Inlet Controller

TC5-ITA

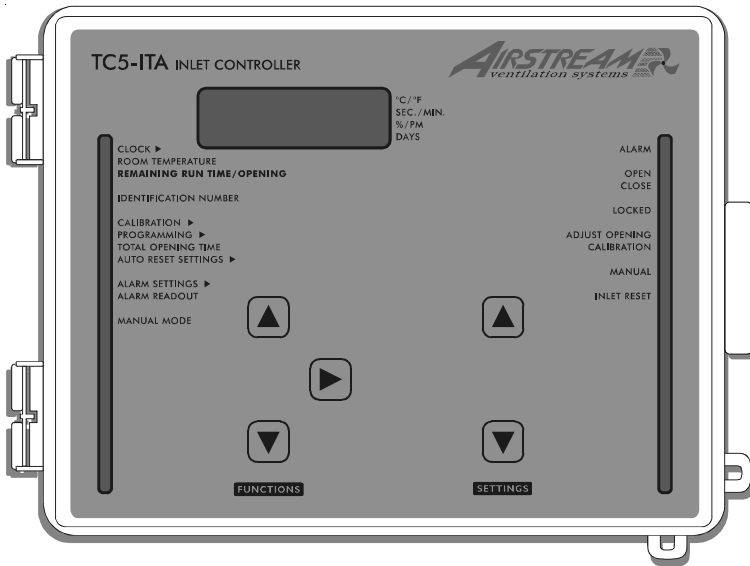## USER'S MANUAL

TABLE OF CONTENTS

PRECAUTIONS

Fuses at the input and outputs of the controller adequately protect its circuitry in the case of an overload or overvoltage. However, we recommend that you install an additional protection device on the controller's supply circuit to prolong the life of the controller.

The room temperature of the room in which the controller is located MUST ALWAYS REMAIN BETWEEN 32° AND 104° F (0° AND 40° C). For indoor use.

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

SYMBOLS OF THIS MANUAL

⚠️ **WARNING**

Caution. Carefully read the following text for it contains important information which, if ignored, may cause the controller to operate improperly.

💡

Pay attention. The following text contains useful information.

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

Model number: _____TC5-ITA_____

Serial number: _____

FEATURES

The TC5-ITA is an electronic device used for air inlet control in livestock buildings. In combination with an environment controller, the TC5-ITA coordinates the movement of the air inlets with the operation of the fans using the real-time clock. Additional units can be connected to the TC5-ITA for an independent control of additional air inlets.

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

DIGITAL DISPLAY
A digital display shows the operation parameters and alarm messages.

PILOT LIGHTS
Pilot lights indicating the state of outputs allow you to monitor the operation of the system from a distance.

ALARM OUTPUT
The controller generates an output signal that will activate any alarm system in the case of various operation problems.

PERMANENT MEMORY
Settings are retained in memory even in the event of a power failure.

OVERLOAD AND OVERVOLTAGE PROTECTION
Fuses located at the input and outputs of the controller protect its circuitry in the case of an overload or overvoltage.

COMPUTER CONNECTION
A computer can be connected to the TC5-ITA to centralize information management and provide monitoring and datalogging possibilities.

LOCATION OF THE CONTROLS
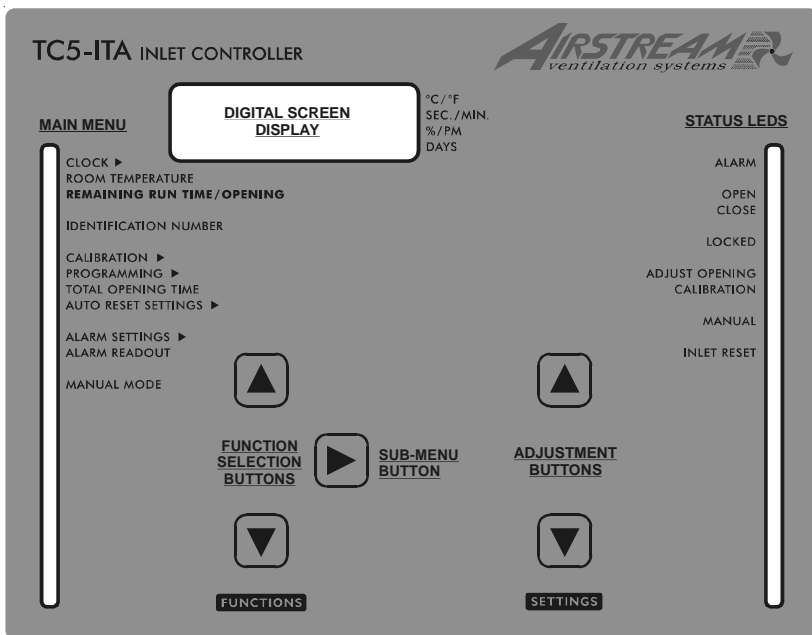
Status Leds

LED	MEANING
ALARM	Turns on when an alarm is detected.
OPEN	Turns on when the controller opens the air inlet panels.
CLOSE	Turns on when the controller closes the air inlet panels.
LOCKED	Turns on when the parameters are locked and cannot be modified.
ADJUST OPENING	Turns on when the controller waits for the user to adjust the air inlet opening.
CALIBRATION	Turns on when the controller is in calibration mode.
MANUAL	Turns on when the actuator is controlled in manual mode.
INLET RESET	Turns on when the inlet position is being reset.

Internal Switches
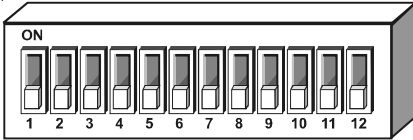
Internal switches are located on the inside of the front cover.

#	OFF	ON
1	UNLOCKED PARAMETERS	LOCKED PARAMETERS
2	FAHRENHEIT DEGREES	CELSIUS DEGREES
3	SUMMER PROGRAM	WINTER PROGRAM
4	DISABLE TEMPERATURE ALARMS	ENABLE TEMPERATURE ALARMS
5	NO TEMPERATURE PROBE	TEMPERATURE PROBE PRESENT
6	SLAVE UNIT	PRIMARY UNIT
7	NO RESET	AUTO RESET THE INLET POSITION
8	RESET MIN POSITION ONLY	RESET TOWARD THE NEAREST POSITION
9	STOP THE MANUAL RESET	START THE MANUAL RESET
10	AM/PM TIME FORMAT	24 HOUR FORMAT
11	OPENING = TIME VALUE	OPENING = %
12	INLET MODE	TUNNEL MODE

Equipment List

Integrating an air inlet control system into your ventilation system requires the following equipment:

- A Comlink-2 communication module added to your controller

- A TC5-ITA controller for each air inlet panel (up to 100 in all)

- An alarm system (optional)

- A DC power supply (optional)

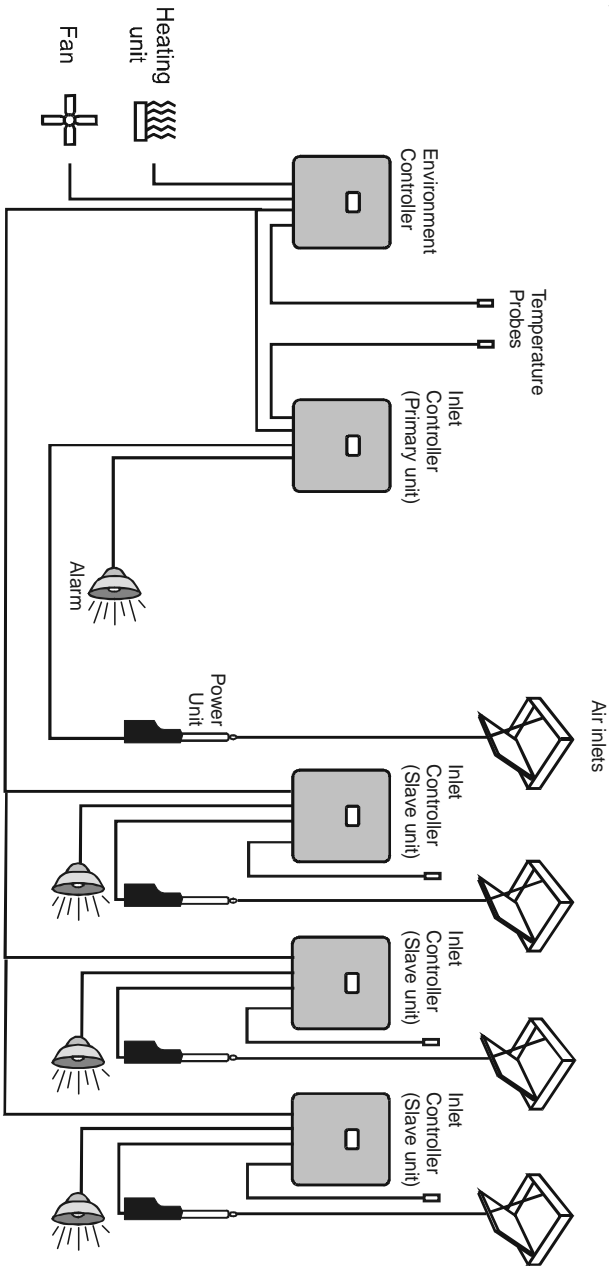- A power unit.

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 equipment, refer to the wiring diagrams enclosed with this user's manual. Also refer to the DC power supply wiring diagram when using a DC type motor.

- Use the electrical knockouts provided at the bottom of the enclosure. Do not make additional holes in the enclosure.

- Set the voltage switch to the appropriate line voltage.

TC5-ITA

Fan

Heating unit

Environment Controller

Temperature Probes

Inlet Controller (Primary unit)

Alarm

Power Unit

Air inlets

Inlet Controller (Slave unit)

Inlet Controller (Slave unit)

Inlet Controller (Slave unit)

INSTALLATION SETUP

ALARM CONNECTION: There are two types of alarms in the industry. 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.

 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 SHOCK AND EQUIPMENT DAMAGE.

TEMPERATURE PROBES:

If your TC5-ITA unit is supplied with a temperature probe, connect it to the PROBE terminal and set internal switch #5 to ON. Note that the TC5-ITA can run without a temperature sensor; in this case, the ROOM TEMPERATURE menu will not be a available.

To extend the probe: This probe can be extended up to 500 ft (150 m).

- Use a shielded cable of outside diameter between 0.245 and 0.260 in (6.22 and 6.60 mm) to ensure the cable entry is liquid-tight (the cable dimension must not be under 18 AWG).

- It is preferable to solder the cable joint to ensure a proper contact between the two cables.
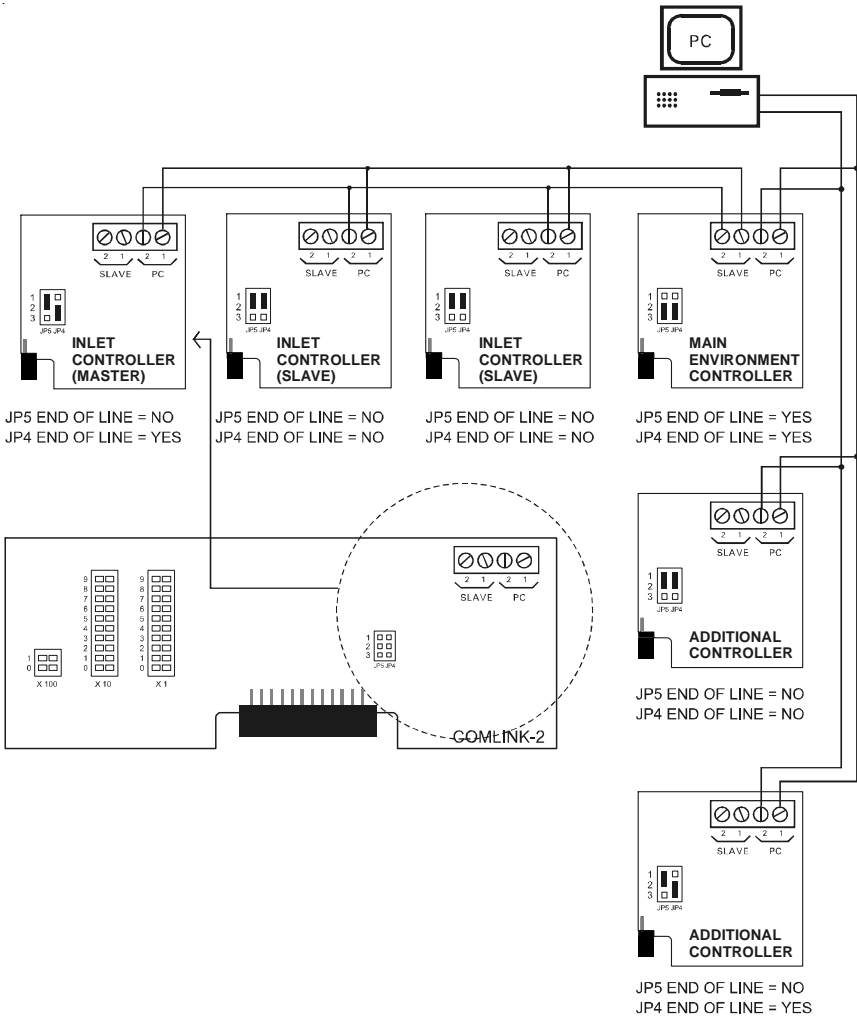
- **Do not ground the shielding.**

CAUTION : The probes operate under low voltage and are isolated from the power supply. Be sure the probe cable is isolated from all high voltage sources. Do not route the probe cable and other power cables through the same electrical knockout. Do not run the probe cable next to other power cables. When crossing over other power cables, cross at 90°.

TC5-ITA

Identification Numbers & End of Line Jumpers

Each Comlink-2 card used to communicate parameters between TC5-ITA units and the main controller must have a unique identification number. This number is configured using jumpers on the card and should be assigned before plugging the card into each unit. To do this, use the three jumpers (marked X100, X10 and X1) on the card (i.d. numbers can go from 0 to 199). Use X1 for units, X10 for tens and X100 for hundreds. In each case, place the black jumper horizontally over the two pins corresponding to the digit required.
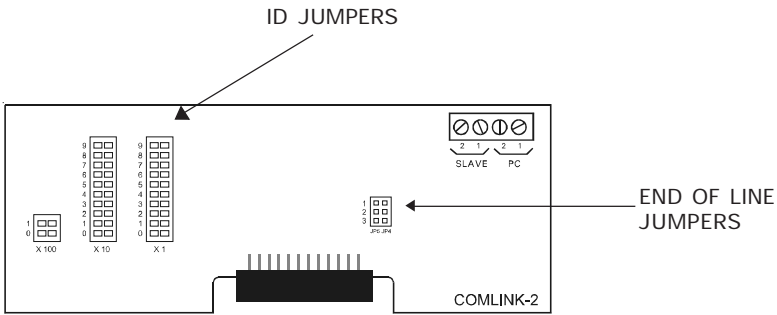

The TC5-ITA network operates on two communication lines. One line links the TC5-ITA units together to the main controller and the other line links temperature controllers to a computer (this second line is optional). Two jumpers on the Comlink-2 card are used to identify the end of line for each communication line. The TC5-ITA communication line uses jumper JP5 and the computer line uses JP4. Use pins 2 and 3 for YES and pins 1 and 2 for NO. The following diagram shows a typical connection with the appropriate jumper configurations.

PC

SLAVE PC
1 2 3
JP5 JP4
INLET CONTROLLER (MASTER)

JP5 END OF LINE = NO
JP4 END OF LINE = YES

SLAVE PC
1 2 3
JP5 JP4
INLET CONTROLLER (SLAVE)

JP5 END OF LINE = NO
JP4 END OF LINE = NO

SLAVE PC
1 2 3
JP5 JP4
INLET CONTROLLER (SLAVE)

JP5 END OF LINE = NO
JP4 END OF LINE = NO

SLAVE PC
1 2 3
JP5 JP4
MAIN ENVIRONMENT CONTROLLER

JP5 END OF LINE = YES
JP4 END OF LINE = YES

SLAVE PC
1 2 3
JP5 JP4
ADDITIONAL CONTROLLER

JP5 END OF LINE = NO
JP4 END OF LINE = NO

SLAVE PC
1 2 3
JP5 JP4
ADDITIONAL CONTROLLER

JP5 END OF LINE = NO
JP4 END OF LINE = YES

9 8 7 6 5 4 3 2 1 0
X 100

9 8 7 6 5 4 3 2 1 0
X 10

0
X 1

SLAVE PC
1 2 3
JP5 JP4
COMLINK-2

Comlink-2 Location & Connection

a. Unplug each unit.

b. Plug the communication card in the unit.

Open the cover. Drill a 5/16" hole through the bottom of the controller and thread the communication cable through the hole. Use the grommet provided to secure the cable. Connect the cable to the terminals of the communication card as shown below. When connecting two cable ends together, solder the joint and use a heat shrink to ensure a proper contact.

SOLDER CONNECTION BETWEEN SHIELDS
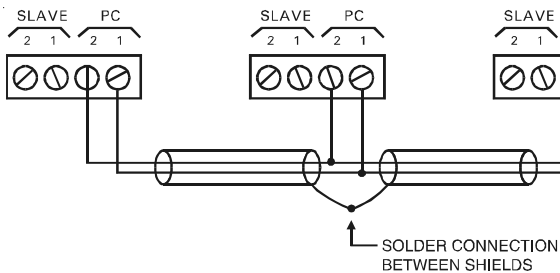
Line-up the comlink card with the connector and insert it in the upright position (see illustration beside). For communication, always use a 1 twisted pair shielded cable. The maximum length of the cable is 3000m and the recommended wire diameter is 1.0 mm. Use a lightning protection module when running the cable between buildings.

COMLINK-2 CARD
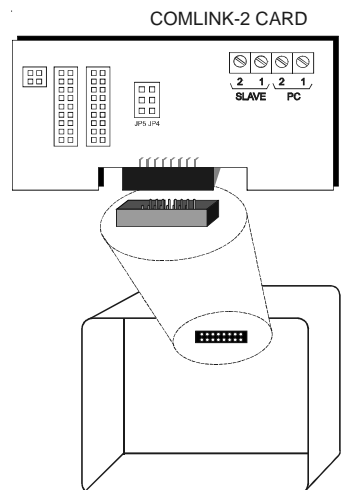
Be sure the communication cable is isolated from all high voltage sources and fluorescent lights. Do not route the communication cable and power cables through the same electrical knockout. Do not run the communication cable next to power cables. When crossing power cables, cross at 90°.

DO NOT GROUND THE SHIELD WIRE!
DISCONNECT THE POWER SOURCE BEFORE CONNECTING THE COMMUNICATION CABLE.

Identifying Primary and Slave Units

If your installation requires more than one TC5-ITA unit for independent control of different air inlets, one of the TC5-ITA will be configured as the primary unit and the others will be configured as slaves. Up to 99 slave units can be connected in this way. When programming the TC5-ITA, the slave units take their reference temperature from the primary unit. By default, all units are set as PRIMARY units.
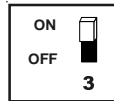
• Set internal switch #6 to ON for the primary unit or OFF for a slave unit. If only one TC5-ITA unit is used, set internal switch #6 to ON.

ON
OFF
6
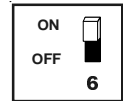
Seasonal Programs

All controller parameters can be set separately for winter and for summer seasons. Select the proper season using internal switch #3 :

ON   =   Winter
OFF   =   Summer

Make sure to select the right season is selected before making changes to the parameters.

Verify TC5-ITA Operation (Manual Mode)

- Power the TC5-ITA then select MANUAL MODE using the function selection buttons.

- Use the adjustment buttons to select the desired actuator status: select **"OPEn"** to open, **"CLoS"** to close or **"OFF"** to stop the actuator. The manual mode's status LED turns on when the actuator is controlled manually.

VERIFY THE MOTOR'S OPERATION:
- Manually open or close the air inlet panels as explained above. The air inlet panels should open when the **"OPEn"** option is selected and should close when the **"CLoS"** option is selected. If the air inlet panels move the opposite way, the motor operates in the wrong direction. Turn off the power and reverse the wires connected to the actuator's open and close terminals. Verify that the motor now operates in the right direction.

**VERIFY LIMIT POSITIONS OF AIR INLET PANELS:**
- Select **"CLoS"** to fully close the air inlet then put the actuator's limit switch at this position to prevent it from closing any further; select **"OPEn"** to fully open the air inlet then put a limit switch at this position to prevent the actuator from opening any further.

Basic Principle of Operation

The TC5-ITA operates in combination with an environment controller. It adjusts the air inlet opening according to the ventilation level provided by this controller. As the temperature increases and new stages are activated, the inlet is opened or closed accordingly. The user must assign a moving time or an opening percentage to each ventilation stage (or reference point) of the environment controller.

The opening time (or %) of Step 0 defines the initial position of the air inlet and corresponds to a room temperature of 0.4°F (0.2°C) below the controller set point. This normally corresponds to the minimum ventilation cycle.

Opening of the Air Inlet based on Ventilation Stages
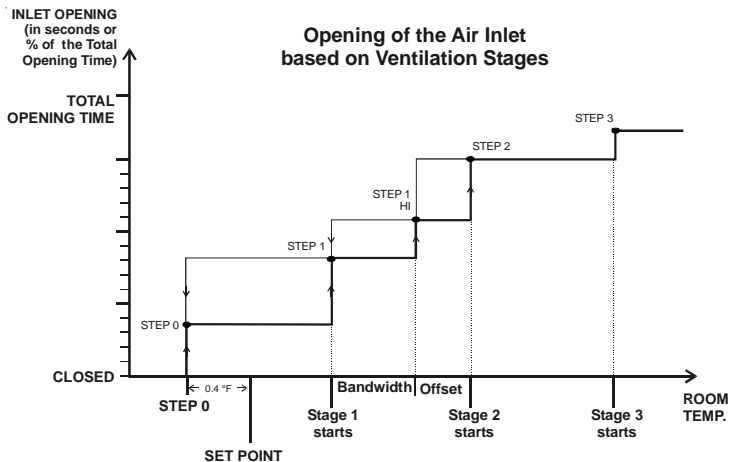
Inlet & Tunnel Modes:
When the last reference point is reached, the TC5-ITA can either open the air inlet according to a user-defined value (internal switch #12 to OFF), or it can fully open the air inlet up until the inlet reaches its limit switch (internal switch #12 to ON).

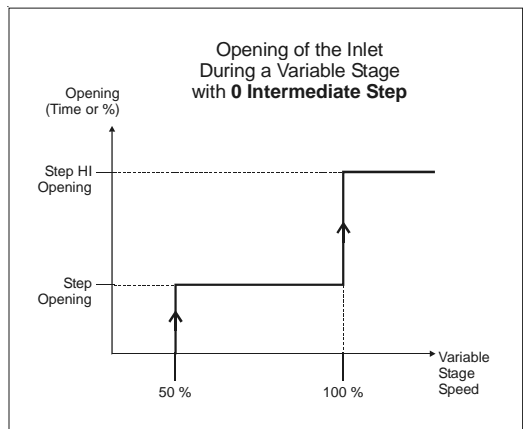**Opening of the Air Inlet During Variable Stages**

A step is also added when a variable stage starts increasing in speed, right after the stage's differential. This step is called " Step x Hi ". The step number is not increased as we are dealing with the same ventilation stage. In the previous graph, Step 1 corresponds to the activation of Stage 1 and Step 1 Hi signals the point where Stage 1 fans reach their full speed.
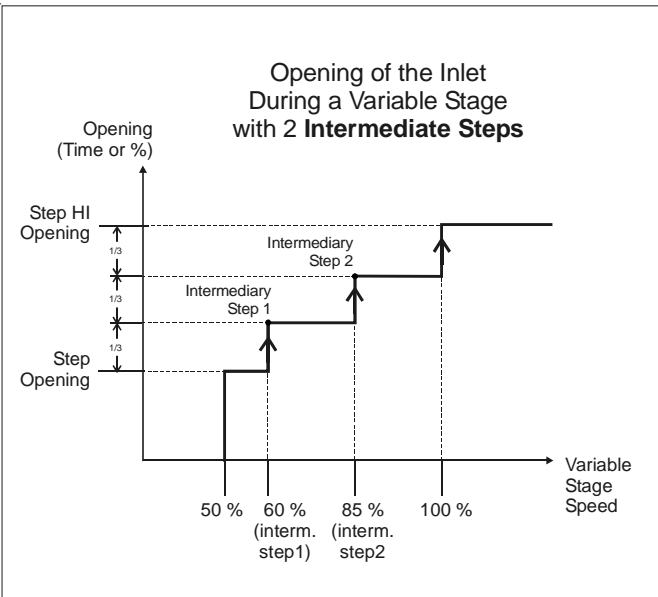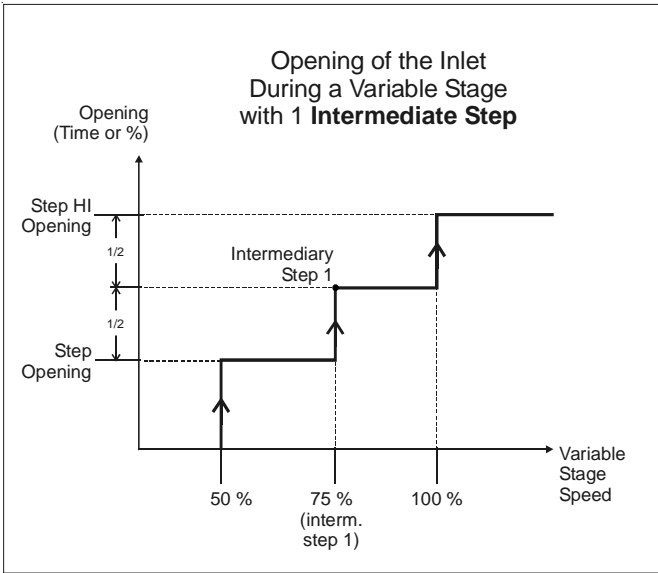
The user must thus define the inlet opening position (in time or %) required at the beginning and at the end of each variable stage. Once this is done, the user can choose to subdivide this opening time or % into 0 to 2 intermediate opening steps to progressively open the inlet during the variable stage.

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

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

The three following graphs illustrate when each intermediate step starts.

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

Opening
(Time or %)

Step HI
Opening

Step
Opening

50 %

100 %

Variable
Stage
Speed

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

Opening (Time or %)

Step HI Opening

1/2

Intermediary Step 1

1/2

Step Opening

Variable Stage Speed

50 %

75 % (interm. step 1)

100 %

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

Opening (Time or %)

Step HI Opening

1/3

Intermediary Step 2

1/3

Intermediary Step 1

1/3

Step Opening

Variable Stage Speed

50 %

60 % (interm. step1)

85 % (interm. step2)

100 %

Refer to the PROGRAMMING chapter to enable the proper number of intermediate opening steps.

Calibration

The TC5-ITA adjusts the opening of air inlets according to the ventilation stages provided by the environment controller. The calibration allows TC5-ITA units to detect how many On/Off and variable stages the environment controller uses.

When the calibration is launched on the PRIMARY TC5-ITA unit, the environment controller enters in test mode and starts simulating the room temperature. The controller increases the simulated room temperature in order to activate all of its ventilation stages. Each time a stage is activated, a reference point is added to the TC5-ITA.

BEFORE CALIBRATING THE TC5-ITA:

- It is preferable to calibrate the TC5-ITA while the room is empty because the calibration will cause the activation of all fan stages.

- Be sure that the circuit breakers at the service panel and all other protection devices are in a position such that the fans can be activated.

- Select the season you want to program with internal switch #3.

CALIBRATION SETTINGS:

1. Select **CALIBRATION** using the function selection buttons

2. Press and hold the right-arrow key for 2 seconds on the primary TC5-ITA unit to start the calibration.

3. Once the calibration is launched, press and hold the right-arrow key for 2 seconds on all TC5-ITA slave units within the next 30 seconds.

4. After 30 seconds, the environment controller enters in test mode and starts simulating the room temperature. The simulated room temperature gradually increases for TC5-ITA units to detect the number of On/Off and variable ventilation stages in use.

5. After the environment controller has reached the start temperature of its last ventilation stage, press and hold the right-arrow key of the PRIMARY TC5-ITA unit for 2 seconds to end the calibration. You can also wait for the environment controller to reach 120°F (49°C) — the calibration will automatically end at that moment. One reference point per ventilation stage will then be added to each calibrated TC5-ITA.

6. Refer to the programming chapter to assign an inlet opening to each reference point.

CONTROLLER FUNCTIONS

Clock Settings

- Select **"CLOCK"** using the function selection buttons.

- Press the right-arrow key once. The hours flash on the display.

- Use the adjustment buttons to set the hours to the desired value.

- Press the right-arrow key. The minutes flash on the display.

- Use the adjustment buttons to set the hours to the desired value.

Identification Number

This function displays the identification number of the TC5-ITA along with its primary/slave status. The identification number is set using jumpers on the COMLINK-2 communication card (see INSTALLATION PROCEDURE chapter).

To display the identification number:

- Select **"IDENTIFICATION NUMBER"** using the function selection buttons. The identification number is displayed, alternating with **"ID"** and **"PRI"** or **"SLA"** for a primary or slave unit.

Total Opening Time

You must specify the **exact time** that is required for the actuator to reach its maximum limit switch. The actuator's opening will then be limited by this opening time.

**Set this parameter before calibrating the inlets.**

- Select **"TOTAL OPENING TIME"** using the function selection buttons. The time that is required to fully open the air inlet is displayed (in seconds).

- Use the adjustment buttons to set the total opening time to the desired value.

- Proceed in similar fashion to set the total opening time on all TC5-ITA units.

Opening Display

The user must assign an inlet position to each ventilation stage. This position can either be specified as a moving time of the actuator or as a percentage of the total run time. When the percentage method is used, the controller converts the inlet's moving times into a percentage based on the total run time of the inlet.

Choose the desired opening display method:

- Time value: internal switch #11 is OFF
- %   internal switch #11 is ON.

ON	
OFF	
	11
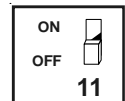
Note that displaying the inlet opening as a time value offers a little more precision than the percentage display.

Programming Inlet Openings

Once the calibration is completed, you must assign an inlet position to each ventilation stage of the environment controller. This position can either be specified as a moving time of the actuator or as a percentage of the total run time, depending on the chosen option (see OPENING DISPLAY chapter).

BEFORE PROGRAMMING INLET OPENINGS

• Install a static pressure measuring device or determine in advance the position required at each reference point by calculating, according to the fan airflow, the opening that will maintain the desired air speed at the inlet.

• Enter the total opening time of the inlet of each TC5-ITA unit.

PROGRAMMING INLET OPENINGS:

• Select **"PROGRAMMING"** using the function selection buttons (note that this menu is not available during the calibration) The opening time or the inlet position (in %) associated with step 0 is displayed. Moving times are displayed as follows:

  - A negative time value signals a closing time;
  - A positive time value signals an opening time;
  - The word **"Off"** means that the inlet completely closes once the temperature controller reaches the selected step.

• Use the adjustment buttons to specify the opening time or the inlet position (%) associated with step 0 (if required).

• Press the right-arrow key to select the next step.

• Use the adjustment buttons to specify the opening time that needs to be added to the previous opening, or to specify the inlet opening (in %) associated with the selected step.

• Proceed in similar fashion for all steps.

The cummulative opening times of an air inlet cannot exceed the inlet's **Total Opening Time** parameter value.

If the opening of the air inlet is set as a percentage, the controller may have to sligthly adjust the inlet opening values due to some internal restriction in the conversion process.

SELECTING THE NUMBER OF INTERMEDIATE OPENING STEPS

Follow this procedure to select the number intermediate opening steps that are performed during variable stages (see BASIC PRINCIPLE OF OPERATION chapter for further information).

- Select **"REMAINING RUN TIME / OPENING"** using the function selection buttons.

- Press and hold the right-arrow key for 2 seconds. The number of intermediate steps flashes, alternating with the letters **"NbS"** and **"StEP**.

- Use the adjustment buttons to set the number of intermediate steps to the desired value. This value ranges from 0 to 2 steps.

Remaining Run Time / Opening Menu

If the inlet opening is displayed as a time value (internal switch #11 is OFF), the REMAINING RUN TIME / OPENING menu shows a countdown of the remaining moving time of the air inlet (opening or closing time). A negative value is displayed when the inlet is closing. The letters "STOP" are displayed if the inlet is not moving.

If the inlet opening is displayed as a percentage, the REMAINING RUN TIME / OPENING menu shows the current opening (in %) of the air inlet.

Resetting the Inlet Position

Resetting the actuator's position allows clearing all accumulated time offets caused by the frequent openings and closings of the inlet. It is highly suggested to reset the inlet positions frequently to make sure they are always accurate.

Choose a Resetting Method:
The inlet reset can be done in two different ways:

1. **Reset the minimum position only:**
    The inlet closes during the **Reset Time Delay** each time a reset is performed. Once the inlet position is reset, the inlet returns to its previous position. Set internal switch #8 to OFF to use this reset method.
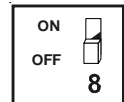
2. **Reset toward the nearest position**
    Each time a reset starts, the inlet panel is directed towards the closest position from its current opening: it then opens or closes during the **Reset Time Delay**. Once the reset is completed, the inlet returns to its previous position. This function prevents closing the air inlet when the room temperature already asks for a large opening of the panel. Set internal switch #8 to ON to use this reset method.
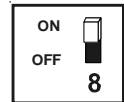
> ⚠️ **WARNING**
> This resetting method requires the presence of limit switches at both ends of the actuator.

Adjust the Reset Delay:

This is the delay that is required to fully open / close the inlet panel in order to reset the inlet position. The reset delay of an inlet must be greater than its total opening time. This ensures the inlet panel to be completely opened or closed while its position is being reset.

The Reset Delay can be adjusted from 60 to 900 seconds in increments of 15 seconds.

- Select **"RESET SETTINGS"** using the function selection buttons.

- Press the right-arrow key until the Reset Delay is displayed alternating with letters **"dEL".**

- Use the adjustment buttons to set the **Reset Delay** to the desired value.

- Proceed in similar fashion to set the Reset Delay on all TC5-ITA units.

Manual & Automatic Resets

The reset of an inlet can either be performed manually (which is useful when the user detects an offset in the inlet position) and/or it can be performed at regular intervals (auto-reset).

Manual Reset:
To perform a manual reset, switch internal switch #9 from OFF to ON.
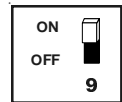
Automatic Reset:
Set internal switch #7 to ON to enable the auto-reset function then program the auto-reset settings as explained in the following section.
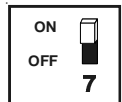
AUTO-RESET SETTINGS:

The following procedure shows how to specify the frequency at which automatic resets are performed.

> ⚠ **WARNING** **SINCE THE RESETS MAY CAUSE THE CLOSURE OF AIR INLETS, DO NOT PROGRAM THE RESET OF ALL INLETS SIMULTANEOUSLY.**

- Select **"RESET SETTINGS"** using the function selection buttons. The hour at which the auto-reset is performed flashes on the display. Note that this menu is only accessible if the auto-reset function is enabled (internal switch #7 is ON).

- Use the adjustment buttons to set the hour to the desired value.

- Press the right-arrow key once. The minutes flash on the display.

- Use the adjustment buttons to set the minutes to the desired value.

- Press the right-arrow key. The frequency at which auto-resets are performed is displayed, alternating with the letters **"PEr"**.

- Use the adjustment buttons to set the frequency to the desired value. The frequency can be adjusted once every 1 to 7 days. Select "1" to reset the position every day; select "2" to reset the position every 2 days, etc.

Temperature Alarms

Low Temperature Alarm:
The alarm contact is activated when the room temperature drops below "temperature set point- low alarm offset" as shown below. The Lo Offset is the temperature difference from the set point below which a low temperature alarm is set off. It can be adjusted from 0.5°F to 20°F (0.3°C to 11.1°C). Note that internal switch #4 must be set to ON for this alarm to be detected.

High Temperature Alarm:
The alarm contact is activated when the room temperature exceeds "temperature set point + high alarm offset" as shown below. The Hi Offset is the temperature difference from the set point above which a high temperature alarm is set off. It can be adjusted from 0.5°F to 40°F (0.3°C to 22.2°C). Note that internal switch #4 must be set to ON for this alarm to be detected.
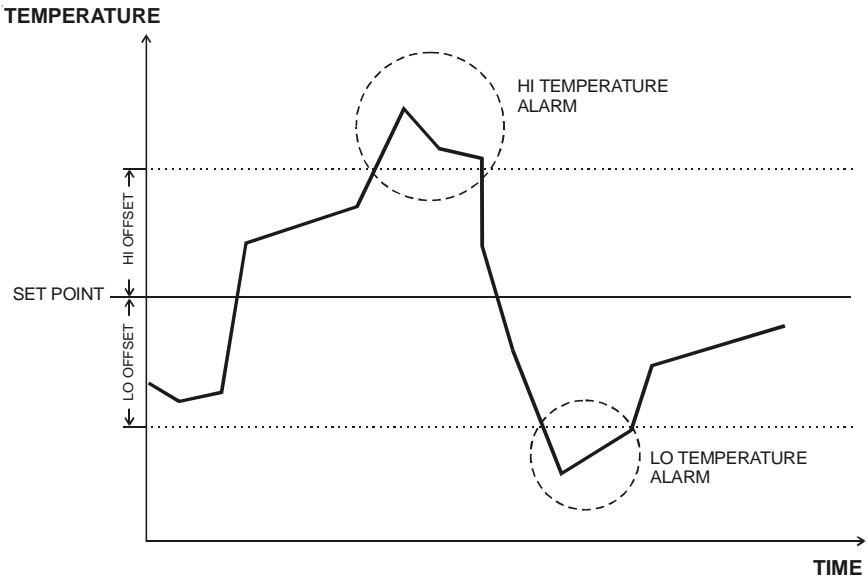
ALARM SETTINGS:

- Select "**ALARM SETTINGS**" using the function selection buttons. The Low Alarm Offset flashes on the display alternating with the letters "Lo". Note that this menu is only accessible it temperature alarms are enabled (internal switch #4 is ON).

- Use the adjustment buttons to adjust the Lo Offset to the desired value.

- Press the right-arrow key once. The Hi Offset flashes on the display alternating with the letters "Hi".

- Use the adjustment buttons to adjust the Hi Offset to the desired value.

Alarms - Readout

When an alarm occurs, the TC5-ITA activates the alarm contact and turns on the alarm pilot light. The alarm readout function displays all currently outstanding alarm situations.

- Select "**ALARM READOUT**" using the function selection buttons. The following codes can be displayed on screen:

ALARM CODE	MEANING
AL1	The communication between the TC5-ITA and the environment controller is disrupted.
AL2	The calibration is not valid.
AL3	the temperature probe is defective or is not connected properly.
AL4	Low temperature alarm.
AL5	High temperature alarm.
AL6	Reception of an unprogrammed stage
NoAL	There is no active alarm.

Room Temperature

This function gives a readout of the current room temperature. Minimum and maximum temperature values can also be displayed. Internal switch #5 must be set to ON and a temperature probe must be connected for this function to work.

⚠️ **WARNING**

If you let the display flash for more than 10 seconds, the controller resets the minimum and maximum temperature values currently in memory. In other words, the two values are reset to the current room temperature. To avoid resetting minimum and maximum values, return to the current opening display using the adjustment buttons before the 10 second delay has elapsed.

- Select **"ROOM TEMPERATURE"** using the function selection buttons. The current room temperature is displayed.

- Press the adjustment buttons' up arrow-key once. The maximum temperature value is displayed alternating with the letters "Hi".

- Press the adjustment buttons' down-arrow key once. The current room temperature is displayed once again.

- Press the adjustment buttons' down arrow-key once again. The minimum temperature value is displayed alternating with the letters "Lo".

TROUBLESHOOTING GUIDE

PROBLEM	SOLUTION
THERE IS NO DISPLAY.	THE CIRCUIT BREAKER AT THE SERVICE PANEL IS OFF OR TRIPPED. THE WIRING IS INCORRECT. THE F10 INPUT FUSE IS OPEN. THE VOLTAGE SELECTOR SWITCH IS IN THE WRONG POSITION. THE DISPLAY BOARD INTERCONNECT CABLE IS UN-PLUGGED FROM THE POWER SUPPLY BOARD.
THE ROOM TEMPERATURE DISPLAYED BY THE TC5-ITA SHOWS SUDDEN VARIATIONS.	A VARIATION IN RESISTANCE IS INDUCED ON THE SENSOR CONNECTED TO THE TC5-ITA - BE SURE THE SENSOR IS DRY AND MOVE IT AWAY FROM DRAFTS AND FROM ANY SOURCE OF RADIANT HEATING. THERE IS ELECTRICAL NOISE NEAR THE CABLE OF THE SENSOR CONNECTED TO THE TC5-ITA. - DO NOT RUN THE SENSOR CABLE NEXT TO OTHER POWER CABLES. WHEN CROSSING OTHER POWER CABLES, CROSS AT 90°.
THE TC5-ITA ALARM PILOT LIGHT IS ON BUT THE ALARM IS NOT ACTIVATED.	THE F9 ALARM FUSE IS OPEN. THE DISPLAY BOARD INTERCONNECT CABLE IS UN-PLUGGED FROM THE POWER SUPPLY BOARD. THE WIRING IS INCORRECT. THE TC5-ITA ALARM IS DEFECTIVE. THE TC5-ITA IS DEFECTIVE. - LISTEN TO SEE IF THERE IS A CLICKING SOUND WHEN THE ALARM PILOT LIGHT TURNS ON. IF THERE IS NO CLICKING SOUND, THE TC5-ITA IS DEFECTIVE. CONTACT YOUR DISTRIBUTOR TO REPAIR THE CONTROLLER.

TECHNICAL SPECIFICATIONS

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 the inlet and alarm if supplied with DC back-up voltage.

Power unit: 50/60 Hz, 30 VDC, 5A motor output, fuse F1-5A slow blow.

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

Probes: Low voltage (< 5V), isolated from the supply. Operating range: -40.0° to 120.0° F(-40.0° to 49° C). Accuracy: 1.8°F (1° C) between 41° and 95°F (5° and 35° C).

Enclosure: ABS, humidity and dust-tight.

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

INDEX