

DO NOT SPRAY WATER ON THE CONTROLLER

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

Model number: **TC5-T6A**
Serial number: _____

FEATURES

The TC5-T6A is an electronic device used for environmental control in livestock buildings. It allows the user to maintain a specified target temperature by controlling the operation of ventilation and heating equipment. Two stages of constant-speed fans, one stage of either constant-speed fans or mist units, six stages of constant-speed tunnel fans, as well as natural ventilation curtains and heaters can be connected to the controller.

The main features of the TC5-T6A are as follows:

THREE-DIGIT DISPLAY

A three-digit display provides a high level of accuracy, allowing the user to specify a temperature to within one tenth of a degree (in Fahrenheit or Celsius units).

PILOT LIGHTS

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

MINIMUM VENTILATION CYCLE

When ventilation is not required for cooling, the first stage fans can be operated either continuously or intermittently to reduce the level of humidity and supply oxygen to the room. Stage 2 fans can also be used for this purpose.

TEMPERATURE CURVE

The controller can be set to automatically change the temperature set point over a given period of time in accordance with the user's requirements by specifying a temperature curve with up to six different points.

HUMIDITY COMPENSATION

Cooling units can be turned off automatically when humidity levels are too high.

HIGH/LOW TEMPERATURE ALARM OUTPUT

In the case of high temperature alarms, the outside temperature is taken into account to avoid setting off alarms when the outside temperature is high.

FOUR INDEPENDENT TEMPERATURE PROBE INPUTS

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

TUNNEL VENTILATION

Six stages of constant-speed tunnel fans can be controlled by the unit. Curtain setup is done either according to room or outside temperature readings.

OVERLOAD AND OVERVOLTAGE PROTECTION

Fuses and other protection devices are installed on the outputs of the controller to protect its circuitry in the case of an overload or overvoltage.

CONTROL OF AIR INLET MOVEMENT

If the TC5-T6A is used in combination with a PF-5B controller, the movement of the air inlets can be coordinated with the operation of the fans using a potentiometer located on the panel drive. This allows the air inlets to be adjusted correctly, without the influence of uncontrollable factors such as wind or air from adjoining rooms.

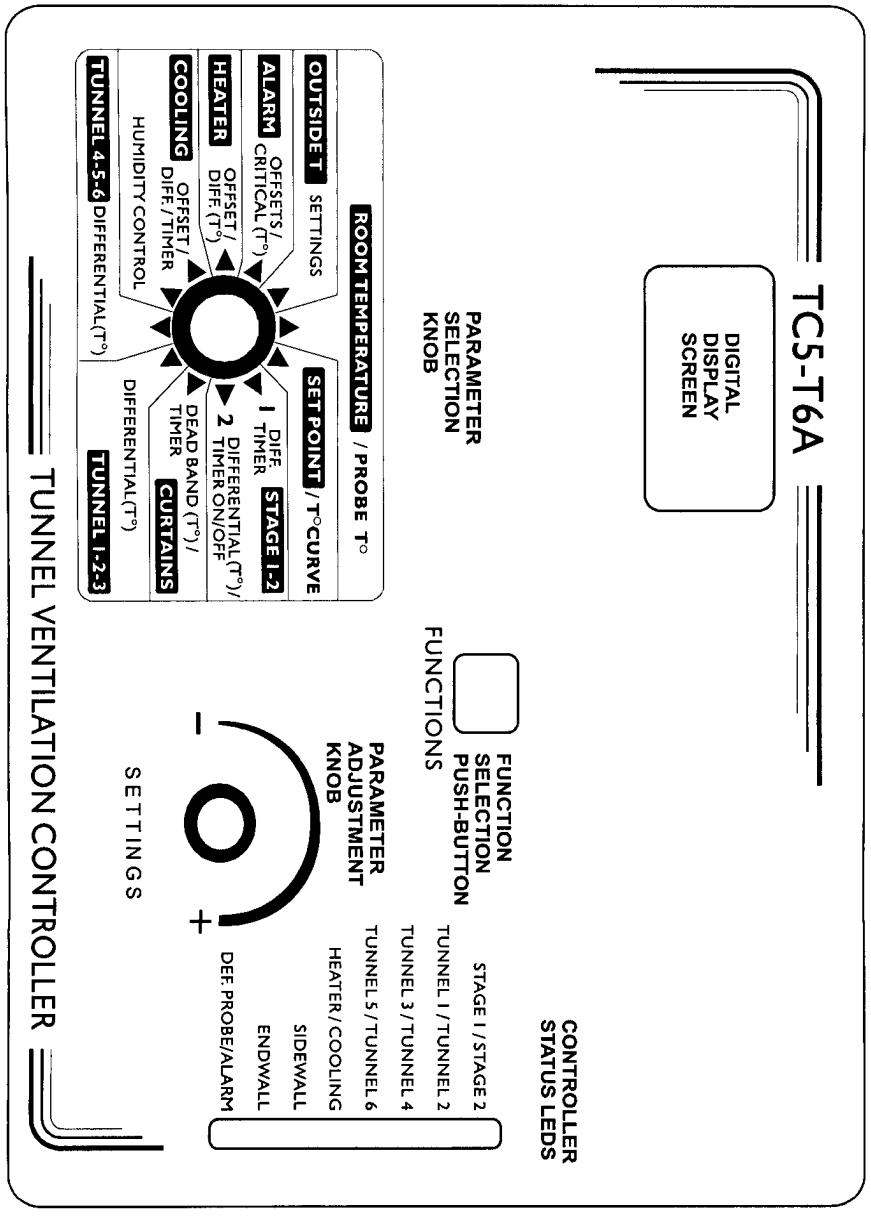
COMPUTER CONTROL

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

TEST MODE

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

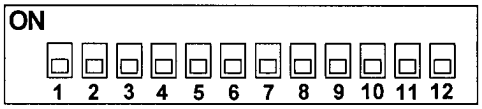
LOCATION OF THE CONTROLS



CONTROLLER STATUS LEDS

LED	MEANING
STAGE 1 / STAGE 2	FLASHES WHEN STAGE 1 FANS ARE ON. TURNS ON WHEN STAGE 2 FANS ARE ALSO ON.
TUNNEL 1 / TUNNEL 2	FLASHES WHEN TUNNEL 1 FANS ARE ON. TURNS ON WHEN TUNNEL 2 FANS ARE ALSO ON.
TUNNEL 3 / TUNNEL 4	FLASHES WHEN TUNNEL 3 FANS ARE ON. TURNS ON WHEN TUNNEL 4 FANS ARE ALSO ON.
TUNNEL 5 / TUNNEL 6	FLASHES WHEN TUNNEL 5 FANS ARE ON. TURNS ON WHEN TUNNEL 6 FANS ARE ALSO ON.
HEATER / COOLING	FLASHES WHEN HEATER IS ON. TURNS ON WHEN COOLING UNITS ARE ON.
SIDEWALL	FLASHES WHEN SIDEWALL CURTAINS ARE CLOSING. TURNS ON WHEN SIDEWALL CURTAINS ARE OPENING.
ENDWALL	FLASHES WHEN ENDWALL CURTAINS ARE CLOSING. TURNS ON WHEN ENDWALL CURTAINS ARE OPENING.
DEF. PROBE/ ALARM	TURNS ON WHEN AN ALARM IS DETECTED. FLASHES WHEN A DEFECTIVE PROBE IS DETECTED.

INTERNAL SWITCHES



The internal switches are located on the inside of the front cover. When the controller is shipped from the factory, all the switches are set to OFF.

#	OFF	ON
1	UNLOCKED PARAMETERS	LOCKED PARAMETERS
2	FAHRENHEIT DEGREES	CELSIUS DEGREES
3	PROBE 2 DISABLED	PROBE 2 ENABLED
4	PROBE 3 DISABLED	PROBE 3 ENABLED
5	PROBE 4 DISABLED	PROBE 4 ENABLED
6	OUTSIDE PROBE DISABLED	OUTSIDE PROBE ENABLED
7	COOLING CUT-OFF WHEN HUMIDITY + ROOM TEMP > SET POINT	COOLING CUT-OFF AT HUMIDITY SET POINT
8	NOT USED	
9	NOT USED	
10	NOT USED	
11	NOT USED	
12	TEST MODE OFF	TEST MODE ON

INSTALLATION

MOUNTING INSTRUCTIONS

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

CONNECTIONS

To connect the controller, refer to the wiring diagram enclosed with this user's manual.

- Set the voltage switch to the appropriate voltage.
- Use the electrical knockouts provided at the bottom of the enclosure. Do not make additional holes in the enclosure, particularly on the side of the enclosure when using a computer communications module.
- It may be necessary to install a transformer in order to supply the appropriate voltage to the heating unit.

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 NO terminal as shown on the wiring diagram. For an alarm of the second type, use the NC terminal.

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.

TEMPERATURE PROBES

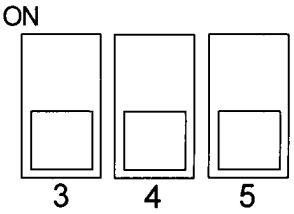
1 Connecting the Probes

The controller is supplied with one temperature probe connected to input # 1. Three additional room probes can be connected to inputs # 2, 3 and 4 and an outside probe can be connected to input # 5 (see wiring diagram enclosed).

CAUTION: Probes operate at low voltage and are isolated from the supply. Be sure that probe cables remain insulated 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.

Switches are used to activate or deactivate the additional probes connected to the controller.

- Activate each additional probe by setting the appropriate switch to **ON**:



- Switch # 3 activates the probe connected to input # 2.
- Switch # 4 activates the probe connected to input # 3.
- Switch # 5 activates the probe connected to input # 4.

2 Extending the Probes

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

- Use a shielded cable of outside diameter between 0.245 and 0.260 in (6.22 and 6.60 mm) (the cable dimensions should not be under 18 AWG) to ensure the cable entry is liquid tight. Do not ground the shielding.
- It is preferable to solder the cable joint to ensure a proper contact between the two cables.

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

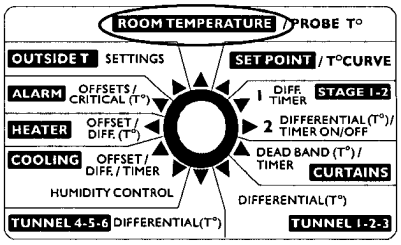
3 Installing the Outside Probe

- Run the outside probe cable on the north side of the building, 6 ft (2 m) below the eave, inside a pale colored conduit. Avoid installing the probe in direct sunlight or exposed to the rain.
- Be sure the probe cable is isolated from sheet metal or any other conductive material.
- Be sure no cable joint is exposed to air or water.

4 Defective Probes

If a defective probe is detected, the Defective Probe Pilot Light flashes. The room temperature shown on the display is then the average temperature measured by the probes in working condition. The controller will operate according to this temperature.
To identify the defective probe:

- Set the selection knob to **ROOM TEMPERATURE**. The room temperature is displayed.
- Press the push-button. If the probe connected to input # 1 and supplied with the controller is not defective, the letters "**PR1**" are displayed, alternating with the on/off state of the probe and the temperature measured by the probe. If the probe is defective, the let-

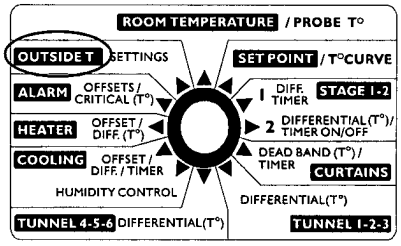


ters "**PR1**" are displayed, alternating with the state of the probe and the letter "**P**".

For each additional probe connected to the controller:

- Press the push-button once again. If the probe is not defective, the letters "**PR#**" (where # is the number of the input to which the probe is connected) are displayed, alternating with the on/off state of the probe and the temperature measured by the probe. If the probe is defective, the letters "**PR#**" are displayed, alternating with the on/off state of the probe and the letter "**P**".

Outside Probe: If the outside probe is defective, the display shows the letter "**P**" when the parameter selection knob is set to **OUTSIDE T°.**



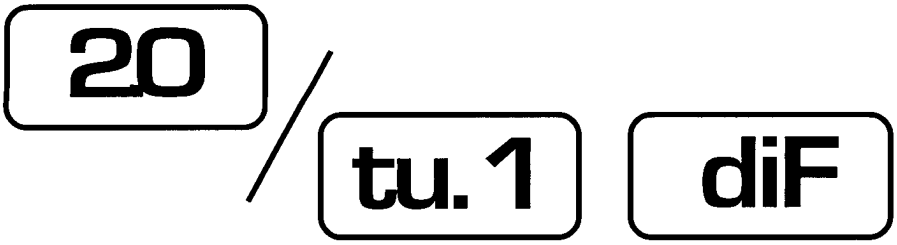
CHANGING THE PARAMETER SETTINGS

USING THE DISPLAY

Flashing Values: The display will flash in certain cases and not in others. The flashing indicates that the value shown can be adjusted. A value that is not flashing cannot be adjusted.

Relative and Absolute Values: Some parameter adjustments are displayed both as a relative value and an absolute temperature. This applies to all heating and cooling differentials, the cooling stage differential and the cooling stage and heater offsets. The parameter is first displayed as a relative value. The corresponding absolute temperature is displayed after six seconds if no action is taken by the user. The absolute value is the temperature at which the stage turns on (except in the case of the heater and cooling stage offsets where the value displayed is the temperature at which the stage turns off). If the user turns the adjustment knob, the relative value reappears. For example, when the user turns the selection knob to the position TUNNEL 1-2-3, the sequence is as follows:

(i) The current differential for tunnel 1 flashes on the display, alternating with "**tu .1**" and "**diF**".



(ii) If, after about 6 seconds, no action is taken by the user, the absolute temperature value is displayed, alternating with "**tu.1**" and "**Str**". In this case, the absolute value is: Set Point + Stage 1 Differential + Stage 2 Differential + Curtain Dead Band + Tunnel 1 Differential.

(iii) When the user turns the adjustment knob to make an adjustment to the tunnel 1 differential, the relative value reappears on the display.

In the case of the cooling and heating units, the starting temperature is displayed with the letters "**STr**" when adjusting the differential and the stopping temperature is displayed with the letters "**STP**" when adjusting the offset.

LOCKING THE PARAMETER SETTINGS

The parameter settings can be locked to prevent accidentally modifying them. When the settings are locked, only the temperature set point can be modified (as long as the temperature curve is deactivated).

To lock the parameter settings:

■ Set internal switch # 1 to **ON**. The Locked Parameter Pilot Light turns on.

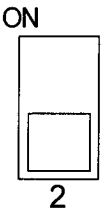
To unlock the parameter settings:

■ Set internal switch # 1 to **OFF**. The Locked Parameter Pilot Light turns off.

TEMPERATURE SETTINGS

TEMPERATURE UNITS

Temperatures can be displayed in either Celsius or Fahrenheit units

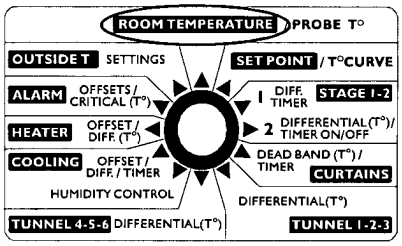


■ Set internal switch # 2 to the desired position:

• **ON** to display temperatures in Celsius units.
• **OFF** to display temperatures in Fahrenheit units.

VIEWING TEMPERATURES

To display the desired temperature, set the selection knob to **ROOM TEMPERATURE**. The readout can display values from -40.0°F to 120.0°F (-40.0°C to 48.9°C).



1 Viewing Room Temperature

The room temperature is the average value of all temperatures measured by activated probes in proper operating condition.

■ Set the selection knob to **ROOM TEMPERATURE / PROBE T°**. The room temperature is displayed.

2 Viewing Probe Temperatures

The controller can display probe temperatures individually. Probes can also be turned on or off to control the temperature in different parts of the building.

■ Set selection knob to **ROOM TEMPERATURE / PROBE TEMP.** The average room temperature is displayed.

- Press the push-button. The temperature reading from probe 1 is displayed, alternating with the letters "**Pr 1**" and the on/off state of probe 1.

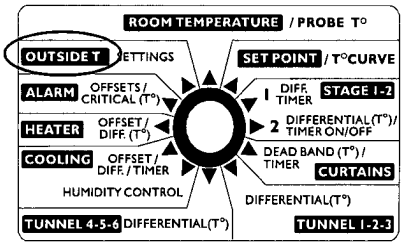
- For each additional probe, press the push-button. The temperature reading from probe x is displayed, alternating with the letters "**Pr x**" and the on/off state of the probe, etc.

Note: The display returns to the average room temperature after one minute.

3 Viewing OutsideTemperature

The outside temperature can be viewed only if a probe is connected to input # 5.

- Set the selection knob to **OUTSIDE T°**. The outside temperature is displayed.



4 Viewing Minimum / Maximum Temperatures

The minimum and maximum temperatures are the lowest and highest temperature values recorded since the last reset. Maximum and minimum temperatures values are recorded for the average room temperature as well as for individual probe temperatures.

- Set the selection knob to **ROOM TEMPERATURE / PROBE TEMP**. The room temperature is displayed.

- Turn the adjustment knob clockwise by one notch. The minimum temperature flashes on the display, alternating with the letters "**Lo**".

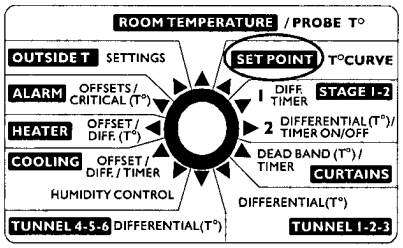
- Turn the adjustment knob clockwise one notch further. The maximum temperature flashes on the display, alternating with the letters "**Hi**".

- Turn the adjustment knob clockwise a third notch. The room temperature is displayed again.
- For each individual probe, press the push-button. The temperature reading from probe x is displayed, alternating with the letters "**Pr x**" and the on/off state of the probe.
- Turn the adjustment knob clockwise by one notch. The minimum temperature is displayed, alternating with the letters "**Lo**".
- Turn the adjustment knob clockwise one notch further. The maximum temperature is displayed, alternating with the letters "**Hi**".
- Turn the adjustment knob clockwise a third notch. The probe temperature is displayed again.
- Press the push-button to access the other probes, etc.

NOTE: If you let the display flash for more than 10 seconds, the controller resets the minimum and maximum temperatures currently in memory (the display stops flashing to indicate that the reset has been done).

TEMPERATURE SET POINT

The temperature set point is the target room temperature. It can be adjusted between -40.0°F and 99.9°F (-40.0°C and 37.7°C).



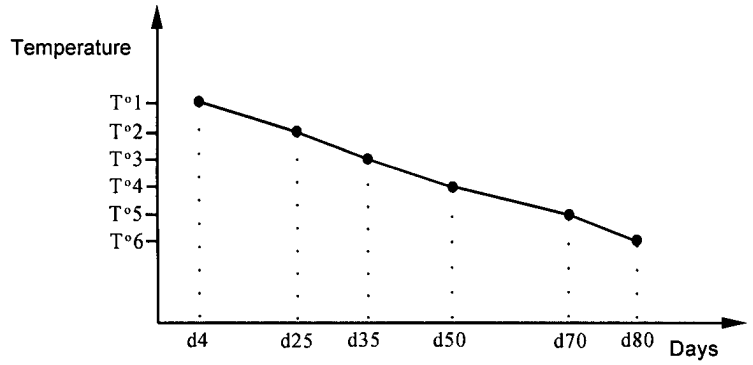
Adjusting Temperature Set Point

- Set the selection knob to **SET POINT / T° CURVE**. The current set point flashes on the display.
- Use the adjustment knob to adjust the set point to the desired value.

NOTE: The temperature set point can be adjusted only if the temperature curve is deactivated (see following section).

TEMPERATURE CURVE

The user can define a temperature curve to adjust the set point automatically over a given time period.



A curve is defined using six points. Each point specifies a day number and a set point for that day. Once the points of the curve are defined, the curve must be activated. The controller will change the temperature set point every hour in a linear fashion between consecutive points of the curve. When the last point of the curve is reached, the temperature set point for that day is maintained until the curve is reactivated.

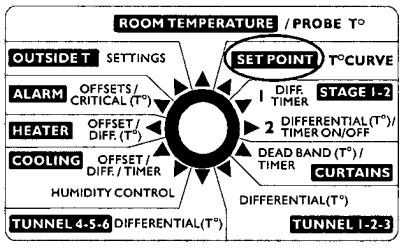
NOTES :

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

ii) Certain restrictions apply to reduce the risk of errors:

- The highest possible day number is 99.
- Decreasing day numbers are not allowed.
- Increasing temperatures are not allowed.
- The temperature variation cannot exceed 3°F (1.6°C) per day.

1 Specifying the Curve



- Set the selection knob to **SET POINT / T° CURVE**. The current temperature set point flashes on the display.

- Press the push-button. The word **OFF** is displayed indicating that the termperature curve is deactivated. If this is not the case, see below to deactivate the curve.

Repeat the following steps for each of the six points:

- Press the push-button once again. The day number is displayed, alternating with the word "**day**".

- Using the adjustment knob, set the day number to the desired value.

- Press the push-button once again. The current temperature set point is displayed, alternating with the word "**set**".

- Using the adjustment knob, adjust the set point to the desired value.

Once the six points of the curve have been specified, activate the curve as explained below.

NOTE: Make sure the temperature curve is deactivated before specifying new points (see below).

2 Activating Temperature Curve

If you have just finished specifying the points on the curve:

- Press the push-button once again. The word **OFF** flashes on the display.
- Turn the adjustment knob clockwise one notch. The word **ON** flashes on the display, indicating that the temperature curve is now activated.
- Set the selection knob to **ROOM TEMPERATURE**.

If you have previously defined the points on the curve:

- Set the selection knob to **SET POINT / T° CURVE**. The current value of the temperature set point flashes on the display.
- Press the push-button. The word **OFF** flashes on the display.
- Press the push-button to display the points of the curve currently defined until the word **OFF** appears (thirteen clicks).
- Turn the adjustment knob clockwise one notch. The word **ON** flashes on the display, indicating that the temperature curve is now activated.
- Set the selection knob to **ROOM TEMPERATURE**.

3 Viewing Current Set Point and Day Number

When the temperature curve is activated, the current temperature set point and day number can be viewed at any time. The current day number can also be adjusted in order to move forward or backward on the temperature curve.

- Set the selection knob to **SET POINT / T° CURVE**. The current temperature set point flashes on the display.
- Press the push-button. The current day number is displayed, alternating with the letters "**cur. day**".
- Use the adjustment knob to set the day number to the desired value.

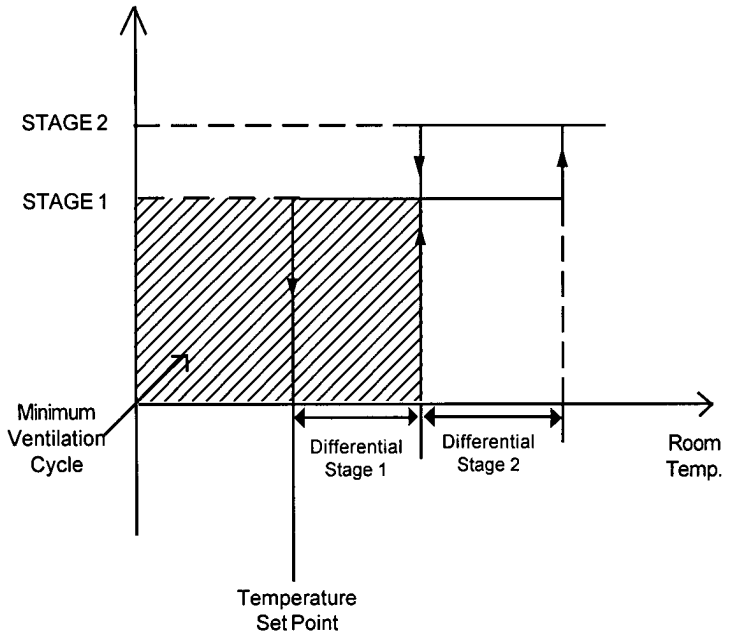
4 Deactivating Temperature Curve

- Set the selection knob to **SET POINT / T° CURVE**. The current temperature set point flashes on the display.
- Press the push-button to display the points of the curve actually defined until the word **ON** appears (fourteen clicks).
- Turn the adjustment knob counterclockwise one notch. The word **OFF** flashes on the display, indicating that the temperature curve is now deactivated.
- Set the selection knob to **ROOM TEMPERATURE**.

VENTILATION SETTINGS

FAN OPERATION

The TC5-T6A controls two stages of constant-speed fans (Stage 1-2). One additional on/off stage can be connected for controlling cooling units using a timer cycle (see "Cooling Stage").



If room temperature rises:

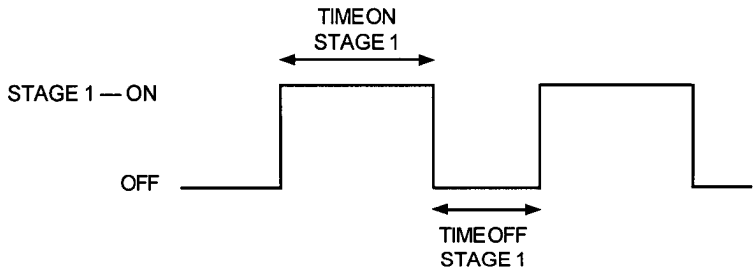
- When room temperature < Set Point, stage 1 fans run according to the minimum ventilation cycle. If minimum ventilation has been activated on Stage 2, Stage 2 fans also provide minimum ventilation.
- At Set Point + Differential 1: stage 1 fans stop operating according to the minimum ventilation cycle and run continuously.
- At Set Point + Differential 1 + Differential 2: Stage 2 fans start running continuously.

If the room temperature falls:

- At Set Point + Differential 1: if minimum ventilation has been activated on Stage 2, Stage 2 fans run according to the minimum ventilation cycle; otherwise, stage 2 fans return to a stop.
- Below the Set Point: stage 1 fans stop operating continuously and operate according to the minimum ventilation cycle. If minimum ventilation has been activated on Stage 2, Stage 2 fans also provide minimum ventilation.

MINIMUM VENTILATION CYCLE

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



During time on, the Stage 1 fans run and the Stage 1 Pilot Light flashes. During time off, the Stage 1 fans do not run. The Stage 1 Pilot Light turns off.

Minimum Ventilation Cycle Settings

1. To run the fans continuously, set time off to zero and time on to any value other than zero.

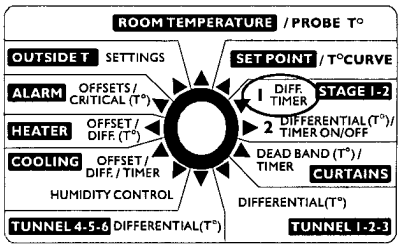
2. To stop the fans, set time on to zero and time off to any value.

3. To run the fans intermittently, set time on to the desired running time and time off to the desired off time.

Adjusting Stage 1 Time On and Time Off

Time On and Time Off can be adjusted between 0 and 900 seconds, in increments of 15 seconds.

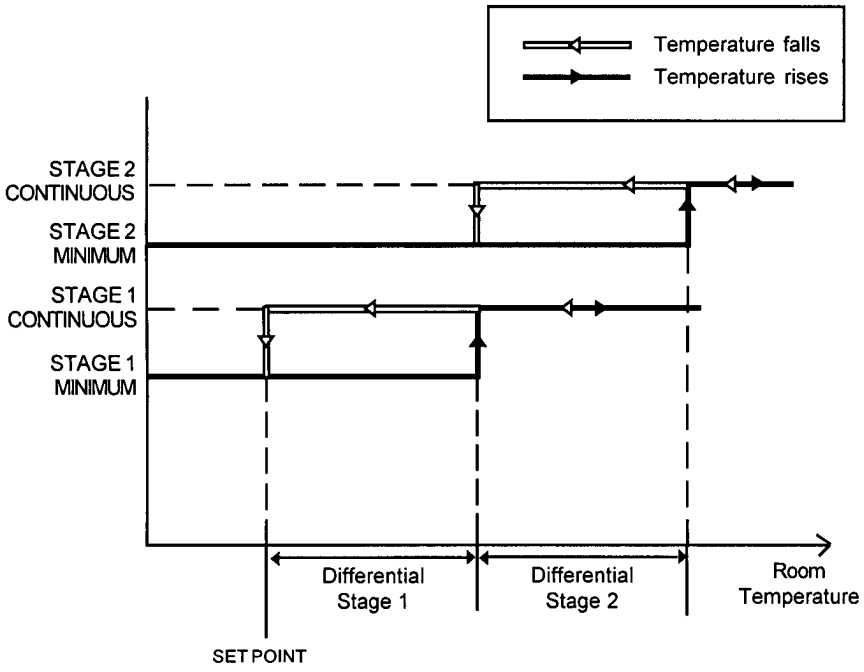
- Set the selection knob to **STAGE 1 — DIFF./TIMER**. The current differential for stage 1 flashes on the display.



- Press the push-button. The current time on for Stage 1 flashes on the display, alternating with the letters "**On**".
- Use the adjustment knob to adjust time on to the desired value.
- Press the push-button. The current time off for Stage 1 flashes on the display, alternating with the letters "**Off**".
- Use the adjustment knob to adjust time off to the desired value.

USING STAGE 2 FANS FOR MINIMUM VENTILATION

Stage 2 fans can provide minimum ventilation whenever they are not needed for cooling purposes, i.e. when the room temperature is less than Set Point + Stage 1 Differential + Stage 2 Differential (when the temperature rises) or less than Set Point + Stage 1 Differential (when the temperature falls). This feature must be activated from the front panel. The timer settings used are the same as for Stage 1 minimum ventilation.



Activating / Deactivating Minimum Ventilation on Stage 2

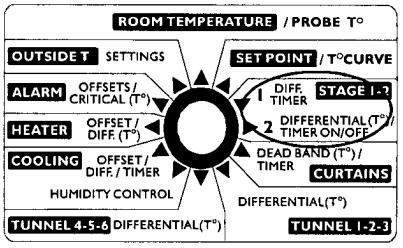
- Set the selection knob to **STAGE 2 — DIFFERENTIAL/TIMER ON/OFF**. The current on/off state for the stage 2 timer flashes on the display.
- Use the adjustment knob to adjust the state to the desired value.

DIFFERENTIAL SETTINGS

1 Adjusting Stage 1 Differential

The Stage 1 differential is the temperature difference between the moment the Stage 1 constant-speed fans start to run and the moment they turn off (see the diagram above). The differential can be adjusted between 0°F and 20.0°F (0°C and 11.1°C).

- Set the selection knob to **STAGE 1 — DIFF./TIMER**. The current differential for Stage 1 is displayed, alternating with the letters "**diF**".
- Use the adjustment knob to adjust differential to the desired value.



2 Adjusting Stage 2 Differential

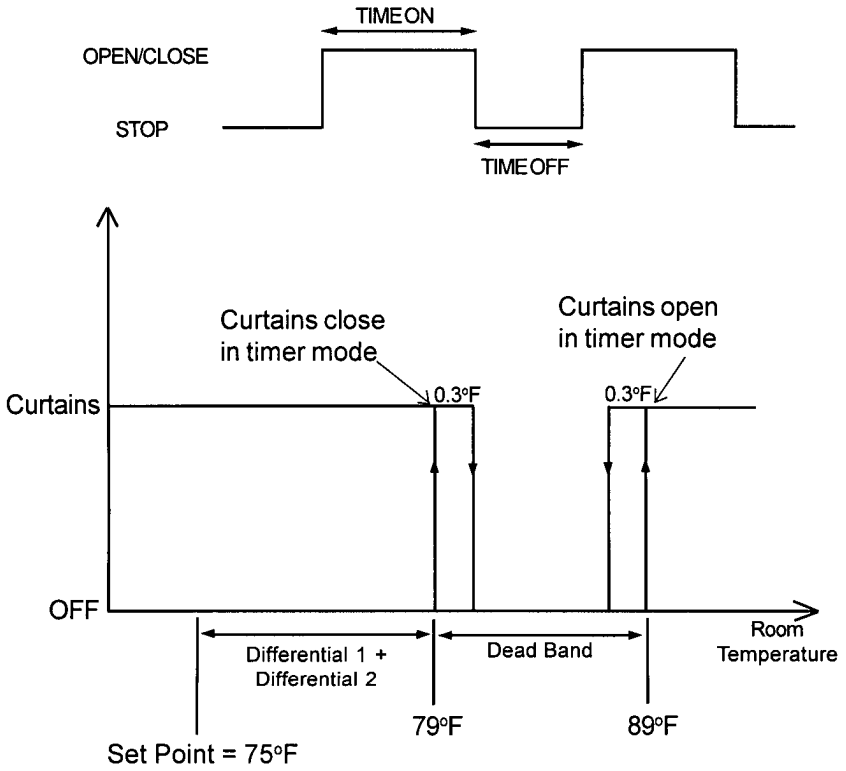
The Stage 2 differential is the temperature difference between the moment the Stage 2 constant-speed fans start to run and the moment they turn off (see the diagram above). The differential can be adjusted between 0°F and 20.0°F (0°C and 11.1°C).

- Set the selection knob to **STAGE 2 — DIFFERENTIAL/TIMER ON/OFF**. The current differential for Stage 2 is displayed, alternating with the letters "**diF**".
- Use the adjustment knob to adjust differential to the desired value.

NATURAL VENTILATION

PRINCIPLE OF OPERATION

The sidewall and endwall curtains can be used for natural ventilation when tunnel ventilation is not in effect. Natural ventilation must be deactivated by from the front panel if it is not required (see below). The endwall and sidewall curtains open and close intermittently according to the same time on and time off settings:

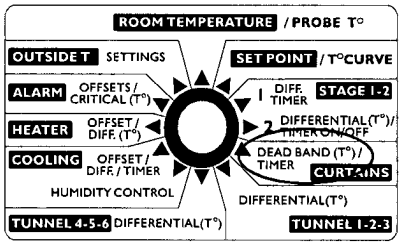


In the example above, when the temperature rises to 89°F, the endwall and sidewall curtains begin to open and continue to do so until fully open if the temperature remains above this point. If the temperature falls to 88.7°F, the curtains stop opening. When the temperature falls to 79°F, the curtains begin to close and continue to do so until fully closed if the temperature remains below this point. If the temperature rises to 79.3°F, the curtains stop closing.

1 Adjusting the Curtain Dead Band

The dead band is the temperature difference between the opening and closing temperatures of the curtains. The hysteresis is fixed at 0.3°F and determines when the curtains stop operating. The dead band can go from 0.5°F to 20.0°F (0.3°C to 11.1°C). Note that if natural ventilation has been deactivated, the dead band, timer and manual controls are not displayed and cannot be adjusted (see below).

- Set the selection knob to **CURTAINS — DEAD BAND / TIMER**. The current curtain dead band flashes on the display, alternating with the word "**Db**".



- Use the adjustment knob to set the dead band to the desired value.

2 Adjusting the Curtain Timer

The time on and time off parameters can take values from 0 to 900 seconds. Note that if natural ventilation has been deactivated, the dead band, timer and manual controls are not displayed and cannot be adjusted (see below).

- Set the selection knob to **CURTAINS — DEAD BAND / TIMER**. The current curtain dead band flashes on the display, alternating with the word "**Db**".

- Press the push-button. The current time on is displayed, alternating with the letters "**On**".

- Use the adjustment knob to set time on to the desired value.

- Press the push-button. The current time off is displayed, alternating with the letters "**Off**".

- Use the adjustment knob to set time off to the desired value.

3 Manual Operation of the Curtains

Note that if natural ventilation has been deactivated, the dead band, timer and manual controls are not displayed and cannot be adjusted (see below).

- Set the selection knob to **CURTAINS — DEAD BAND / TIMER**. The curtain dead band is displayed, alternating with the letters "**Db**".
- Press the push-button three times. The current curtain mode of operation is displayed: **Aut** — automatic mode; **Off** — stop the curtains; **OPE** — open the curtains; **CLO** — close the curtains.
- Use the adjustment knob to select the mode.

4 Activating / Deactivating Natural Ventilation

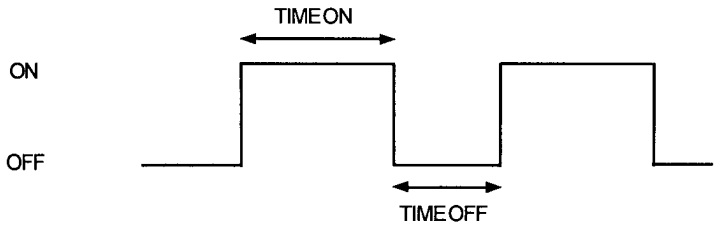
By default, natural ventilation is activated. When the curtains are deactivated, they remain closed except for tunnel ventilation.

- Set the selection knob to **CURTAINS — DEAD BAND / TIMER**. The curtain dead band is displayed, alternating with the letters "**Db**".
- Press the push-button four times. The current on/off state for natural ventilation is displayed, alternating with the letters "**nAt**".
- Use the adjustment knob to change the on/off state for natural ventilation.

COOLING STAGE

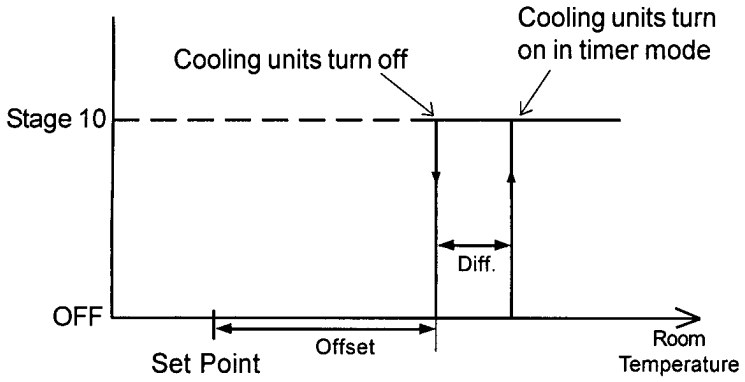
COOLING STAGE OPERATION

Stage 10 can be used as an additional cooling stage. This stage uses a separate offset relative to the set point as shown in the diagram below. When used for cooling, the stage operates according to a separate timer. Time on is the running time of the cooling units and time off is the off time. If a timer cycle is not needed, time off should be set to zero.



If the humidity compensation is activated, the cooling units are turned off when the humidity reaches a user-defined maximum humidity level (see below).

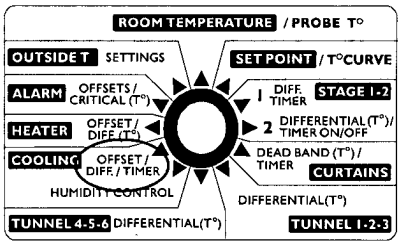
The following diagram sums up the operation of the cooling units.



1 Adjusting the Cooling Stage Offset

The cooling stage offset is the temperature difference from the set point at which the cooling units turn off. The offset can be adjusted between 0.5°F and 40.0°F (0.3°C and 22.2°C).

- Set the parameter selection knob to **COOLING — OFFSET/DIFF./TIMER.** The current offset is displayed, alternating with the letters "**OFt**".



- Use the adjustment knob to set the offset to the desired value.

2 Adjusting the Cooling Stage Differential

The cooling stage differential is the variation in room temperature between the moment the cooling units turn on and the moment they turn off. The differential can be adjusted between 0.5°F and 20.0°F (0.3°C and 11.1°C).

- Set the parameter selection knob to **COOLING — OFFSET/DIFF./TIMER.** The current offset is displayed, alternating with the letters "**OFt**".

- Press the push-button. The current differential is displayed, alternating with the letters "**diF**".

- Use the adjustment knob to set the differential to the desired value.

3 Adjusting Cooling Stage Time On and Time Off

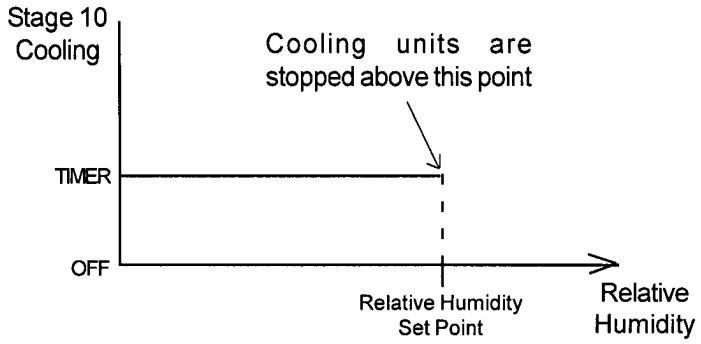
Time on and time off can be adjusted between 0 and 60 minutes, in increments of 1 minute. To deactivate cooling, set time on to zero.

- Set the parameter selection knob to **COOLING — OFFSET/DIFF./ TIMER.** The current offset is displayed, alternating with the letters "**OFt**".
- Press the push-button twice. The current time on flashes on the display, alternating with the letters "**On**".
- Use the adjustment knob to adjust time on to the desired value.
- Press the push-button. The current time off flashes on the display, alternating with the letters "**Off**".
- Use the adjustment knob to adjust time off to the desired value.

HUMIDITY COMPENSATION

Humidity compensation can be activated to turn cooling units off when humidity levels are too high. This feature must be activated from the front panel. The compensation operates in one of two modes:

Mode I: (Internal switch #7 ON) – cooling units are turned off when the humidity reaches the humidity set point.

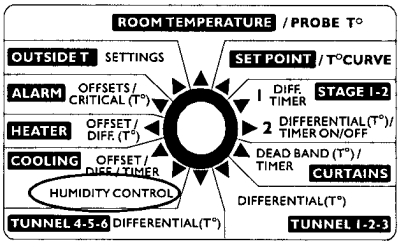


Mode II: (Internal switch #7 OFF) – cooling units are turned off when the humidity + the room temperature (in °F only) exceeds a user-specified value. The value varies from 100 to 200.

1 Viewing Relative Humidity

The relative humidity is expressed as a percentage. If internal switch #7 is set to OFF, the value displayed is the humidity + current room temperature.

- Set the selection knob to **COOLING — HUMIDITY CONTROL**. The current relative humidity is displayed If humidity compensation is currently in effect, the humidity reading alternates with the letters "**rHc**".



- Turn the adjustment knob clockwise by one notch. The minimum humidity flashes on the display, alternating with the letters "**Lo**".

- Turn the adjustment knob clockwise one notch further. The maximum humidity flashes on the display, alternating with the letters "**Hi**".

- Turn the adjustment knob clockwise a third notch. The current humidity value is displayed again.

NOTE: If you let the display flash for more than 10 seconds when the maximum or minimum humidity is displayed, the controller resets the minimum and maximum humidity values currently in memory (the display stops flashing to indicate that the reset has been done).

2 Adjusting Relative Humidity Set Point

If internal switch # 7 is set to OFF, this value is the set point for humidity + current room temperature and varies from 100 to 200 (in Fahrenheit units only). When the current humidity + temperature reading exceeds the set point, the cooling stage is turned off.

If internal switch # 7 is set to ON, this value is the relative humidity expressed as a percentage and varies from 40 to 100%. When the current humidiy reading exceeds the set point, the cooling stage is turned off.

Note that the humidity compensation feature must be activated for this to work (see below).

- Set the selection knob to **STAGE 1 — HUMIDITY CONTROL**. The current humidity reading is displayed.

- Press the push-button. The current humidity set point is displayed, alternating with the letters "**SEt**" and "**rh**".

- Adjust the humidity set point to the desired value using the adjustment knob.

3 Activating / Deactivating Humidity Compensation

Humidity compensation must be activated from the front panel. By default, it is set to OFF.

- Set the selection knob to **STAGE 1 — HUMIDITY CONTROL**. The current humidity reading is displayed.
- Press the push-button twice. The current on/off state for humidity compensation flashes on the display.
- Adjust the on/off state to the desired value using the adjustment knob.

TUNNEL VENTILATION

CURTAIN SETUP

To position the curtains for tunnel ventilation, the controller fully closes the sidewall curtains and fully opens the endwall curtains. This is refered to as doing the curtain setup. Either one of the curtains may already be in the required position, depending on when the setup is done. The curtain setup is done when a certain inside or outside temperature is reached. If the outside temperature setup is activated, the reference temperature is the outside temperature. If it is set to OFF, the reference temperature is the room temperature (see below).

A - Room Temperature Setup:

The curtain setup is done when room temperature reaches Curtain Opening Temperature + Tunnel 1 Differential (If natural ventilation has been deactivated, the setup is done at Stage 2 Starting Temperature + Tunnel 1 Differential). Tunnel 1 fans are turned on as soon as the curtain setup is started. All other stages are inactive except Stages 1, 2 and 10 (cooling units) which operate as usual.

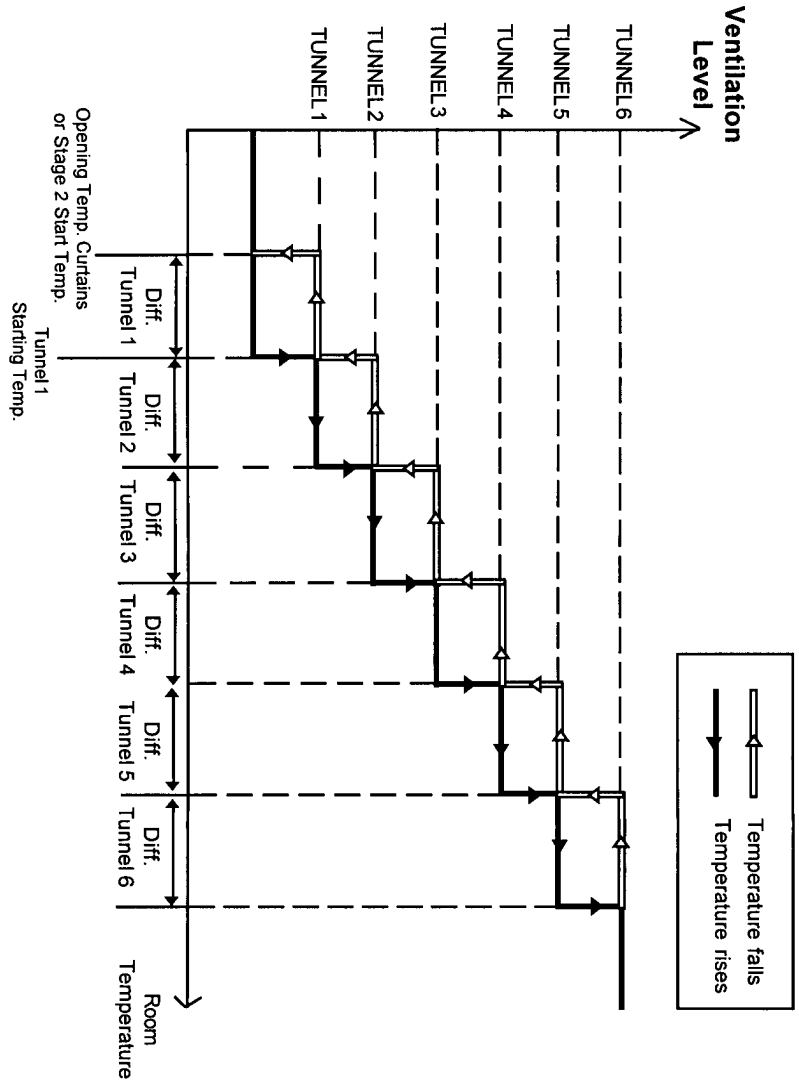
The cooling stages operate according to room temperature as shown in the diagram on the next page. Tunnel 2 fans are started at least 120 seconds after Tunnel 1 fans are started.

The curtain setup is undone when room temperature drops below Tunnel 1 Starting Temperature by the value of the tunnel 1 differential. At that time, the controller stops Tunnel 1 fans and fully opens the sidewall and endwall curtains. The controller then returns to normal operations.

B - Outside Temperature Setup:

The curtain setup is done when outside temperature reaches the outside set point and when the indoor temperature reaches the Tunnel 1 starting temperature (i.e. Curtain Opening Temperature + Tunnel 1 Differential when natural ventilation is activated or Stage 2 Starting Temperature + Tunnel 1 Differential when natural ventilation is deactivated). The controller starts the curtain setup and immediately starts Tunnel 1 fans. All other stages are inactive except Stages 1, 2 and 10 (cooling units) which operate as usual. If the Tunnel 1 starting temperature has been reached but the outside temperature is less than the outside set point, the curtain

setup is not done but Tunnel 1 fans are turned on; none of the other tunnel fans are started in this case.

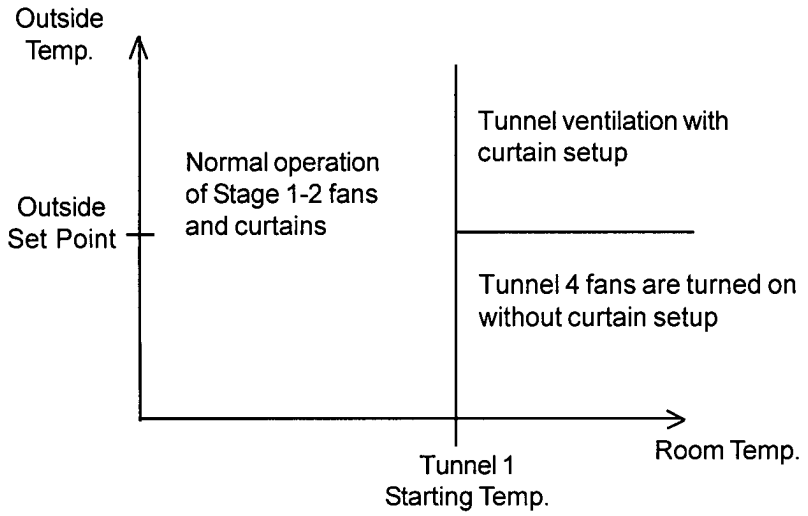


The cooling stages operate according to room temperature as shown in the diagram on the previous page. Tunnel 2 fans are started at least 120 seconds after Tunnel 1 fans are started.

The curtain setup is undone when the outside temperature drops 4°F below the outside temperature set point. At that time, the controller stops Tunnel 1 fans and fully opens the sidewall and endwall curtains. The controller then returns to normal operations.

The following graph summarizes operation of the tunnel ventilation fans when the outside temperature is used as a reference:

Tunnel Operation with Outside Temperature Reference



The following chart describes the operation of all stages during normal operations, natural ventilation and tunnel ventilation modes when natural ventilation is activated.

Controller Operation with Natural Ventilation Activated

	NORMAL MODE	NATURAL VENTILATION MODE	TUNNEL VENTILATION MODE		
	OPERATION	OPERATION	CURTAIN SETUP	OPERATION	CURTAIN SETUP UNDONE
STAGE 1 FANS	ON/OFF AS NEEDED	ON	ON	ON	ON
STAGE 2 FANS	ON/OFF AS NEEDED	ON	ON	ON	ON
SIDEWALL CURTAINS	OPEN/CLOSE WITH TIMER	OPEN WITH TIMER	FULL CLOSE	FULL CLOSE	OPEN/CLOSE WITH TIMER
ENDWALL CURTAINS	OPEN/CLOSE WITH TIMER	OPEN WITH TIMER	FULL OPEN	FULL OPEN	OPEN/CLOSE WITH TIMER
STAGE 10 COOLING	ON/OFF WITH TIMER	ON/OFF WITH TIMER	ON/OFF WITH TIMER	ON/OFF WITH TIMER	ON/OFF WITH TIMER
TUNNEL 1 FANS	OFF	OFF	ON	ON NONSTOP	ON/OFF AS NEEDED
TUNNEL 2 FANS	OFF	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 3 FANS	OFF	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 4 FANS	OFF	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 5 FANS	OFF	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 6 FANS	OFF	OFF	OFF	ON/OFF AS NEEDED	OFF

The chart on the following page describes the operation of all stages during normal operations and tunnel ventilation modes when natural ventilation is deactivated.

Controller Operation with Natural Ventilation Deactivated

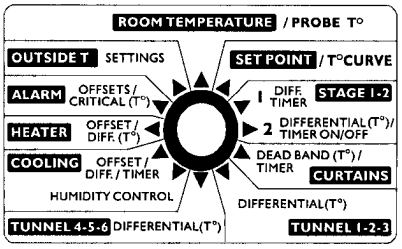
	NORMAL MODE	TUNNEL VENTILATION MODE		
	OPERATION	CURTAIN SETUP	OPERATION	CURTAIN SETUP UNDONE
STAGE 1 FANS	ON/OFF AS NEEDED	ON	ON	ON
STAGE 2 FANS	ON/OFF AS NEEDED	ON	ON	ON
SIDEWALL CURTAINS	CLOSED	FULL CLOSE	FULL CLOSE	FULL CLOSE
ENDWALL CURTAINS	CLOSED	FULL OPEN	FULL OPEN	FULL CLOSE
STAGE 10 COOLING	ON/OFF WITH TIMER	ON/OFF WITH TIMER	ON/OFF WITH TIMER	ON/OFF WITH TIMER
TUNNEL 1 FANS	OFF	ON	ON NONSTOP	ON/OFF AS NEEDED
TUNNEL 2 FANS	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 3 FANS	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 4 FANS	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 5 FANS	OFF	OFF	ON/OFF AS NEEDED	OFF
TUNNEL 6 FANS	OFF	OFF	ON/OFF AS NEEDED	OFF

SETTINGS

1 Adjusting Tunnel 1-6 Differentials

The tunnel differential is the temperature difference between the moment the tunnel fans start to run and the moment they turn off. The differential can be adjusted between 0.5°F and 20.0°F (0.3°C and 11.1°C).

- Set the selection knob to **TUNNEL 1-2-3 — DIFFERENTIAL** or **TUNNEL 4-5-6 – DIFFERENTIAL.** The current differential for Tunnel 1 or 4 is displayed, alternating with the letters "**tu.1**" or "**tu.4**" and "**diF**".



- Use the adjustment knob to adjust the differential to the desired value.

- Press the push-button. The current differential for Tunnel 2 or 5 is displayed, alternating with the letters "**tu.2**" or "**tu.5**" and "**diF**".

- Use the adjustment knob to adjust the differential to the desired value.

- Press the push-button. The current differential for Tunnel 3 or 6 is displayed, alternating with the letters "**tu.3**" or "**tu.6**" and "**diF**".

- Use the adjustment knob to adjust the differential to the desired value.

2 Adjusting the Outside Set Point

The outside set point is used for determining when to start the curtain setup if the outside temperature is being used as the reference. It can be adjusted between -40.0°F and 99.9°F (-40.0°C and 37.7°C). Note that an outside probe must be connected, internal switch # 6 must be set to ON and the outside temperature setup must be activated for this feature to work.

- Set the selection knob to **OUTSIDE T° — SETTINGS**. The current outside temperature is displayed.

- Press the push-button. The current outside set point flashes on the display.

- Use the adjustment knob to adjust the outside set point to the desired value.

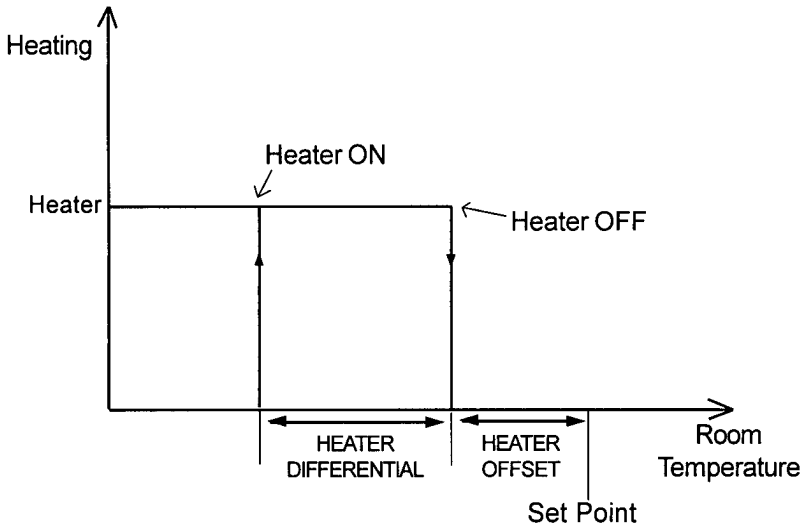
3 Activating / Deactivating Outside Temperature Setup

When this feature is activated, the outside temperature is used as a reference for doing the curtain setup and starting tunnel ventilation.

- Set the selection knob to **OUTSIDE T° — SETTINGS**. The current outside temperature is displayed.
- Press the push-button twice. The on/off status for the outside temperature setup is displayed.
- Use the adjustment knob to set the status to the desired value.

HEATER SETTINGS

The following diagram illustrates the operation of the heater.



If the room temperature rises:

- at Set Point - Heater Offset: Heater turns off.

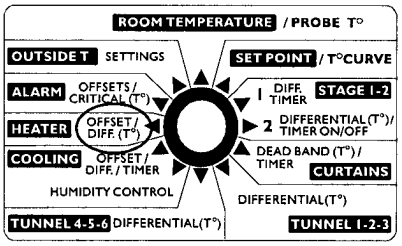
If the room temperature falls:

- at Set Point - Heater Offset - Heater Diff.: Heater turns on.

1 Adjusting Heater Offset

The heater offset can provide substantial energy savings if correctly adjusted according to the outside temperature. It is the number of degrees below the set point at which the heating units turn off (see diagram above). The heater offset can be adjusted between 0.5°F and 20.0°F (0.3°C and 11.1°C).

- Set selection knob to **HEATER — OFFSET/DIFF.** The current heating offset is displayed, alternating with the letters "**OFt**".
- Use the adjustment knob to adjust the offset to the desired value.



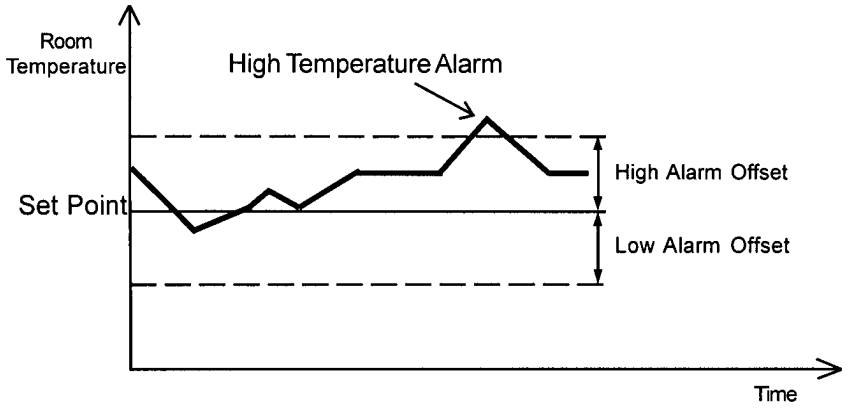
2 Adjusting Heater Differential

The heating differential is the temperature difference between the moment the heater units turn on and the moment they turn off (see diagram above). The differential can be adjusted between 0.5°F and 20.0°F (0.3°C and 11.1°C).

- Set the selection knob to **HEATER — OFFSET/DIFF**. The current heating offset is displayed, alternating with the letters "**OFt**".
- Press the push-button. The heater differential is displayed, alternating with the letters "**dIF**".
- Use the adjustment knob to adjust the differential to the desired value.

ALARM SETTINGS

The controller sets off an alarm in the case of a power failure, a fault in the supply circuit or a high or low temperature. Temperature alarms are defined according to the set point as shown in the diagram below.

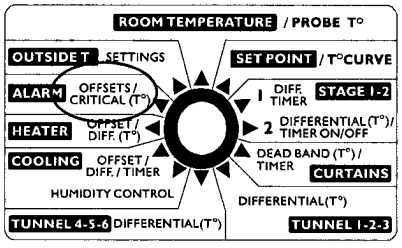


The situation changes for high temperature alarms, however, when the outside temperature is greater than the set point. In this case, the set point is replaced by the outside temperature as the reference point. This means an alarm is set off when the indoor temperature reaches Outside Temperature + High Alarm Offset. Internal switch # 6 must be set to ON to use this feature. A third parameter, called the critical high temperature, is defined to continue monitoring the indoor temperature for high temperatures. When the indoor temperature reaches the critical high temperature (defined as an absolute value), an alarm is set off.

Adjusting the Alarm Settings

The high and low alarm offsets range from 0.5°F to 40°F. The critical temperature ranges from -40.0°F to 120.0°F (-40.0°C to 48.9°C).

- Set the selection knob to **ALARM — OFFSETS / CRITICAL**. The current low alarm offset flashes on the display, alternating with the word "**LO**".



- Use the adjustment knob to set the low alarm offset to the desired value.
- Press the push-button. The current high alarm offset flashes on the display, alternating with the word "**HI**".
- Use the adjustment knob to set the high alarm offset to the desired value.
- Press the push-button. The current critical high temperature is displayed, alternating with the letters "**Cri**".
- Use the adjustment knob to set the critical high temperature to the desired value.

TEST MODE

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

To enter test mode:

- Set internal switch # 12 to **ON**. At the **ROOM TEMPERATURE** or **OUTSIDE TEMPERATURE** position, the letters "**TST**" are displayed, alternating with the room or outside temperature.

- Turn the adjustment knob to adjust the room or outside temperature to the desired value. The controller operates the stages according to the new temperature setting.

To exit test mode:

- Set internal switch # 12 to **OFF**.

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
The display doesn't work.	The circuit breaker on the service panel is off or tripped.	Reset the circuit breaker.
	The wiring is incorrect.	Fix the wiring.
	The input fuse is open.	Replace the fuse.
	The voltage selector switch is in the wrong position.	Set the switch to the correct position.
	The display board interconnect cable is unplugged from the power supply board.	Plug the cable.
The display shows the letter "P"	Probe # 1 is improperly connected.	Fix the probe's connection.
The Defective Probe Pilot Light is on.	One or more probes are defective.	Follow the procedure described in DEFECTIVE PROBES to identify and replace the defective probe.
The display shows sudden variations in the room temperature.	A variation in resistance is induced on a probe.	Make sure the probes are dry and move them away from drafts and sources of radiant heating.
	There is electrical noise near an extended probe cable.	Do not run probe cables next to other power cables. When crossing other power cables, cross at 90°.

PROBLEM	CAUSE	SOLUTION
Stage 1 fans are not running.	The wiring is incorrect.	Correct the wiring. In particular, make sure two different lines are connected to each motor: line L1 modulated by the controller should be combined with another line (N for 115V or L2 for 230V) to activate the motor. Also, be sure the Stage 1 COMMON is supplied by line L1.
	The Stage's fuse is open.	Replace the fuse.
	The display board interconnect cable is not plugged into the power supply board properly.	Make sure the cable is firmly plugged in with the tabs in place.
	The fan motor is defective.	Check if motor is defective by connecting it to an alternate power supply. Replace the motor if it still doesn't operate.
Stage 1 fans run continuously at full speed.	The wiring is incorrect.	Fix the wiring.
	The ambient temperature is above the set point.	Adjust the set point to the desired value.

PROBLEM	CAUSE	SOLUTION
Stage 1 or 2 fans run continuously at full speed.	The wiring is incorrect.	Fix the wiring.
	The ambient temperature is above the set point.	Adjust the set point to the desired value.
Stage 1 or 2 fans run erratically.	The differential is too small.	Adjust the differential to a higher value.
	The time on or time off is too short.	Adjust the time on or time off to a higher value.
Stage 1 or 2 fans do not stop running when the controller is operating in minimum ventilation cycle.	Time off is set to zero.	Set time off to a value other than zero.
	The wiring is incorrect.	Correct the wiring. In particular, make sure two different lines are connected to each motor: line L1 modulated by the controller should be combined with another line (N for 115V or L2 for 230V) to activate the motor. Also, be sure the stage 1 COMMON is supplied by line L1.

PROBLEME	CAUSE	SOLUTION
One of the other stages is not operating.	The Stage's fuse is open.	Replace the fuse.
	The display board interconnect cable is not plugged into the power supply board properly.	Make sure the cable is firmly plugged in with the tabs in place.
	The wiring is incorrect.	Correct the wiring. In particular, make sure two different lines are connected to each motor: line L1 modulated by the controller should be combined with another line (N for 115V or L2 for 230V) to activate the motor or heating unit. Also, make sure the Stage COMMON is supplied by line L1.
	The fan motor or heating unit is defective.	Verify if the motor or heating unit is defective by connecting it to an alternate power supply. Replace the motor or heating unit If it still is not operating.
	The controller is defective.	Listen to see if there is a clicking sound when the Stage's pilot light turns on. If there is no clicking sound, contact your distributor to repair the controller.

TECHNICAL SPECIFICATIONS

MASTER:

Supply: - 115/230 VAC (-18%, +8%), 50/60 Hz, overload and overvoltage protection fuse F10-1A fast blow.

- 12 VDC for AC back-up supply; can activate Stages 1 and 2, Tunnels 1-6, cooling units, heater and curtains if supplied with DC back-up voltage.

Stage 1: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F1-10A slow blow.

Stage 2: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F2-10A slow blow.

Endwall Curtains: OPEN-CLOSE output, 115/230 VAC, 50/60 Hz, 30VDC, 5A winch output, fuse F3-5A slow blow.

Cooling Units: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F5-10A slow blow.

Heater: ON-OFF output, 115/230 VAC,50/ 60 Hz, 30VDC, 6A FAN,10A RES, fuse F6-10A slow blow.

Alarm: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 3A , fuse F9-3A slow blow.

SLAVE:

Supply: - 115/230 VAC (-18%, +8%), 50/60 Hz, overload and overvoltage protection fuse F10-1A fast blow.

- 12 VDC for AC back-up supply; can activate Tunnel 1-6 and sidewall curtains if supplied with DC back-up voltage.

Sidewall Curtains: OPEN-CLOSE output, 115/230 VAC, 50/60 Hz, 30VDC, 5A winch output, fuse F1-5A slow blow.

Tunnel 1: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F3-10A slow blow.

Tunnel 2: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F4-10A slow blow.

Tunnel 3: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F5-10A slow blow.

Tunnel 4: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F6-10A slow blow.

Tunnel 5: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F7-10A slow blow.

Tunnel 6: ON-OFF output, 115/230 VAC, 50/60 Hz, 30VDC, 6A FAN,10A RES, fuse F8-10A slow blow.

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

Enclosure: ABS, moisture and dust-tight.

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

FACTORY SETTINGS

PARAMETER		FACTORY SETTING	RANGE OF VALUES
Temperature Set Point		75°F(23.9°C)	-40 to 99.9 °F (-40 to 37.7 °C)
Outside Set Point		85°F(29.4°C)	-40 to 99.9 °F (-40 to 37.7 °C)
Stage 1	Differential	2°F(1.1°C)	0.5 to 20 °F (0.3 to 11.1 °C)
	Time On	15 seconds	0 to 900 seconds by increments of 15 seconds
	Time Off	0 seconds	
Stage 2	Differential	2°F(1.1°C)	0.5 to 20 °F (0.3 to 11.1 °C)
Curtains	Dead Band	2°F(1.1°C)	0.5 to 20 °F (0.3 to 11.1 °C)
	Time On	20 seconds	0 to 900 seconds, by increments of 1 second
	Time Off	60 seconds	
Tunnel 1-6	Differential	2°F(1.1°C)	0.5 to 20 °F (0.3 to 11.1 °C)
Cooling	Offset	6°F(3.3°C)	0.5 to 40 °F (0.3 to 22.2 °C)
	Differential	2°F(1.1°C)	0.5 to 20 °F (0.3 to 11.1 °C)
	Time On	1 minute	0 to 60 minutes, by increments of 1 minute
	Time Off	1 minute	

PARAMETER		FACTORY SETTING	RANGE OF VALUES
Humidity Control	Humidity Set Point	65%	40 to 100% relative humidity
	Humidity Set Point with Room Temp.	135	100 to 200
Heater	Differential	2°F(1.1°C)	0.5 to 20 °F (0.3 to 11.1 °C)
	Offset	0.5°F(0.3°C)	0.5 to 20 °F (0.3 to 11.1 °C)
Alarms	High Offset	12.0°F(6.7°C)	0.5 to 40 °F (0.3 to 22 °C)
	Low Offset	10.0°F(5.6°C)	0.5 to 40 °F (0.3 to 22 °C)
	Critical High Temperature	95°F (35°C)	-40 to 120.0 °F (-40 to 48.9 °C)

NOTES:

i) These initial parameter settings will not be retained in the controller's memory. Each new setting will replace the preceding one.

ii) If the power supply is cut off, the last parameter settings will be retained in memory until the power is restored.

FUNCTION SUMMARY

POSITION	DISPLAY	MEANING
ROOM TEMPERATURE	steady value	Room temperature
	Pr1 - On/OFF Pr2 - On/OFF Pr3 - On/OFF Pr4 - On/OFF	Room temperature and on/off state for probe x
	Lo / Hi	Minimum / Maximum temperature value.
SET POINT / T° CURVE	flashing value	User-adjusted set point.
	steady value	Set point calculated using the temperature curve.
	On / OFF	Status of temperature curve.
	dAY	Day number of the current temperature curve point.
	set	Set point of the current temperature curve point.

TC5-T6A

POSITION	DISPLAY	MEANING
STAGE 1 - DIFF/ TIMER	diF /Str	Stage 1 differential / start temperature.
	On	Time On for minimum ventilation cycle
	OFF	Time off for minimum ventilation cycle
STAGE 2 - DIFFERENTIAL/ TIMER ON/OFF	diF /Str	Stage 2 differential / start temperature.
	On / OFF	Status of stage 2 minimum ventilation.
CURTAINS - DEAD BAND/ TIMER	Db / OPE / CLO	Curtain Dead Band / Opening Temperature / Closing Temperature.
	On	Time On.
	OFF	Time Off.
	Aut / OFF/ OPE/ CLO	Aut - automatic mode OFF - manual off OPE - manual open CLO - manual close
TUNNEL 1-2-3 - DIFFERENTIAL	tu.x / diF / Str	Tunnel x differential / start temperature.
TUNNEL 4-5-6 - DIFFERENTIAL	tu.x / diF / Str	Tunnel x differential / start temperature.
COOLING - OFFSET/ DIFF/ TIMER	OFt / StP	Cooling offset / stop temperature
	diF / Str	Cooling differential / start temperature.
	On	Time On.
	OFF	Time Off.

POSITION	DISPLAY	MEANING
HUMIDITY CONTROL	steady value / rHc	Room Humidity (compensation activated).
	SEt / rh	Humidity Set Point
	On / OFF	Status of Humidity Compensation.
HEATER OFFSET/ DIFF.	Oft / StP	Heater offset (stop temperature).
	diF / Str	Heater differential (start temperature).
ALARM OFFSETS	Lo	Low alarm offset.
	Hi	High alarm offset.
	Cri.	Critical temperature.
OUTSIDE T° SETTINGS	Steady value / OFF	Outside temperature / probe deactivated
	flashing value	Outside set point
	On / OFF	Status of outside temperature curtain setup.