CONTROL LOGIC DESCRIPTION DOCUMENT

Natural Ventilation with Variable Fans

Configuration # : 41M33F0

Inputs/Outputs Table:

Inputs	Qty		Outputs	Qty
Inside Temperature Probe	2		Heater Stage	1
			Variable Stages	2
			On/Off Fan Stage	1
			Stir Fan Stage	1
			Cooling Stage	1
			Curtain Stages	2
			Baffle Stage	1
			Alarm	1

Equipment required:

Item	Description	Qty
IC-410ND	Intelligent Control, 4 inputs / 10 outputs	1
AIM-1	Air Inlet Module	1
VPM-2	Variable Module (10 Amps)	1
2004-1k	Temperature Probe (-6.0 to 168.6°F)	2

Configuration Versions:

Version	Date	Modification
F0	07-27-09	New.

1. GENERAL

For proper installation and full understanding of your IC-410ND, it is important to read both the **IC-410ND User's Manual** and this Control Logic Document. The User's Manual informs you on safety issues, warranty, sensors, adjustments of parameters and many other characteristics of the IC-410ND. However, this document explains all particularities of the configuration logic.

Definition
Throughout this document, the following terminology is used.

-DRT →	**D**esired **R**oom **T**emperature. This is the temperature goal for the room and it is also the reference temperature for all relative settings.
-RSP →	**R**elative **S**et **P**oint. Number of degrees relative to the *DRT* where a function begins.
-DIFF →	**DIFF**erential is the number of degree changed before stopping the output. For example, with a differential = 1°F, the IC-410ND turns on a fan at 70°F when temperature increases, but it will shut it off only at 69°F when the room is cooling down. The differential is necessary to avoid oscillations.
-MOD BAND →	**MOD**ulation Band is the number of degrees a variable fan takes to reach its full speed.

Expressions in *ITALICS* are user parameters.

Ventilation System Overview
This control operates 2 natural ventilation curtains which operate according to their zone temperature. There is 1 heater, 2 variable fans, an on/off fan, a stir fan, a cooling and a baffle stage that are operating according to the average temperature of the 2 zones. All probe readouts are equipped with a Hi/Lo function.

Refer to the wiring diagram in attachment for a typical installation.

2. DESCRIPTIONS OF PARAMETERS

Parameter # 1

AVERAGE TEMPERATURE

This parameter displays the average temperature of the building. All outputs and alarm logic, except curtains, will follow this parameter. The AVERAGE TEMPERATURE is displayed to the nearest 0.1°F from a minimum display of -6.0°F to a maximum display of 168.6°F.

F2: PROBE INPUT

The PROBE INPUT gives the access of each temperature probe which makes the AVERAGE TEMPERATURE. To access the probe input function, press F2 at AVERAGE TEMPERATURE parameter, the readouts shown are: the physical location of the probe on the IC-410ND (input #) and its temperature value. Press F2 while in first probe readouts, this will give the readouts of the second probe.

F3: HI/LO

In addition to the readout of the probe, the parameter can record the lowest and highest value reached. To access the Hi/Lo function, press F3. To clear the respective Hi/Lo values, after pressing F3, press and hold the + and - buttons until CLR appears on the LED display.

Parameter # 2

CURTAIN 1 TEMPERATURE

This parameter displays the actual curtain 1 temperature. The curtain 1 will follow this parameter. This parameter is also used to compute the AVERAGE TEMPERATURE. The CURTAIN 1 TEMPERATURE is displayed to the nearest 0.1°F from a minimum display of -6.0°F to a maximum display of 168.6°F.

F3: HI/LO

In addition to the readout of the probe, the parameter can record the lowest and highest value reached. To access the Hi/Lo function, press F3. To clear the respective Hi/Lo values, after pressing F3, press and hold the + and - buttons until CLR appears on the LED display.

Parameter # 3

CURTAIN 2 TEMPERATURE

This parameter displays the actual curtain 2 temperature. The curtain 2 will follow this parameter. This parameter is also used to compute the AVERAGE TEMPERATURE. The ZONE 2 TEMPERATURE is displayed to the nearest 0.1°F from a minimum display of -6.0°F to a maximum display of 168.6°F.

F3: HI/LO

In addition to the readout of the probe, the parameter can record the lowest and highest value reached. To access the Hi/Lo function, press F3. To clear the respective Hi/Lo values, after pressing F3, press and hold the + and - buttons until CLR appears on the LED display.

Parameter # 4

DESIRED ROOM TEMPERATURE (DRT)

This parameter is used to establish the target room temperature. The *DRT* is used as the reference point for other relative settings. The *DRT* is adjusted in 0.5°F increments from a minimum setting of 32.0°F to a maximum setting of 120.0°F.

Parameter # 5

HEATER RSP

This parameter is used to establish the temperature RSP at which the heater begins to operate. The heater follows the average temperature. The *HEATER RSP* is adjusted in 0.5°F increments from a minimum setting of -15.0°F to a maximum setting of -1.0°F.

Ex: See *HEATER DIFF* for example.

F2: ***HEATER DIFFERENTIAL***

This parameter is used to establish the differential for the heater output. The *HEATER DIFFERENTIAL* is adjusted in 0.5°F increments from a minimum setting of 0.5°F to a maximum setting of 5.0°F.

Ex: *DRT* = 70.0°F, *HEATER RSP* = -5.0°F and the *HEATER DIFFERENTIAL* = 1.0°F then, when the average temperature decrease to 65.0°F, the heater output will be activated. Heater will deactivate when the temperature warm up to 66.0°F.

F3: ***HEATER MANUAL OVERRIDE***

This parameter is used to control manually the heater output. If you set the parameter to AUTO, the heater output will follow the configuration logic. If you set the parameter to 0, it will force the heater output to stay off. If you set the parameter to ON, the heater output will be forced ON.

Parameter # 6

FAN 1 RSP

This parameter is used to establish the RSP at which fan 1 begins to modulate. Fan 1 will run at *FAN 1 MINIMUM SPEED* when average temperature is below *FAN 1 RSP*. This parameter is adjusted in 0.5°F increments from a minimum setting of -5.0 °F to maximum of 20.0°F.

F2: ***FAN 1 MINIMUM SPEED***

This parameter is used to establish the minimum speed for fan 1. This parameter is adjusted in 1% increments from a minimum setting of 12% to a maximum setting of 100%.

F3: ***FAN 1 MODULATION BAND***

This parameter is used to establish the range of temperature where fan 1 speeds up as the average temperature increase. Fan 1 increase its speed from its minimum speed (*FAN 1 MINIMUM SPEED* at *FAN 1 RSP)* to the maximum speed at the end of the *FAN 1 MODULATION BAND*. Fan 1 will run at *FAN 1 MINIMUM SPEED* when average temperature is below *FAN 1 RSP*. This parameter is adjusted in 0.5°F increments from a minimum setting of 0.5°F to maximum setting of 5.0°F.

Parameter # 7

FAN 2 RSP

This parameter is used to establish the RSP at which fan 2 begins to modulate. This parameter is adjusted in 0.5°F increments from a minimum setting of -5.0 °F to maximum of 20.0°F.

F2: ***FAN 2 MINIMUM SPEED***

This parameter is used to establish the minimum speed for fan 2. This parameter is adjusted in 1% increments from a minimum setting of 12% to a maximum setting of 100%.

F3: ***FAN 2 MODULATION BAND***

This parameter is used to establish the range of temperature where fan 2 speeds up as the average temperature increase. Fan 2 increases its speed from its minimum speed (*FAN 2 MINIMUM SPEED* at *FAN 2 RSP)* to the maximum speed at the end of the *FAN 2 MODULATION BAND*. This parameter is adjusted in 0.5°F increments from a minimum setting of 0.5°F to maximum setting of 5.0°F.

Parameter # 8

FAN 3 RSP

This parameter is used to establish the RSP at which fan 3 begins to operate. This parameter is adjusted in 0.5°F increments from a minimum setting of -5.0 °F to maximum of 20.0°F.

F2: ***FAN 3 DIFFERENTIAL***

This parameter is used to establish the differential for the fan 3 output. This parameter is adjusted in 0.5°F increments from a minimum setting of 0.5°F to a maximum setting of 5.0°F.

F3: ***FAN 3 MANUAL OVERRIDE***

This parameter is used to control manually the fan 3 output. If you set the parameter to AUTO, the fan 3 output will follow the configuration logic. If you set the parameter to 0, it will force the fan 3 output to stay off. If you set the parameter to ON, the fan 3 output will be forced ON.

Parameter # 9

FAN 1 NATURAL SHUTOFF

This parameter is used to deactivated the fan 1 in natural mode. If *FAN 1 NATURAL SHUTOFF* is set to ON and if either of the curtains reach its RSP then, fan 1 will be deactivated after the curtain has **opened** for 3 cycles.

F2: ***FAN 2 NATURAL SHUTOFF***

This parameter is used to deactivated the fan 2 in natural mode. If *FAN 2 NATURAL SHUTOFF* is set to **ON** and if either of the curtains reach its RSP then, fan 2 will be deactivated after the curtain has **opened** for 3 cycles.

F2: ***FAN 3 NATURAL SHUTOFF***

This parameter is used to deactivated the fan 3 in natural mode. If *FAN 3 NATURAL SHUTOFF* is set to **ON** and if either of the curtains reach its RSP then, fan 3 will be deactivated after the curtain has **opened** for 3 cycles.

OFF = Respective fan activated in natural mode

ON = Respective fan deactivated in natural mode

Note: To exit natural mode, either of the curtains that have opened for 3 cycles, have to close 1 cycle.

Parameter # 10

When CURTAIN 1 TEMPERATURE is between opening and closing set points, curtain 1 will continue to operate according to the last instruction until it receives the opposite demand.

CURTAIN 1 RSP **(Follows CURTAIN 1 TEMPERATURE reading)**

This parameter is used to establish the relative set point at which the curtain 1 will start to open on a timer. Below that set point minus *CURTAIN 1 DIFFERENTIAL*, the curtain 1 will close on a timer and below that set point minus 4°F, the curtain will close continuously (differential 1°F). There is a 10 seconds delay between the opening and the closing of the curtain. This parameter is adjusted in 0.5°F increments from a minimum setting of -5.0 °F to maximum of 20.0°F.

F2: ***CURTAIN 1 DIFFERENTIAL***

This parameter is used to establish the differential of the curtain 1. When the CURTAIN 1 TEMPERATURE reaches *CURTAIN 1 RSP*, the curtain 1 will start to open on a timer. When the CURTAIN 1 TEMPERATURE drops down to *CURTAIN 1 RSP - DIFFERENTIAL*, the curtain 1 will start to close on a timer. This parameter is adjusted in 0.5°F increments from a minimum setting of 0.5°F to a maximum setting of 5.0°F.

F3: ***CURTAIN 1 MANUAL OVERRIDE***

This parameter is used to manually control the curtain 1 output. If you set the parameter to AUTO, the curtain 1 output will follow the configuration logic. If you set the parameter to 0, the curtain 1 will not move. If you set the parameter to 1, the curtain 1 will be forced to open. If you set the parameter to CLO, the curtain 1 will be forced to close.

Parameter # 11

CURTAIN 1 TIMER PERIOD

This parameter is used to establish the period of the curtain 1 timer. This parameter is adjusted in 1 minute increments from a minimum setting of 1 minute to a maximum setting of 10 minutes.

Ex: See *CURTAIN 1 %RUN TIME* for example.

F3: ***CURTAIN 1 %RUN TIME***

This parameter is used to establish the run time of the curtain 1 timer. This parameter is adjusted in 1% increments from a minimum setting of 0% to maximum setting of 100%.

Ex: If *CURTAIN 1 %RUN TIME* = 10% and *CURTAIN 1 TIMER PERIOD* = 5min then, the opening or closing of the curtain will cycle On 30 seconds and Off 4 minutes 30 seconds.

Parameter # 12

When CURTAIN 1 TEMPERATURE is between opening and closing set points, curtain 1 will continue to operate according to the last instruction until it receives the opposite demand.

CURTAIN 2 RSP **(Follows CURTAIN 2 TEMPERATURE reading)**

This parameter is used to establish the relative set point at which the curtain 2 will start to open on a timer. Below that set point minus *CURTAIN 2 DIFFERENTIAL*, the curtain 2 will close on a timer and below that set point minus 4°F, the curtain will close continuously (differential 1°F). There is a 10 seconds delay between the opening and the closing of the curtain. This parameter is adjusted in 0.5°F increments from a minimum setting of -5.0 °F to maximum of 20.0°F.

F2: ***CURTAIN 2 DIFFERENTIAL***

This parameter is used to establish the differential of the curtain 2. When the CURTAIN 2 TEMPERATURE reaches *CURTAIN 2 RSP*, the curtain 2 will start to open on a timer. When the CURTAIN 2 TEMPERATURE drops down to *CURTAIN 2 RSP - DIFFERENTIAL*, the curtain 2 will start to close on a timer. This parameter is adjusted in 0.5°F increments from a minimum setting of 0.5°F to a maximum setting of 5.0°F.

F3: ***CURTAIN 2 MANUAL OVERRIDE***

This parameter is used to manually control the curtain 2 output. If you set the parameter to AUTO, the curtain 2 output will follow the configuration logic. If you set the parameter to 0, the curtain 2 will not move. If you set the parameter to 1, the curtain 2 will be forced to open. If you set the parameter to CLO, the curtain 2 will be forced to close.

Parameter # 13

CURTAIN 2 TIMER PERIOD

This parameter is used to establish the period of the curtain 2 timer. This parameter is adjusted in 1 minute increments from a minimum setting of 1 minute to a maximum setting of 10 minutes.

Ex: See *CURTAIN 2 %RUN TIME* for example.

F3: ***CURTAIN 2 %RUN TIME***

This parameter is used to establish the run time of the curtain 2 timer. This parameter is adjusted in 1% increments from a minimum setting of 0% to maximum setting of 100%.

Ex: If *CURTAIN 2 %RUN TIME* = 10% and *CURTAIN 2 TIMER PERIOD* = 5min then, the opening or closing of the curtain 2 will cycle On 30 seconds and Off 4 minutes 30 seconds.

Parameter # 14

STIR FAN RSP

This parameter is used to establish the RSP at which stir fan begins to operate. This parameter is adjusted in 0.5°F increments from a minimum setting of -5.0 °F to maximum of 20.0°F.

F2: ***STIR FAN DIFFERENTIAL***

This parameter is used to establish the differential for the stir fan output. This parameter is adjusted in 0.5°F increments from a minimum setting of 0.5°F to a maximum setting of 5.0°F.

F3: ***STIR FAN MANUAL OVERRIDE***

This parameter is used to manually control the stir fan output. If you set the parameter to AUTO, the stir fan output will follow the configuration logic. If you set the parameter to 0, it will force the stir fan output to stay off. If you set the parameter to ON, the stir fan output will be forced ON.

Parameter # 15

COOLING RSP

This parameter is used to establish the relative set point at which the cooling output will activate on a timer. This parameter is adjusted in 0.5°F increments from a minimum setting of -5.0 °F to maximum of 30.0°F.

F2: ***COOLING TIMER PERIOD***

This parameter is used to establish the period of the cooling timer. This parameter is adjusted in 1 minute increments from a minimum setting of 0 minutes to a maximum setting of 20 minutes.

Ex: See *COOLING %RUN TIME* for example.

F3: ***COOLING %RUN TIME***

This parameter is used to establish the run time of the cooling timer. This parameter is adjusted in 1% increments from a minimum setting of 0% to maximum setting of 100%.

Ex: If *COOLING %RUN TIME* = 10% and *COOLING TIMER PERIOD* = 5min then, the cooling output will cycle On 30 seconds and Off 4 minutes 30 seconds.

Parameter # 16

F2(1): ***BAFFLE POSITION FAN 1 MIN SPEED***

This parameter is used to establish the position of the baffle when only fan 1 is running at its minimum speed. The *BAFFLE POSITION FAN 1 MIN SPEED* is adjusted in 1% increments from 0% to 100%.

F2(2): ***BAFFLE POSITION FAN 1 MAX SPEED***

This parameter is used to establish the position of the baffle when fan 1 is running at its maximum speed. The *BAFFLE POSITION FAN 1 MAX SPEED* is adjusted in 1% increments from 0% to 100%.

F2(3): ***BAFFLE POSITION FAN 2 MIN SPEED***

This parameter is used to establish the position of the baffle when fan 2 is running at its minimum speed. The *BAFFLE POSITION FAN 2 MIN SPEED* is adjusted in 1% increments from CLOSE, 1% to 100%.

F2(4): ***BAFFLE POSITION FAN 2 MAX SPEED***

This parameter is used to establish the position of the baffle when fan 2 is running at its maximum speed. The *BAFFLE POSITION FAN 2 MAX SPEED* is adjusted in 1% increments from 0% to 100%.

F2(5): ***BAFFLE POSITION FAN 3***

This parameter is used to establish the position of the baffle when fan 3 is running. The *BAFFLE POSITION FAN 2* is adjusted in 1% increments from 0% to 100%.

Parameter # 17

BAFFLE MANUAL OVERRIDE

This parameter is used to manually operate the baffle to perform the calibration operations. If this parameter is set to "AUTO", the baffle will follow the calculated position. If it is set to "0", the baffle will continuously close. If it is set to "1", the baffle will maintain its position. If it is set to "OPEN", the ceiling baffle will continuously open. This parameter can be set to "AUTO", "0", "1" or "OPEN".

F2: ***BAFFLE SET LOW LIMIT***

This parameter is used to set the low potentiometer limit for baffle calibration. This will effectively define the lowest possible value for the baffle's potentiometer and the 0% position. To obtain this value, close the baffle completely using the *BAFFLE MANUAL OVERRIDE* parameter. Once the baffle is completely closed, set this parameter to "CLR", at this point, the control will attempt to save the baffle's low limit. If this save succeed, the LED named "Baffle Save High/Low Limit" will light up, this LED will turn off when this parameter is set back to 0. If this operation fails, the LED named "Baffle Problem Code" will light up and BAFFLE PROBLEM CODE parameter will show the appropriate erratic code. In this last case, calibration must be performed once the situation is corrected.

F3: ***BAFFLE SET HIGH LIMIT***

This parameter is used to set the high potentiometer limit for baffle calibration. This will effectively define the highest possible value for the baffle's potentiometer and the 100% position. To obtain this value, open the baffle completely using the *BAFFLE MANUAL OVERRIDE* parameter. Once the baffle is completely open, set this parameter to "CLR", at this point, the control will attempt to save the baffle's high limit. If this save succeed, the LED named "Baffle Save High/Low Limit" will light up, this LED will turn off when this parameter is set back to 0. If this operation fails, the LED named "Baffle Problem Code" will light up and BAFFLE PROBLEM CODE parameter will show the appropriate erratic code. In this last case, calibration must be performed once the situation is corrected.

Parameter # 18

FAN 1 MANUAL OVERRIDE

This parameter is used to manually control the fan 1 output. If you set the parameter to AUTO, the fan 1 output will follow the configuration logic. If you set the parameter to 0, it will force the fan 1 output to stay off. If you set the parameter to a value between 1 and 100, the fan 1 will run at the corresponding speed.

F2: ***FAN 2 MANUAL OVERRIDE***

This parameter is used to manually control the fan 2 output. If you set the parameter to AUTO, the fan 2 output will follow the configuration logic. If you set the parameter to 0, it will force the fan 2 output to stay off. If you set the parameter to a value between 1 and 100, the fan 2 will run at the corresponding speed.

F3: ***COOLING MANUAL OVERRIDE***

This parameter is used to manually control cooling output. If you set the parameter to AUTO, the cooling output will follow the configuration logic. If you set the parameter to 0, it will force the cooling output to stay off. If you set the parameter to ON, the cooling output will be forced ON.

Parameter # 19

ALARM HIGH TEMP RSP

This parameter is used to establish the temperature RSP at which high temperature alarm condition will occur. The *ALARM HIGH TEMP RSP* is adjusted in 1.0°F increments from a minimum setting of 5.0°F to a maximum setting of 32.0°F. **See also the alarm section 3 for other alarm conditions.**

Ex: See *ALARM LOW TEMP RSP* for example

F2: ***ALARM LOW TEMP RSP***

This parameter is used to establish the temperature RSP at which low temperature alarm condition will occur. The *ALARM LOW TEMP RSP* is adjusted in 1.0°F increments from a minimum setting of -32.0°F to a maximum setting of -5.0°F. **See also the alarm section 3 for other alarm conditions.**

Ex: *DRT* = 70.0°F, *ALARM HIGH TEMP RSP* = 10.0°F, *ALARM LOW TEMP RSP* = -5.0°F then, when the AVERAGE TEMPERATURE is not within 65.0°F and 80.0°F an alarm condition will occur.

Parameter # 20

BAFFLE PRECISION

This parameter is used to adjust the precision of the baffle. If the baffle moves too often, increase this setting. When this is done, the baffle will then require a greater difference between its actual position and the requested one before moving. The precision of the baffle is adjusted in 1% increments from 1% to 20%.

F2: ***BAFFLE ALARM OPTION***

This parameter is used to determine if the alarm will activate when the baffle's potentiometer value cannot be read. If this option is set to ON and the baffle's potentiometer has an out of range reading, the alarm relay will activate. If this option is set to OFF, only an alarm message will be displayed in the case of a potentiometer problem.

F3: ***BAFFLE MAX RUN TIME***

This parameter is used to set the maximum run time of the baffle within a ten minute period. When the baffle has moved for a time greater than the value of this parameter within a ten minute period, the module will not activate the open or close relays until the baffle has had time to cool down until the remainder of the 10 minutes. This value should be set according to the manufacturer's specifications. Setting this value to "OFF" will deactivate the module cool down function. This parameter is adjusted in 1 minute increments from 1 minute to 9 minutes, "OFF".

Parameter # 21

BAFFLE PROBLEM CODE

This parameter displays the current baffle's problem code. This next table shows a listing of possible codes that can be displayed by this parameter.

Code	Problem
0	No problem.
1	Can't save baffle's low limit. (while *BAFFLE SET LOW LIMIT* is set to CLR)
2	Can't save baffle's high limit. (while *BAFFLE SET HIGH LIMIT* is set to CLR)
3	Baffle cool down.
4	Baffle's potentiometer problem, check baffle's potentiometer.
5	Baffle module not responding.

Parameter # 22

BAFFLE TECH. PARAMETER DISPLAY

This parameter is reserved for technical support personnel.

Parameter # 23

BAFFLE TECH. PARAMETER RESULT

This parameter is reserved for technical support personnel.

3. ALARM

The alarm relay is normally activated, but it will deactivate 8 seconds after a power failure or after one of the following events:

a. the IC-410ND fails
b. the AVERAGE TEMPERATURE exceeds the limits *ALARM HIGH TEMP RSP* and *ALARM LOW TEMP RSP*.
c. an inside temperature probe is defective (Open or short circuit) or unplugged.
d. an inside temperature probe vary more than 20°F/min.
e. If the baffle's potentiometer has an out of range reading and the *BAFFLE ALARM OPTION* is set to ON.

ATTACHMENTS

- Parameter Table
- Labels
- Wiring Diagram

PARAMETER TABLE

PARAMETER DESCRIPTION		Restrictions*	CONTROL VALUES				
			MIN	MAX	PRESET		
1. AVERAGE TEMPERATURE	**deg. F**		-6.0	168.6	*****	*****	*****
F2: Probe Input #	deg. F		-6.0	168.6	PRB1-2	*****	*****
F3: Hi/Lo	**deg. F**	**CLR**	-6.0	168.6	*****	*****	*****
2. CURTAIN 1 TEMPERATURE	**deg. F**		-6.0	168.6	*****	*****	*****
F2: Probe Input #	deg. F		-6.0	168.6	PRB1	*****	*****
F3: Hi/Lo	**deg. F**	**CLR**	-6.0	168.6	*****	*****	*****
3. CURTAIN 2 TEMPERATURE	**deg. F**		-6.0	168.6	*****	*****	*****
F2: Probe Input #	deg. F		-6.0	168.6	PRB2	*****	*****
F3: Hi/Lo	**deg. F**	**CLR**	-6.0	168.6	*****	*****	*****
4. DESIRED ROOM TEMPERATURE	**deg. F**	**none**	32.0	120.0	70.0		
5. HEATER RSP	**deg. F**	**none**	-15.0	-1.0	-3.0		
F2: Heater Differential	deg. F	**none**	0.5	5.0	1.5		
F3: Heater Manual Override	deg. F	**none**	AUTO, 0	ON	AUTO		
6. FAN 1 RSP	**deg. F**	**none**	-5.0	20.0	0.0		
F2: Fan 1 Minimum Speed	%	**none**	12	100	35		
F3: Fan 1 Modulation Band	deg. F	**none**	0.5	5.0	2.0		
7. FAN 2 RSP	**deg. F**	**none**	-5.0	20.0	2.0		
F2: Fan 2 Minimum speed	%	**none**	12	100	35		
F3: Fan 2 Modulation band	deg. F	**none**	0.5	5.0	2.0		
8. FAN 3 RSP	**deg. F**	**none**	-5.0	20.0	4.0		
F2: Fan 3 Differential	deg. F	**none**	0.5	5.0	1.0		
F3: Fan 3 Manual Override		**none**	AUTO, 0	ON	AUTO		
9. FAN 1 NATURAL SHUTOFF	**On/Off**	**none**	OFF	ON	OFF		
F2: Fan 2 Natural Shutoff	On/Off	**none**	OFF	ON	OFF		
F3: Fan 3 Natural Shutoff	On/Off	**none**	OFF	ON	OFF		
10. CURTAIN 1 RSP	**deg. F**	**none**	-5.0	20.0	5.0		
F2: Curtain 1 Differential	deg. F	**none**	0.5	5.0	2.0		
F3: Curtain 1 Manual Override		**none**	AUTO, 0	1 (Open), CLO (Close)	AUTO		
11. CURTAIN 1 TIMER	**min**	**none**	1	10	5		
F2: Curtain 1 % Run time	%	**none**	0	100	20		
12. CURTAIN 2 RSP	**deg. F**	**none**	-5.0	20.0	5.0		
F2: Curtain 2 Differential	deg. F	**none**	0.5	5.0	2.0		
F3: Curtain 2 Manual Override		**none**	AUTO, 0	1 (Open), CLO (Close)	AUTO		
13. CURTAIN 2 TIMER	**min**	**none**	1	10	5		
F2: Curtain 2 % Run time	%	**none**	0	100	20		
14. STIR FAN RSP	**deg. F**	**none**	-5.0	20.0	10.0		
F2: Stir Fan Differential	deg. F	**none**	0.5	5.0	2.0		
F3: Stir Fan Manual Override	deg. F	**none**	AUTO, 0	ON	AUTO		
15. COOLING RSP	**deg. F**	**none**	-5.0	30.0	12.0		
F2: Cooling Timer Period	min	**none**	0	20	5		
F3: Cooling % Run Time	%	**none**	0	100	10		

PARAMETER DESCRIPTION		Restrictions*	CONTROL VALUES				
			MIN	MAX	PRESET		
16. BAFFLE POSITION							
F2(1): Baffle Position Fan 1 Min Speed	%	**none**	0	100	25		
F2(2): Baffle Position Fan 1 Max Speed	%	**none**	0	100	50		
F2(3): Baffle Position Fan 2 Min Speed	%	**none**	0	100	75		
F2(4): Baffle Position Fan 2 Max Speed	%	**none**	0	100	100		
F2(5): Baffle Position Fan 3	%	**none**	0	100	100		
17. BAFFLE MANUAL OVERRIDE		**none**	AUTO, 0 (Close)	1 (Hold), OPEN	AUTO		
F2: Baffle Set Low Limit		**none**	0	CLR	0		
F3: Baffle Set High Limit		**none**	0	CLR	0		
18. FAN 1 MANUAL OVERRIDE		**none**	AUTO, 0	100	AUTO		
F2: Fan 2 Manual Override		**none**	AUTO, 0	100	AUTO		
F3: Cooling Manual Override		**none**	AUTO, 0	ON	AUTO		
19. ALARM HIGH TEMP. RSP	**deg. F**	**none**	5.0	40.0	40.0		
F2: Alarm Low Temp. RSP	deg. F	**none**	-40.0	-5.0	-40.0		
20. BAFFLE PRECISION	**%**	**none**	1	20	1		
F2: Baffle Alarm Option	On/Off	**none**	OFF	ON	ON		
F2: Baffle Max Run Time	min	**none**	1	9, OFF	OFF		
21. BAFFLE PROBLEM CODE		**none**	0	5	*****		
22. BAFFLE TECH. PARAMETER DISPLAY		**none**	OFF, 1	15	1		
23. BAFFLE TECH. PARAMETER RESULT		**none**	-32768	32767	*****		

*** Restriction legend of symbols**	
none	Parameter adjustable by the user or the supervisor
	Invisible to the user when Supervisor mode OFF
	Read only to the user when Supervisor mode OFF
	Follows a ramping curve when ramping function ON
	Can not be changed
CLR	Press + − simultaneously to clear

41M33F0

Average Temperature F3:Hi/Lo	1
Curtain 1 Temperature F3:Hi/Lo	2
Curtain 2 Temperature F3:Hi/Lo	3
Desired Room Temperature	4
Heater RSP F2:Differential F3:Manual Override	5
Fan 1 RSP F2:Minimum Speed F3:Modulation Band	6
Fan 2 RSP F2:Minimum Speed F3:Modulation Band	7
Fan 3 RSP F2:Differential F3:Manual Override	8
Fan 1 Natural Shutoff F2:Fan 2 Nat Shutoff F3:Fan 3 Nat Shutoff	9
Curtain 1 RSP F2:Differential F3:Manual Override	10
Curtain 1 Timer F2:% Run Time	11
Curtain 2 RSP F2:Differential F3:Manual Override	12
Curtain 2 Timer F2:% Run Time	13
Stir Fan RSP F2:Differential F3:Manual Override	14
Cooling RSP F2:Timer Period F3:% Run Time	15
Baffle Position F2(1):1 Min F2(2):1 Max F2(3):2 Min F2(4):2 Max F2(5):3	16
Baffle Manual Override F2:Set Low Limit F3:Set High Limit	17
Fan 1 Manual Override F2:Fan 2 Override F3:Cooling Override	18
Alarm High Temp RSP F2:Alarm Low Temp RSP	19
Baffle Precision F2:Alarm Option F3:Max Run Time	20

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Baffle Precision F2:Alarm Option F3:Max Run Time	20

1 FAN 1

2 FAN 2

3 FAN 3

4 STIR FAN

5 HEATER

6 COOLING

7 CURTAIN 1 OPEN / CLOSE

8 CURTAIN 2 OPEN / CLOSE

9 BAFFLE LIMIT SAVED

10 BAFFLE PROBLEM CODE

1 FAN 1

2 FAN 2

3 FAN 3

4 STIR FAN

5 HEATER

6 COOLING

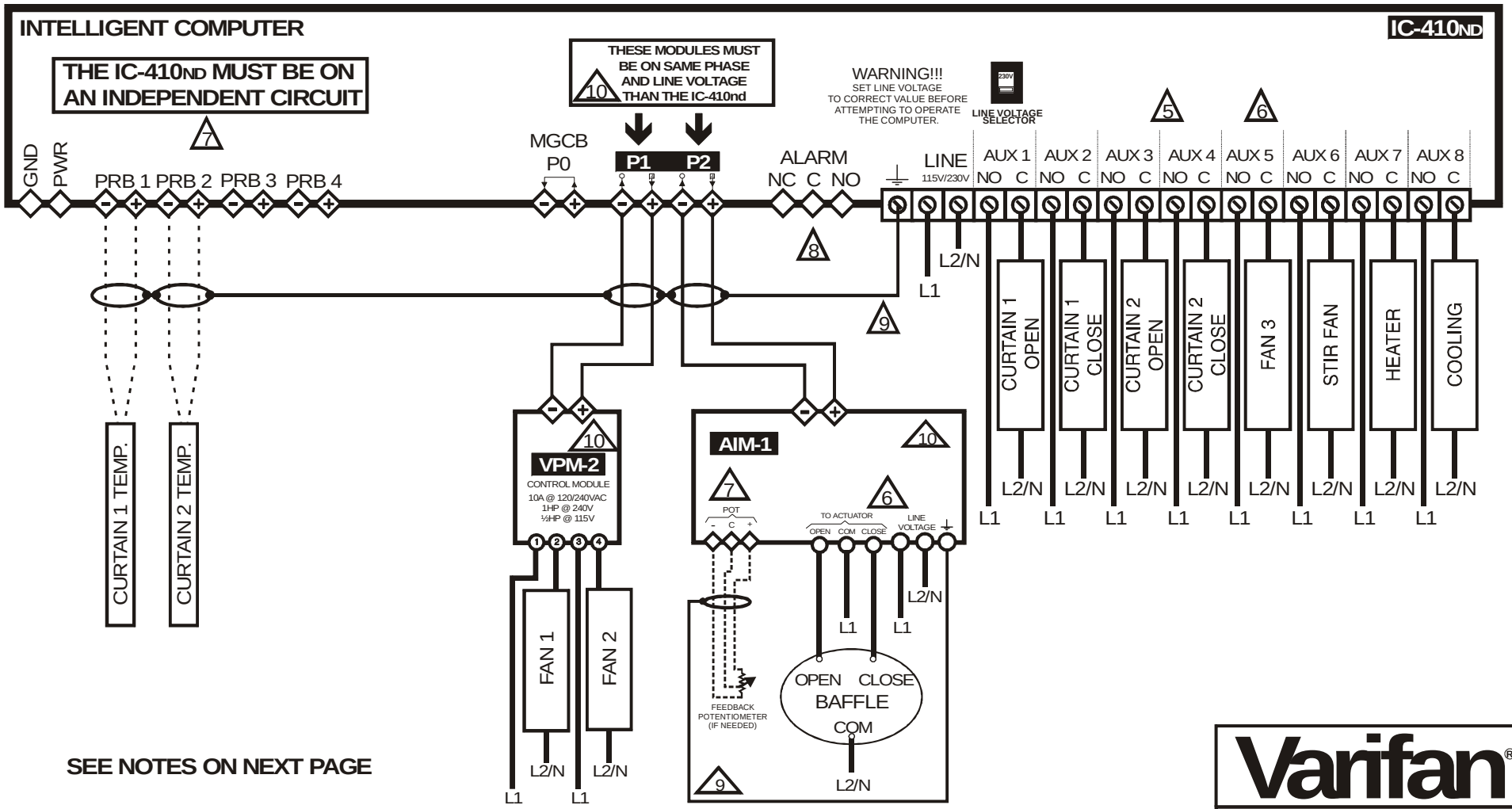
7 CURTAIN 1 OPEN / CLOSE

8 CURTAIN 2 OPEN / CLOSE

9 BAFFLE LIMIT SAVED

10 BAFFLE PROBLEM CODE

WIRING DIAGRAM CONFIGURATION 41M33F0



41M33F0
Electrician's notes
wiring tips and hints (see guide for details)

1 ---------- (PROBE WIRING) SHIELDED WIRE AWG #18 WITH 16/30 STRANDING, 492ft (150m) MAXIMUM LENGTH. (Ex.: DECA 73-310)
For other probe, refer to specific probe manual for appropriate maximum length and wire size or use AWG #18, 492ft (150m) MAXIMUM LENGTH.

2 ———— (COMMUNICATION WIRING) SHIELDED LOW CAPACITANCE WIRE, (Capacitance between conductors @ 1Khz = 24pF/ft), TWISTED PAIR (8 twist/ft), AWG #18 TO 22, 820ft (250m) MAX LENGTH. (Ex.: BELDEN 8761)

3 ▬▬▬ HIGH VOLTAGE WIRE INSTALLED ACCORDING TO LOCAL WIRING CODE.

4 INSTALL LOW VOLTAGE WIRES (PROBES, COMPUTER LINK OR POTENTIOMETER WIRES) AT LEAST 12in. (30cm) AWAY FROM HIGH VOLTAGE WIRES (120/230VAC, 24VDC). ALWAYS CROSS HIGH AND LOW VOLTAGE WIRES AT A 90-DEGREE ANGLE.

△**5** RELAYS: 10A @ 250VAC RESISTIVE, MOTOR 1HP @ 250VAC, 1/2HP 120VAC AT EACH OUTPUT (AUX 1-8).

△**6** MAXIMUM 2 WIRES OF SAME SIZE PER BLACK TERMINAL, NO BIGGER THAN AWG #12, NO SMALLER THAN AWG #22.

△**7** 1 WIRE ONLY PER GREEN TERMINAL. USE WIRE CONNECTOR IF YOU WANT TO CONNECT MORE THAN 1 WIRE, NO BIGGER THAN AWG #12, NO SMALLER THAN AWG #28.

△**8** CHECK INSTALLATION GUIDE FOR ALARM WIRING.

△**9** USE SHIELD FOR SHIELDING PURPOSE ONLY. CONNECT THE SHIELD TO THE CONTROL CIRCUIT COMMON END ONLY⏚. NEVER LEAVE THE SHIELD UNCONNECTED AT BOTH ENDS. NEVER CONNECT BOTH ENDS OF THE SHIELD TO COMMON⏚. THE USE OF A SHIELD FOR ALL PROBES AND POTENTIOMETERS IS **MANDATORY**.

△**10** THESE MODULES MUST BE ON SAME POWER PHASE AND LINE VOLTAGE AS THE CONTROLLER.