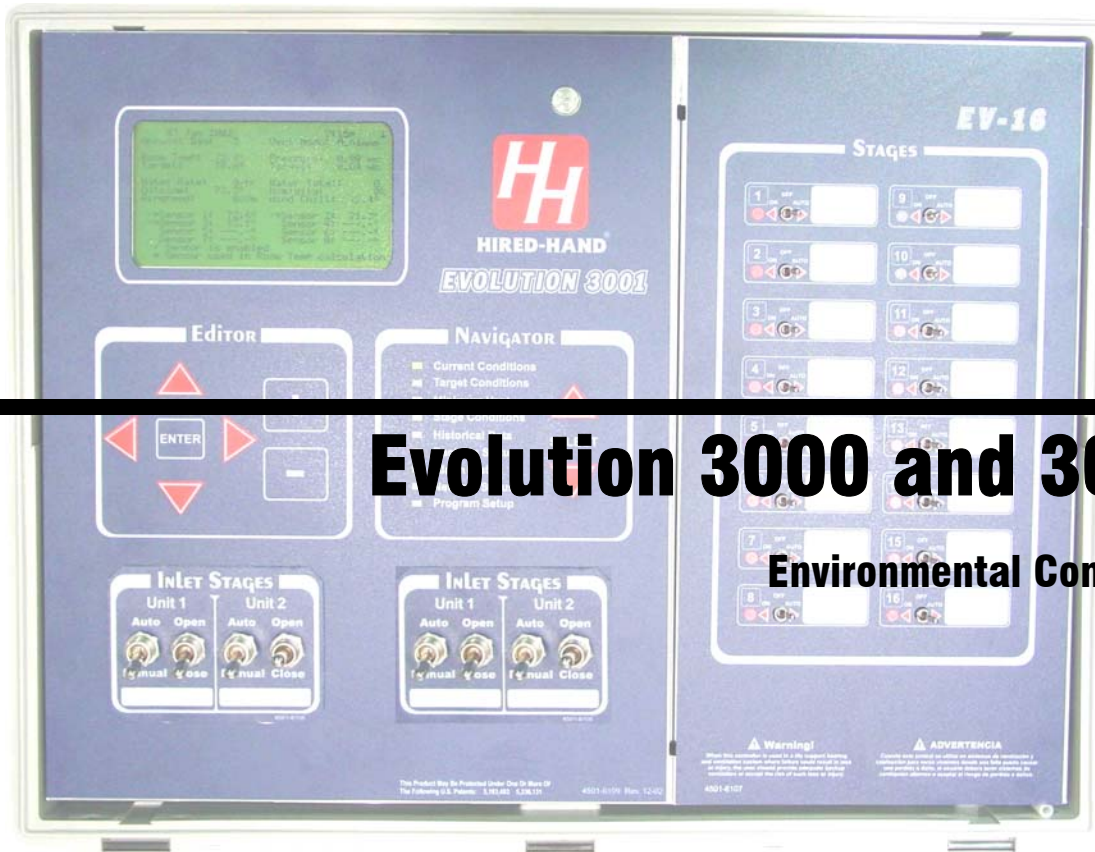




HIRED-HAND®



Evolution 3000 and 3001 Environmental Controller

**Hired Hand Manufacturing, Inc.
1733 County Road 68
PO Box 99
Bremen, Alabama 35033**

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1. Ratings and Specifications

HHI Part Number	Model	Power Supply	Curtain Output	Stage Output
6607-8015	EV-Back-up	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	12V, 3A
6607-8016	EV-16-Expansion	120/230 VAC 50/60 Hz	NA	1 HP @ 240VAC
6607-8020	EV-3000-R1-00	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	N/A
6607-8021	EV-3000-16-00	120/230 VAC 50/60 Hz	N/A	1 HP @ 240 VAC
6607-8022	EV-3000-16-01	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	1 HP @ 240 VAC
6607-8023	EV-3000-16-02	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	1 HP @ 240 VAC
6607-8024	EV-3000-16-03	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	1 HP @ 240 VAC
6607-8025	EV-3001-16-00	120/230 VAC 50/60 Hz	N/A	1 HP @ 240 VAC
6607-8026	EV-3001-16-01	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	1 HP @ 240 VAC
6607-8027	EV-3001-16-02	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	1 HP @ 240 VAC
6607-8028	EV-3001-16-03	120/230 VAC 50/60 Hz	½ HP @ 240 VAC	1 HP @ 240 VAC

NOTE: Room Temperature Must Be Kept Between 32°F/0°C and 122°F/50°C.

2. Warnings

Warning!

Before connecting power to the machine, be sure to check the position of the voltage selector switch located next to the transformer on the EV/I/O board. Improper positioning of this switch will cause system failure.

Warning!

Maximum operating temperature of controller is 50° C (122° F). Use adequate ventilation to reduce the risk of overheating of controller!

Warning!

When this controller is used in a life support heating and ventilation system where failure could result in loss or injury, the user should provide adequate back-up, or accept the risk of such loss or injury!

3. Limited Warranty

All products are warranted to be free from defects in material and workmanship for a period of one year from the date of purchase if installed and used in strict accordance with the installation instructions. Liability is limited to the sale price of any products proved to be defective or, at manufacturers' option, to the replacement of such products upon their return. No products are to be returned to the manufacturer, until there is an inspection and/or a return-goods authorization (RGA) number is issued.

All complaints should be directed first to the authorized distributor who sold the product. If satisfaction is not obtained or the name of the distributor is not known, write the manufacturer that appears below, directed to the attention of Customer Service Manager.

This limited warranty is expressly in lieu of any and all representations and warranties expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose. The remedy set forth in this limited warranty shall be the exclusive remedy available to any person. No person has authority to bind the manufacturer to any representation or warranty other than this limited warranty. The manufacturer shall not be liable for any consequential damages resulting from the use of our products or caused by any defect, failure or malfunction of our products. (Some areas do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.)

This warranty gives you specific legal rights and you may also have other rights that vary from area to area.

Warrantor:

Hired-Hand MFG., Inc.
1733 County Road 68
PO Box 99
Bremen, Alabama 35033

4. Introduction

The Evolution 3000 Controller is the first member of Hired-Hand's new environmental controller line. The Evolution 3001 Controller has the same operational features as the 3000 except the 3001 has a larger display. The Evolution 3000 and 3001 Controllers have 16 stages standard. The Evolution 3000 and 3001 Controllers can be expanded up to 64 stages. (i.e. 16, 32, 48 and 64 stages).

This manual revision reflects features included in versions 0.16 and later versions.

Features:

- **Input Device Options**

8 inside temperature sensors	1 outside temperature sensor
1 humidity sensor	1 air speed sensor
2 digital water meter input	1 static pressure transducer
6 PowerTrak auxiliary switch inputs	HHNet connection for PC compatibility

- **Feed Management (Optional)**

2 Feed Bin Level Sensors	2 Auger Runtime Sensors
4 Belt Runtime Sensors	

- **Output Devices (Standard)**

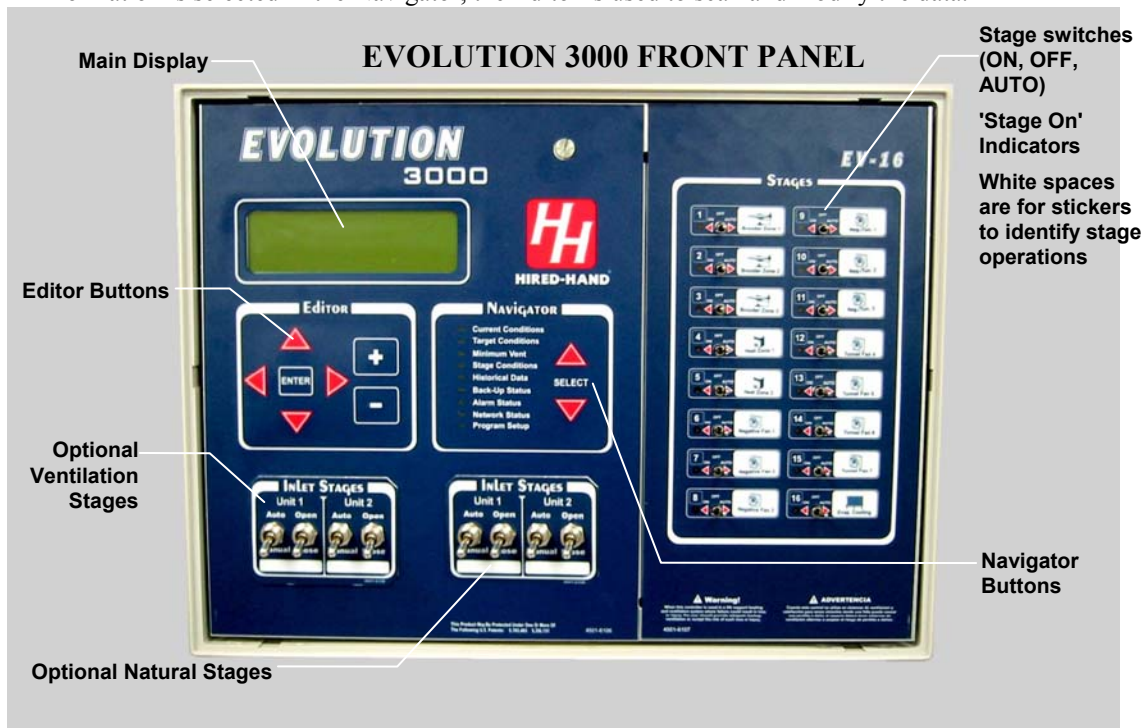
16 On/Off output stages with manual override switches
Open/Off/Close PowerTrak stages with manual override (Depending On Model)
1 Alarm relay with both N.O. and N.C. contacts

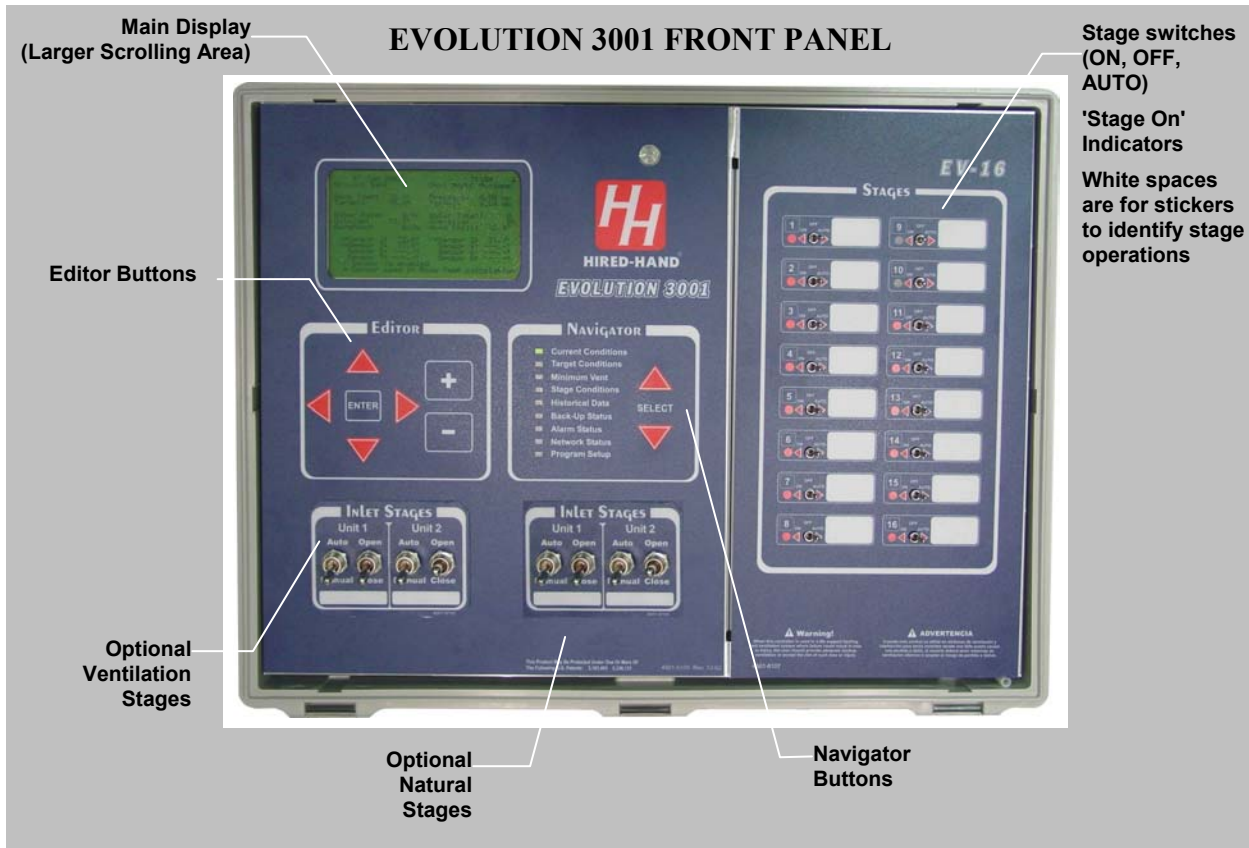
- **Output Devices: (Optional)**

2 sets of Open/Off/Close PowerTrak stages with manual override
Variable speed output drive
16 On/Off output stages with manual override switches
Patented integrated Evolution Back-up

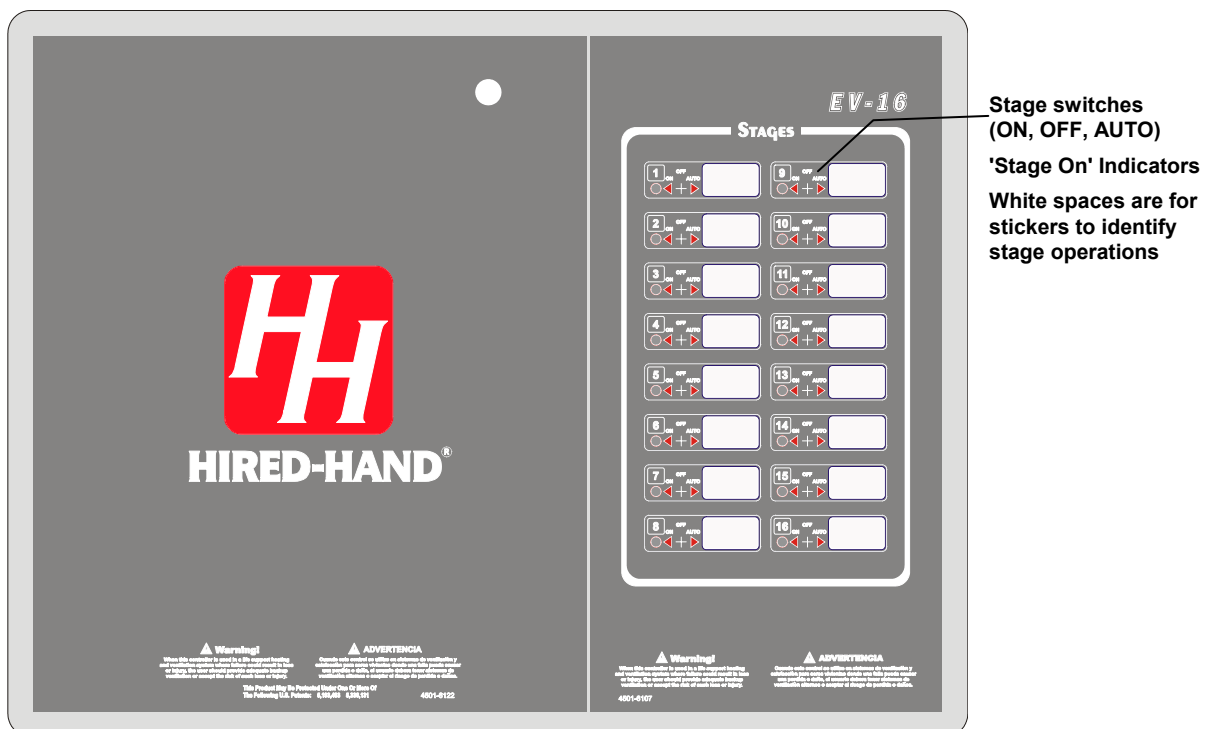
5. Evolution Front Panel

The Evolution Controller is divided into two main areas. On the left is the Main Control Panel containing the Main Display, Editor, Navigator and the Inlet Stage Controls. On the right are the Stage Switches. The Navigator is used to select the information to be displayed in the Main Display. Once the desired information is selected in the Navigator, the Editor is used to scan and modify the data.



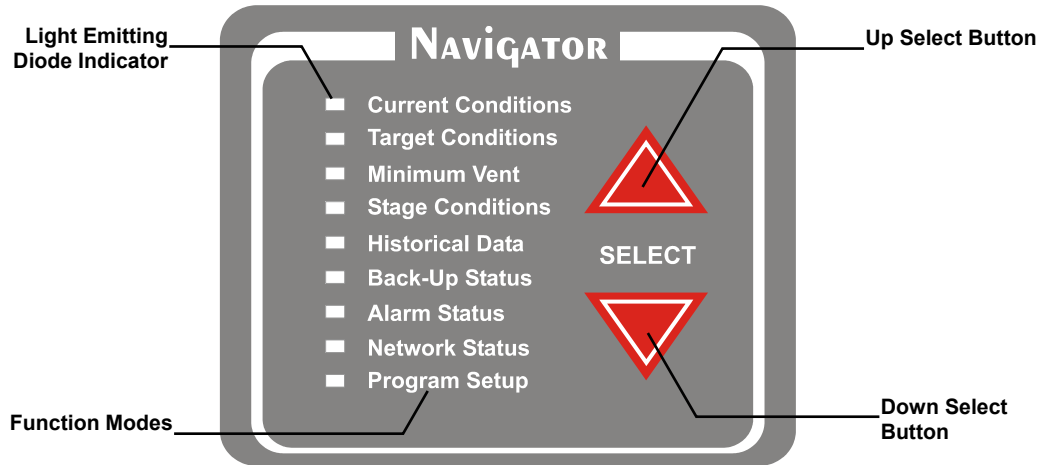


EVOLUTION 3000 EXPANSION STAGES FRONT PANEL



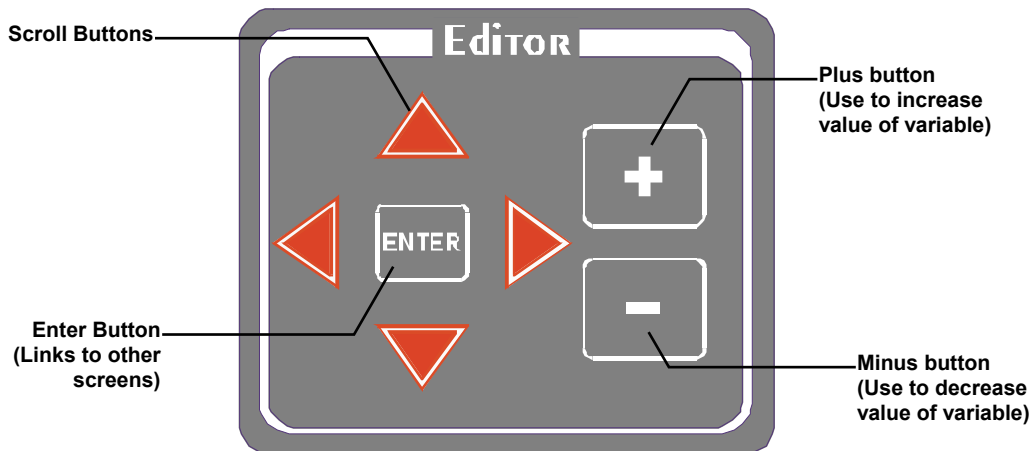
5.1 Navigator Panel

The Navigator buttons are used to select a controller function. Press up or down button to toggle between functions. LED (light emitting diode) lights when a function is selected and the associated data is displayed in the Main Display.



5.2 Editor Panel

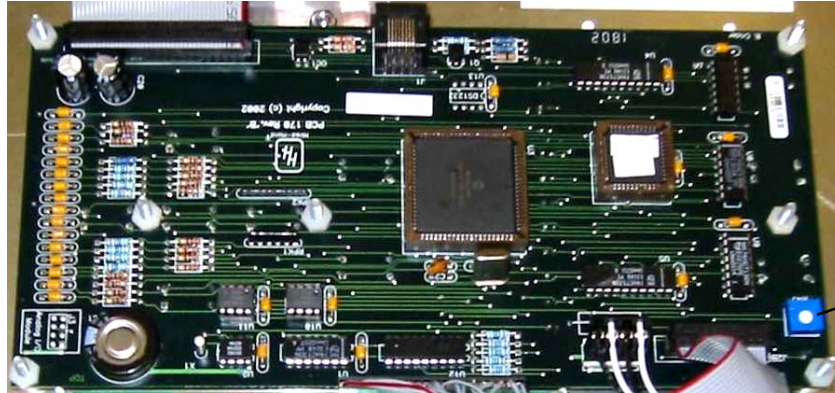
The Editor buttons are used to select functions that appear in the Main Display screen. The arrow buttons are used to scroll to variables that appear within the current screen of the Main Display. The plus (+) and minus (-) buttons are used to change or modify a variable's value. The Enter button is used to link to a new display screen of a selected variable. NOTE: To return to the main function screen, press either Up (▲) or Down (▼) Navigator button.



5.3 Main Display Contrast

The main display contrast can be adjusted to adapt to various lighting conditions. The Contrast Control is located on the opposite side of the front panel. Use the Contrast Control potentiometer and a small flat-head screw-driver to manually darken or lighten the screen. Turn clockwise to darken the display; Counter-clockwise to lighten the display.

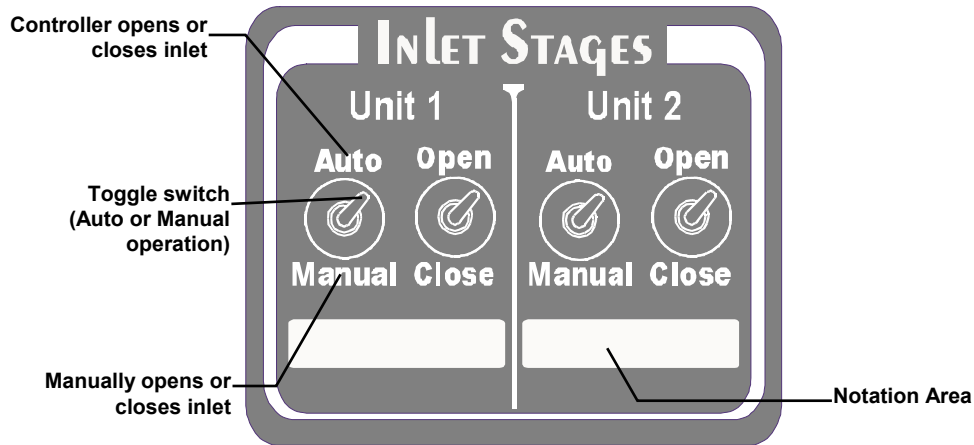
CAUTION: DO NOT CONTACT OTHER COMPONENTS OR WIRES.



Contrast Control

5.4 Inlet Stages

Optional inlet stages may be added to control vents & curtains. Up to 4 inlet stages may be added per controller unit. When Auto/Manual toggle switch is placed in Auto position, inlet opens and closes according to programmed instructions. Use the Open/Close toggle switch to manually open or close inlet when Auto/Manual toggle switch is placed in Manual position. The Notation area is for labeling the inlet.

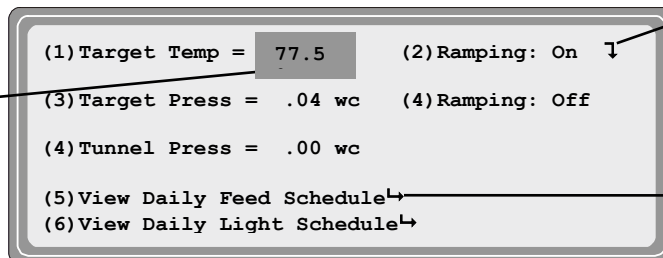


Under normal circumstances the machines should be left in automatic (Auto) as shown above.

5.5 Status Display

The following is an example of Main Display screen displaying the Target Conditions status screen. The Main Display screen displays both status and programming screens.

To change parameter: Select parameter using editor arrow keys. Use + and - keys to change value.



The Scroll Symbol is a flashing down arrow (⏏) that indicates more text outside of display screen. Use up/down editor arrow keys ▼▲ to scroll text.

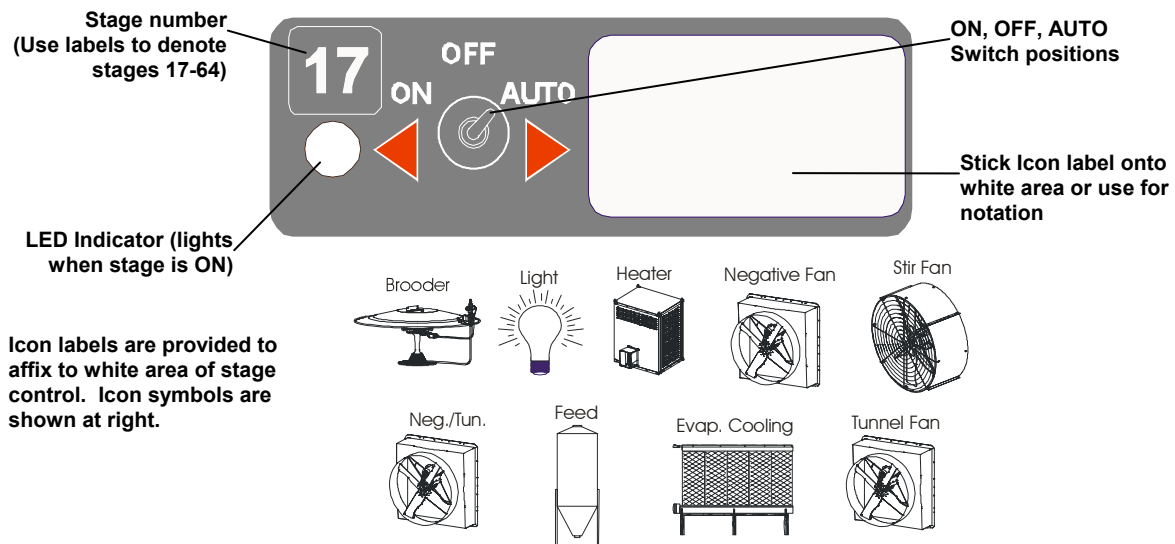
The Link Symbol (↪) is a right pointing arrow and indicates a link to another display screen.

5.6 Stage Switch

The stage LED indicator lights when a stage is active. The stage switch is used to select Auto operation, On, or Off. If switch is in Auto position, the stage operation is controlled by the controller. That is, the stage may turn on and off according to settings selected from the Main Display screen. If switch is in the On position, a stage is On continuously. If switch is in the Off position, a stage is Off.

The white space is used to affix a label indicating stage function (i.e. brooder, fan, light, cool, etc.)

NOTE: Stages 1-16 are marked on Main panel. For optional stages 17-64, use stick-on label to number stages.

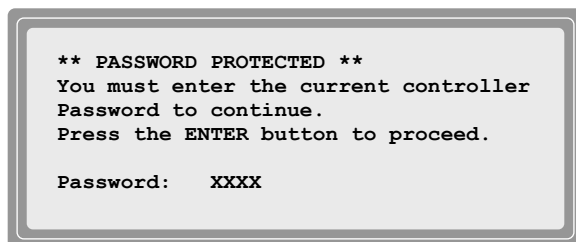


5.7 Locks

A lock feature has been included for additional security to the Evolution 3000 and 3001 settings with software versions V0.16 and higher. This feature locks the Program Setup screens to prevent changes. Locked screens are noted by a lock symbol (🔒) in the upper right of the screen. The Target Conditions and Minimum Vent screens are not lockable.

When the lock feature is disabled (🔓), all screens will show unlocked until the password is changed. See **Section 7.4**.

NOTE: The Diagnostics screen can only be unlocked using the HHI Service Code; Contact your local dealer for assistance.



6. Viewing Navigator Status Screens

The following nine screens are available: Current Conditions, Target Conditions, Minimum Vent, Stage Conditions, Historical Data, Back-Up Status, Alarm Status, Network Status, Program Setup. The Navigator selects the desired status screen by pressing the up and down SELECT arrows. The first eight screens display status information. The last screen is the Program Screen. To change program parameters the Program Setup Screen must be selected.

6.1 Current Conditions

The current environmental conditions of the building are shown here. Below is a table describing the variables that can appear in the Current Conditions status screen.

The numbers in brackets e.g. (1) refer to the descriptions below the sample screen displays.

- (1) **Vent Mode** – Indicates the current ventilation mode: either Minimum, Natural, Power, Transition or Tunnel.
- (2) **Room Temp** – The average temperature of the sensors for display. **Target**— Target Temperature.
- (3) **Outside (Temperature)** – The outside temperature as indicated by the outside sensor.
- (4) **Pressure** – The current atmospheric pressure internal to the building. **Target**— Target Pressure.
- (5) **Humidity** – The percent of water vapor of the air inside the building.
- (6) **Airspeed** – The velocity of the air in the building in feet per minute.

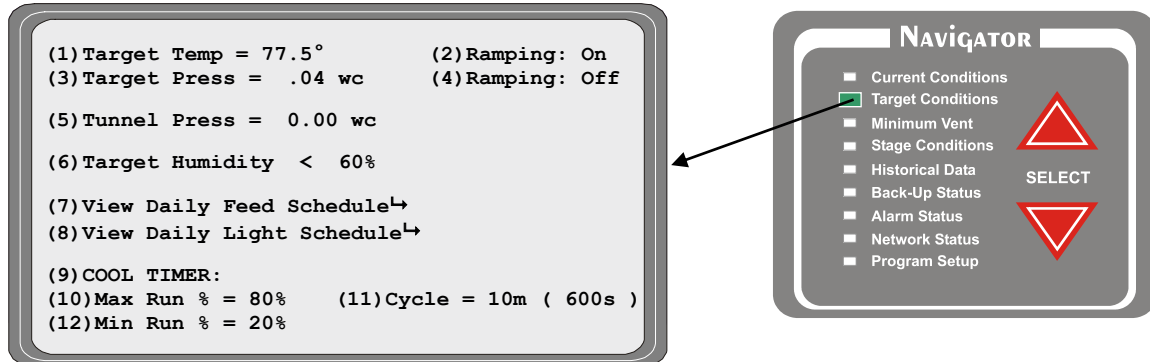
NOTE: In this manual, Reference numbers refer to descriptions given in text. These numbers do not appear on display.

VENT MODE	Definition
Minimum	Heat stages or timer fans operating. None of the negative stages are on because of temperature.
Natural	The main curtains are open.
Power	The curtains are up and there are negative fans on because of temperature.
Transition	The control is between power and tunnel ventilation. The control is making the adjustments needed to go into tunnel.
Tunnel	The tunnel signal has been activated and the system has entered into tunnel.

- (7) **Growout Day** – The current day in the growout period. The Current Conditions LED on the Navigator panel will blink if the growout day is later then the current date.
- (8) **Water Consumption** – Water consumed for the current day; The total for the day is listed first then the units per hour is shown inside (). Two water meters may be monitored (Water Meter 1 & Meter 2).
- (9) **Feed Level** – The Feed level is shown in number of feet from the bottom first then the percentage of feed remaining in the feed bin is shown inside (). Two feed bins may be monitored (Bin #1 & Bin #2).
- (10) **Cooler Temp** – The cooler temperature is the temperature sensor which is placed inside the cooler. If a cooler application is not used, this sensor can also be used to monitor the control room or other necessary locations. **NOTE:** To use this application FEATURE, Sensor 8 must be used.
- (11) **Sensor 1 through 8** – The current temperature read by each sensor.

6.2 Target Conditions

The current target environmental conditions of the building are shown here



- (1) **Target Temp** - This is the desired temperature of the building.
- (2) **Ramping** – Indicates if ramping of the Target Temperature is turned On or Off. You are also allowed to turn the temperature ramping on or off in the program set up screen. You use the Navigator to reach the Program Setup screen and then navigate down to "Temperature Ramp" and press enter. See Section 7.5.
- (3) **Target Press** - This is the desired negative pressure in the building. See Section 7.3.
- (4) **Ramping** – Indicates if ramping for the Target Pressure is turned on: On or Off. You are also allowed to turn the pressure ramping on or off in the program setup screen. See Section 7.3.
- (5) **Tunnel Pressure** – Indicates the desired negative pressure in the building while in the Tunnel Mode. See Section 7.3.
- (6) **Target Humidity** – The desired humidity inside the building is less than this set number. For every percentage increase in humidity over the set %, the timer percentage will increase.

EXAMPLE:

Target Humidity < 65%

Timer Percentage is set to 20% of 5 minutes.

If Humidity in building is at 70%, the timer percentage will be at 25%.

NOTE: This only affects the variable timer %.
Min1% and Min2% are unaffected.

- (7) **View Daily Feed Schedule** –See Section 7.6.
- (8) **View Daily Light Schedule** –See Section 7.7

NOTE: The EV-3000 displays the COOL TIMER section only on the Minimum Vent screen.

- (9) **Cool Timer** - Cool timer is also allowed a different timer cycle if needed. This can be used for foggers or cool cell systems.
- (10) **Max Run** - The Cool Timer Maximum Run Time percentage.
- (11) **Cycle** - Cycle Time in Minutes. Cool timer is also allowed a different timer cycle if needed. This will be used for foggers or cool cell systems.
- (12) **Min Run** – The Cool Timer Minimum Run Time percentage.

6.3 Minimum Vent

The Minimum Vent status screen display:

```

(1) MINIMUM TIMERS:
(2)Min1 % = 40% ( 215s) (3)Cycle = 5 m ( 300s)
(4)Min2 % = 20% ( 108s)

(5)VARIABLE TIMER:
(6)Run %: 31% ( 93s) (7)Cycle = 5 m ( 300s)
(8)Sensors = Outside (9)Ramping = Off
(10)Max Run % = 65% (11)Max Temp = 85.0°
(12)Min Run % = 20% (13)Min Temp = 70.0°

(14)VARIABLE SPEED:
(15)V1 Minimum % = 50% (16)Current % = 55%
(17)V2 Minimum % = 40% (18)Current % = 100%

(19)COOL TIMER:
(20)Max Run % = 100% (21)Cycle = 10 m ( 600s)
(22)Min Run % = 55%
    
```

NOTE: Cycle in seconds

NOTE: Run Time in seconds

NAVIGATOR

- Current Conditions
- Target Conditions
- Minimum Vent
- Stage Conditions
- Historical Data
- Back-Up Status
- Alarm Status
- Network Status
- Program Setup

SELECT

(1) **Minimum Timer 1** - The Minimum timer one and two both share the same cycle time. Different timer percentages may be set for minimum 1 vs. minimum 2. If the vent anticipation is being used, both minimum 1 and 2 will start the vents open before a stage comes on.

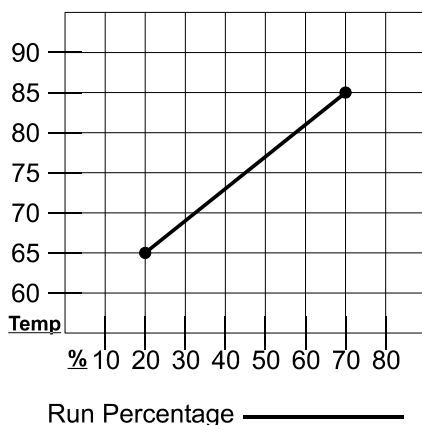
(2) **Min1 %** - The percentage of the Timer 1 cycle that the stage will run.

(3) **Cycle** - The length of Timer 1 cycle. Cycle = 1 to 20 minutes.

(4) **Min2 %** - The percentage of the Timer 2 cycle that the stage will run.

NOTE: The Minimum timer one and two both share the same cycle time. Different timer percentages may be set for Minimum 1 and Minimum 2. If the vent anticipation is being used, both Minimum 1 and 2 will start the vents open before a stage comes on.

(5) **Variable Timer** - The variable timer is similar to the expanded timer found in the System 2000 PC-8. The variable timer will vary the timer based on temperature. See chart below.



(6) **Current Run %** - The percentage of time a stage is currently running using the variable timer based off the temperature.

(7) **Cycle** - The length of the Variable Timer cycle. The variable timer is allowed to have a different cycle time than the minimum timer.

(8) **Sensors** - The sensors used to determine the run time. Active sensors will be indicated by a number starting with #1 from right to left. Inactive sensors will be indicated by a - or hyphen. When "outside-" is displayed, outside sensor is active. For example, If sensors 1, 2 and 3 are being used, "----321" will be displayed. When "outside" is displayed, the outside sensor is active.

(9) **Ramping** - "ON" sets the timer percentage to ramp with growout day (See Section 7.5 Temp/Timer% Ramp).

(10) **Max Run %** - The maximum Run Time percentage.

(11) **Max Temp** - The temperature at which the timer will run Maximum Run time % percentage.

(12) **Min Run %** - The minimum Run Time percentage.

(13) **Min Temp** - The minimum temperature. The timer will be at minimum Run %.

(14) **Variable Speed:** These settings are used to set up variable speed fan operation.

(15) **V1 Minimum** - The minimum speed or minimum percentage of light intensity for V1.

(16) **Current %** - The current percentage of speed or light intensity of V1.

(17) **V2 Minimum** - The minimum speed or minimum percentage of light intensity for V2.

(18) **Current %** - The current percentage of speed or light intensity of V2.

NOTE: The EV-3001 displays the COOL TIMER section only on the Target Conditions screen.

(19) Cool Timer: Cool timer is also allowed a different timer cycle if needed. This can be used for foggers or cool cell systems.

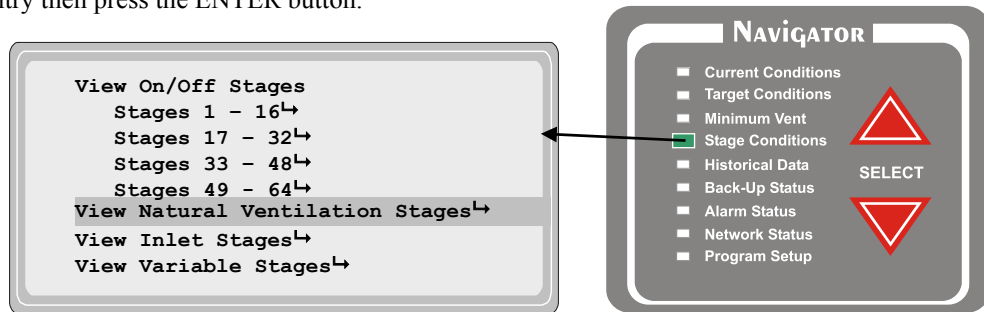
(20) Max Run - The Cool Timer Maximum Run Time percentage.

(21) Cycle - Cycle Time in Minutes. Cool timer is also allowed a different timer cycle if needed. This will be used for foggers or cool cell systems.

(22) Min Run - The Cool Timer Minimum Run Time percentage.

6.4 Stage Conditions

When Stage Conditions is first selected by using the Navigator Select arrows, the following menu screen is shown. Now to select the Stage Conditions screens, use the up and down arrows in the Editor to highlight the desired entry then press the ENTER button.



6.4.1 On/Off Stages

The On/Off stages are used for devices that do not need a variable speed capability. This screen shows you how your stages are set. You can view 16 stages at a time. You only need to navigate to the stages you want to view, and then press enter.

(1) # - Identifies the On/Off

stage number or Tunnel. Tunnel is not a stage like the Stage Master and Vent Master. This parameter is set in the tunnel setup of Program Setup

screen. See Section 7.4, Tunnel Setup.

(2) Status - Indicates if the stage is currently On or Off.

(3) Mode - This column indicates how the stage is programmed. Any stage can be set to any of these modes. The available stage options are: Off, Heat, CSTIR, CNEG, CNEGT, CTUN, LIGHT, FEED or CEVAP.

(4) Rtemp - The Rtemp column will indicate the current temperature the stage is operating from.

On/Off Stages							↓
(1) #	(2) STATUS	(3) MODE	(4) RTEMP	(5) ON	(6) OFF	(7) TIME	
TUN	Off	CTUN	79.4°	85°	80°		
1	On	Light				Ramp	
2	On	Cstir	79.6°	76°	95°	None	
.
.
16	On	Cstir	79.6°	76°	95°	Min1	

(5) On - The current temperature setting for the on point temperature of the stage.

(6) Off - The current temperature setting for the off point temperature of the stage.

(7) Time - This column indicates if a stage is on a timer and shows the different timers you are allowed to put a stage on. The timer options are: None, Min1, Min2, Var or Cool.

6.4.2 Natural Ventilation Stages

Natural Ventilation stages are used to open and close side curtains to allow natural ventilation.

(1) # - The stage bank either U1 or U2.

(2) **Status** - This column will indicate whether the machine is Off, Opening or Closing.

Natural Ventilation Stages						
(1) #	(2) STATUS	(3) MODE	(4) RTEMP	(5) OPEN	(6) CLOSE	(7) CLOSED
U1	Off	NAT	88.9°	85.5°	82.5°	No
U2	Off	NAT	88.5°	85.5°	82.2°	No

(3) **Mode** – The mode column indicates how the machine will be operating. It will be a natural curtain "NAT" or a natural and tunnel "N&T" machine, (U2 only).

(4) **Rtemp** – The Rtemp column will indicate the current temperature the curtain machine is operating from.

(5) **Open** – The temperature at which the curtain opens.

(6) **Close** – The temperature at which the curtain closes.

(7) **Closed** - This column indicates if the machine is fully closed. When the machine is on the closed auxiliary switch, this column will display "Yes".

6.4.3 Inlet Stages

The Inlet Stages are used to control Power Trak operation for power ventilation. U1 is normally for baffle boards and U2 controls tunnel inlets.

(1) # - The stage bank either U1 or U2.

(2) **Status** - Indicates if the Stage is Off, Opening or Closing.

Inlet Stages					
(1) #	(2) STATUS	(3) MODE	(4) PRESS	(5) OPENED	(6) CLOSED
U1	Open	Vent	0.04	No	No
U2	Close	Tun	0.04	No	Yes

(3) **Mode** – The mode column tells you how the machine will be operating. If it will be a vent machine "VENT" or a tunnel machine "TUN" machine.

(4) **Pressure** – Indicates the pressure in the building.

(5) **Opened** – Indicates if the machine is fully open (Yes or No). When the machine is fully open on the open auxiliary switch, this column will indicate a "Yes".

(6) **Closed** – Indicates if the machine is fully closed (Yes or No). When the machine is fully closed on the closed auxiliary switch, this column will indicate a "Yes".

6.4.4 Variable Stages

The Variable stages are used to control devices (i.e. fans, light, etc.) with a variable capability.

(1) # - The Stage bank either U1 or U2.

(2) **Run %** - This is the current percentage that the device is operating.

Variable Stages						
(1) #	(2) Run %	(3) MODE	(4) RTEMP	(5) MaxON	(6) MinON	(7) TIME
U1	50%	Light				Ramp
U2	75%	CStir	88.7°	76.4°	74.0°	None

(3) **Mode** – Indicates how the stage is programmed: CSTIR, CNEG, CNEGT, CTUN or LIGHT.

(4) **Rtemp** – The Rtemp column will indicate the current temperature the stage is operating from.

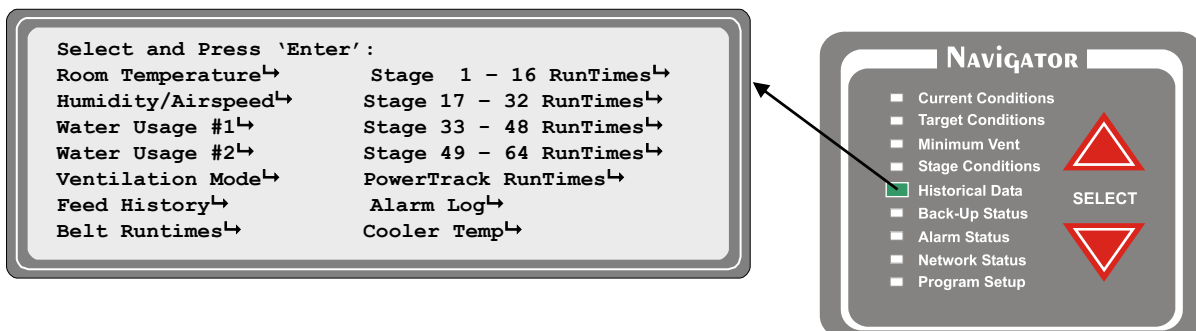
(5) **MaxON** – This will be the temperature at which the variable speed fan will reach full speed.

(6) **MinON** - The temperature at which the fan will run at minimum speed.

(7) **Time** – None, Min1, Min2, Var or Always ON (ON). Always ON when Rtemp is below MIN ON.

6.5 Historical Data

This screen provides access to historical data. Highlight the selection and press the ENTER button on the EDITOR panel.



6.5.1 Room Temperature

This screen shows the highest and lowest room temperature for each day for up to 99 days. The last day reported will appear at the top of the list. The list can contain data up to 99 days. After displaying 99 days, oldest data will be deleted.

(1) DAY	(2) HIGH TEMP	(3) AVE	(4) LOW TEMP
21	71.0°-12:34p	66.3°	61.6°-12:34a
20	71.0°-12:34p	66.3°	61.6°-12:34a
.	.	.	.
.	.	.	.
1	71.0°-12:34p	66.3°	61.6°-12:34a

(1) Day – The specific day in the growout period. Values = 1 day to 99 days.

(2) High Temp – The high recorded temperature and the time of day that it occurred.

(3) AVE – The average recorded temperature for the day.

(4) Low Temp - The low recorded temperature and the time of day low temperature occurred.

NOTE: The High and Low temperature readings are taken from the Sensors for Display in "Sensor Setup" of the Program Setup Screen.

6.5.2 Humidity/Airspeed

This screen shows the highest humidity & wind speed for each day for up to 99 days. The last day reported will appear at the top of the list. The list can contain data up to 99 days. After displaying 99 days, oldest data will be deleted.

(1) DAY	(2) High Humidity	(3) High Airspeed
21	70%-12:34p	450-12:34p
20	70%-12:34p	450-12:34p
.	.	.
.	.	.
1	70%-12:34p	450-12:34p

(1) Day – The specific day in the growout period. Values = 1 day to 99 days.

(2) High Humidity – The highest recorded humidity and the time of day that it occurred.

(3) High Airspeed - The highest recorded airspeed and the time of day that it occurred.

6.5.3 Water Usage (#1 or #2)

This screen gives the Water Usage of the building per day of growout, high rate, and water total. The screen display format is the same for either water usage #1 or #2.

- (1) **Day**– The specific day in the growout period. Values = 1 day to 99 days.
- (2) **High Rate** – The highest recorded water rate and the time of day that it occurred.
- (3) **Total For Each Day** – The total water usage for each day of growout

(1) DAY	(2) HIGH RATE	(3) DAILY TOTALS
41	24/hr-12:00p	240
40	20/hr-12:34p	210
.	.	.
35	10/hr-11:15p	200
.	.	.
24	15/hr-12:05p	130
.	.	.
.	.	.
1	5/hr-1:00p	50

6.5.4 Ventilation Mode

This screen shows the length of time in hours and minutes that the Control is in different ventilation modes. NOTE: Natural mode is when the system is in natural ventilation and the main curtains are open.

Transition mode is when the control is between power and tunnel ventilation. The control is making the adjustments needed to go into tunnel. Tunnel mode is when the tunnel signal has been activated and the system has entered into tunnel.

- (1) **Minimum Ventilation** – The time spent in minimum mode. Heaters & timer fans running.
- (2) **Power Ventilation** – The time spent in the Power Ventilation mode.
- (3) **Natural Ventilation** – The time the side wall curtains are open.
- (4) **Transition to Tunnel** – The time required to transit to tunnel mode. (3 minutes per transition)
- (5) **Tunnel Ventilation** – The time spent in the Tunnel mode.

	Today	Yesterday
(1) Minimum Ventilation	6:07	10:31
(2) Power Ventilation	1:10	6:29
(3) Natural Ventilation	2:00	1:00
(4) Transition to Tunnel	0:03	0:09
(5) Tunnel Ventilation	0:45	4:51

6.5.5 Feed History

This screen shows the estimated daily amount of feed used and the total time that the feed line motors have been running.

- (1) **Day** – The specific day in the growout period. Values = 1 to 99 days.
- (2) **Usage** – The amount of feed used from Bin #1 and Bin #2 combined for each day of growout. Measurements = pounds (lb.).
- (3) **Run 1** – The total amount of run-time feed line #1 was running for each day of growout. Measurements = Hours and minutes.
- (4) **Run 2** – The total amount of run-time feed line #2 was running for each day of growout. Measurements = Hours and minutes.
- (5) **Status** – The status of the auger current sensor whether the sensor is On or Off. ON indicates the motor is running and OFF indicates the motor is not running.

(1) Day (5) Status	(2) Usage	(3) Auger1 On	(4) Auger2 On
41	2100 lb	4:10	9:10
40	2000 lb	3:00	8:00
.	.	.	.
35	1500 lb	3:00	8:00
.	.	.	.
24	1000 lb	1:30	6:30
.	.	.	.
.	.	.	.
1	150 lb	1:10	6:10

6.5.6 Belt Run Times

This screen shows the history of the belt runtimes. It keeps track of the last 100 days.

- (1) **Day** – The specific day in the growout period.
- (2) **Belt 1 thru Belt 4** – The length of time in hours and minutes that the belt has run on the current day.
- (3) **Status** – The status of the belt current sensor whether the sensor is On or Off. ON indicates the motor is running and OFF indicates the motor is not running.

(1) Day	(2) Belt1	Belt2	Belt3	Belt4 ↓
(3) Status	On	On	On	On
141	2:24	2:24	2:24	2:24
140	2:24	2:24	2:24	2:24
.
1	2:24	2:24	2:24	2:24

6.5.7 Stage Run Times

This screen shows the length of time in hours and minutes that the individual stages have run, on the current day and previous day.

- (1) **Stage** – Identifies the stage number.
- (2) **Current Day** – The length of time in hours and minutes that the stage has run on the current day.
- (3) **Previous Day** - The length of time in hours and minutes that the stage has run on the previous day.

(1) Stage	(2) Current Day	(3) Previous Day ↓
1	2:24	2:24
2	2:24	2:24
.	.	.
16	2:24	2:24

6.5.8 Power Track Run Times

This screen shows the length of time that the Power Track equipment has been running.

- (1) **Inlet #1 and #2** - The length of time in hours and minutes that the inlets have run on the current and previous days.
- (2) **Natural #1 and #2** - The length of time in hours and minutes that the natural inlets have run on the current and previous days.

Stage	Current Day	Previous Day ↓
(1) Inlet #1		
Open	8:00	8:00
Close	10:00	10:00
(1) Inlet #2		
Open	10:00	10:00
Close	10:00	10:00
(2) Nat #1		
Open	1:00	1:00
Close	23:00	23:00
(2) Nat #2		
Open	1:00	1:00
Close	23:00	23:00

6.5.9 Alarm Log

This screen shows the list of the past 20 alarms and status information starting with the most recent occurrence.

- (1) **Alarm**
 - Description** – The alarm problem area.
 - (2) **Alarm Status** – The alarm status (Failure or Correted).
 - (3) **Date of Alarm** – The date the alarm occurred or was corrected.
 - (4) **Time of Alarm** – The time the alarm occurred or was corrected.

** Alarm Log **				
1	(1) Tunnel Vent	(2) Corrected @	(3) 2/ 5	(4) 1:26p
2	Low Press	Failure @	2/ 5	1:09p
3	Lo Water Rate	Corrected @	2/ 3	3:39p
4	Cycle Press	Failure @	2/ 1	4:15a
5	Low Temp	Corrected @	1/ 30	3:09p
6	Lo Water Rate	Corrected @	1/ 27	12:38a
7	Lo Water Rate	Corrected @	1/ 21	7:45a
8	Lo Water Rate	Corrected @	1/ 17	9:52p
9	Low Pressure	Failure @	1/ 15	5:21p
10	Max Runtime1	Corrected @	1/ 10	8:27a

6.5.10 Cooler Temp

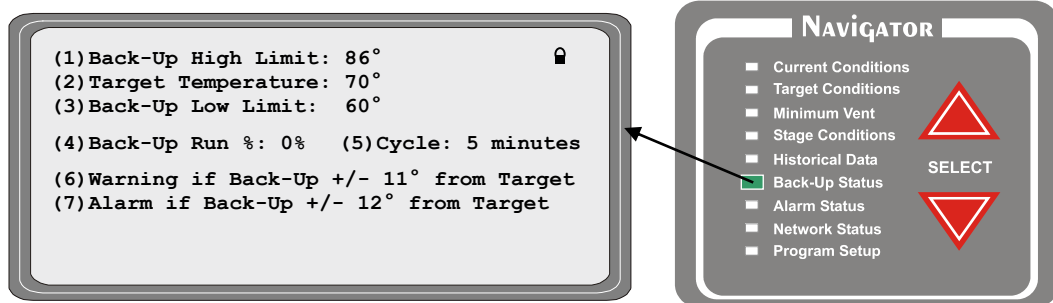
This screen shows the daily history for the cooler temperature (Sensor 8).

- (1) **Day** – The specific day in the growout period. Values = 1 day to 99 days.
- (2) **High Temp** – The high recorded temperature and the time of day that it occurred.
- (3) **Low Temp** - The low recorded temperature and the time of day low temperature occurred.

(1) Day	(2) High Temp	(3) Low Temp
100	44.7°-2:49p	38.7°-4:25a
99	45.7°-2:49p	39.7°-2:49p
.	.	.
.	.	.
1	44.7°-2:49p	40.7°-2:49p

6.6 Back-Up Status

The Back-Up status shows the status information concerning back-up operation.



NOTE: This is the high and low limit of the Evolution Back-Up system. These settings are set in the Back-Up system.

- (1) **Back-up High Limit** – The high temperature limit at which the Back-up stages will start turning on cool stages.
- (2) **Target Temperature** – Backup target temperature.
- (3) **Back-Up Low Limit** - The low temperature limit at which the Back-up will turn on the heat stage.
- (4) **Back-Up Run %** The Back-up timer percentage.

NOTE: This is the timer percentage of the Evolution Back-Up system. This setting is set in the Back-Up system. If the Back-Up fails to communicate with the Evolution 3000 control

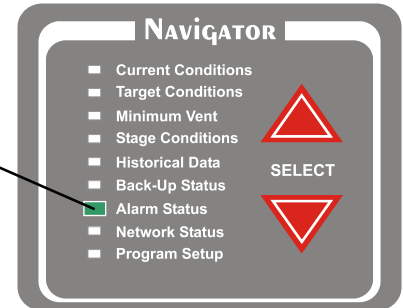
- the Back-Up will display an LnE. At this point the Back-Up will take over minimum ventilation by running all Cool 1 circuits on this timer. This percentage is how long the fan will run out of five minutes.
- (5) **Cycle 5 Minutes** –The cycle time of the back-up stages is 5 minutes.
- (6) **Warning if Back-Up** – If Backup settings are set that far away from target, Back-up status light will flash.
- (7) **Alarm if Back-Up** -Same as above but will also set off auxiliary alarm contact.

6.7 Alarm Status

The ALARM column lists the elements and sensors that are available. For the High and Low temperatures and High and Low pressure, the Cycle Pressure the current Alarm Limits are shown. For all entries the STATUS and the LAST REPORTED alarm are indicated. To change the ALARM LIMIT use the Editor arrows to highlight the desired entry and the Plus (+) and Minus (-) buttons to increase or decrease the desired limit.

↳ Proceed to Detail Screens

TEMPERATURE	LIMIT	STATUS	LAST ALARM
(1) High Temp↳	85.0°	OK	08/15-10:36p
(2) Low Temp↳	65.0°	OK	08/10-03:36p
PRESSURE	LIMIT	STATUS	LAST ALARM
(3) Cycle Press	0.04	Off	08/09-07:36p
(4) High Press	0.15	Off	07/22-01:36p
(5) Low Press	0.03	Off	07/13-06:36p
WATER ALARMS	LIMIT	STATUS	LAST ALARM
(6) High Rate #1	100/hr	OK	01/01-12:00a
(7) Low Rate #1	25/hr	OFF	01/01-12:00a
(6) High Rate #2	100/hr	OK	01/01-12:00a
(7) Low Rate #2	25/hr	OFF	01/01-12:00a
FEED ALARMS	LIMIT	STATUS	LAST ALARM
(8) Auger Run1	10min	OFF	01/01-12:00a
(9) Auger Run2	10min	OFF	01/01-12:00a
SYSTEM STATUS	STATUS	LAST ERROR	
(10) Tunnel Vent↳	----	OK	07/12-02:36p
(11) Growout Day	----	OK	07/31-05:36p
(12) Local Network	----	OK	07/27-05:36p
(13) Back-Up Limits	--	OK	07/31-05:36p
(14) Sensor 1	----	OK	07/27-05:36p
(14) Sensor 2	----	OK	06/10-09:36p
(14) Sensor 3	----	OK	06/11-01:36p
(14) Sensor 4	----	OK	06/13-06:36p
(14) Sensor 5	----	OK	06/13-03:36p
(14) Sensor 6	----	OK	06/21-03:36p
(14) Sensor 7	----	OK	06/17-02:36p
(14) Sensor 8	----	OK	06/13-10:36p
(15) Outside	----	OK	07/13-02:31p



NOTE: The High and Low temperature reading is taken from the Sensors for Display in "Sensor Setup" of the Program Setup Screen.

- (1) **High Temperature Limit & Status** - The high temperature setting at which the alarm relay will activate. See Section 6.7.1.
- (2) **Low Temperature Limit & Status** - The low temperature setting at which the alarm relay will activate. See Section 6.7.2.
- (3) **Cycle Pressure Limit & Status** - The pressure setting at which the alarm relay will activate provided the pressure differential is not seen during the timer period..
- (4) **High Pressure Limit & Status** - The High Pressure alarm will send a signal to your existing alarm system when the pressure exceeds the High Pressure Setpoint for greater than 45 seconds. (High Negative Pressure) This alarm warns if the vents did not open for some reason (Automatically enabled during Tunnel).
- (5) **Low Pressure Limit & Status** - The Low Pressure alarm will send a signal when pressure drops below the Low Pressure setpoint for greater than 45 seconds. This alarm warns if the vents failed to close for some reason. Setting the Low Pressure alarm setpoint to "OFF" prevents the alarm from sounding.
- (6) **High Rate** - High water usage rate. Alarm if units per hour exceed. One or two water meters (#1 or #2) can be monitored.
- (7) **Low Rate** - Low water usage rate. Alarm if units per hour drop below. One or two water meters (#1 or #2) can be monitored.
NOTE: Low Alarm is disabled when lights are off.
- (8) **Auger Run1** - Alarm if continuous runtime of feed line #1 exceeds selected time limit.

- (9) **Auger Run2** - Alarm if continuous runtime of feed line #2 exceed selected time limit.
- (10) **Tunnel Vent** - The Tunnel alarm will send a signal if for some reason the controller is unable to enter tunnel. See Section 6.7.3.
- (11) **Growout Day** - Status & last error (Warning only).
- (12) **Local Network** - Status & last error.
- (13) **Back-Up Limits** - Status & last error.
- (14) **Sensor 1 through 8 Limit & Status** - If the sensor is disabled, this field will show “off”. If the sensor is enabled, this field will show “OK” if the sensor is functioning properly or “fail” if the sensor is not properly reporting the temperature. Check wiring for damage or bad connection.
NOTE: This is the status of the alarms. Once an error has occurred the LED for Alarm Status will start blinking. Use the Navigator arrows to move down to Alarm Status. You will see what has failed. For a detail of what caused the failure navigate down to highlight the alarm and press enter. This will give a detail of what caused it and when it happened.
- (15) **Outside** -If the sensor is disabled, this field will show “off”. If the sensor is enabled, this field will show “OK” if the sensor is functioning properly or “fail” if the sensor is not properly reporting the temperature. Check wiring for damage or bad connection.

6.7.1 High Temperature Alarm Details

The High Temperature Alarm Details lists the settings for the alarm and the last time the alarm was sounded and the cause of the alarm.

- (1) **High Temperature Alarm Details** – Identifies the following information:
- (2) **Alarm On/Off** – The status of the alarm is On or Off.
- (3) **High Temperature Limit** – The current temperature setting of the High Temperature alarm.
- (4) **Increase Limit In Tunnel** – Increase high temperature limit during tunnel mode by this number.
- (5) **Last Alarm Statistics** – Identifies the date, time and cause of the last alarm.
- (6) **Date & Time** – The date and time of the last alarm. Date is given as Month/Day.
- (7) **Cause** – Displays the reading of the high temperature that caused the alarm.

```
(1)High Temperature Alarm Details
(2)Alarm On/Off = Off
(3)High Temperature Limit = 81.5°
(4)Increase Limit In Tunnel = +2.0
(5>Last Alarm Statistics:
(6)Date: 02/12 (6)Time: 1:09p
(7)Cause: Sensor 1
```

Possible Reasons for High Temperature False Alarm Conditions:

- If the same sensor causes multiple alarms, check the location of the sensor and wiring for possible damage. Also insure that the limit is properly set for the target and room temperature.

6.7.2 Low Temperature Alarm Details

The Low Temperature Alarm Details lists the settings for the alarm and the last time the alarm was sounded and the cause of the alarm.

- (1) **Low Temperature Alarm Details** – Identifies the following information:
- (2) **Alarm On/Off** – The status of the alarm is On or Off.
- (3) **Low Temperature Limit** - The current setting of the Low Temperature alarm limit.
- (4)**Last Alarm Statistics** - Identifies the date, time and cause of the last alarm.
- (5) **Date & Time** – The date and time of the last alarm. Date is given as Month/Day.
- (6) **Cause** - Displays the reading of the low temperature that caused the alarm.

```
(1)Low Temperature Alarm Details
(2)Alarm On/Off = Off
(3)Low Temperature Limit = 71.5°
(4>Last Alarm Statistics:
(5)Date: 02/12 (5)Time: 1:09a
(6)Cause: Sensor 1
```

Possible Reasons for Low Temperature False Alarm Conditions:

- If the same sensor causes multiple alarms, check the location of the sensor and wiring for possible damage. Also insure that the limit is properly set for the target and room temperature.

6.7.3 Tunnel Vent Alarm Details

The Tunnel Alarm Details shows the settings for the alarm, the last time the alarm was sounded and the cause of the alarm.

(1) **Tunnel Alarm Details** – Identifies the following information:

(2) **Alarm On/Off** – The status of the alarm is On or Off due to tunnel. Not settable. Status indicator only. NOTE: This alarm is automatically set by the Evolution 3000 or 3001 Controller.

(3) **Last Alarm Statistics** - Identifies the date, time and cause of the last alarm.

(4) **Date & Time** - The date and time of the last alarm.

(5) **Cause** - Displays the cause of the tunnel error. The following are the problems that could cause a Tunnel Error:

Tunnel Auxiliary would be when the controller has seen a closed signal from the tunnel curtain during tunnel. After 20 seconds the system will come out of tunnel and return to natural or power ventilation.

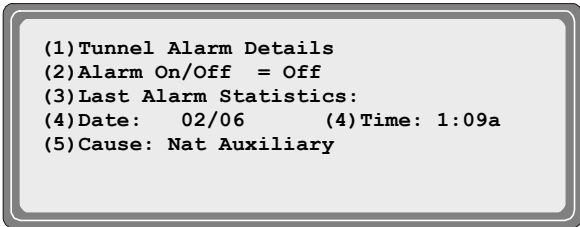
Nat Auxiliary would be when the controller has seen an open signal from the natural curtains during tunnel or that the curtains never closed from natural allowing the system to go into tunnel. This alarm would take 13 minutes from when it started to go into tunnel. After 20 seconds the system will come out of tunnel and return to natural or power ventilation.

Low Pressure would be when the pressure fell below the low pressure alarm setting during tunnel. This alarm will need to see the pressure below the limit for 45 seconds. At this point the Alarm Status LED will start blinking. Then after another 20 seconds the system will come out of tunnel and return to natural or power ventilation.

High Pressure would be when the pressure went above the high limit alarm setting during tunnel. This alarm will need to see the limit exceeded for 45 seconds. At this point the Alarm Status LED will start blinking. Then after another 20 seconds the system will come out of tunnel and return to natural or power ventilation.

Possible Reasons for Tunnel Vent Alarm Conditions:

- Tunnel Inlet failed to open.
- Natural Curtain failed to close.
- High Static Pressure due to lack of inlet opening.



```
(1) Tunnel Alarm Details
(2) Alarm On/Off = Off
(3) Last Alarm Statistics:
(4) Date: 02/06 (4) Time: 1:09a
(5) Cause: Nat Auxiliary
```

6.8 Network Status

The Network Status shows the installed Evolution Stages, the Back-Up and the Heat Zone. The ENABLED indicator shows if the stage is enabled and the STATUS indicates OK or Failed.

(1) **Modules** – The Evolution modules that can be installed will appear here. EV I/O - This is the back board of the Evolution 3000.

(1) MODULES	(2) ENABLED	(3) STATUS
EV-INPUT/OUTPUT	Yes	OK
EV-16 (1-16) or SCS-16	Yes	OK
EV-16 (17-32) or SCS-8	Yes	OK
EV-16 (33-48)	No	OK
EV-16 (49-64)	No	OK
BACK-UP/S3	Yes	OK
HEAT ZONE	No	OK

(2) **Enabled** – Those modules that are enabled will be indicated by Yes. This column lets you know which modules are turned on for the Evolution control to communicate with. When adding expansion back-up modules, the ENABLED must be set to “Yes” for proper operation.

(3) **Status** - OK or Failed. This column lets you know if you have lost communication with one of the modules.

6.9 Program Set-Up

The Program Setup screen is used to select all of the Programming screens. Highlight an entry and press the ENTER button. See the next section of this manual for a description of the programming screen.

** FREQUENTLY ADJUSTED SETTINGS **	
(1) GENERAL SETTINGS↵	(3) STATIC PRESSURE↵
(2) SENSOR SETUP↵	(4) PROGRAMS & SECURITY↵
** INITIAL SETUP **	
(5) TEMP/TIMER% RAMP↵	(12) TUNNEL SETUP↵
(6) FEED CLOCK SETUP↵	(13) ON/OFF STAGES 1-16↵
(7) LIGHT CLOCK SETUP↵	(14) ON/OFF STAGES 17-32↵
(8) STAGE PROPERTIES↵	(15) ON/OFF STAGES 33-48↵
(9) NATURAL VENT↵	(16) ON/OFF STAGES 49-64↵
(10) DIAGNOSTICS↵	(17) VARIABLE STAGES↵
(11) FEED LEVEL↵	

(1) **General Settings** – Parameters that usually need to be set when the system is installed. See Section 7.1.

(2) **Sensor Setup** – See Section 7.2.

(3) **Static Pressure** – See Section 7.3.

(4) **Programs & Security** – See Section 7.4.

(5) **Temp/Timer% Ramp** – See Section 7.5.

(6) **Feed Clock Setup** – See Section 7.6.

(7) **Light Clock Setup** - This feature is added for those applications that desire light control. See Section 7.7.

(8) **Stage Properties** – See Section 7.8.

(9) **Natural Ventilation** - See Section 7.9.

(10) **Diagnostics** - See Section 7.10.

(11) **Feed Level** - See Section 7.11.

(12) **Tunnel Setup** - See Section 7.12.

(13) **-(16) On/Off Stages** Settings for Set up of stages. See Section 7.13.

(17) **Variable Stages** - Set-up for variable stages. See Section 7.14.

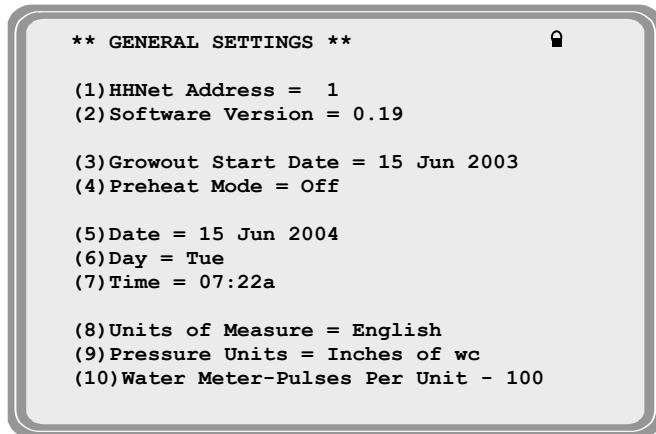
7. Setting Programming Functions

This section discusses the programming screens for the Evolution 3000 and 3001.

7.1 General Settings

The General Settings contains parameters that usually only need to be set once when the system is installed. To change any of these parameters, use the EDITOR arrows to navigate through the list and the plus (+) and minus (-) buttons to increase or decrease the values.

- (1) **HHNET Address** - HH.Net permits up to 32 controllers to be addressed on a single communications port of a personal computer (PC). In order for the computer to recognize the communications from the controllers, each controller must have a unique network address. For example: If you have an Evolution 3000 or 3001, a Stage Master, and two Power Vents you would need to set the Evolution to address 1, the Stage Master to address 2, the first Power Vent to address 3, and the second Power Vent to address 4. Valid settings are: 1 - 32. (You do not have to address the controllers in any particular order.)



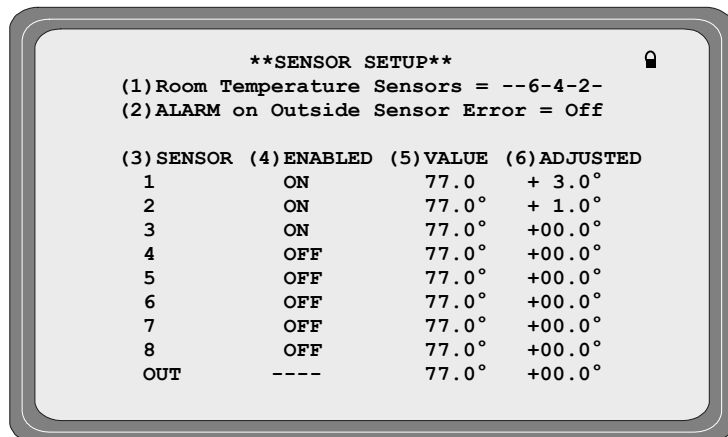
- (2) **Software Version** – The software version currently in use.
- (3) **Growout Start Date** - Set the date desired to start the grow-out. Evolution will use this date to control the feed, light clock and ramping functions. NOTE: This must be set to the first day of grow-out. Your historical data will start at this date and go for 99 days or until the next grow-out date has been set and then that date has been passed.

- (4) **Preheat Mode** – On or Off
- (5) **Date** – The current date as Day/Month/Year.
- (6) **Day** – The current day of the week.
- (7) **Time** – The current time.
- (8) **Units of Measure** - The units of measure can be selected as English or Metric.
- (9) **Pressure Units** - Pressure units can be selected as inches of water column or Pascals.
- (10) **Water Meter-Pulses Per Unit** – HH standard water meter is one pulse per gallon. Select a value from 1 to 100.

7.2 Sensor Setup

The Sensor Set-Up screen is used to set the temperature sensors that will be used to determine the internal temperature of the building.

- (1) **Room Temperature Sensors** - Select any or all of the internal sensors. Your alarm high and low limits will use these sensors that are displayed here.
For example: If you wanted to display sensors 1,2,3,4,5 for your room temperature it would look like this: "---54321" If you turn all the stages off (by setting it to -) the control would use the outside temperature and it would look like this: "Outside-".
- (2) **Alarm on Outside Sensor Error** – On or Off.



- (3) **Sensor** – Identifies up to eight inside and one outside sensor.
- (4) **Enabled** – Yes or No.
- (5) **Value** – Current temperature reading.
- (6) **Adjusted** – This will indicate if the sensor temperature has been calibrated and the amount of re-calibration.

7.3 Static Pressure Settings

The Static Pressure setting sets the parameters necessary to operate the vents.

- (1) **Vent Anticipation** - Number of seconds before a timer stage comes on to start opening stages. When vent anticipation is being used, both minimum 1 and 2 will start the vents open before a stage comes on.

- (2) **Reaction Delay** – The amount of time delay before the vent machine operates.

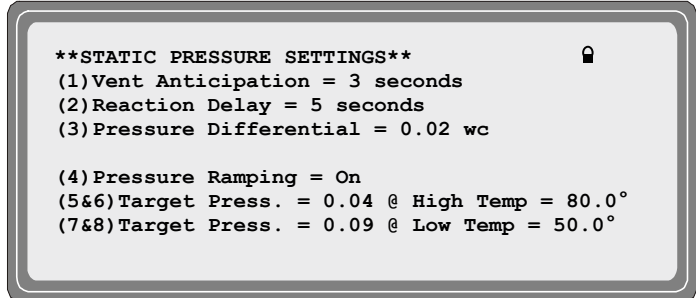
- (3) **Pressure Differential** - Number from target to start opening and closing vents.

Example: With Target 0.07 and Differential 0.02, the vents open when the pressure is above 0.08; The vents will close when the pressure is below 0.06.

- (4) **Pressure Ramping** – Select On or Off to enable or disable pressure ramping.

- (5 & 6) **Target Press. @ High Temp** - The target pressure when the outside temperature is at the high temperature limit. Set both pressure and temperature limit.

- (7 & 8) **Target Press. @ Low Temp** -The target pressure when the outside temperature is at the low temperature limit. Set both pressure & temperature limit.



7.4 Programs & Security

The Programs & Security screen is used to change programs, copy the settings of one program into another program or set the password to access applicable screens.

- (1) **Seasonal Programs** – Select Program 0, 1 or 2 for the current operating program.

This selection can also be used to COPY FROM the Seasonal Program number to the selected program number shown in the item 3 below.

- (2) **Program Name** – The program name can be changed to include a special title, letters, numbers, and characters up to 8 digits in length.

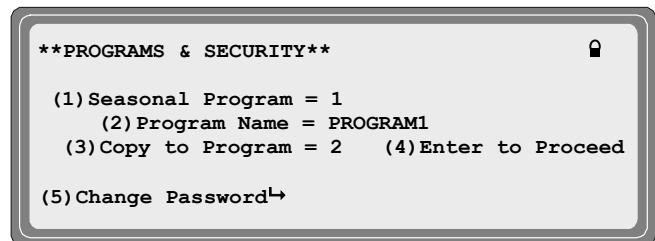
- (3) **Copy to Program** – Enter the COPY TO program number (0, 1, or 2).

- (4) **Enter to Proceed** – When “Enter to Proceed” is selected and the ENTER button is pressed, the Copy to Program number programming contents is replaced with the programming contents of the Seasonal Program number.

NOTE: This action is not reversible.

- (5) **Change Password** – Select “Change Password” for changing the existing password for the Controller. The four digits will allow a numeric password from 0001 to 9999. Changing the Password to 0000 disables the locks until the password is changed to a number between 0001 and 9999.

NOTE: Record the password in a convenient retrievable location.



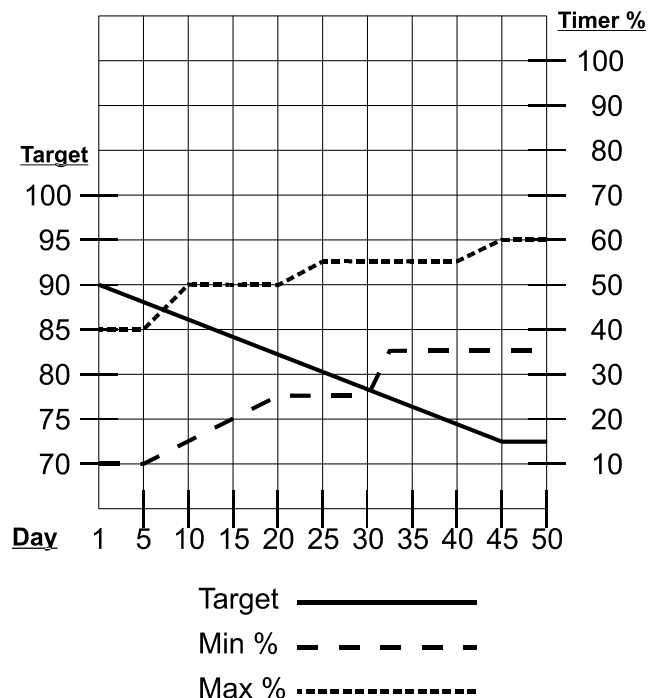
7.5 Temp/Timer% Ramp

The temperature & timer percentage ramping is used to adjust the temperature and timer percentage for the variable automatically by grow-out day.

- (1) **Number of Points** – Select 2 through 10 points.
- (2) **Ramping** – Select On or Off to enable or disable ramping.
- (3) **Preheat Target** – Target Temperature for preheating.
- (4) **Preheat** – On or Off. Preheat allows the controller to run the target to a higher set target temperature for preheating the house.
- (5) (xx.x) – Temperature shown is the current setting for the Minimum Vent Variable Timer Min Temp.
- (6) (xx.x) – Temperature shown is the current setting for the Minimum Vent Variable Timer Max Temp.
- (7) **Point** – This table identifies the specific points. Ramp will function as it does through Farm Manager Explorer. You are allowed up to 10 points at which you can change the target at these points. This allows you to keep the same target for a couple of days and then start ramping down. When the target temperature changes in the Target column, that target will start the day that is in the Growout day column.
- (8) **Day** – The day of growout that starts the set Target Temp.
- (9) **Target** – Set the specific target temperature for each of the growout days.
- (10) **Min%** - The minimum timer percentage for variable timer at set growout day.
- (11) **Max%** - The maximum timer percentage for variable timer at set growout day.

TEMPERATURE & TIMER% RAMPING				
(1) Number of Points = 10		(2) Ramping = Off		
(3) Preheat Target = 95.0°		(4) Preheat = Off		
	(5)	(6)		
	(50.0°)	(80.0°)		
(7) POINT	(8) DAY	(9) TARGET	(10) MIN%	(11) MAX%
1	1	90.0°	10%	40%
2	5	88.0°	10%	40%
3	10	86.0°	15%	50%
4	15	84.0°	20%	50%
5	20	82.0°	20%	50%
6	25	80.0°	25%	50%
7	30	78.0°	25%	55%
8	35	76.0°	35%	55%
9	40	74.0°	35%	55%
10	45	72.0°	35%	60%

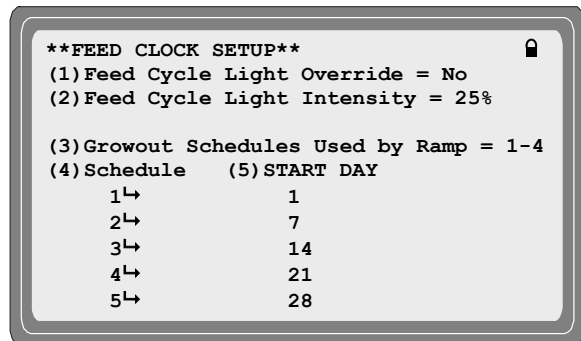
NOTE: The graph below shows an example of how the EV would adjust the target temperature, the variable timer Min%, and the variable timer Max% based on the growout day.



7.6 Feed Clock Setup

The Feed Clock Setup establishes the parameters necessary to enable automatic feed control functions.

- (1) **Feed Cycle Light Override** – Turns the lights to a set intensity while running the feed program.
- (2) **Feed Cycle Light Intensity** – Sets the light intensity percentage to occur during the feed cycle.
- (3) **Growout Schedules Used by Ramp** - Set the number of growout schedules up to five.
- (4) **Schedule** – The schedule number will automatically be set by Evolution.
- (5) **Start Day** - Displays the growout day on which the selected schedule will start. The Start Day is settable on the Schedule screen.



7.6.1 Feed Clock Schedules

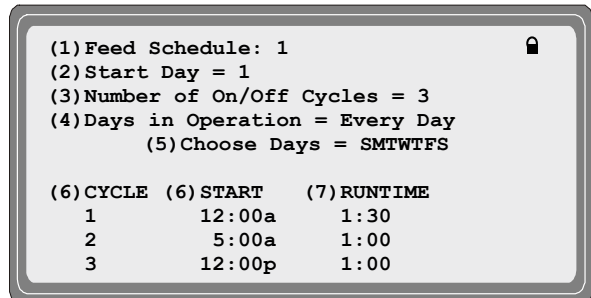
The Feed Clock Schedules screen contains options for the feeding period daily cycles, skip days and runtimes.

Select the individual schedules in the Feed Clock Setup screen.

This screen is also available from the Target Conditions screen as described in **Section 6.2**.

- (1) **Feed Schedule** – The feed schedule selected from the Feed Clock Setup screen will appear here.

- (2) **Start Day** – Set the growout day in which the specific schedule starts.
- (3) **Number of On/Off Cycles** – Enter the number of On/Off cycles desired (up to ten).
- (4) **Days in Operation** – This setting is used for special feeding cycles running the feed only every other day if set to odd or even days. Enter the desired Days In Operation option for operating growout days.



Every Day – No days skipped.

Odd Days Only – Runs the feed cycles ONLY on the ODD growout days (1, 3, 5, 7, etc.).

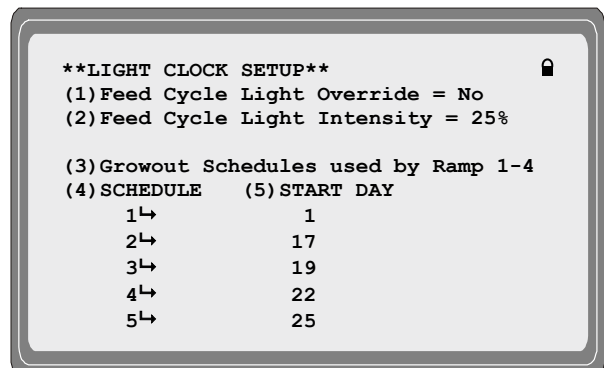
Even Days Only – Runs the feed cycles ONLY on the EVEN growout days (2, 4, 6, 8, etc.).

Selected Days – Runs the feed cycles only on the selected days chosen in item 5.

- (5) **Choose Days** – Select the specific days for operation. Used only when Days In Operation item 4 is set to “Selected Days”.
- (6) **Cycle** – This identifies the feed cycle.
- (7) **Start** – Enter the start time in hours and minutes of the feed schedule cycle.
- (8) **Runtime** – Enter the length of time in hours and minutes for the feeding cycle.

7.7 Light Clock Setup

The Light Clock Setup establishes the parameters necessary to enable automatic control of the house lights. On each Schedule you will need to program a start day of when you want the control to start using this schedule. Then you will need to set the number of on/off cycles. This is how many times the light clock needs to come on in a 24-hour period. You are allowed 10 on/off cycles. Then you set the start time of each cycle and how long that cycle needs to run. When you are using a variable speed stage for the lights you are allowed to set the intensity and ramp. The intensity is the level



you want the lights to be on when your cycle comes on. The ramp allows the light ramp up and down from off to the intensity you have set. The ramp applies at the beginning and the ending of the light cycle.

- (1) **Feed Cycle Light Override** - Turns the lights to a set intensity while running the feed program.
- (2) **Feed Cycle Light Intensity** – Set the light intensity percentage to occur during the feed cycle.
- (3) **Growout Schedules used by Ramp 1-1-** Set the number of schedules from one up to five. The next schedule will start after you have reached the growout day that your schedule starts on.
- (4) **Schedule** – The schedule number will automatically be set by Evolution. After the number of Schedules have been set you will need to setup each schedule.
- (5) **Start Day** –The starting day of each schedule.

7.7.1 Light Clock Details

Select the individual cycle in the Light Clock Details screen and enter the start day time that lighting is to begin and the length and intensity of the lighting period. This screen is also available from the Target Conditions screen as described in **Section 6.2**.

- (1) **Light Schedule** – The selected schedule.
- (2) **Start Day** – Set to the growout day to start program.
- (3) **Number of On/Off Cycles** – Enter the number of On/Off cycles desired (up to ten).
- (4) **Cycle** –The selected cycle within the schedule.
- (5) **Start** – The start time of the lighting cycle.

(1) Light Schedule: 4				
(2) Start Day = 22				
(3) Number of On/Off Cycles = 4				
(4) CYCLE	(5) START	(6) RUNTIME	(7) INTENSITY	(8) RAMP
1	12:00a	2:00	75%	0:10
2	10:00a	2:00	100%	0:10
3	5:00p	2:00	100%	0:10
4	10:00p	2:00	100%	0:10

- (6) **Runtime**- The runtime of the lighting cycle. (hours : minutes)
- (7) **Intensity** –Set the intensity of the lights from 0% to 100%. (For use with variable units only).
- (8) **Ramp** – If it is desired to ramp the lights, that is to slowly turn the lights on and off, enter the time period (hours:minutes) over which to turn the lights on and off (For use with variable units).

7.8 Stage Properties

The Stage Properties screen is where you link to set up specific parameters for the heating and cooling modes.

Stage Properties gives you a definition of how a stage will operate and allows you to add additional variables to some of the properties.

- (1) **Heat Properties** – See Section 7.8.1
- (2) **Cool Stir Properties** – See Section 7.8.2
- (3) **Cool Negative Properties** – See Section 7.8.3
- (4) **Cool Negative Tunnel Properties** – See Section 7.8.4
- (5) **Cool Tunnel Properties** – See Section 7.8.5
- (6) **Cool Evaporative Properties** - See Section 7.8.6
- (7) **Natural Ventilation Properties** - See Section 7.8.7

** Stage Properties **	
(1) Heat Properties	↳
(2) Cool Stir Properties	↳
(3) Cool Negative Properties	↳
(4) Cool Negative Tunnel Properties	↳
(5) Cool Tunnel Properties	↳
(6) Cool Evaporative Properties	↳
(7) Natural Ventilation Properties	↳

7.8.1 Heat Properties

There is one heat property to be setup. Set to “Yes” if it is desired to operate the heat stage only during minimum ventilation. Otherwise the control will allow a heat stage to operate at the same time a cool stage is operating if they are looking at different sensors.

```
** Heat Properties **
Heat Stages operate heating devices
such as heaters or brooders. The
following are additional properties.

Operate during Minimum Vent only = No
```

7.8.2 Cool Stir Properties

This allows stir fans to act as mixing fans during tunnel ventilation.

(1) Allow to operate in Tunnel

– Select Yes or No.

YES = The stir fans operate in any ventilation mode.

NO = The stir fans will NOT operate during tunnel ventilation.

```
** Cool Stir Properties **
These stages typically operate fans
That are used to stir the air inside
The building. They operate in all
Ventilation modes.
```

```
(1)Allow to operate in Tunnel = No
```

7.8.3 Cool Negative Properties

The following parameters can be set:

(1) Transitional Stage

Override – Yes or No

(2) Override on Stage – Set to an available Stage Number.

This feature is used to turn **Cool Negative Fans** off before entering tunnel ventilation.

Functionality: When the Override is set (Override on Stage # XX) to a specific **Cool Negative Tunnel Stage**, the Stage turns all of the **Cool Negative Fans** OFF when the Stage comes ON.

Example: Turning 36” Sidewall Fans OFF when a 48” Negative Tunnel Fan comes ON while still pulling air through the vent boards.

```
** Cool Negative Properties **
These stages typically operate sidewall fans
Since they are not allowed to operate during
Tunnel Ventilation.
(1) Transitional Stage Override = Yes
(2) Override on Stage # 16
```

7.8.4 Cool Negative Tunnel Properties

There are no additional parameters that can be set under this property display.

```
** Cool Negative Tunnel Properties **
These stages typically operate endwall
fans since they are allowed to operate during
both Power and Tunnel Ventilation.
```

7.8.5 Cool Tunnel Properties

The Cool Tunnel Properties provide for setting override functions. Take note when setting the properties. All options must be true before the stage is allowed to operate. For example if all options are set to Only While, then all options will have to be true or in the range before the stage is allowed to operate. NOTE: Override parameter settings are "Only While" and "Always".

- (1) **Time Override** – When set to Only While, the Time Override will allow the stages to operate only while the time is between the times you set. Otherwise when set to Always, the time will not affect the stages.
- (2) **Growout Day Override** – During the first days of the growout period, especially during brooding, the Evolution 3000 or 3001 can be set to only allow the cool tunnel stages to operate after a specified number of days in the growout period. When set to Only While, the Growout Day Override will allow the stages to operate only while the growout day is greater than the day you set. Otherwise when set to Always, the day of growout will not affect the stages.
- (3) **Outside Temperature Override** - When set to Only While the Outside Temperature Override will allow the stages to operate only while the outside temperature is greater than the desired setting. Otherwise when set to always the outside temperature will not affect the stages.

```
** Cool Tunnel Properties **
These stages typically operate endwall fans
only needed for tunnel Ventilation.
The following are additional properties:

(1)Time Override:
  Allow to operate |Only While |
    Time falls between: 2:00p - 2:20p

(2)Growout Day Override:
  Allow to operate |Always |
    Growout day > 14

(3)Outside Temperature Override
  Allow to operate |Always |
    Outside Temperature > 70°
```

7.8.6 Cool Evaporative Properties

Cool Evaporative Properties allow for setting several override functions. Take note when setting the properties. All options must be true before the stage is allowed to operate. For example if all options are set to Only While, then all options will have to be true or in the range before the stage is allowed to operate.

- (1) **Only Operate During Tunnel Vent** –Setting this to “Yes” will only allow the evaporative cooling stages to operate during tunnel. Otherwise on “No” will allow the stages to operate while not in tunnel. For example on misting Hogs during natural ventilation.
- (2) **Time Override** – When set to Only While, the Time Override will allow the stages to operate only while the time is between the times you set. Otherwise when set to Always, the time will not affect the stages.
- (3) **Humidity Override** - Run while humidity is less than

```
** Cool Evaporative Properties **
These stages typically operate
Evaporative Cooling Systems. The
following are additional properties:

(1)Only Operate During Tunnel Vent = No

(2)Time Override:
  Allow to Operate |Always |
    Time falls between 12:00p - 5:00p

(3)Humidity Override:
  Allow to Operate |Always |
    Humidity < 75%

(4)Growout Day Override:
  Allow to Operate |Always |
    Growout Day > 14

(5)Outside Temperature Override
  Allow to Operate |Always |
    Outside Temperature > 70°
```


XX%. When set to Only While, the Humidity Override will allow the stages to operate only while the humidity is less than the humidity you set. Otherwise when set to Always, the humidity will not affect the stages.

(4) **Growout Day Override** - When set to Only While, the Growout Day Override will allow the stages to operate only while the growout day is greater than the day you set. Otherwise when set to Always, the day of growout will not affect the stages.

(5) **Outside Temperature Override** - When set to Only While, the Outside Temperature Override will allow the stages to operate only while the outside temperature is greater than the desired setting. Otherwise when set to Always, the outside temperature will not affect the stages.

7.8.7 Natural Ventilation Properties

(1) **Time Override** - When set to Only While, the Time Override will allow the Natural Curtain Stages to open while the time is between the times you set. Otherwise when set to Always, the time will not affect the Natural Curtain Stages.

(2) **Growout Day Override** - When set to Only While, the Growout Day Override will allow the Natural Curtain stages to operate only while the growout day is greater than the day you set. Otherwise when set to Always, the day of growout will not affect the stages.

(3) **Outside Temperature Override** - When set to Only While, the Outside Temperature Override will allow the stages to open only while the outside temperature is greater than the desired setting. Otherwise when set to Always, the outside temperature will not affect the stages.

```

** Natural Ventilation Properties **
The Natural Ventilation Stages typically
operate sidewalls. The following are some
additional properties:

(1)Time Override:
    Allow to Operate Always
    Time falls between 5:00p - 5:00a

(2)Growout Day Override:
    Allow to Operate Only While
    Growout Day > 7

(3)Outside Temperature Override
    Allow to Operate Always
    Outside Temperature > 70°
  
```

7.9 Natural Ventilation

Natural Ventilation options are:

(1) **Target Temperature** – Displays the existing Target Temperature.

(2) **Allow Natural Ventilation** – Yes or No. This must be set to yes before the control is allowed to enter into natural ventilation.

(3) **Cycle Time** – The length of time in minutes between the start of one curtain position adjustment, and the start of the next curtain position adjustment. (A Cycle time of 3 means that the curtain will move up or down, or remain stationary, depending upon temperature for its runtime once every 3 minutes).

(4) **Run Time** – Period of time the curtain will run each cycle.

(5) **Initial Run Time** – When the controller determines that the curtains should run open and senses that they are closed, it uses this parameter for the 'first' run. This setting is used to allow the curtains to open enough on the first run to guarantee adequate ventilation. Valid settings are 1 to 240 seconds.

```

** (1)NATURAL VENTILATION** (Target: 75.0°)
(2)Allow Natural Ventilation = No
(3)Cycle Time = 5 minutes
(4)Run Time = 30 seconds
(5)Initial Run Time = 60 seconds
(6)Aggressive Range = +/- 5.0°
(7)Unit #2 is Tunnel Inlet = Yes

(8) # (9)SENSORS (10)MODE (11)OPEN (12)CLOSE
U1 --654321 NAT 77.5° 75.0°
U2 --654321 N&T 76.5° 74.0°
  
```

- (6) **Aggressive Range** – If this Temperature limit is exceeded, the run times of the stages are doubled.
 NOTE: If the temperature is at the open setting, the control will run the machine for the runtime you have set. As the temperature moves up, your runtime will also increase. The runtime may ramp up to two times the selected Run Time depending on the amount of temperature difference past the Open or Closed set temperatures. As the temperature gets closer to the Aggressive Range tolerance, the Run Time gets closer to the maximum two times Run Time. Your runtime will have doubled once the temperature reaches the set Aggressive Range/tolerance. This is also true for the close side of the curtain machine.
- (7) **Unit #2 is Tunnel Inlet** –Yes or No. -YES sets U2 to OPEN during Tunnel. The tunnel machine will use the same settings that unit 1 does for natural ventilation.
 Example: If you have natural unit #1 as the main curtain and natural #2 as the tunnel curtain. Natural unit #1 and natural #2 will operate at the same time together. They will both use the settings for Unit #1.
- (8) # - Identify either Unit #1 or Unit #2.
- (9) **Sensors** – Identify the sensors used by the controller. This will be the sensor that the curtain machine will operate from. Active sensors will be indicated by a number starting with #1 from right to left. Inactive sensors will be indicated by a - or hyphen. When "outside-" is displayed, outside sensor is active. To use sensors 1,2 and 3, "----321" should be displayed. See (7).
- (10) **Mode** – Natural (NAT) or Natural Tunnel (N&T). Sets unit 2 to Tunnel Inlet also.
- (11) **Open** –This will be the temperature at which your curtain will open for natural ventilation.
- (12) **Close** - This will be the temperature at which your curtain will close from natural ventilation and start it back to minimum ventilation.

7.10 Diagnostics

The Diagnostics screen is for qualified technician use only and can only be changed by using the service code. Contact the local dealer for assistance.

- (1) **Power Ventilation Auxiliary SWX** - Setting these options to Yes will ignore the indication from the curtain switch. This feature will totally ignore the auxiliary switches on the PT machines when answered yes.

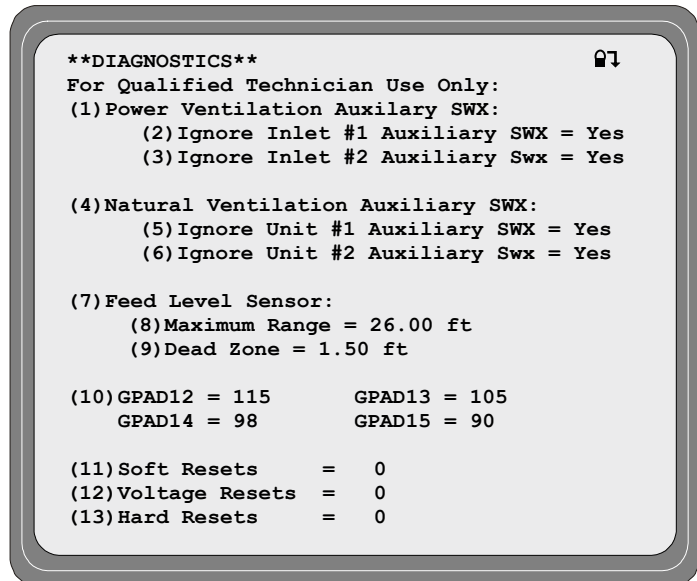
Note: This must be answered 'No' and the open auxiliary switch of the vent machine must be connected in order to use the feature of running the tunnel curtain with the vents during Power ventilation when the pressure is to high and the vents are completely open.

- (2) **Ignore Inlet #1 Auxiliary Switch**
 - Yes or No
- (3) **Ignore Inlet #2 Auxiliary Switch**
 - Yes or No
- (4) **Natural Ventilation Auxiliary SWX** - Setting these options to

Yes will ignore the indication from the curtain switch. This feature will totally ignore the auxiliary switches on the PT machines when answered "Yes".

Note: The auxiliary switches must be connected and this answered to no in order for the control to enter into natural ventilation.

- (5) **Ignore Unit #1 Auxiliary Switch** - Yes or No
- (6) **Ignore Unit #2 Auxiliary Switch** - Yes or No
- (7) **Feed Level Sensor** – Settings for setting the maximum range and calibration of the feed level sensor.
- (8) **Maximum Range** - Total sensing range of the sensor.
- (9) **Dead Zone** - Distance from the top of the feed bin to the bottom of the sensor.



(10) GPAD12 thru GPAD15 – For HHI Service Technician Use ONLY.

General Purpose A/D Readings:

As shown on the **Diagnostics** screen in **Section 7.10**, there is a section with four displays labeled GPAD12, GPAD13, GPAD14, and GPAD15. These values represent the data being received from the I/O Expansion Board, if equipped. These values will be used to troubleshoot your controller by a qualified service technician in the case that a problem occurs with your I/O Expansion board. The following tables give you an idea of the range of values and what they represent.

GPAD12 & GPAD13 -- Feed Level Sensor Inputs		
Range	Status	Cause
0-24	Bin is full	Feed is on or above proximity rod.
25-57	Loss of Echo	Bin may be empty or a sensor error
58-239	Sensing Feed	Value should be based on level of feed with 58 being approximately full.
240-255	Error	Could represent empty but probably a defective sensor.
GPAD12 = Bin 1		
GPAD13 = Bin 2		

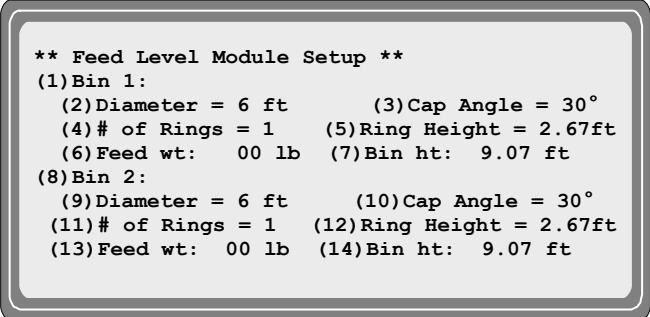
GPAD14 -- Current Sensors for Auger 1, Auger 2, Belt 1			
Range	Motor Status		
	Auger 1	Auger 2	Belt 1
0-115	On	On	On
116-124	Off	On	On
125-136	On	Off	On
137-151	Off	Off	On
152-169	On	On	Off
170-194	Off	On	Off
195-224	On	Off	Off
225-255	Off	Off	Off

GPAD15 -- Current Sensors for Belt 2, Belt 3, Belt 4			
Range	Motor Status		
	Auger 1	Auger 2	Belt 1
0-115	On	On	On
116-124	Off	On	On
125-136	On	Off	On
137-151	Off	Off	On
152-169	On	On	Off
170-194	Off	On	Off
195-224	On	Off	Off
225-255	Off	Off	Off

- (11) **Soft Resets** - For HHI Use Only.
- (12) **Voltage Resets** - For HHI Use Only.
- (13) **Hard Resets** - For HHI Use Only.

7.11 Feed Level

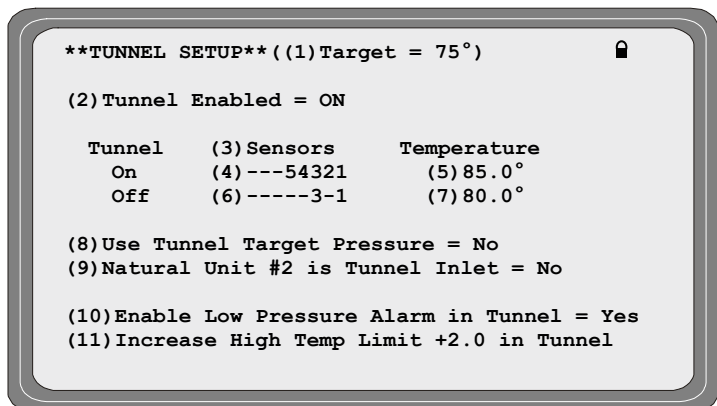
The Feed Level Module Setup screen sets the parameters required to monitor feed bins.



- (1) **Bin 1** - These settings provide the feed level sensor at Bin #1 with necessary information to calculate the approximate feed weight and height.
- (2) **Diameter** – Feed Bin #1 diameter = 6, 7, or 9 ft.
- (3) **Cap Angle** – Feed Bin #1 cap angle at the top of the bin = 30° or 40°
- (4) **# of Rings** – Feed Bin #1 number of rings = 1, 2, 3, 4, or 5
- (5) **Ring Height** - Feed Bin #1 ring height = Measurement from the top/center of one ring to the top/center of the next ring.
- (6) **Feed wt** - Feed Bin #1 feed weight = The feed weight is calculated by using the entered bin size information and the current feed level module results.
- (7) **Bin ht** - Feed Bin #1 bin height = The bin height is calculated by using the entered bin size information.
- (8) **Bin 2** - These settings provide the feed level sensor at Bin #2 with necessary information to calculate the approximate feed weight and height.
- (9) **Diameter** – Feed Bin #2 diameter = 6, 7, or 9 ft.
- (10) **Cap Angle** – Feed Bin #2 cap angle at the top of the bin = 30° or 40°
- (11) **# of Rings** – Feed Bin #2 number of rings = 1, 2, 3, 4, or 5
- (12) **Ring Height** - Feed Bin #2 ring height = Measurement from the top/center of one ring to the top/center of the next ring.
- (13) **Feed wt** - Feed Bin #2 feed weight = The feed weight is calculated by using the entered bin size information and the current feed level module results.
- (14) **Bin ht** - Feed Bin #2 bin height = The bin height is calculated by using the entered bin size information.

7.12 Tunnel Setup

The Tunnel Setup screen sets the parameters necessary to operate in the Tunnel mode.



- (1) **Target** – Displays the target temperature of the building.
- (2) **Tunnel Enabled** – Select either Yes or No to enable or disable going into the Tunnel mode.
- (3) **Sensors** – The user is given the choice as to what sensors will be used to enter and exit Tunnel Mode; select any or all of the available sensors. To use the outside sensor when entering tunnel set the sensors to display the word “outside” by turning all the sensors off.
- (4) **Tunnel ‘On Sensors’** – Selectable for 1-8 sensors. Select the sensors used for entering Tunnel Mode.
- (5) **Tunnel ‘On Temperature’** – The temperature at which the controller will go into tunnel mode.
- (6) **Tunnel ‘Off Sensors’** – Selectable for 1-8 sensors. Select the sensors used for exiting Tunnel Mode.
- (7) **Tunnel ‘Off Temperature’** - The temperature at which the controller will go out of tunnel mode.

- (8) Use **Tunnel Target Pressure** – Yes or No. This will allow a different Target Pressure to be used in the Tunnel mode.
- (9) **Natural Unit #2 is Tunnel Inlet** – Yes or No. This indicates that PowerTrak Number 2 of the Natural Set is a Tunnel inlet and will open during Tunnel.
- (10) **Enable Low Pressure Alarm in Tunnel** – Yes or No. Set to Yes if it is desired to use a low pressure alarm while in the tunnel mode.
- (11) **Increase High Temperature Limit +##° in Tunnel** –While in the tunnel mode the Evolution 3000 can adjust the High Temperature Limit. Enter the number of degrees that the limit is to be increased while in the tunnel mode. This increase will only be used while in tunnel.

7.13 ON/OFF Stages

You must select the set of stages you want to set or edit. NOTE: When programming stages you are allowed to edit the settings from the main screen. You are also allowed to go into each stage and see a detailed screen. To do this have a stage number highlighted and then press enter.

NOTE: Highlight and press ENTER to bring up details on each stage.

ON/OFF STAGES						
(2) #	(3) SENSORS	(4) MODE	(5) ON	(6) OFF	(7) TIMER	(1) Target = 73.0°
1	-----1	Feed	76	74	None	
2		Light			Ramp	
3	----321	Cstir	76	74	Min 2	
4	-----1	Cneg	76	74	Min 1	
5	-----2-	CNeg	77	75	None	
6	-----3--	CNeg	78	76	None	
7	-----2-	CNeg	79	77	None	
8	-----1	CNeg	80	78	None	
9	-----1	CNeg	81	79	None	

(1) **Target** – Displays the current set Target Temperature.

(2) **Stage #** - Stage Numbers.

(3) **Sensors** – The sensors used to control ON or OFF point of the stage. Turn ON 1-8. This will be the sensor that the stage will operate from. Active sensors will be indicated by a number starting with #1 from right to left. Inactive sensors will be indicated by a - or hyphen. When "outside-" is displayed, outside sensor is active. To use sensors 1,2 and 3, "----321" should be displayed.

(4) **Mode** – This mode column will indicate how the stage is Programmed to operate.

(OFF) Disables stage from operating during automatic operation.

(Heat) Heat Mode: This method of heating only operates when the curtains are in the closed position and the operating sensor is below the on temperature.

(CSTIR) Cool Stir Mode: This mode setting allows the cool stage to run whether the main curtain is open or closed.

(CNEG) Cool Negative: Method of ventilation where air is drawn out of the building by fans, creating a negative static pressure which draws air into the house from all openings at a even pace. Will not operate in Tunnel or Nat.

(CNEGT) Cool Negative Tunnel: A combination of the Cool Negative and the Cool Tunnel Modes.

(COOL TUNNEL) Only operate during Tunnel operation.

(LIGHT) The LIGHT Mode: See Section 7.7.

(FEED) The FEED mode: See Section 7.6.

(CEVAP) Cool Evaporative mode See Section 7.8.6

(5&6) **ON/OFF** –The ON column will indicate the current setting for the onpoint temperature of the stage. Set this to the temperature you would like for the stage to come on at. The OFF column will indicate the current setting for the offpoint temperature of the stage. Set this to the temperature you would like for the stage to turn off at.

(7) **TIMER** – None, Min1, Min2, Var, Cool This Timer column will indicate what type of timer you want the stage to operate from. If the stage doesn't need a timer then you must have this setting to none.

7.13.1 On/Off Stage Details

- (1) **ON/OFF STAGE #** – Stage number.
- (2) **Sensor(s)** – Sensors used.
- (3) **Mode** –See Section 7.8.
- (4) **Timer** –See Section 7.8.
- (5) **On/Point** – See Section 7.8.
- (6) **OffPoint** –See Section 7.8.

```
(1) ON/OFF Stage 1      (Target: 70.0°)  🔒
(2) Sensor(s)= -----1
(3) Mode = Cool Evap
(4) Timer = None
(5) On/Point = 70.4°
(6) OffPoint = 70.0°
```

7.14 Variable Stages

- (1) **Target** – Displays the target temperature.
- (2) **#** - Identifies the Variable Stage unit below.

```
**VARIABLE STAGES** (1)Target: 77.5°  🔒
(2) # (3) SENSORS (4) MODE (5) MaxON (6) MinON (7) CURVE (8) TIME
1 ← -----1 Light Ramp
2 ← -----1 Cstir 76.2° 74.0° Fan 4 None
```

NOTE: Highlight and press ENTER to bring up details on each stage.

- (3) **Sensors** –The selected sensor(s) to operate. Active sensors will be indicated by a number starting with #1 from right to left. Inactive sensors will be indicated by a - or hyphen. When "outside-" is displayed, outside sensor is active. To use sensors 1,2 and 3, "----321" should be displayed.
- (4) **Mode** – Heat, CSTIR, CNEG, CNEGT, CTUN, LIGHT. NOTE: This mode column will indicate how the stage is Programmed. You are allowed to set any stage at any of these modes. When the stage is used to control lighting then you must set the mode and curve to Light.
- (5) **MaxON** –This MaxON column will indicate the current setting for the Maximum onpoint temperature of the stage. Set this to the temperature you would like for the stage to reach the desired maximum speed.
- (6) **MinON** – This MinON column will indicate the current setting for the Minimum onpoint temperature of the stage. Set this to the temperature you would like for the stage to start running its minimum speed setting. Minimum speed setting is set at the Minimum Vent screen of the Navigator.
- (7) **Curve** – This is the motor curve for the variable speed fans. If you are using the stage for lights then make sure the curve is set for light.
 - Light Run lights. Sets light intensity to vary linearly with time.
 - Fan 1 For use with Hired Hand’s line of Funnel Flow fans that are 24” or less. Also, line voltage must be single phase.
 - Fan 2 For operation of 36” fans. The power distributed at each percentage is somewhat greater than that of Curve 1. Therefore, the speed will be a little greater than that of Curve 1.
 - Fan 3 For 3-Phase systems. Its purpose is to shift the voltage curve to give a much higher power from the varied phase. Conditions that would warrant the use of this curve is a variable speed fan that varies a great deal from 100% speed to 95% speed.
 - Fan 4 For 3-Phase systems. Its purpose is to shift the voltage curve to give much less power from the varied phase. Conditions that would warrant the use of this curve is a variable speed fan that varies very little from 100% speed to 5% speed.
 - Fan 5 For use with Hired-Hand’s newest Emerson fan motor, these motors are typically used on fans that are 24” or smaller.
- (8) **Time** - None, Min1, Min2, Var, Always ON. This Timer column will indicate what type of timer you want the stage to operate from. If the stage doesn't need a timer then you must have this setting to none. Always ON sets the fan to always run at Minimum speed when operating temperature is below the set Minimum ON temperature.

8. Fail-Safe Relay Operation

There are two types of Relay strips used in the Evolution. The Normally Open (NO) strip requires a signal from the controller board in order to energize a stage of ventilation. Should power be removed from the EV-3000 or 3001, the Normally Open Relay strips would not be able to energize a ventilator. On the other hand, the Fail-Safe relay strip would close each of the relays in the strip resulting in energizing the ventilators in case of a controller power failure. Each of the relay strips contains four relays for controlling four stages. In the EV-3000 or 3001 there are a total of four relay strips; Three will be N.O. and one will be a Fail-Safe. The operator must insure that the Fail-Safe relay strip is connected only to stages that should be turned on in case of a controller failure. See the Section 9.9 for a physical description of the relay strips. It is not recommended to place heating equipment on Fail-Safe stages.

WARNING: The Fail-Safe Relay Card Is Not Recommended For Use On Timer Stages.

NOTE:

Older versions of the Fail-Safe Relay Cards will not have the Yellow Warning Label. Look for the “FAIL-SAFE RELAY STRIP” text visible on this end of the Fail-Safe Relay Card circuit board.



Fail-Safe Relay Card

NOTE:

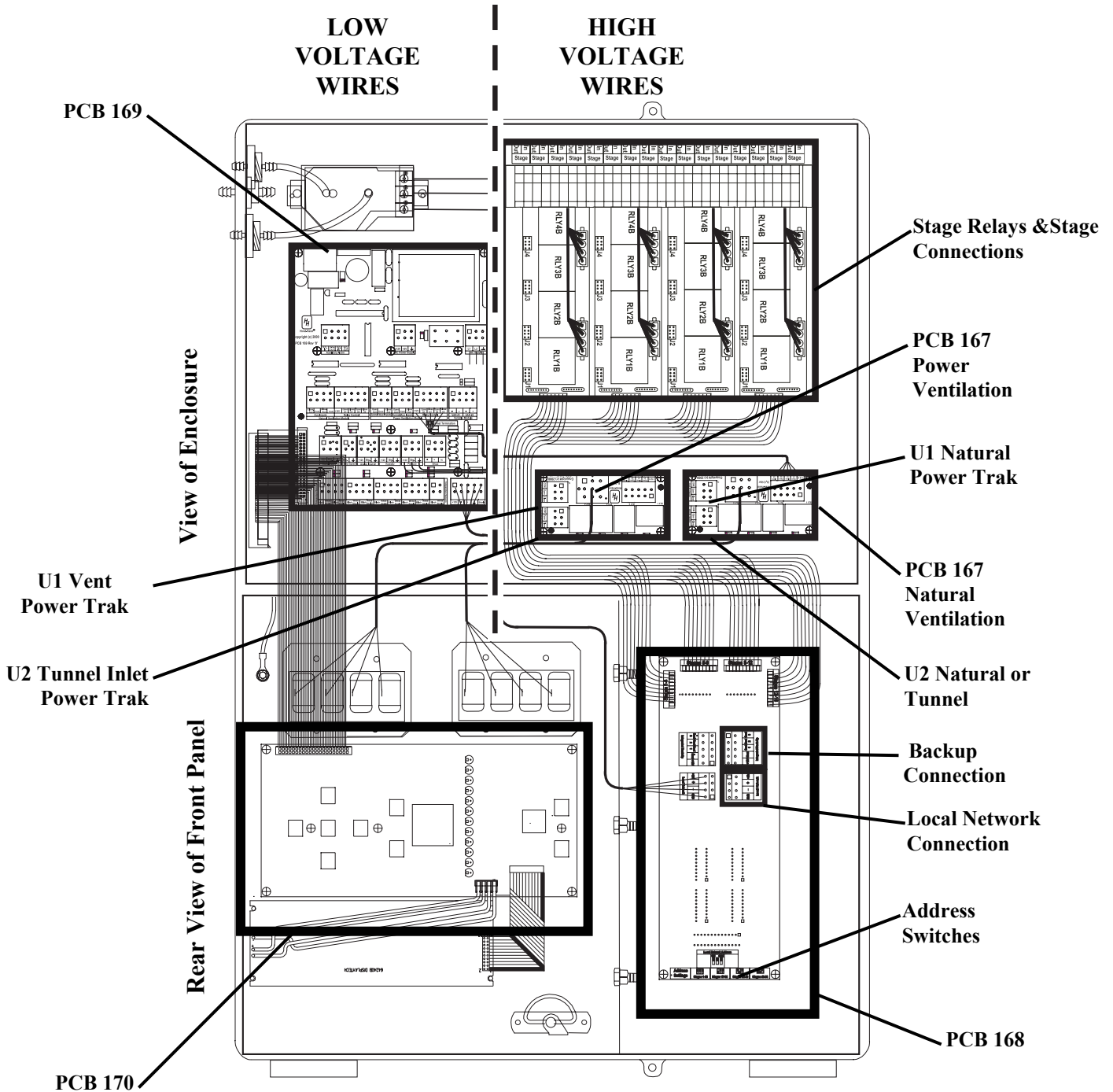
The Normally Open Relay Card will have the “N.O. RELAY STRIP” text visible on this end of the Relay Card circuit board.



Normally Open Relay Card

9. Wiring Diagrams

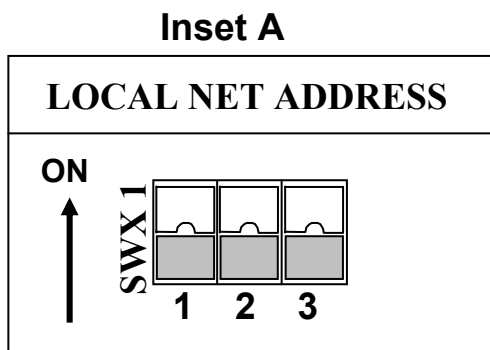
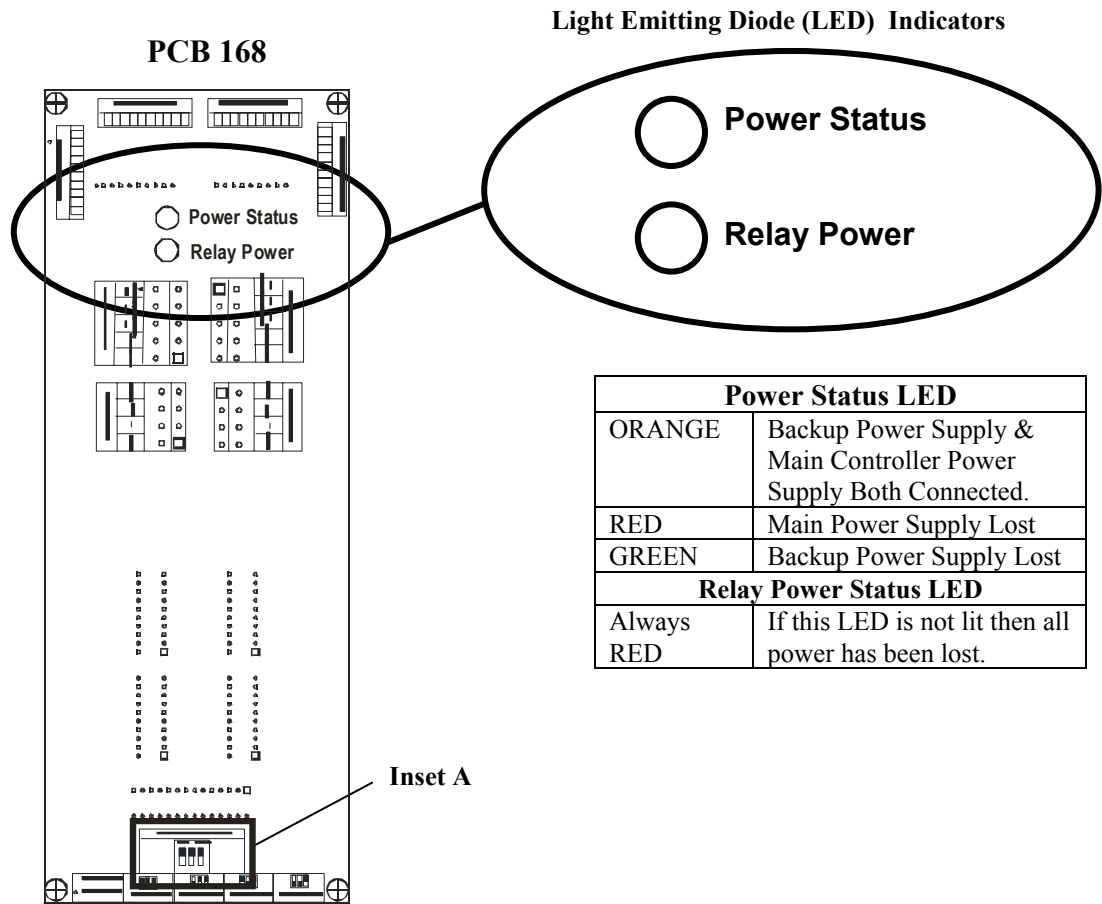
9.1 Connections of Evolution 3000 & 3001 Enclosure



WARNING!

Keep All Low Voltage Wires Such As Sensors, Network, & Backup, Curtain Aux Switches Separate From AC Wires!

9.2 Setting Address Switches & LEDs on PCB 168 Stage Board



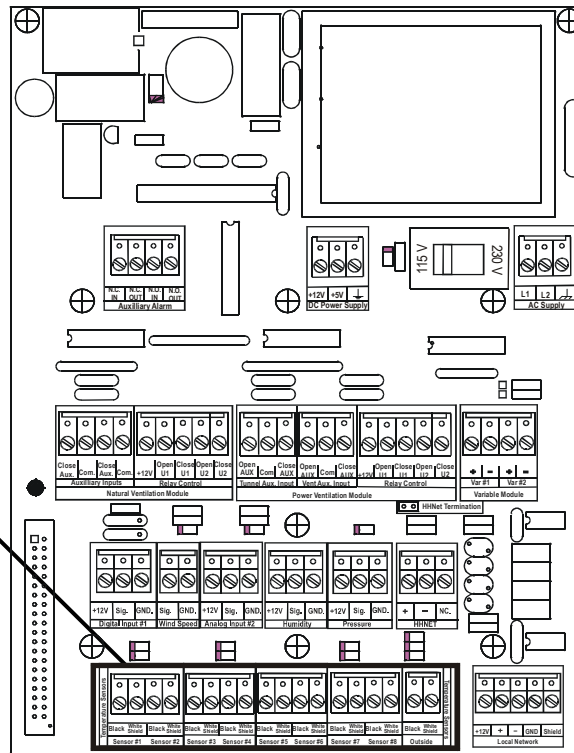
DIP Switch Settings			Stage Address Assignment
No. 1	No. 2	No. 3	
ON	ON	ON	1 -16
OFF	ON	ON	17-32
ON	OFF	ON	33-48
OFF	OFF	ON	49-64

LOCAL NET ADDRESS

Local addresses are assigned by setting a series of three DIP switches on the PCB 168 circuit board. There are three switches that can be set as shown in the above table. For example, if all three DIP switches are set to "ON", the Stages are 1 through 16.

9.3 Connecting Temperature Sensor to Evolution 3000 & 3001

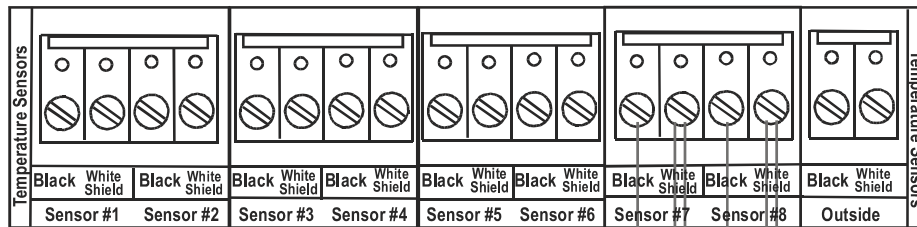
PCB 169



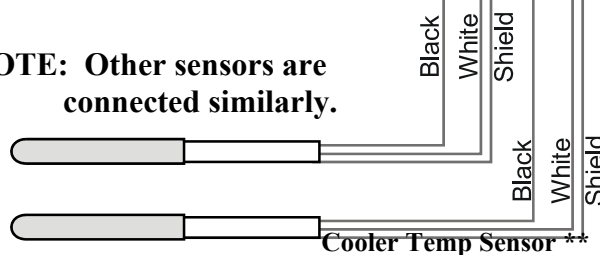
Inset A

WARNING!
 LOW VOLTAGE!
 Keep Separate From
 High Voltage Wires!

Inset A



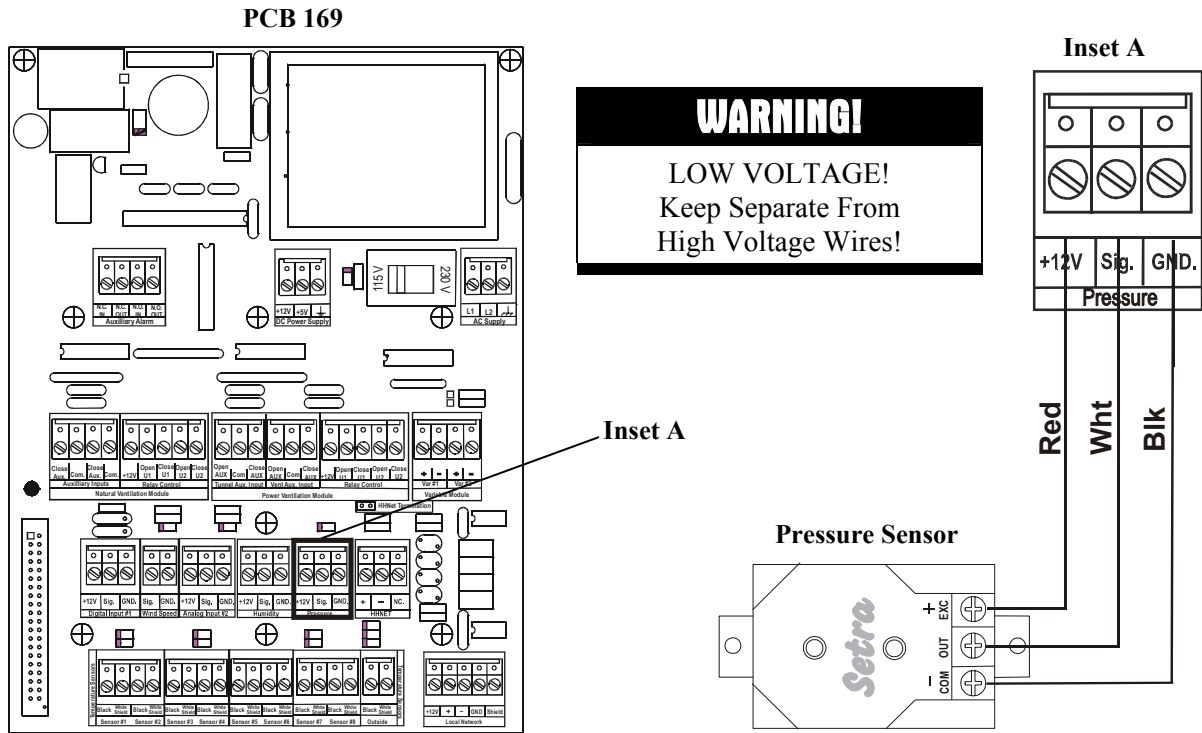
NOTE: Other sensors are connected similarly.



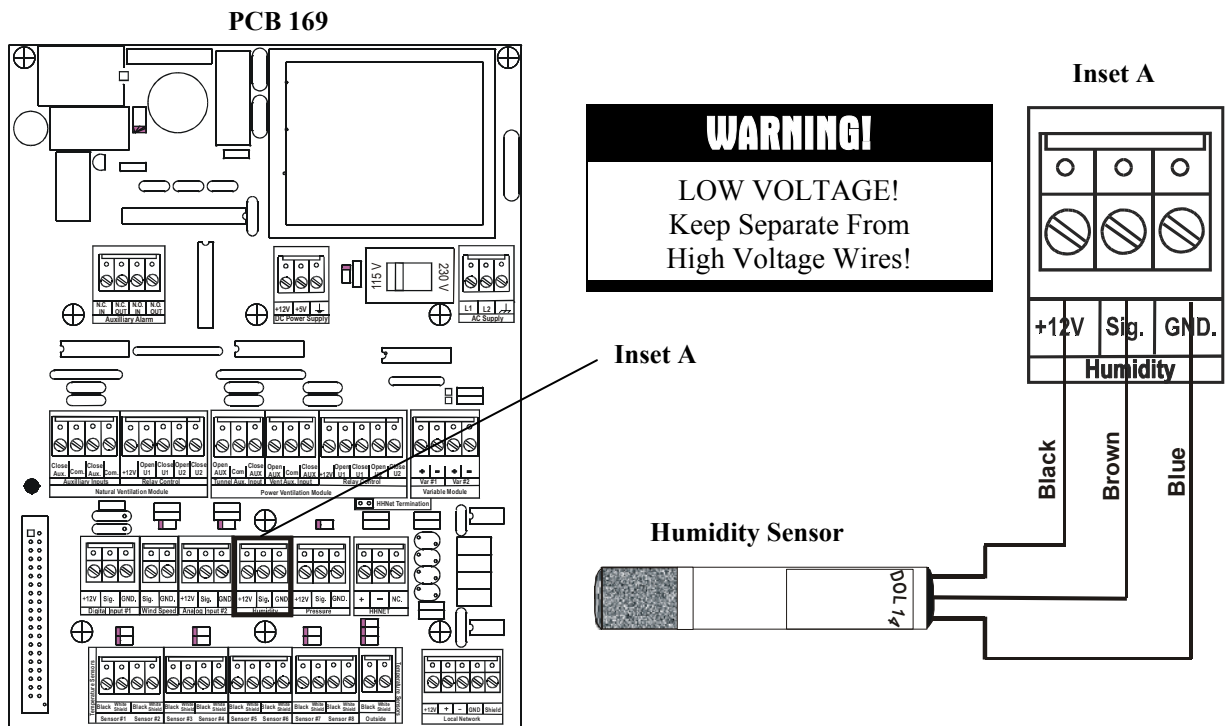
** Optional use as a Cooler Temp or Control Room Temperature Monitor.

Warning!
 Tape Shields To Prevent Bare Wires From Touching!

9.4 Connecting Static Pressure Sensor to Evolution 3000 & 3001

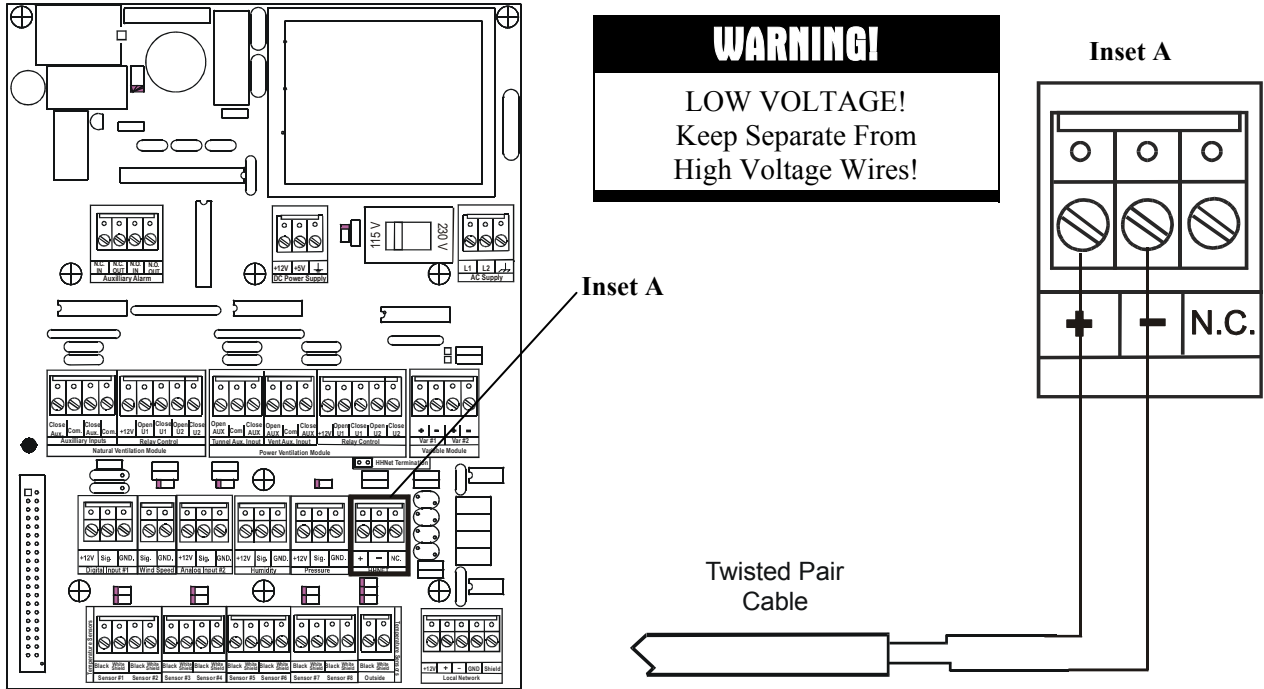


9.5 Connecting Humidity Sensor to Evolution 3000 & 3001



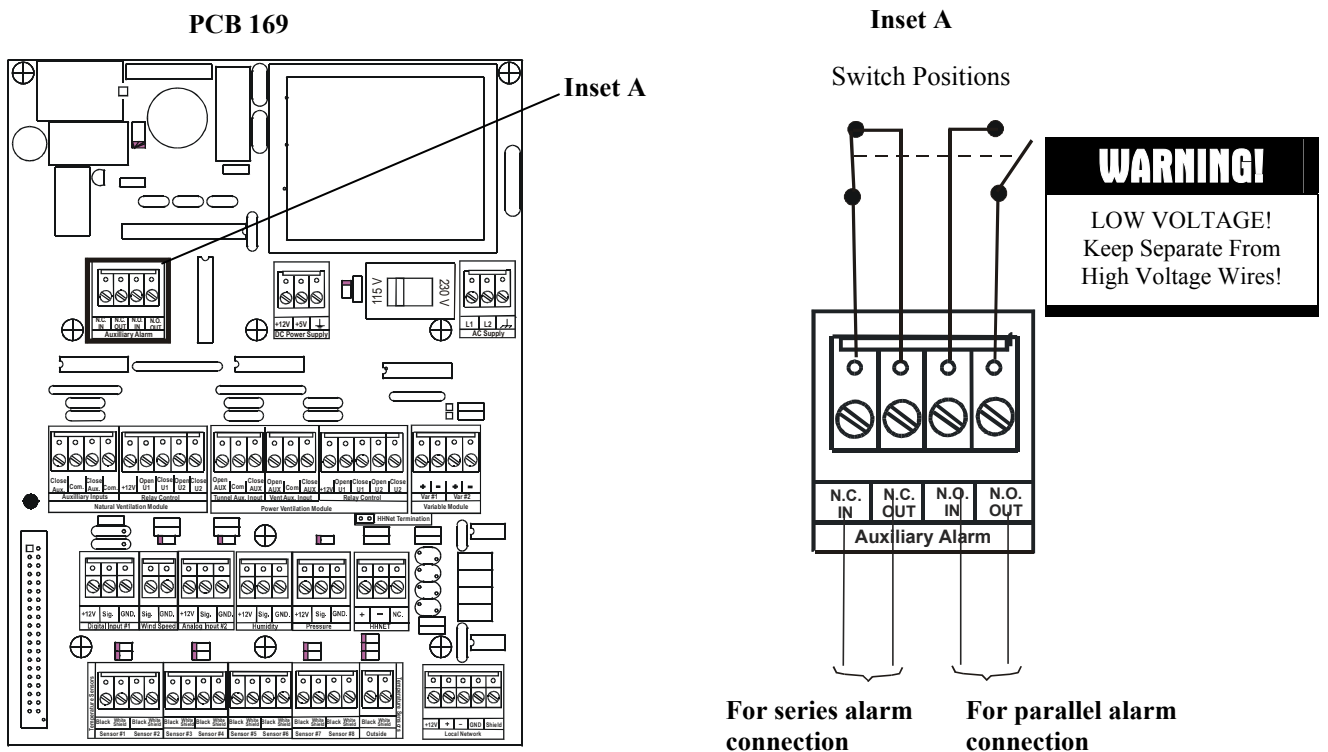
9.6 Connecting PC Network to Evolution 3000 & 3001

PCB 169



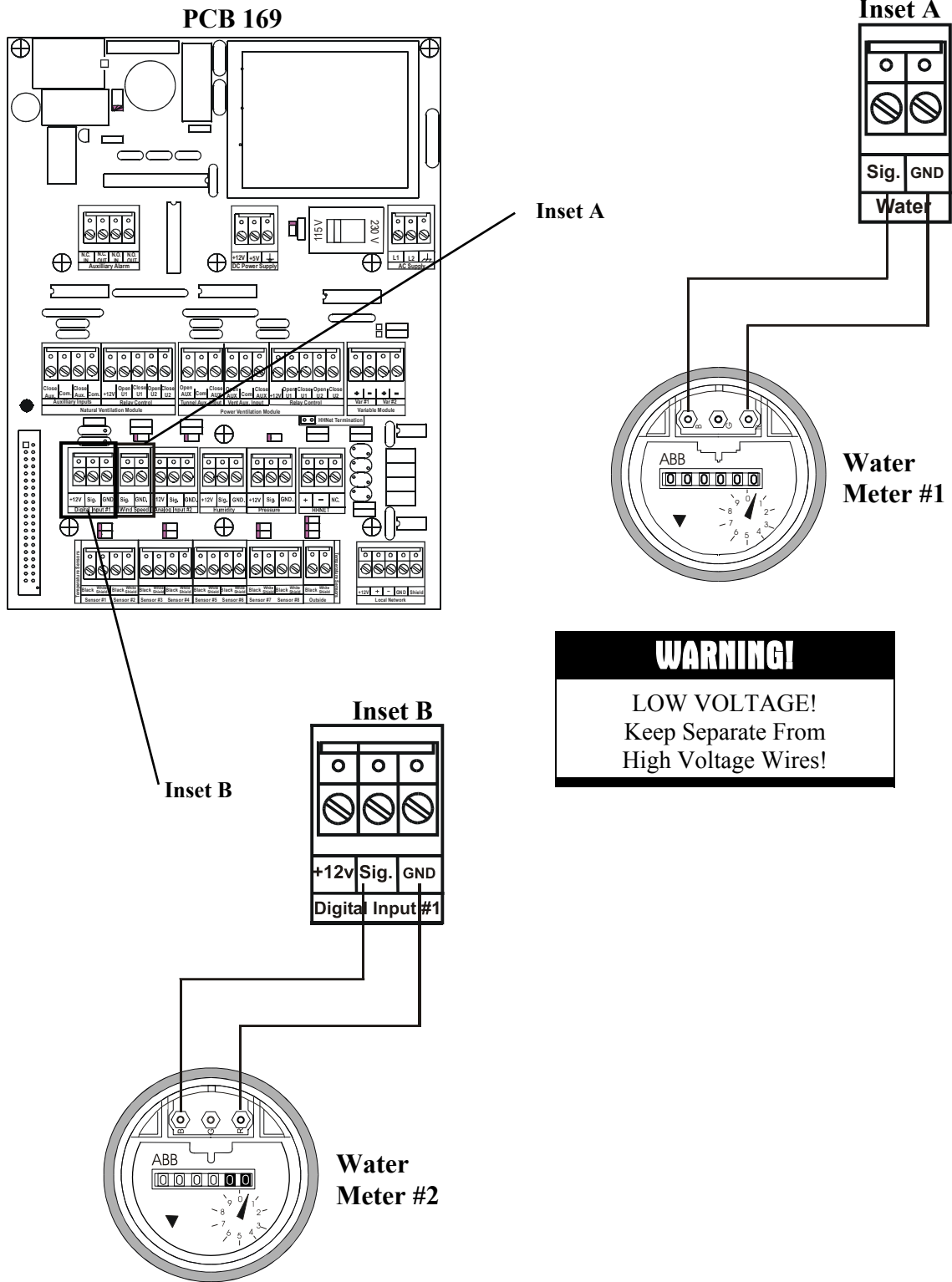
9.7 Connecting Alarm Device to Evolution 3000 & 3001

PCB 169



NOTE: The internal wiring shows the condition of the relay during normal conditions (no alarm present). During an alarm condition, the contact positions will be reversed.

9.8 Connecting Water Meter to Evolution 3000 & 3001

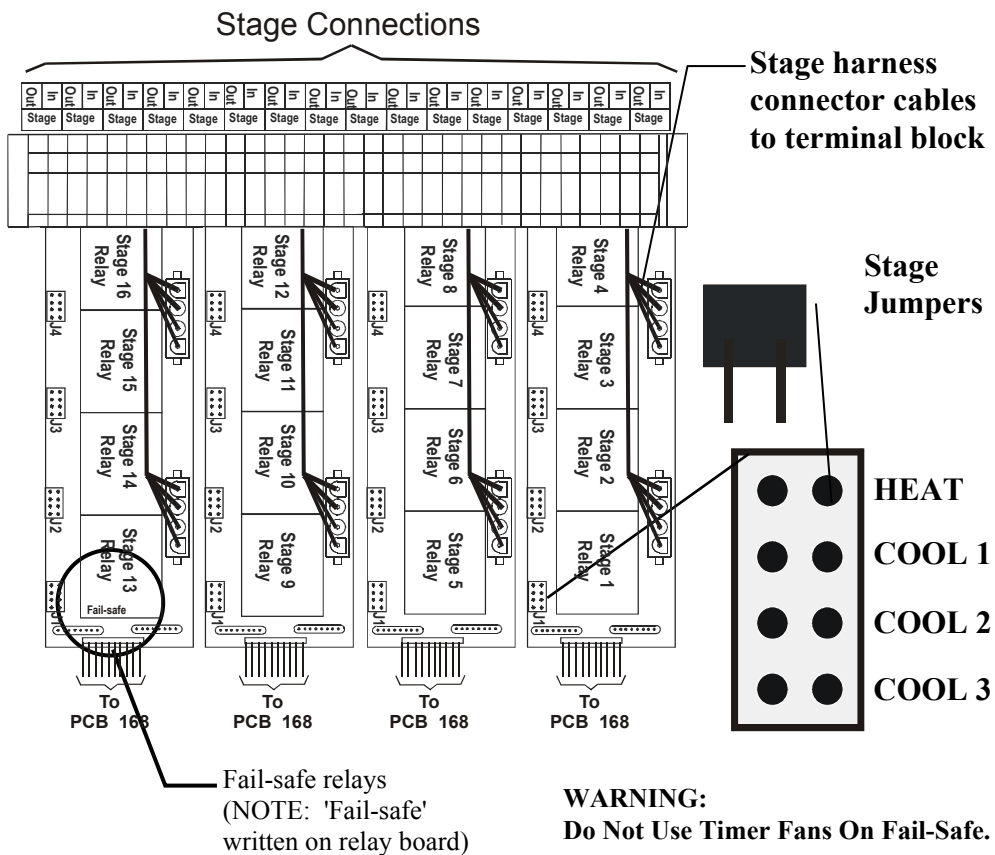


9.9 Connecting Stage Jumpers of Evolution 3000 & 3001

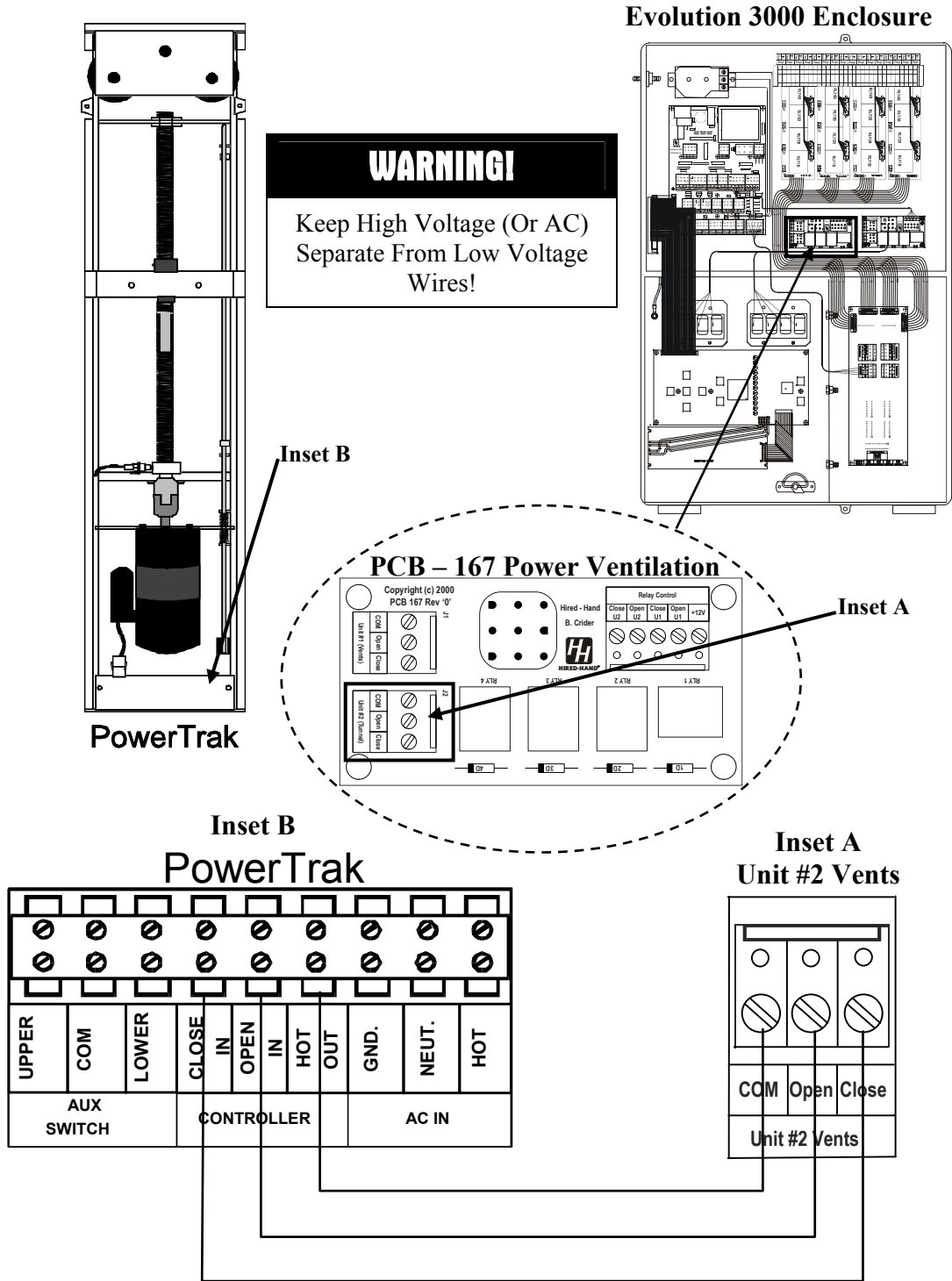
Pictured at below is a stage relay board consisting of four stage relays and the associated stage jumper for each relay. The stage jumpers are labeled COOL 1, COOL 2, COOL 3, and HEAT. Location of the jumper places the stage in one of these four modes, or if the jumper is NOT inserted, the stage is NOT placed on Back-up. The jumpers should be placed based on the operation of stage equipment and should be the same as assigned in the Master Controller.

Jumpers are placed according to the following table:

Stage Operation	Jumper
Cool Negative	COOL 1
Cool Negative Tunnel Fan	COOL 2
Cool Tunnel Fan	COOL 3
Heat Stage	HEAT
Stage NOT in Back-up	No Jumper installed



9.10 Connecting the PowerTrak to the Evolution 3000 & 3001

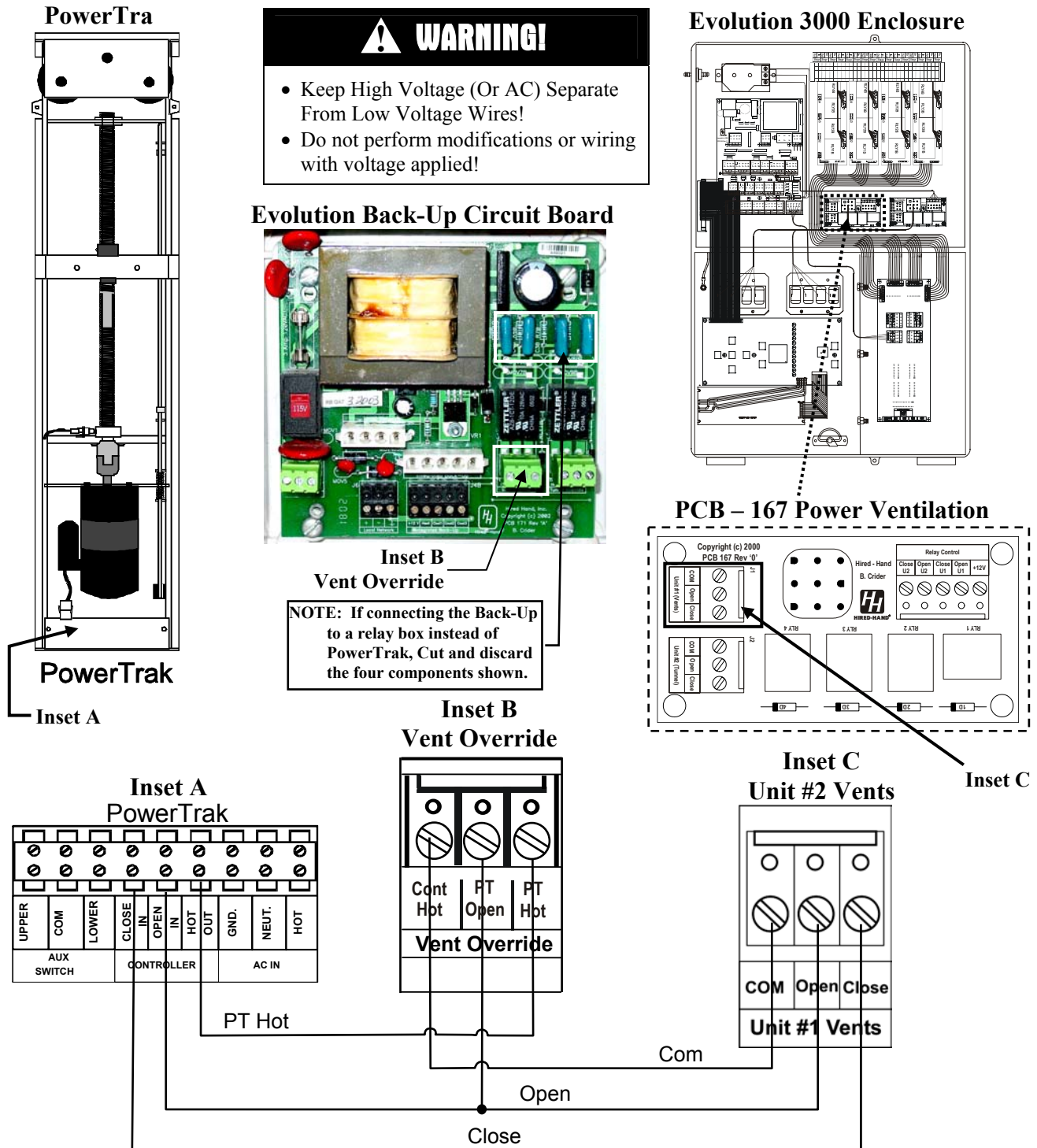


NOTE: If curtain is setup to pull curtain up to open, then reverse wires connected to "OPEN" and "CLOSE" terminals.

NOTE: Only 1 Power Trak can be connected to each Power Trak outlet. If Additional Power Traks are needed, Then use of relay boxes is necessary to separate the load.

NOTE: All PowerTrak units will connect the same.

9.11 Connecting the PowerTrak and EV Back-Up to the Evolution 3000 & 3001



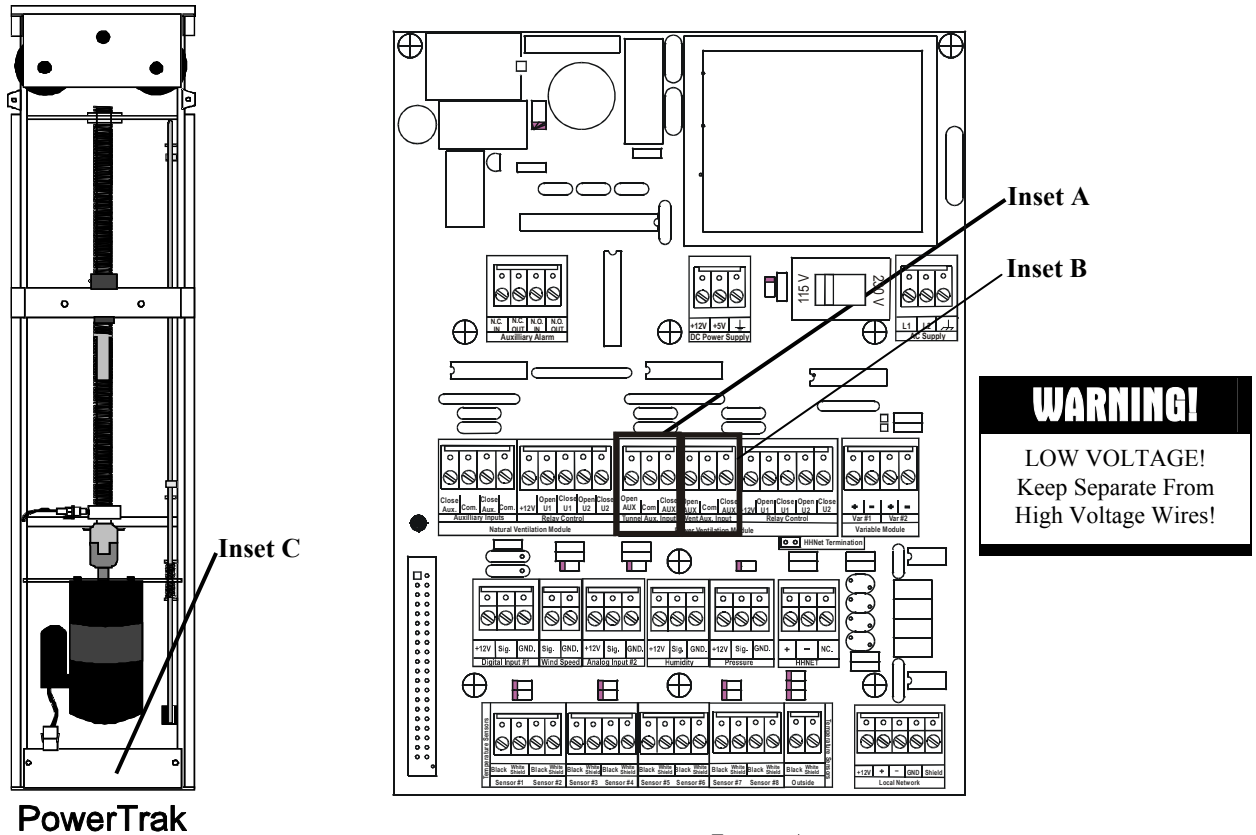
NOTE: If curtain is setup to pull curtain up to open, then reverse wires connected to "OPEN" and "CLOSE" terminals.

NOTE: Only 1 Power Trak can be connected to each Power Trak outlet. If Additional Power Traks are needed, Then use of relay boxes is necessary to separate the load.

NOTE: All PowerTrak units will connect the same.

9.12 Connecting the PowerTrak Power Auxiliary Switches to Evolution 3000 & 3001

PCB 169

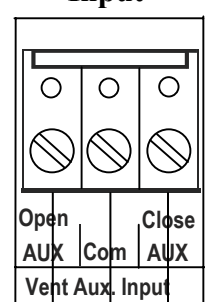
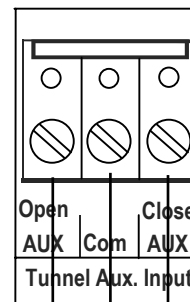
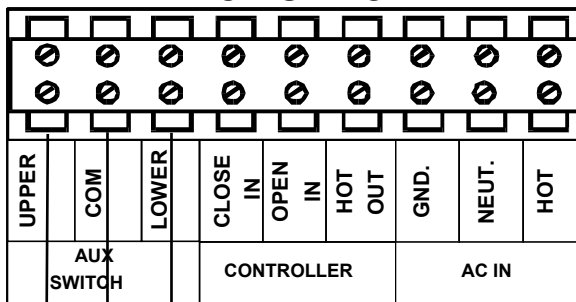


PowerTrak

Inset C
PowerTrak

Inset A
Tunnel Auxiliary
Input

Inset B
Vent Auxiliary
Input

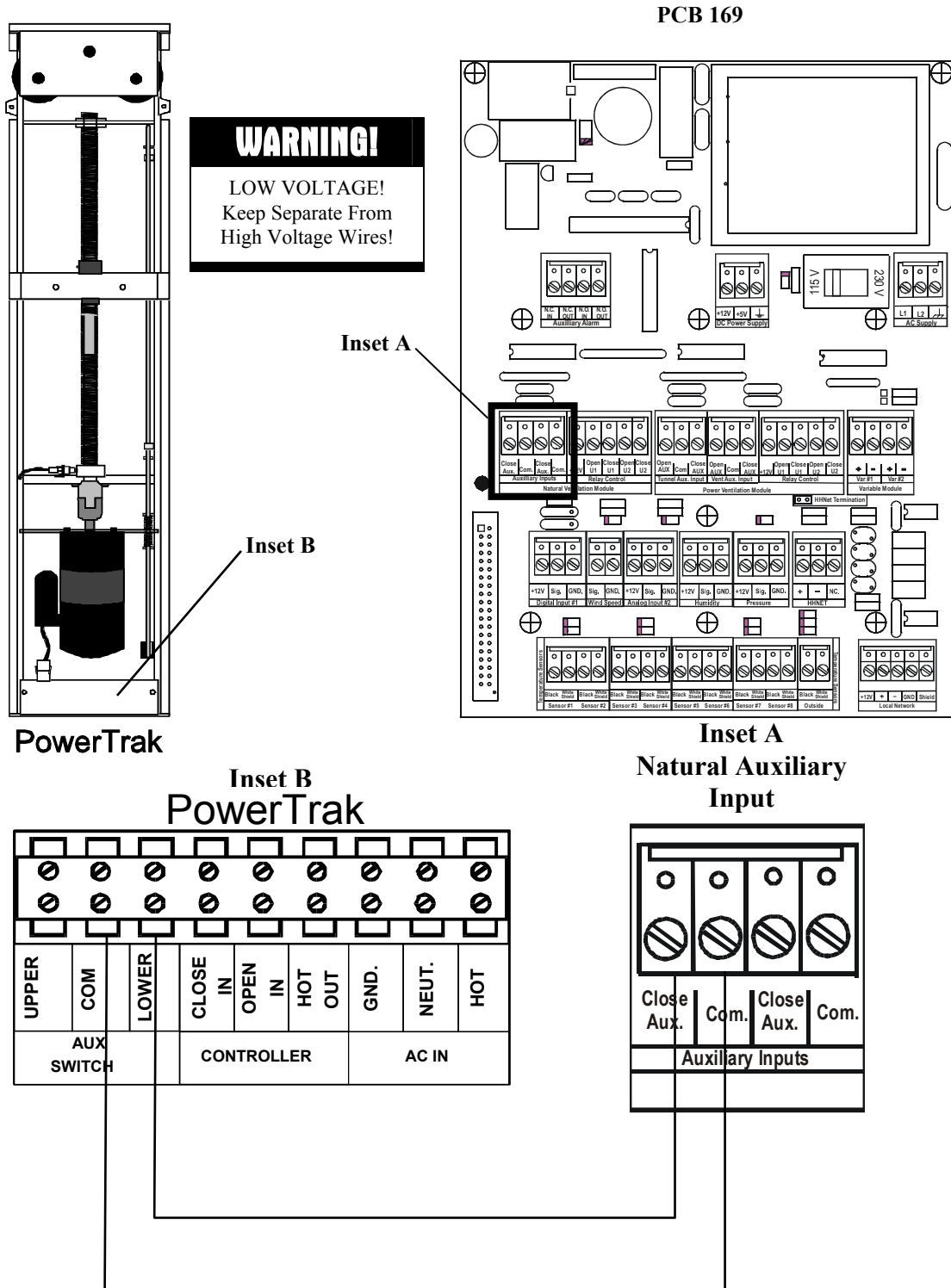


See Note below

NOTE: Vent auxiliary connects the same as tunnel auxiliary.

NOTE: If curtain is setup to pull curtain up to open, then reverse wires connected to "Upper" and "Lower" terminals.

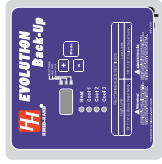
9.13 Connecting PowerTrak Natural Auxiliary Switches to Evolution 3000 & 3001



NOTE: If curtain is setup to pull curtain up to open, then reverse wires connected to 'Upper' and 'Lower' terminals.

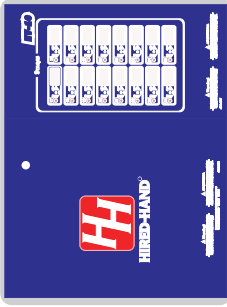
9.14 Power Supply Connection

Evolution Back-up Cabinet

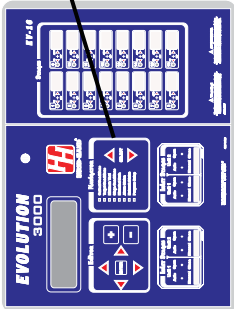


NOTE: Run power cables including earth ground from each cabinet to a common AC junction box. Do NOT run AC power and ground between cabinets.

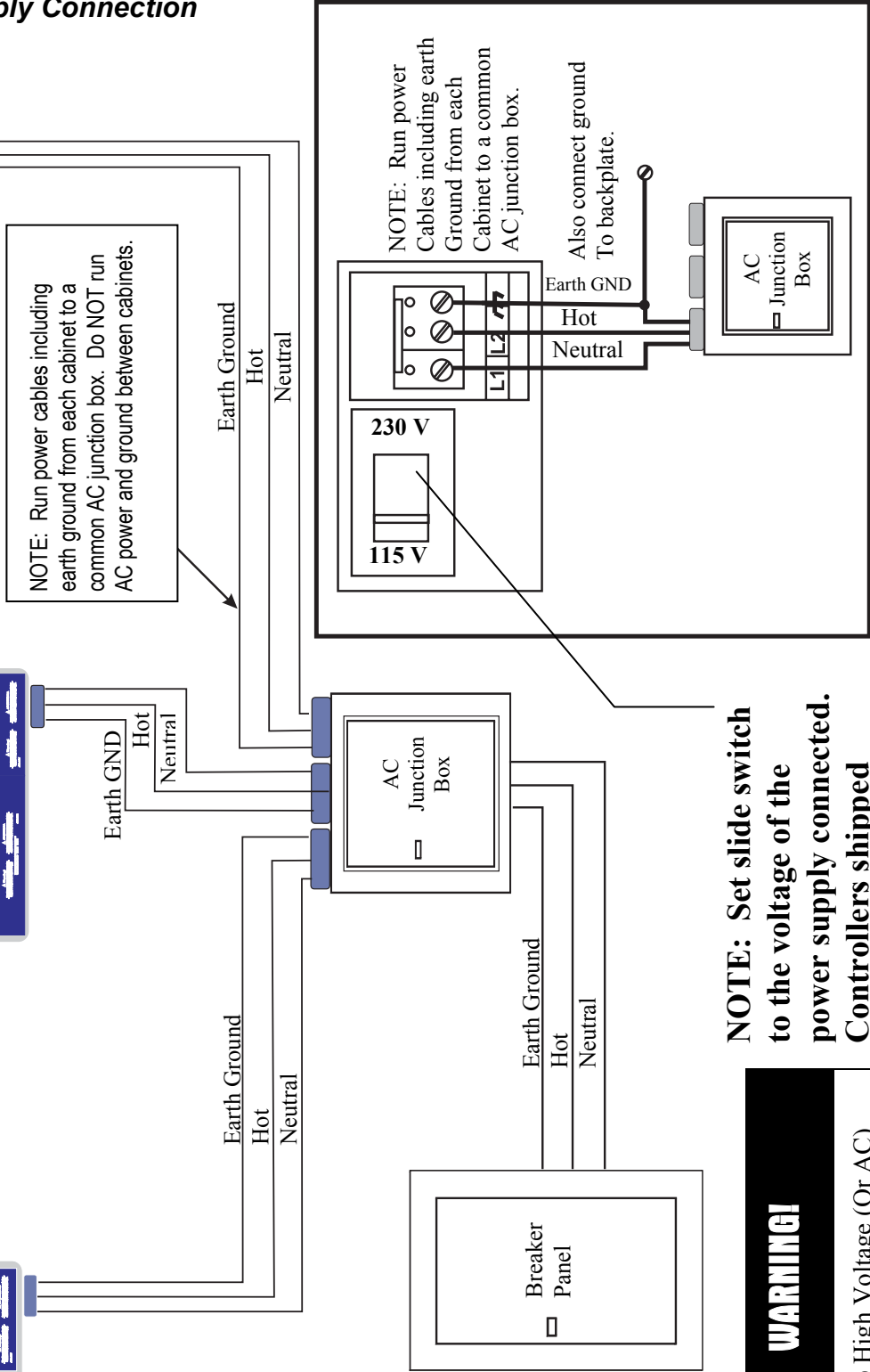
Evolution 3000 16 Stage Expansion Module



Evolution 3000 Cabinet



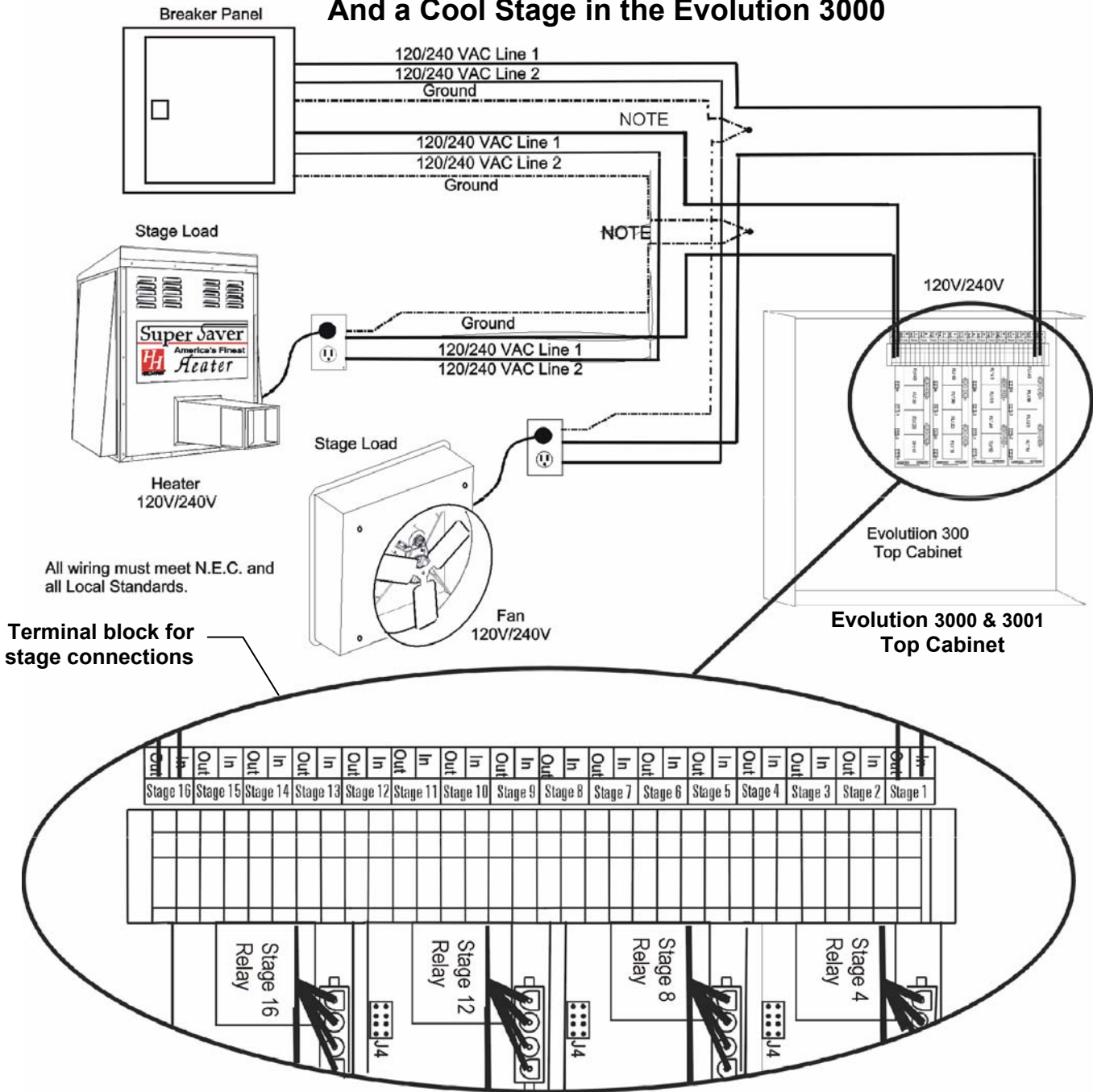
Inset A
(AC Input on
PCB 169)



WARNING!
Keep High Voltage (Or AC) Separate From Low Voltage Wires!

9.15 Evolution 3000 & 3001 Power Connection

Connecting Power from Breaker to a Heat Stage And a Cool Stage in the Evolution 3000



NOTE: Example above shows how to wire stages to heating & cooling equipment. Stage numbers are shown on label affixed to inside top of controller box.

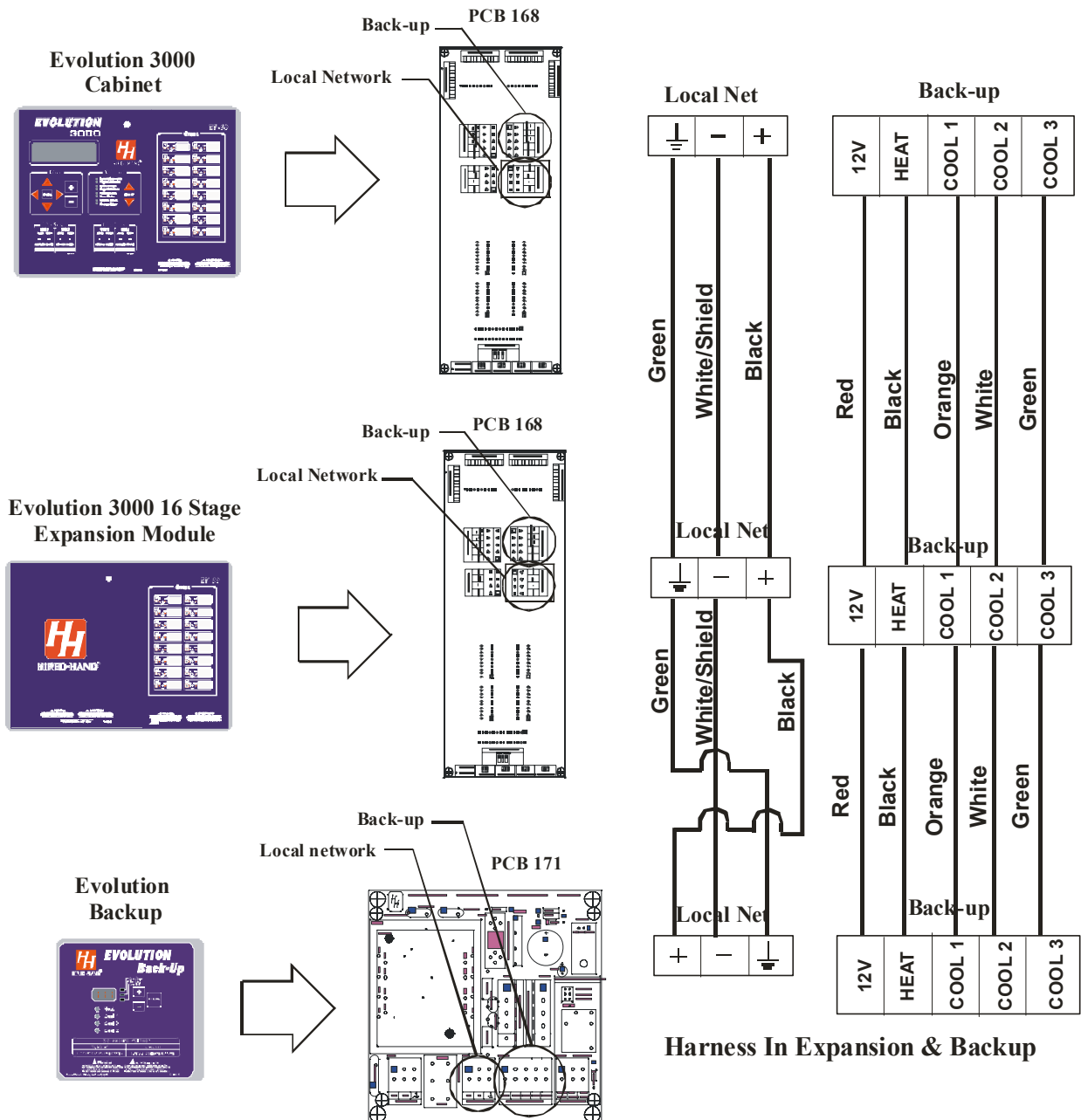
WARNING!

Keep High Voltage (Or AC) Separate From Low Voltage Wires!

9.16 Connecting Local Network & Backup to the Evolution 3000 & 3001

WARNING!

LOW VOLTAGE!
Keep Low Voltage Wires Separate From High Voltage Wires



Harness In Expansion & Backup

Warning!

Tape Shield To Prevent Damage!

NOTE: Harness to connect Local Network and Back-up together are connected & included in the Back-up and 16 Stage Expansion units.

10. Temperature vs. Sensor Resistance Table

The following chart gives the resistance when measured between the white and black sensor wires at a given temperature. To check a sensor, first know the temperature in the area, then use a multi-meter to check the resistance.

Resistencia Kohms	Temp (F)	Temp (C)	Resistencia Kohms	Temp (F)	Temp (C)	Resistencia Kohms	Temp (F)	Temp (C)
32.654	32	0	15.714	59	15	8.59	83.3	28.5
32.158	32.5	0.3	15.568	59.4	15.2	8.517	83.7	28.7
31.671	33.1	0.6	15.353	59.9	15.5	8.408	84	28.9
31.191	33.6	0.9	15.211	60.3	15.7	8.336	84.6	29.2
30.72	34.2	1.2	15.001	60.8	16	8.23	85.1	29.5
30.257	34.7	1.5	14.863	61.2	16.2	8.125	85.6	29.8
29.802	35.2	1.8	14.658	61.7	16.5	8.056	86	30
29.355	35.8	2.1	14.457	62.2	16.8	7.954	86.5	30.3
28.915	36.3	2.4	14.325	62.6	17	7.853	87.1	30.6
28.482	36.9	2.7	14.128	63.1	17.3	7.787	87.4	30.8
28.057	37.4	3	13.999	63.5	17.5	7.689	88	31.1
27.777	37.8	3.2	13.808	64	17.8	7.592	88.5	31.4
27.363	38.3	3.5	13.682	64.4	18	7.496	89.1	31.7
26.957	38.8	3.8	13.496	64.9	18.3	7.433	89.4	31.9
26.557	39.4	4.1	13.373	65.3	18.5	7.34	90	32.2
26.164	39.9	4.4	13.192	65.8	18.8	7.248	90.5	32.5
25.777	40.5	4.7	13.073	66.2	19	7.157	91	32.8
25.523	40.8	4.9	12.896	66.7	19.3	7.098	91.4	33
25.147	41.4	5.2	12.779	67.1	19.5	7.009	91.9	33.3
24.777	41.9	5.5	12.607	67.6	19.8	6.922	92.5	33.6
24.413	42.4	5.8	12.493	68	20	6.836	93	33.9
24.055	43	6.1	12.325	68.5	20.3	6.779	93.4	34.1
23.82	43.3	6.3	12.215	68.9	20.5	6.695	93.9	34.4
23.472	43.9	6.6	12.051	69.4	20.8	6.612	94.5	34.7
23.13	44.4	6.9	11.943	69.8	21	6.531	95	35
22.793	45	7.2	11.783	70.3	21.3	6.45	95.5	35.3
22.572	45.3	7.4	11.678	70.7	21.5	6.371	96.1	35.6
22.244	45.9	7.7	11.522	71.2	21.8	6.319	96.4	35.8
21.922	46.4	8	11.42	71.6	22	6.241	97	36.1
21.71	46.8	8.2	11.268	72.1	22.3	6.165	97.5	36.4
21.397	47.3	8.5	11.168	72.5	22.5	6.089	98.1	36.7
21.088	47.8	8.8	11.02	73	22.8	6.015	98.6	37
20.886	48.2	9	10.874	73.6	23.1	5.941	99.1	37.3
20.586	48.7	9.3	10.778	73.9	23.3	5.869	99.7	37.6
20.29	49.3	9.6	10.636	74.5	23.6	5.798	100.2	37.9
20.096	49.6	9.8	10.542	74.8	23.8	5.728	100.8	38.2
19.809	50.2	10.1	10.404	75.4	24.1	5.658	101.3	38.5
19.526	50.7	10.4	10.312	75.7	24.3	5.59	101.8	38.8
19.34	51.1	10.6	10.177	76.3	24.6	5.522	102.4	39.1
19.065	51.6	10.9	10.088	76.6	24.8	5.456	102.9	39.4
18.884	52	11.1	9.956	77.2	25.1	5.39	103.4	39.7
18.616	52.5	11.4	9.869	77.5	25.3	5.326	104	40
18.352	53.1	11.7	9.741	78.1	25.6	5.262	104.5	40.3
18.179	53.4	11.9	9.614	78.6	25.9	5.199	105.1	40.6
17.503	54.9	12.7	9.53	79	26.1	5.137	105.6	40.9
17.339	55.2	12.9	9.407	79.5	26.4	5.076	106.2	41.2
17.095	55.8	13.2	9.325	79.9	26.6	4.995	106.9	41.6
16.856	56.3	13.5	9.205	80.4	26.9	4.936	107.4	41.9
16.698	56.7	13.7	9.086	81	27.2	4.877	108	42.2
16.465	57.2	14	9.007	81.3	27.4	4.82	108.5	42.5
16.312	57.6	14.2	8.891	81.9	27.7	4.763	109	42.8
16.085	58.1	14.5	8.815	82.2	27.9	4.688	109.8	43.2
15.935	58.5	14.7	8.702	82.8	28.2			

11. Parts List

Main Controls

HHI PN Description

6607-8014	EV Secondary Sensing System
6607-8015	EV-Back-up
6607-8016	EV-16-Expansion
6607-8020	EV-3000-R1-00 (For replacement of VM24 to connect to SCS)
6607-8021	EV-3000-16-00 (No curtain output)
6607-8022	EV-3000-16-01 (With Power Ventilation)
6607-8023	EV-3000-16-02 (With Natural Ventilation)
6607-8024	EV-3000-16-03 (With Power and Natural Ventilation)
6607-8025	EV-3001-16-00 (No curtain output)
6607-8026	EV-3001-16-01 (With Power Ventilation)
6607-8027	EV-3001-16-02 (With Natural Ventilation)
6607-8028	EV-3001-16-03 (With Power and Natural Ventilation)

Accessories

6450-5101	KIT EV static pressure 4 stg
6450-5102	KIT EV natural vent 4 stg
6450-5103	KIT EV Humidity Sensor
6450-5104	KIT EV Vent Expansion
3025-0101	MTR Wtr 5/8x3/4 w/ 1g Reed SWX (Water Meter)
6407-2593	Temperature sensor asy 10'
6407-3028	Temperature sensor asy 25'
6407-6038	EV-S3 Stand Alone Relay Card
3591-2252	MODULE Static pres xmitr Setra

Variable/Dimmer Modules

6607-8031	EV-Variable 4KW/4HP(2 Outputs)
6607-8032	EV-Variable 8KW/8HP(4 Outputs)
6607-8033	EV-VAR Manual/Auto 4KW/HP(2 Outputs)
6607-8034	EV-VAR Manual/Auto 8KW/HP(4 Outputs)

Feed Management

6407-6035	EV I/O Expansion
6407-6036	Feed Bin Level Sensor
6407-6070	Current Sensor .35-100A (For use with belts, motors, or feed augers.)

Farm Manager Network

6626-0000	Software Kit FH Explorer (Wired)
6626-0100	Software Kit with 2-900SS (Wireless)

Farm Manager Accessories

6407-5110	HHI Router / Repeater
6407-5111	900SS Wireless Repeater
6626-3500	Wireless Installation Kit

Palm

6626-3000	Software EV-Ware TO GO (Palm)
6450-5110	/Kit EV-Control Palm Connection

Circuit Boards

- 6407-1511 PCB161 EV fail safe rly w QA
- 6407-1513 PCB161 EV relay w QA
- 6407-1516 PCB167 EV curtain rly w QA
- 6407-1518 PCB168 EV 16 Stg SWX w QA
- 6407-1520 PCB169 EV Master I/O w QA
- 6407-1522 PCB170 EV 3000 Interface w QA
- 6407-1523 PCB170 EV 3001 Interface w QA
- 6407-1526 PCB171 EV backup PS w QA
- 6407-1528 PCB171 EV 16 Stg PS w QA
- 6407-1536 PCB172 EV-Variable w/QA
- 6407-6011 EV Display Assy. (LCD Display only)3000
- 6407-6026 EV Back-up Door Assy.
- 6407-6050 EV-3001 Display Assy. (LCD Display only)
- 6407-1538 PCB174 Dimmer M/A w/QA

Chips

- 3701-6061 FLASH EV3000 (For PCB170)
- 3701-6065 FLASH EV3001 (For PCB170)
- 3701-6062 PIC EV3000 (For PCB170)
- 3540-0148 EEPROM 25C640 (For U10 and U11 of PCB170)
- 3701-6063 PIC EV3000 I/O (For PCB169)
- 3701-6064 PIC EV-Backup (For PCB163)

Fuses

- 3010-2991 FUSE 3 AMP 5mmX20mm (For PCB169 and 171)
- 3010-2540 FUSE 20 A 1/4X1-1/4 (For PCB172-Variable Modules)

Terminal Blocks

- 3006-5076 CONN TBLK 2 pos EBY (Black)
- 3006-5077 CONN TBLK 3 pos EBY (Black)
- 3006-5078 CONN TBLK 4 pos EBY (Black)
- 3006-5079 CONN TBLK 5 pos EBY (Black)
- 3006-5082 CONN TBLK 3 pos Magnum (Green)

Harnesses and Cables

- 1903-4008 HRNS Evo. 40pin I/O to Interface
- 1903-4009 HRNS Evo. 20pin Interface to Display
- 1903-5052 HRNS EV. Local Network 6ft.
- 1702-5190 WC&S 6' 18/5 Back-up connection
- 6407-6017 /EV.Inlet Machine SWX Assy.

Tools

- 0605-0107 TOOL PLCC Extraction Tool (For Removal of Chips)

Manuals

4801-5307 MANUAL EVOLUTION 3000
4801-5308 MANUAL Evolution Ventilation. Add-on
4801-5309 MANUAL EVOLUTION BACK-UP
4801-5310 MANUAL EV-3000 Power Supply
4801-5315 MANUAL EV-Variable drives
4801-2997 MANUAL Secondary Sensing System
4801-2998 MANUAL Feed Management
4801-2995 MANUAL 900SS Wireless
4801-2996 MANUAL HHI Repeater
4801-5152 EV High Temperature Monitor

Replacement Parts

Hardware

1001-1462 #6 Nylon nut
1001-1463 #4 Nylon nut
1018-3001 SPACER Nylon .375L For #6 bolt (for PCB 170)
1018-3003 SPACER Nylon .625L For #6 bolt (for PCB 168)
1818-3005 SPACER Nylon .25L For #4 bolt (for Display)



Hired-Hand, Inc.

Poultry House Layout and Specification

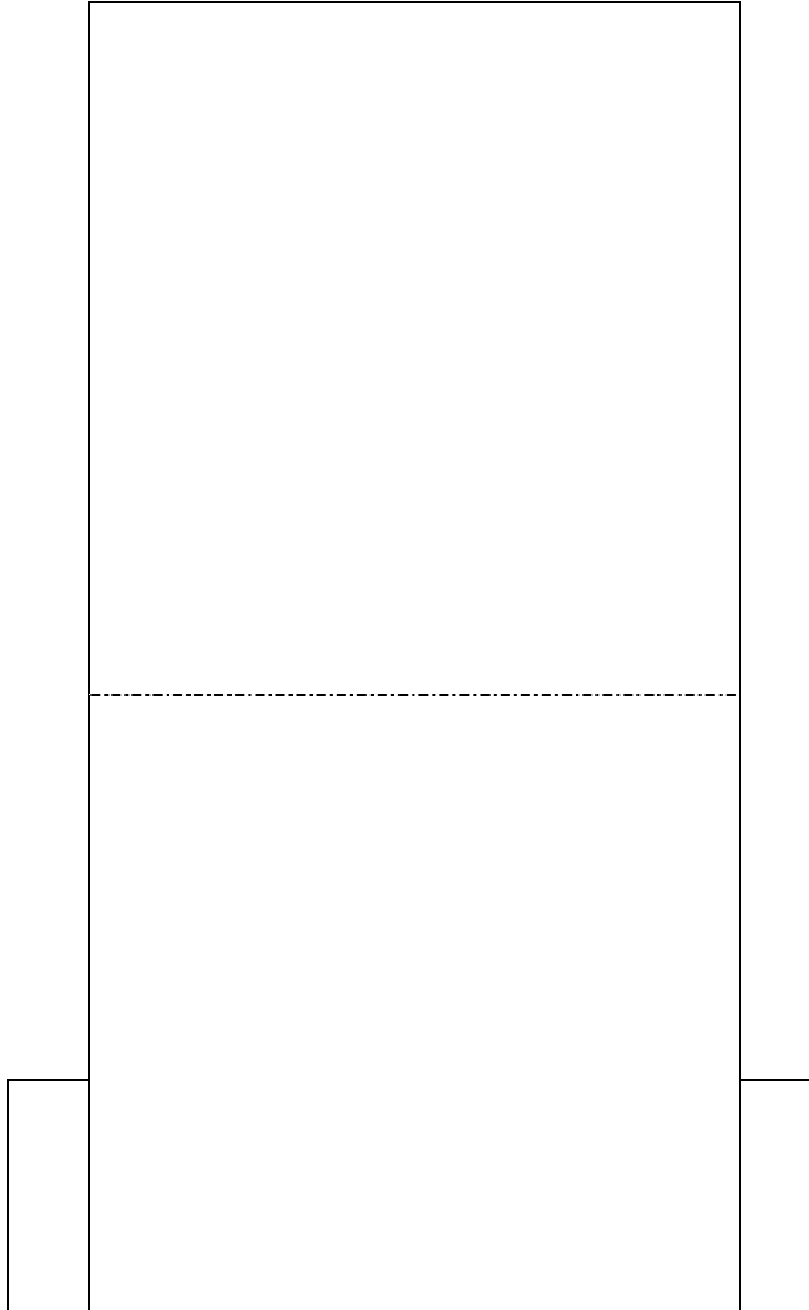
1. House Specification

Name: _____

Building Size

Vents

Stage	Equipment
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
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32	



Legend

Sensors

- S Main
- B Backup
- A Alarm

Equipment

- O Brooders
- F Fans
- H Heaters
- T Tunnel Machine
- V Vent Machine

* Indicates distance from end wall on equipment
 * Mark fans with size and number

Inlet Size

HIRED-HAND, INC. • 1733 County Road 68 • Bremen, AL 35033 USA • Phone 256-287-1000 • Fax 256-287-2000



Hired-Hand, Inc.
Poultry House Layout and Specification

2. Stage Programming

Target _____

Stage	Sensors	On Point	Off Point	Mode	Timers
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					
31.					
32.					

Modes: Heat, Cool Stir, Negative, Negative Tunnel, Tunnel, Feed, Lights

Timers: Minimum 1, Minimum 2, Variable, Cool



Hired-Hand, Inc.
Poultry House Layout and Specification

3. Temperature Curve

Target									
Growout Day									

4. Static Pressure Settings

Vent Inlet Static Pressure _____

Pressure Ramping off of Outside Temperature

Pressure _____ at _____ High Temperature.

Pressure _____ at _____ Low Temperature.

Vent Delay _____ (seconds) Vent Anticipation _____ (seconds)

5. Minimum Vent

Timer Cycle _____ (minutes)

Day									
Timer %									
Stages									

6. Tunnel Settings

Tunnel Sensors: _____

Tunnel On Temperature: _____ (Based off of Target Temperature from Section 2)

Tunnel OFF Temperature: _____ (Based off of Target Temperature from Section 2)

Tunnel Target Pressure: _____

Use Low Pressure Alarm in Tunnel: _____

Disable Tunnel until Growout day: _____

Cool Timer for Evaporative cooling

Timer Cycle _____ (minutes)

Max. Run % _____

Min. Run % _____



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Poultry House Layout and Specification

9. Back-up Specifications

Back-Up Stages	Equipment (Stage Number)	Other Requirements:
Heat		
Cool 1		
Cool 2		
Cool 3		

10. Alarm Specifications

Alarm	Settings	Other Requirements:
High Temperature		
Low Temperature		
Cycle Pressure		
High Pressure		
Low Pressure (If used in Tunnel)		
High Water Usage		
Low Water Usage		

