Horizon Control

920950 (2 enclosures - 920951, 920952)
921157 Expansion Unit

Installation and Operation

920951

920952

921157

990070
(REV 4) 6-27-2018
©2018 Valco Companies, Inc.

TABLE OF CONTENTS

VAL PRODUCTS, INC. PRODUCT WARRANTIES 6

CHAPTER 1 - Introduction 9

1.1 PRODUCT OVERVIEW 9

1.2 SYMBOLS 10

1.3 ACRONYMS AND DEFINITIONS 11

CHAPTER 2 - Before You Start ! 13

2.1 PLANNING 13

2.2 IO MAIN UNIT ASSEMBLY COMPONENT DESCRIPTION 13

2.3 CIRCUIT PROTECTION 14

2.4 UNDERSTANDING ZONES, EFFECTIVE ENVIRONMENTAL TEMPERATURES AND VENTILATION MODES 15

2.5 SENSORS 16

2.6 DEVICES 16

CHAPTER 3 - Control Hardware and Installation 17

3.1 VERIFY PARTS LIST 17

3.2 LOCATION 17

3.3 MOUNTING THE CONTROL 17

3.4 PREPARE ENCLOSURE FOR WIRING 18

3.5 POWERING THE 920951 HORIZON DISPLAY CONTROL 19

3.6 POWERING THE 920952 IO UNIT MAIN ASSEMBLY 20

3.7 POWERING THE 921157 IO EXPANSION UNIT 21

3.8 ADDRESSING THE I/O ENCLOSURES 22
3.9 ADDRESSING THE I/O BOARDS 22

CHAPTER 4 - Sensor Installation 23
4.1 SENSOR WIRING *(RECOMMENDATIONS)* *23*
4.2 SIGNAL CONNECTIONS 24
4.3 SETTING JUMPERS ON INPUT BOARDS (GP IOM) 25
4.4 (AO) ANALOG OUTPUTS 25
4.5 ANALOG INPUTS (IN) 25
4.6 INPUT WIRING (EXAMPLE) 32

CHAPTER 5 - Relay Installation 33
5.1 OUTPUT RELAYS - WHAT YOU NEED TO KNOW! 33
5.2 OUTPUT RELAY WIRING 34
5.3 OUTPUT RELAY WIRING SLOT 1 (EXAMPLE) 36
5.4 OUTPUT RELAY WIRING SLOT 3 (EXAMPLE) 37
5.5 OUTPUT RELAY WIRING SLOT 5 (EXAMPLE) 38
5.6 SLOT - DIP SET 7 (EXAMPLE) 39
5.7 BACKUP SYSTEMS AND ALARMS 40

CHAPTER 6 - Special Features 41
6.1 SETTING UP (VIRTUAL NETWORK COMPUTING) VNC - REMOTE ACCESS 41

©2018 Valco Companies, Inc.

CHAPTER 7 - Touch Screen Navagation 43
7.1 NAVIGATION OVERVIEW 44
7.2 MAIN MENU 47
7.3 HOUSE VIEW 59
7.4 HISTORY 60
7.5 OPERATION 63
7.6 SWITCHES 64
CHAPTER 8 - Control Setup 67
8.1 OPERATION - SYSTEM CONFIGURATION 67
8.2 OPERATION - COOLING SETUP 90
8.3 OPERATION - MINIMUM VENT SETUP 98
8.4 OPERATION - NATURAL SETUP (THIS OPTION NOT AVAILABLE) 113
8.5 OPERATION - LIGHTING SETUP 114
8.6 OPERATION - FEED SETUP 120
8.7 OPERATION - ZONE CONTROL SETUP 125
8.8 OPERATION - ENVIRONMENTAL CONTROL SETUP 132
8.9 OPERATION - ALARMS AND NOTIFICATIONS SETUP 136
8.10 OPERATION - SECURITY SETUP 149
8.11 OPERATION - DATA FILE OPERATIONS SETUP (FILE TRANSFER AND CHANNEL MONITOR) 155
8.12 OPERATION - CHANNEL STATUS 161
8.13 OPERATION - SHUT DOWN HORIZON CONTROLLER 163

CHAPTER 9 - Explosed View and Parts Lists. 171
9.1 920950 PARTS LIST 171
9.2 920951 PARTS LIST AND EXPLODED DRAWING 172
9.3 DISPLAY PARTS LIST AND EXPLODED DRAWING 173
9.4 DISPLAY PARTS LIST AND EXPLODED DRAWING 174
9.5 920952 PARTS LIST AND EXPLODED DRAWING 175
9.6 921157 PARTS LIST AND EXPLODED DRAWING 176
CHAPTER 10 - Quick Guide Installation and Operation 177
10.1 INSTALLATION OF ENCLOSURES 177
10.2 OPERATING THE CONTROL - MENU OVERVIEW. 178
CHAPTER 11 - Customer Service 183
11.1 TROUBLESHOOTING. 183
11.2 RESETTING CONTROL TO “NEW STATE” 184
11.3 CUSTOMER SERVICE. 185

©2018 Valco Companies, Inc.

VAL PRODUCTS, INC. PRODUCT WARRANTIES

VAL-C0® MANUFACTURED PRODUCTS OTHER THAN EXTENDED WARRANTY PRODUCTS

Val Products, Inc. (Val Products) warrants to the original purchaser that Val Products' manufactured products (other than the products subject to an extended warranty set forth below) will be free of defects in material and workmanship for a period of one (1) year from and after the date of original purchase and when used in a usual and customary fashion. If Val Products is notified that such a defect exists within one year of the original purchase date and, upon inspection, agrees that the product is defective, Val Products will, at its option, (a) repair or replace (FOB Val Products' plant) the defective product, or (b) refund to the original purchaser the original purchase price paid for the defective product less any installation, shipping, or other charges associated with the original purchase. All defective products must be returned to a Val Products designated location for evaluation. Val Products' determination as to whether the product is defective is final. See the General Conditions and Limitations set forth below.

PRODUCT	Normal Warranty Coverage Period (1)	Extended Limited Warranty Coverage Period (2)	Total Warranty Coverage Period (3)
VR & VBL Series Drinkers	5 Years	5 Years	10 Years
VQ, VA, & VB-BN Series Drinkers	2 Years	3 Years	5 Years
Roll Formed Tube	3 Years	7 Years	10 Years
Coreless Auger (Moisture Content less than 18%)	3 Years	7 Years	10 Years
Fuze® ProLine Feeder Pans	2 Years	3 Years	5 Years
Fiberglass Fan Housings	Lifetime (4)	N/A	Lifetime (4)
Aluminum Fan Blades	Lifetime	N/A	Lifetime
Fan Motors	2 Years (5)	N/A	2 Years (5)
"Z" Fan Housings	7 Years (6)	N/A	7 Years (6)

Explanations/Conditions of above listed footnotes for VAL-CO warranties:

(1) "Normal warranty coverage period" is subject to the conditions of VAL-CO's standard one year warranty policy.

(2) "Extended limited warranty coverage" will be provided at a charge rate of 50% off the VAL-CO List Price for an item at the time the warranty claim is made known to the company in writing, and is subject to VAL-CO's standard warranty policy conditions and limitations.

(3) "Total warranty coverage period" is the sum of periods for the "normal warranty coverage period" plus the length of the "extended limited warranty coverage period", and is subject to VAL-CO's standard warranty policy conditions and limitations.

(4) The "Lifetime" warranty for fiberglass fan housings manufactured by Val Products is limited to PMC Power Miser, FW, and Hypermax 12", 16", 21", 24", 36", 48", 50", and 54" Fiberglass Fans' housings that prove to be defective in workmanship or material and become unusable over the life of the structure where the VAL-CO Fiberglass Fan was originally installed after original purchase, provided that the fan has remained undisturbed in its original installation location, will be

repaired or replaced, at Val Products' option, at no charge (excluding labor of removal and installation and shipping), FOB Val Products' plant. All defective fan housings must be returned to a Val Products' designated location for evaluation. Val Products' determination as to whether the product is defective and unusable is final. See the General Conditions and Limitations set forth below.

(5) This fan motor warranty is limited to the motors used in with respect to the fiberglass fan motors included as original equipment on VAL-CO PMC Power Miser 12", 16", 21", and 24" Fiberglass Fans manufactured by Val Products that prove to be defective in workmanship or material and become unusable within a period of two (2) years from and after the date of original purchase will be repaired or replaced, at Val Products' option, at no charge (excluding labor of removal and installation and shipping), FOB Val Products' plant. All defective fan motors must be returned to a Val Products' designated location for evaluation. Val Products' determination as to whether the product is defective and unusable is final. See the General Conditions and Limitations set forth below.

(6) "Z" Fan housings are warranted for 7 years against rust through in poultry applications only. Other fan components are covered by VAL-CO's standard one year warranty. See the General Conditions and Limitations set forth below.

General Conditions and Limitations Applicable to All Val Products, Inc. (Val Products) Warranties, Including Extended Warranties

1. The Product must be installed and operated in accordance with instructions published by Val Products or the warranty will be void.

2. Warranty will be void if all components of the product or system are not original equipment supplied by the manufacturer.

3. Products not manufactured by Val Products and supplied by outside manufacturers (such as, but not limited to, certain electrical motors, certain controls, gas valves, etc.) are warranted separately by the respective manufacturer and only to the extent of the manufacturer's warranty.

4. Val Products feed bins are designed to be used with free flowing agricultural feed materials with a density proximate to 40 pounds (18.15 kilograms) per cubic foot (.03 cubic meter). Soybean meal, meat scraps and other materials, both agricultural and industrial, are not free flowing and may significantly exceed recommended material density. Feed bin structural failure from their use will void this warranty.

5. Val Products does not warrant against feed bin structural failure, or bin unloading components such as flexible auger transitions and boots that arises due to the addition of aftermarket devices attached to, or installed within or attached to the feed bin structure for the purpose of enhancing feed material flow and/or the elimination of feed bridging issues.

6. Warranty applies only to products used in applications as originally intended by Val Products – other applications in industry or commerce are not covered by the Warranty. Val Products' products are expressly not designed or authorized for use in any applications where intended to sustain or support human life or any other application where the failure of the product could result in personal injury or death.

7. Malfunctions resulting from misuse, abuse, mismanagement, negligence, alteration, accident, lack of proper maintenance, lightning strikes, electrical power surges, or electrical power interruption shall not be considered defects under the Warranty. Corrosion, material deterioration and/or equipment malfunction caused by or consistent with the excessive additions of chemicals, minerals, sediments or other foreign elements with the product shall not be considered defects under the Warranty.

©2018 Valco Companies, Inc.

8. VAL PRODUCTS WILL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE FOR ANY KIND OF SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR CONTINGENT DAMAGES INCLUDING, BUT NOT LIMITED TO, LOST OR DAMAGED PRODUCT, GOODS OR LIVESTOCK, COSTS OF TRANSPORTATION, LOST SALES, LOST ORDERS, LOST INCOME, INCREASED OVERHEAD, LABOR AND INCIDENTAL COSTS AND OPERATIONAL INEFFICIENCIES. IN NO EVENT SHALL THE WARRANTY LIABILITY EXCEED THE INVOICED PRICE OF THE PRODUCT TO THE ORIGINAL PURCHASER.

9. THE WARRANTIES SET FORTH ABOVE CONSTITUTE VAL PRODUCTS' ENTIRE AND SOLE WARRANTY. VAL PRODUCTS EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES AS TO THE MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, DESCRIPTION OF QUALITY OF THE PRODUCT FURNISHED, AND ANY OTHER WARRANTY ARISING BY OPERATION OF LAW, CUSTOM OR USAGE.

10. Val Products denies any authorization of any distributor, dealer, agent, or employee to modify, extend, or otherwise alter the conditions of any warranty in addition to, or in lieu of, those conditions and terms expressly stated above. Any exceptions not noted in the body of the Warranty must be authorized in writing by an officer of Val Products. Val Products reserves the right to change or delete models, or change specifications at any time without notice or obligation to improve previous products.

Tools Required

Level	**Pliers**	**Drill**
Hammer	**Needle Nose Pliers**	**Driver/Socket/Wrench Set or Air Wrench or**
Tape Measure	**Sm. Flat Head Screw Driver**	**Open End Wrench or Adjustable Open End**
Wire Cutters	**Med. Phillips Head Screw Driver**	**Wrench**

Tool Set

Level

Wire Cutter

Drill

Pliers

Tape Measure

Needle Nose Pliers

Hammer

Wrench

CHAPTER 1 - Introduction

1.1 PRODUCT OVERVIEW

The Horizon® by VAL-CO® is the next generation in whole-house poultry controllers. A modern, intuitive interface simplifies the powerful, flexible software and rugged hardware making it easy to manage a modern confinement poultry operation. Remote access is easily achieved through standard non-proprietary means. Building off of the successful logic of the GainTRAC™ and Ventra PRO™ lines of VAL-CO® controllers, the Horizon® presents a totally updated and modern user interface along with substantial advances in flexibility and control. Using a large, full-color touch screen to control the upgraded interface, Horizon® makes the difficult exercise of programming and retrieving data from the control easy. A virtual network and Ethernet port allow remote access through Ethernet IP, making it possible for producers to directly view, modify and monitor their barns from a PC, tablet, or smartphone.

Description

The Horizon® is a base 46 channel control capable of directly switching 42 single-phase loads of up to 1.5hp at 240VAC per relay. Four (4) analogue output channels provide control over dimmable lighting circuits, with provisions for future control of modular heating devices and Variable Frequency Drive (VFD) fan controls. Up to 24 analogue or digital input terminals provide plenty of flexibility to monitor conditions in multiple areas or even multiple barns. The software allows up to nine (9) completely distinct environments to be controlled from one (1) Horizon®. The base Horizon® package comes in two separate, NEMA 4X enclosures, one containing the display, main processor, and power supply, the other enclosure containing the input and output relays. The Horizon® is expandable with additional input and output channels by adding easily connected Expansion units.

Benefits

- Easy-to-use interface to overcome barriers to adoption; stylish design to promote innovation in the brand
- Built-in remote monitoring and control scheme through IP address for easy remote access via multiple common third-party software programs
- Zone software allows a single Horizon® to control multiple areas, rooms, or even multiple barns independently
- Intelligent Minimum Ventilation with default settings and cost-saving options for the right balance of ventilation and fuel savings.
- Modular components – blade style boards make swapping out relays or inputs easy with only two screws and a ribbon cable to remove
- Dual alarm relays allow specifying major or minor alarms to cut down on nuisance alarms
- Backed by VAL-CO® service and support

©2018 Valco Companies, Inc.

1.2 SYMBOLS

= NOTE - take notice this may help you!

= IMPORTANT INFORMATION - be sure to read!

= CHECK - the details of all requirements, processes or procedures of instructions listed.

= WARNING - The safety alert symbol is always used on warning signs that involve your safety or has extra significance since it is describing the importance of a feature or explaining a step to which you should pay close attention to avoid problems.

= STOP - before you go further check the details of all requirements, processes or procedures of instructions listed.

= USER

DANGER = DANGER - imminent hazard, if ignored serious injury or death WILL occur.

WARNING = WARNING - probable hazard, if ignored serious injury or death COULD occur.

CAUTION = CAUTION - imminent hazard or potential hazard, if ignored minor or moderate injury WILL or MAY occur.

Warning!

AS WITH ANY SOPHISTICATED CONTROL SYSTEM, THIS CONTROLLER CANNOT BE GUARANTEED TO PERFORM WITHOUT INCIDENT FOREVER. THERE ARE MANY CONDITIONS SUCH AS LIGHTNING STRIKES, PROGRAMMING ERRORS, AND EQUIPMENT FAILURE THAT COULD RESULT IN THIS CONTROLLER FAILING TO PERFORM ITS INTENDED FUNCTION. YOU MUST BE AWARE OF THIS AND BE WILLING TO TAKE THE NECESSARY PRECAUTIONS TO PREVENT FINANCIAL LOSS.
TO PROTECT AGAINST LOSS RELATED TO THE FAILURE OR MALFUNCTION OF THIS CONTROLLER, THE FOLLOWING SAFEGUARDS ARE REQUIRED:

1. A MANUAL BACKUP SYSTEM MUST BE INSTALLED. THIS SYSTEM MUST TAKE OVER IN THE EVENT OF A CONTROL SYSTEM MALFUNCTION.
2. AN ALARM SYSTEM MUST BE INSTALLED. THIS SYSTEM MUST PROVIDE A VISUAL INDICATION AND AUDIBLE WARNING OF ABNORMAL CONDITIONS.
3. A WEEKLY TEST OF THE MANUAL BACKUP SYSTEM AND ALARM SYSTEM MUST BE PERFORMED. THIS TEST CONFIRMS THAT THESE SYSTEMS ARE FUNCTIONING PROPERLY.
4. A DAILY CHECK OF THE CONTROL SYSTEM MUST BE PERFORMED. THIS CHECK CONFIRMS THAT THE SYSTEM IS OPERATING PROPERLY.
5. NON-FUNCTIONAL ALARM OR BACKUP SYSTEM COMPONENTS MUST BE REPAIRED IMMEDIATELY.

1.3 ACRONYMS AND DEFINITIONS

Navigate: The concept of navigation, as used in this document, refers to the process of making selections in a hierarchical menu system that allow various actions to be taken depending upon the functions presented at any given level.

Menus: Refers to the selections available, the Main Menu being of primary importance. This screen will provide an overview of your system and access for drilling down to specific features and setups.

Screen: View(s) on Display screen.

Icon: An icon is a graphic image that is used to represent a function, control, or message.

Button: Refers to any touch-sensitive icon used to navigate through the Display Screen. Reference to 'pushing' a button, refers to activating a touch-sensitive area.

Input: Refers to any component that is connected to the Horizon for the purpose of providing data to the system (i.e. thermometers, wind speed sensors, etc).

Output: Refers to any component that is connected to the Horizon for the purpose of being controlled (via the program or manual control) by the system (i.e. fans, inlets, curtains, lights).

Notification: A system or user-specified notice that is set to appear at a specified time or under certain conditions. Notifications will not sound a physical alarm. Notifications will stay active until acknowledged. System notifications inform the user that an event or non-critical error has occurred. User specified notifications may be created to remind the operator to perform some scheduled operation.

Alarm: A user-specified notice that is set to appear under certain conditions. Alarms will activate a physical alarm, the priority of which is user specified. Alarms will stay active until cleared. If the condition that caused the alarm to be set is not rectified, then the alarm will be re-activated. A cleared alarm becomes an acknowledged notification.

IOM (Input Output Module): The various inputs and outputs are connected to the system through input output modules. Currently, there are two different types of IOM: (R) IOM and general purpose (GP)IOM.

Manual: A component is defined as being in manual mode when its Toggle Switch has been placed into either 'on' or 'off'. In this state the component ignores the instructions of the system program and stays within the state it has been set to by the user.

Over-ride: A component is defined as being over-ridden when the physical switch on the inside of the enclosure (on all relay IOMs) has been switched into either the 'on' or 'off' state. The system program has no control over the state of the component when it is over-ridden and the user must place the switch back into 'auto' in order for the system to regain control.

Zone: A user configurable grouping of components (inputs and outputs) within the system. It may or may not correlate to a specific physical location or grouping. However, all selection and viewing of information is done according to selected zones.

Nesting (Nested Zones): The system can be set-up so that a number of zones can exist within larger (more comprehensive) zones. This allows the user to establish a small (limited number of I/O) zone when the animals are younger but to 'grow' to a larger (greater number of I/O) zone when the animals are older, larger, and require more room.

Passcode: Assigning a passcode to individual users, so that any actions can be tracked based upon what code was entered, is an optional security measure.

©2018 Valco Companies, Inc.

Intentionally left blank.

CHAPTER 2 - Before You Start !

WARNING !

1. **A QUALIFIED ELECTRICIAN or VAL-CO® service technician should perform all wiring to ensure local and national codes are followed.**
2. **Disconnect all power before inspecting or servicing equipment.**
3. **Always use the proper wire size for wiring systems.**

2.1 PLANNING

To set up a building operated by the Horizon® controller you must:

- List the devices (fans, curtains, heaters, lights, misters, etc.) that are in the facility.
- Plan how each type of device will be grouped (turned on and off together).
- Determine optimum sensor locations.
- Determine which sensors will control each equipment group.
- Determine which controller output channel will connect to each equipment group.
- Determine which controller input channel will connect to each sensor.
- Determine the desired operational settings such as on/off temperature settings for each heating and cooling group, etc. Input these settings into the controller.
- After you have documented and thoroughly understand the set up information, you can begin configuring the controller. Chapter 8 of this manual gives detailed instructions for configuring the controller.

2.2 IO MAIN UNIT ASSEMBLY COMPONENT DESCRIPTION

Controller

The Horizon 920950 includes (1) 920951 HORIZON WHOLE HOUSE CONTROL/ display and (1) 920952 IO MAIN UNIT ASSEMBLY. The 921157 IO ASSEMBLY is also available for adding additional input and output channels.

Control Specifications

Fuses: 20 Amp 3AB ceramic body slow-acting type (Bussmann MDA-20 or equivalent 0.25 x 1.25")

Power Input: 120/240 VAC 2.2A Maximum
Recommended tightening Torque 7 IN-LB

Output: 42 Normally Open relay output channels. 120VAC, 1 HP / 240VAC, 1.5 HP maximum per circuit.
Recommended tightening Torque 7 IN-LB

Alarm Output: TERM BLK PLUG 6 POS 5.08MM 1.6KV
Recommended tightening Torque 3.5 IN-LB

Sensor Inputs: 24 Analog or Digital
Recommended tightening Torque 5 IN-LB

Environmental: NEMA Enclosure type 4X

DIMENSIONS (enclosures)		
	920952, 921157	920951
WIDTH	19.6	17.4
DEPTH	11.7	9.7
HEIGHT	18.6	16.6

©2018 Valco Companies, Inc.

2.3 CIRCUIT PROTECTION

Circuit Breakers

The controller should be wired to an independent circuit breaker. Ideally each equipment output channel should have its own breaker to insure that tripping one breaker will not affect other devices in the ventilation system.
Motors must have a thermal overload protection device or impedance protection. The overload should auto-reset for any essential equipment.

WARNING !

1. **A QUALIFIED ELECTRICIAN or VAL-CO® service technician should perform all wiring to ensure local and national codes are followed.**
2. **Disconnect all power before inspecting or servicing equipment.**
3. **Always use the proper wire size for wiring systems.**

Power Surges

The Horizon™ is protected against normal voltage surges, but lightning induced surges could damage the equipment. We recommend use of a Deadbolt™ surge suppressor to reduce damage from lightning and other types of power surges. **Lightning damage is not covered by the warranty.**

Conduit and Connections

High voltage wires should enter the control enclosure from the bottom so they can be easily connected to the relay terminals.

Low voltage sensor wiring can be brought in from the bottom or side and connected to the input terminals near the top. Make sure there are no frayed wires because the control board may press against the wires when the controller's cover is closed.
To avoid electrical shorts or damage due to moisture, you should never run conduit openings through the top of the box. Conduit and hubs should be corrosion resistant plastic or fiberglass. Use only UL approved NEMA 4X rated conduit hubs. Connect hubs to conduit before connecting to the control enclosure. Use only liquid-tight strain-relief connectors to bring cables into the box.

Clearance Holes for Standard Conduit

Trade Size (inches)	Hole Size (inches)
1/2	0.875
3/4	1.125
1	1.375
1 1/4	1.750
1 1/2	2.000
2	2.500
2 1/2	3.000
3	3.625

Conduit Hole Sizes.eps

Battery Backup System

The Horizon® must be plugged into a UPS (Un-interruptible Power Supply) to prevent sudden shutdown of the system and possible corruption of the Linux System and the databases.

2.4 UNDERSTANDING ZONES, EFFECTIVE ENVIRONMENTAL TEMPERATURES AND VENTILATION MODES

The following sections on Zones and Ventilation Modes are necessary for you to understand in order to set up the control and run your barn effectively.

Zones

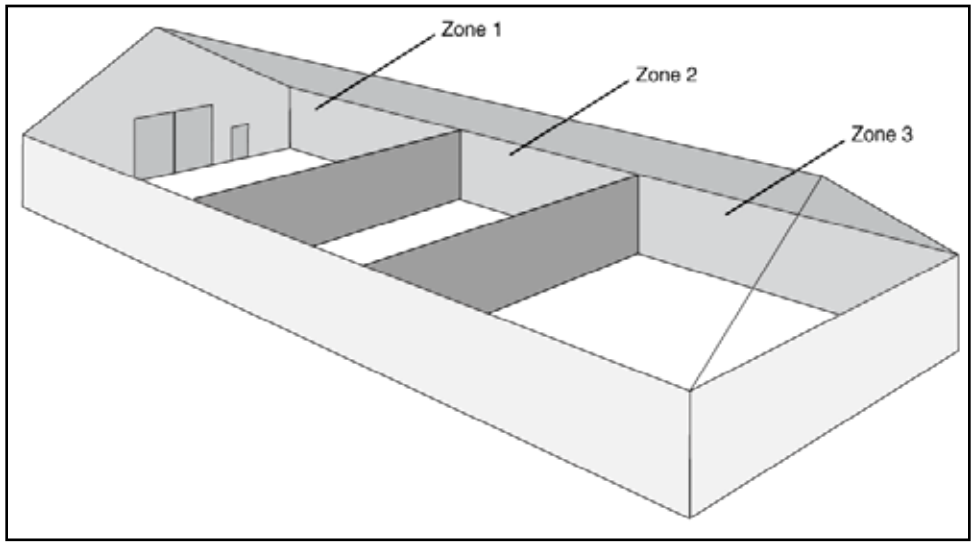
This controller has multiple zone capabilities. With this controller, zones can be used in two different ways:

1. A zone can be a completely separate room from the rest of the barn. Any device or sensor installed in that zone is exclusive to that zone and cannot be shared across zones. Think of this type of zone as a completely separate house from the rest of the building.

2. A zone can be a "nested" zone, which is a small area within the larger house area.

   a. Each "parent" zone can have one nested zone.
   b. The "parent" zone, in turn, can also be a nested zone within an even larger "parent" zone.
   c. Any device or sensor installed in a nested zone can be used by the next larger "parent" zone. However, any device or sensor in the "parent" zone cannot be used by the smaller nested zone.

Figure 1 **Zone Example**



Minimum Ventilation

Minimum ventilation is the process of bringing outside air into a building even when the indoor temperature and humidity do not require it. This helps keep ammonia, dust and carbon dioxide from accumulating.

Purge

Purging is the process of evacuating stale contaminated air and replacing it with fresh air. This is necessary when a building is closed up for a long time, as during cold weather. Purging is initiated when humidity reaches the level and length of time you set. Purging will not occur if curtains are open. Any combination of fans and air inlets can be set up to purge.

©2018 Valco Companies, Inc.

2.5 SENSORS

The terminal strips for Sensors are located on the 920967 GP IOM Assembly

All input terminals and output terminals are "plug in" for ease of wiring installation.

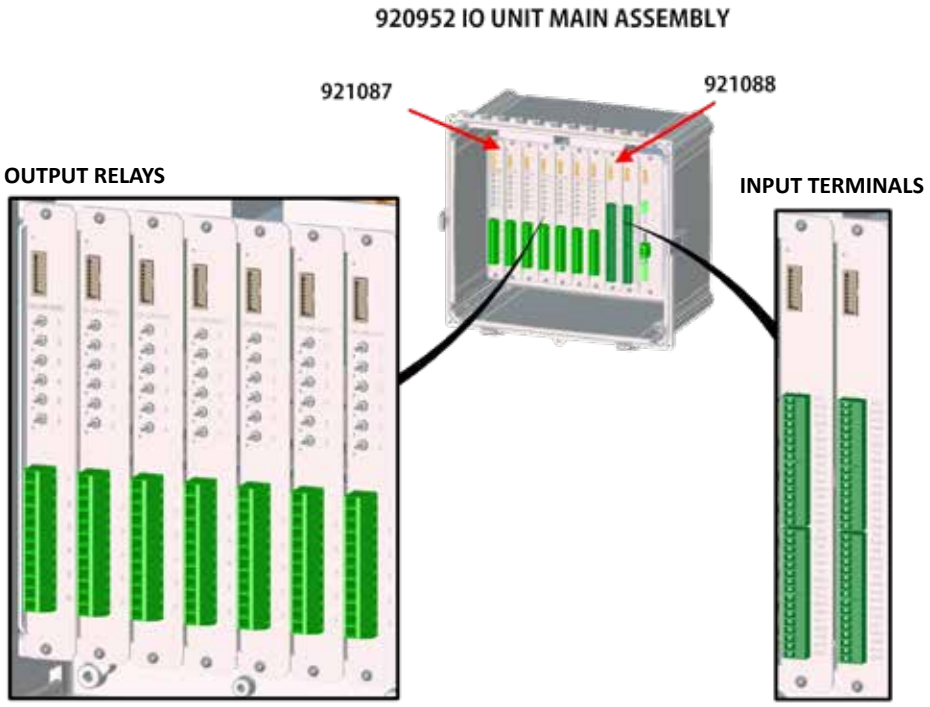
Input Sensors

INPUT SENSORS *(# 1 to #12 onGPIOM boards)*	
• Attic Temperature	• MinVent Current Sensor
• Outside temperature	• Air Speed
• Temperature	• Outdoor Humidity
• Outdoor Windspeed	• Feed Motor Current Sensor
• Humidity	• Circuit Breaker Temp
• Static Pressure	• Water Meter
• Power Monitor	

Analog Outputs

ANALOG INPUTS *(#13 to #14 on GPIOM boards)*
• Variable Lights

Figure 2



2.6 DEVICES

Output Relays

The terminal strips for Devices are located on the 920957 Relay IOM Assembly

OUTPUT RELAYS *(#1 TO #6 on RIOM boards)*	
• Lights	• Inlets - Sidewall, Ceiling
• Heaters - Heater, Brooder	• Curtains - Sidewall, Tunnel
• Fogger, Cool Pad	• Feeder Control
• Fans - Tunnel, Sidewall, Stir, Pit, Attic	• Cooling Compressor

CHAPTER 3 - Control Hardware and Installation

3.1 VERIFY PARTS LIST

Before you begin installation of the Horizon® Control and IO Unit Main Assembly, it is important you verify the shipment with the packaging slip or parts listed in Chapter 9 of this manual. Contact your dealer or VAL-CO® if there are any problems with your shipment.

3.2 LOCATION

The controller must be mounted indoors. Select a protected, vertical surface, and effective location for wiring and access. The control should be mounted in an area where there is at least **2** inches of space surrounding it, clear from electrical items, with the wire routing holes facing down, *to protect the control from water or debris*.

3.3 MOUNTING THE CONTROL

Mount the controller in a room where the temperature remains between 30 degrees Fahrenheit (- 1 degree Celsius) and 110 degrees Fahrenheit (43 degrees Celsius). DO NOT mount the controller in direct sunlight. Place the controller away from motors and relays/contactors that switch high current. It is NOT RECOMMENDED that you install the control in the same room where the animals live since the air tends to be corrosive to electronic circuits. A separate room or control office is a preferred location.

Mounting brackets and hardware for the Horizon™ 920951, 920952, and 921157 are enclosed with each unit.

1. Attach the (4) Mounting Brackets with the 1/4”-10 x 1/4”” screws to the back of the control, as shown in Figure 3.
2. Draw a level line on the wall where the control should be mounted, as shown in Figure 4.
3. Hold the control enclosure backside to the wall and align the top or bottom of the enclosure to the line drawn and use the cut-out in the mounting bracket to mark the wall where the holes should be drilled, as shown in Figure 5.
4. Drill pilot holes and use appropriate TEK screws to mount the control.

Figure 3

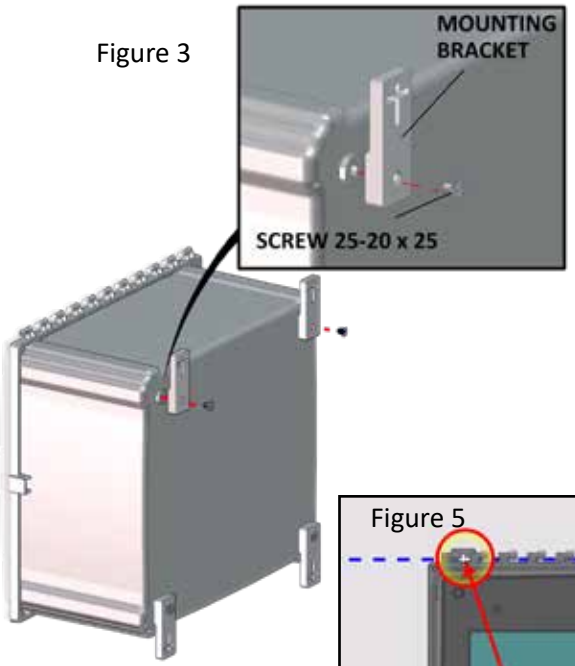


Figure 4

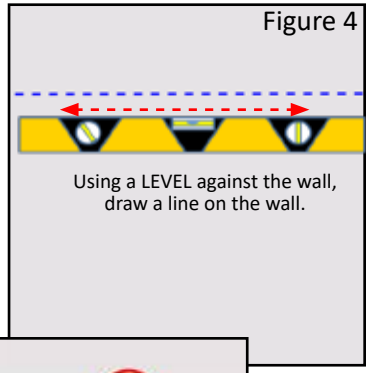
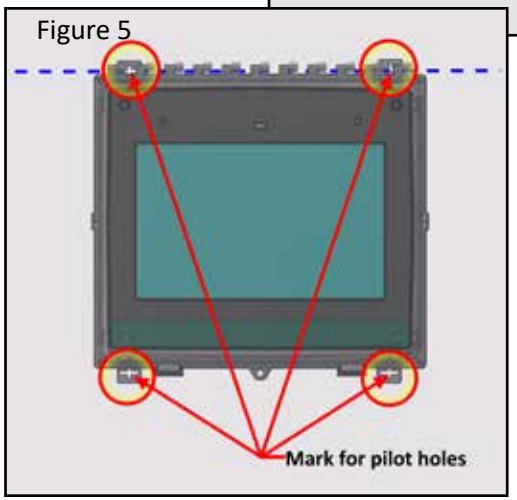


Figure 5



WARNING:
DO NOT OVERTIGHTEN SCREWS.

Circuit Boards are sensitive to static and should always be handled with appropriate grounding and electrostatic precautions.

©2018 Valco Companies, Inc.

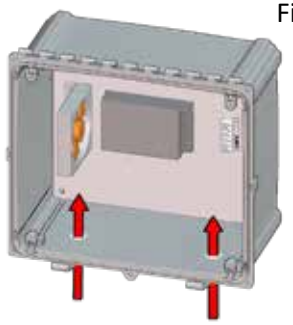
3.4 PREPARE ENCLOSURE FOR WIRING

Drill holes, *(using the appropriate hole saw for each)*, into the enclosures 920951 and 920952 and/or 921157 as required for connecting power supplies, communication ports, devices and sensors into or out of the enclosures. Instructions for connecting sensors and devices are included in the next chapter.

1. Determine and mark the location for each hole needed through the bottom side of each enclosure to the center/right/left according to where the wire needs routing for insertion at connectors for input or outputs. *The number hole(s) needed will be determined by the number of devices/ outputs and sensors/inputs to install*. It is also recommended that the hole used for the power supply be located in line with the power supply terminal to the far right of the IO, located to the right corner of each enclosure, *(circled in drawings to the right)*. Do not use for other wires.
2. Drill holes using hole saws sized according to the diameter of the conduit or strain reliefs being used, a possible installation example is shown below. **Be sure that you do not drill into any of the control's components.**
3. Insert the conduit or strain reliefs from the out-side bottom of the enclosure (through the hole(s) using appropriate fasteners) and be sure to use glue/caulking to seal against moisture or debris. ***Sealing the wiring is critical to protect against the harsh corrosive environment.***

920951, HORIZON DISPLAY

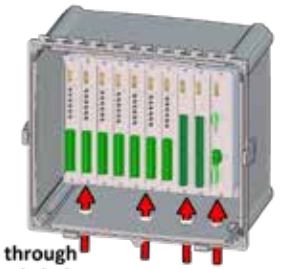
Figure 6



Drill holes in bottom directly below power and communication connections

920952, IO UNIT MAIN ASSEMBLY

Figure 7

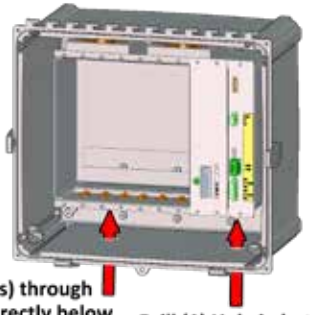


Drill hole(s) through bottom directly below outputs as needed

Drill (1) hole through bottom directly below input connections and another hole directly below power connection

921157, IO EXPANSION UNIT

Figure 8

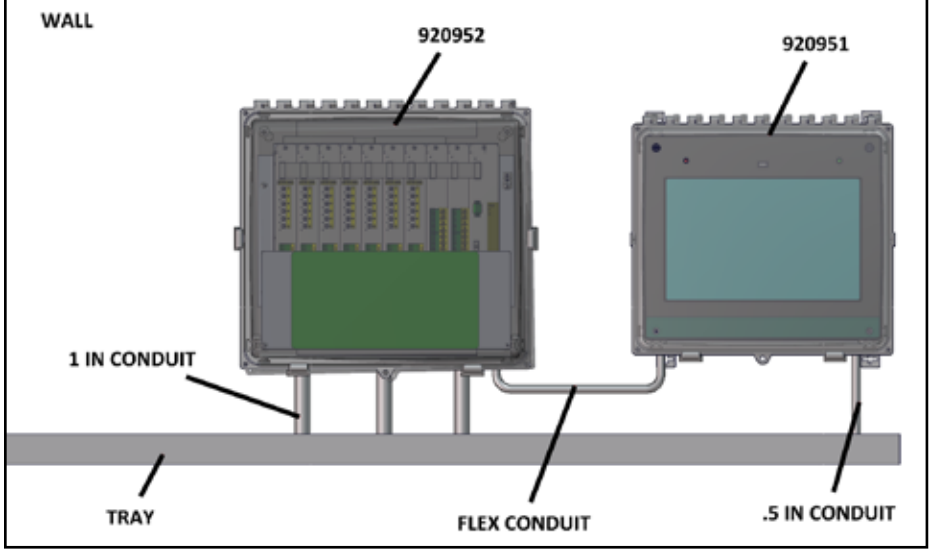


Drill hole(s) through bottom directly below outputs or inputs as needed

Drill (1) Hole in bottom directly below power connections

Figure 9

920950 - INSTALLATION EXAMPLE USING CONDUIT



It is beneficial to install an isolating switch to allow the power supply to be switched off during installation and service. The isolating switch must be bipolar.

3.5 POWERING THE 920951 HORIZON DISPLAY CONTROL

1. Locate the power supply in the control, shown circled in red and detailed in Figure 10. Insert the wires as indicated on the label next to the power supply. The Ground wire (usually green) into the G terminal, Power wire (usually black) into the L1 and the Common or Neutral wire (usually white) into the L2/N terminal.

Be sure that ALL POWER IS DISCONNECTED BEFORE INSTALLING or Servicing the control.

- **To ensure the Horizon® control ALARMS on loss of power in either leg of 220V at your electrical service panel, we recommend wiring the control for 220V when it is available.**
- **A main power disconnect must be provided by the installer to allow the controller to be shut off.**
- **The maximum torque for the power input terminals is 8 inch-pounds.**
- **Use 18 to 14 gauge wire.**

Warning: Do not tap power from the power supply for other devices. The extra power draw may cause the controller to malfunction.

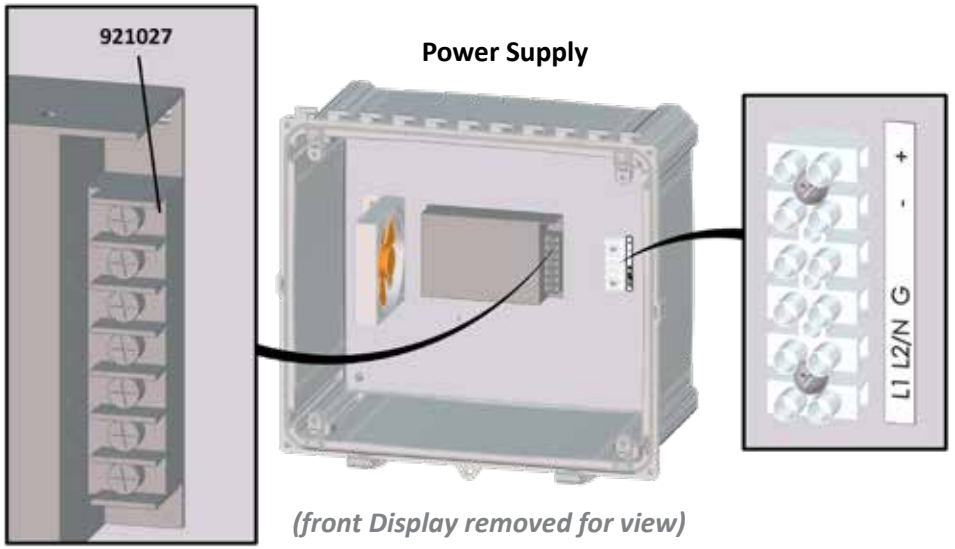
120 VAC connections		240 VAC connections	
Hot	L1	Hot	L1
Neutral	L2/N	Hot	L2/N
Ground	G	Ground	G

⏚ Ground

L2/N Neutral - spelled out on terminal block label

L1 Line - spelled out on terminal block label

Figure 10 **920951, HORIZON DISPLAY**



(front Display removed for view)

©2018 Valco Companies, Inc.

3.6 POWERING THE 920952 IO UNIT MAIN ASSEMBLY

1. Locate the DC Power Connector in the control, shown circled in red and detailed in Figure 11. Unplug 12 VDC terminal from ECM board. Wire the +12 and the - GND terminals to the + and the - terminals in the display box power terminals. Replace (plug) the terminal back into the 920974 IO board.

Be sure that ALL POWER IS DISCONNECTED BEFORE INSTALLING or Servicing the control.

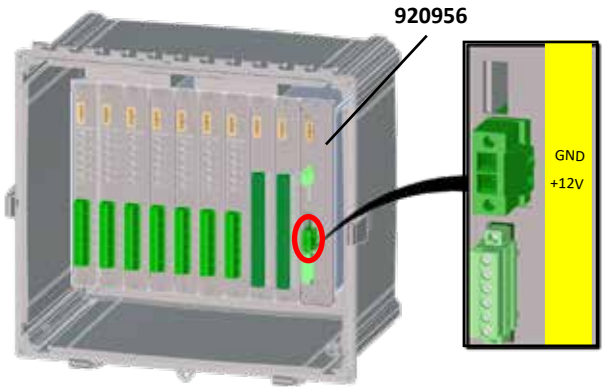
DC POWER CONNECTIONS	
DC Power	+12V
DC Ground	GND

GND **DC Ground**

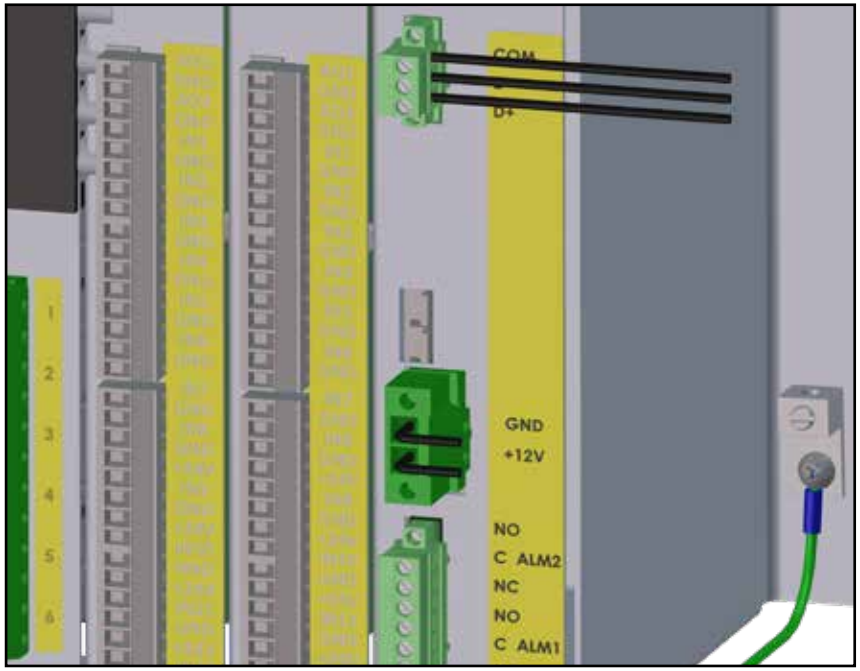
+12V **DC Power**

920952, IO UNIT MAIN ASSEMBLY

Figure 11



920952 Power Wiring Detail (Figure 11a)



3.7 POWERING THE 921157 IO EXPANSION UNIT

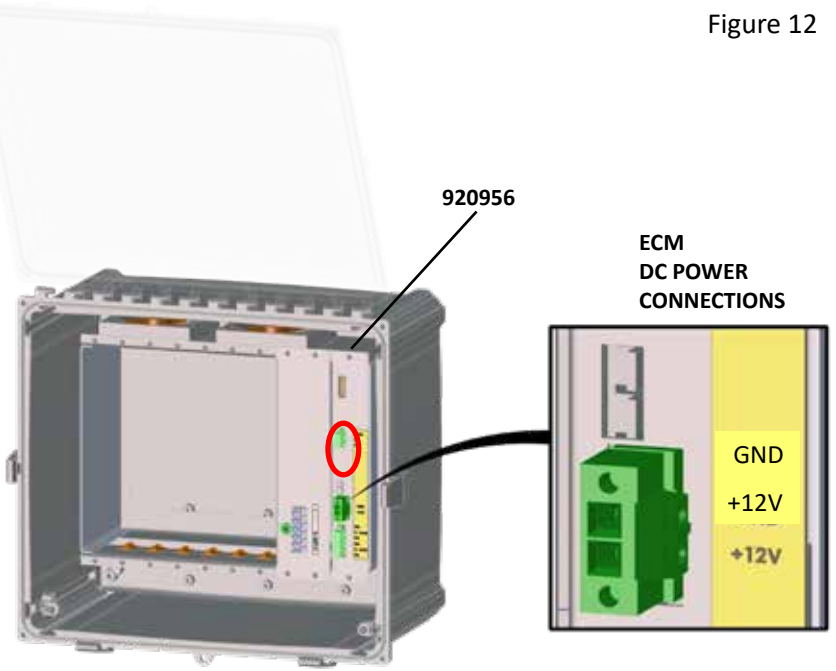
Figure 12

1. Locate the DC Power Connector in the control, shown circled in red and detailed in Figure 12.
2. Connect customer power mains to the AC connector as detailed in Figure 12a to Terminal Block per the wiring label.

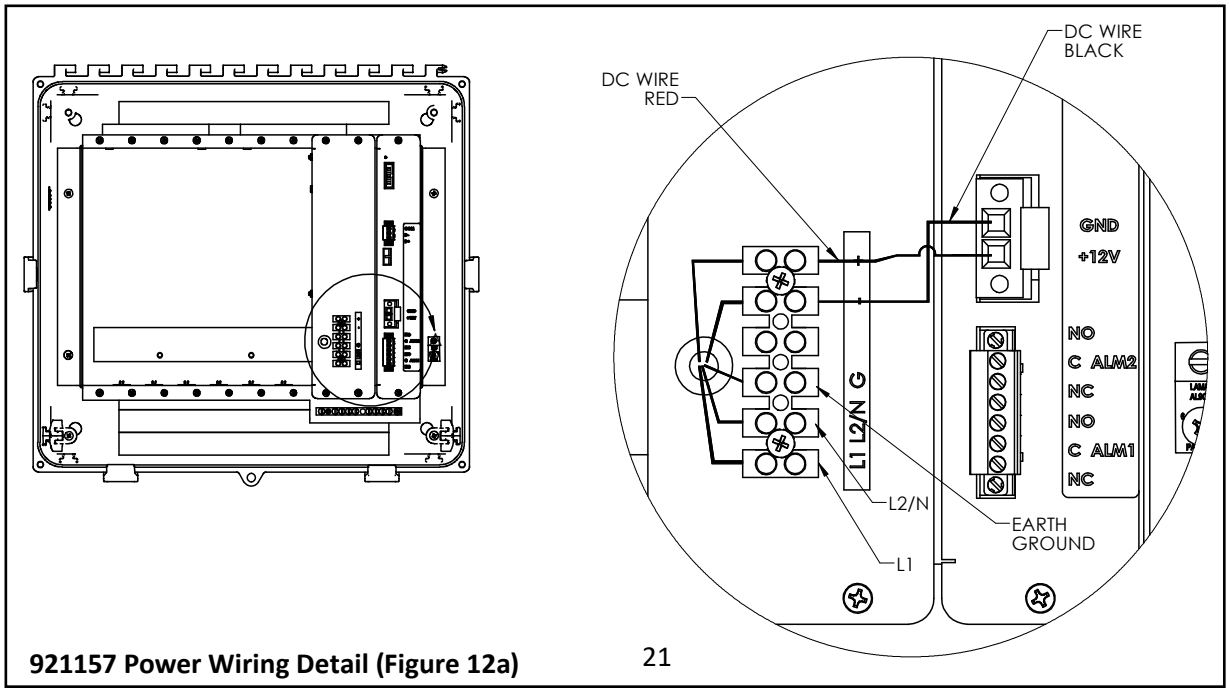
AC POWER CONNECTIONS	
L1 / HOT	L1
L2 /NEUTRAL	L1/N
EARTH GROUND	G

The customer is responsible for Branch Circuit PROTECTION (Circuit Breakers or Fuses) per applicable local Electrical Codes. The power requirements are 230/115 VAC. 2.2A

Be sure that ALL POWER IS DISCONNECTED BEFORE INSTALLING or Servicing the control.



921157, IO EXPANSION UNIT

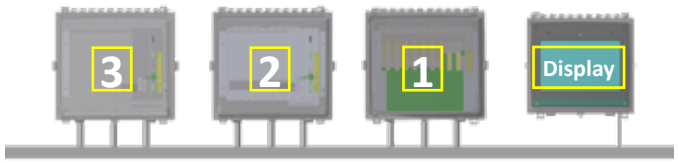


921157 Power Wiring Detail (Figure 12a)

©2018 Valco Companies, Inc.

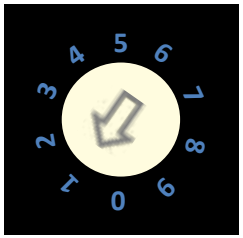
3.8 ADDRESSING THE I/O ENCLOSURES

When wiring the I/O enclosures you will need to set the Rotary Switch of the ECM Board (920956) of each I/O enclosure. This will provide the "address" or location for each enclosure. Without this Rotary Switch setting the Main Unit or Display Enclosure will not be able to send or receive information to the correct enclosure(s). Use the chart below to determine the correct settings.

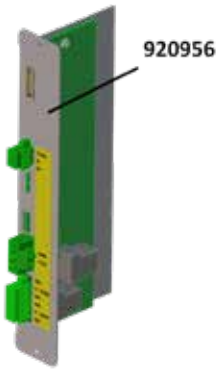


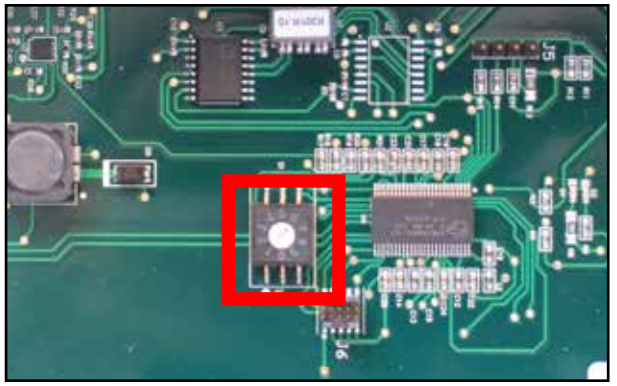
Number the I/O enclosures beginning with the one closest to the Display Enclosure, as exampled on left.

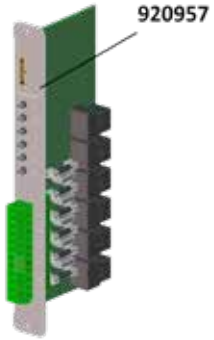
I/O ENCLOSURE ROTARY SWITCH SETTINGS	
IOM ENCLOSURE	ROTARY SETTING
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

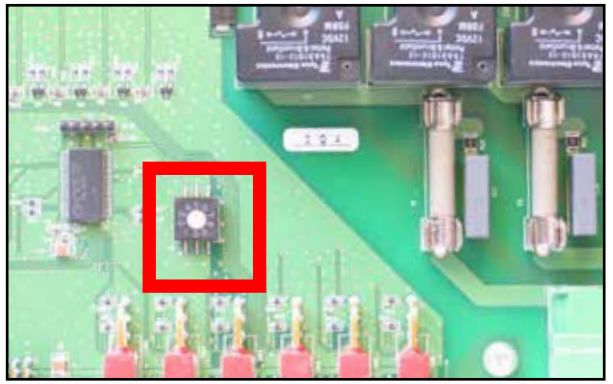


ROTARY SWITCH ENLARGED





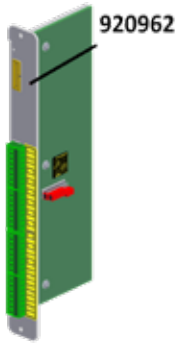


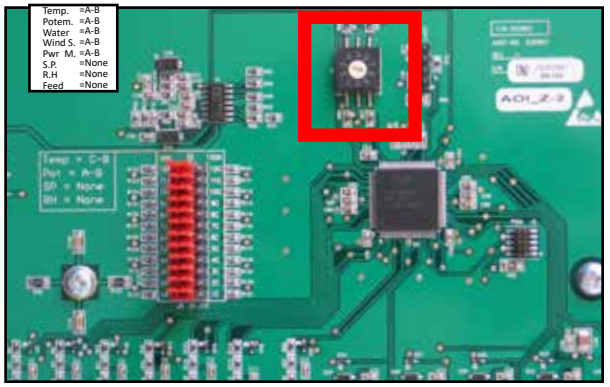


3.9 ADDRESSING THE I/O BOARDS

Each Board or Slot (920957, or 920962) in the I/O Enclosure has a Rotary Switch setting which "addresses" or locates each device. It is imperative that the Rotary Switch on each board is set according to the chart below.

I/O BOARD ROTARY SWITCH SETTINGS	
IOM BOARD (SLOT)	ROTARY SETTING
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7





CHAPTER 4 - Sensor Installation

4.1 SENSOR WIRING *(RECOMMENDATIONS)*

Low voltage signal or I/O wiring unless specified otherwise should be done MINIMALLY with good quality shielded twisted pair wiring of appropriate gauge. The consequences of neglecting this practice is excessive noise on the low voltage lines creating false signals or bad input readings.

Shielded wiring should be terminated at the ground terminals available in the control, shown in Figure 14. These ground terminals are mounted to the edge of the card cage and are conveniently near the input terminals, this is not a coincidence, please take advantage of these terminals!

Sensor Wire Spacing

Never run control wiring parallel to power wiring or fluorescent lamps, always ensure control wiring passes over power wiring at 90 degree angles.

In cases where control wiring must be parallel to power wiring ...
MAINTAIN AS MUCH SEPARATION BETWEEN THE TWO AS POSSIBLE.
(3 feet minimum is recommended.)
DO NOT run sensor or communication cables through conduit with power wires.

Sensors Placement

Suspend sensors from the ceiling to ensure free airflow. Sensors should hang close to the animals, but should be out of their reach. Leave enough wire so you can tie up several loops of slack to keep the sensor at the right height. If you must replace a bad sensor in the future, the extra length allows you enough wire to cut off the old sensor and still have plenty to splice to the new sensor.

Splices

Some sensors already have wiring and you will need to splice the wire using Scotchlok® connectors. It is critical that the splice between the wire and the sensor lead is protected from the corrosive air in the building. The best splices can be made using the gel-filled 3M Scotchlok connectors. These create low-resistance, corrosion-resistant connections. Wrap your splice well in electrical tape. ***Only 22 to 24 gauge wire will fit the Scotchlok® connectors supplied with the sensors.*** *Detail for using Scotchlok® connectors is shown in Figure 14a.* Replacement sensors can be connected by cutting the old sensor lead and making a new connection with a Scotchlok® connector. *It is not necessary to strip the insulation from the individual wires when using Scotchlok connectors.*

Terminal Connectors

All the terminals are Plug-in type. These may be un-plugged for ease of installing the wiring.

Figure 13

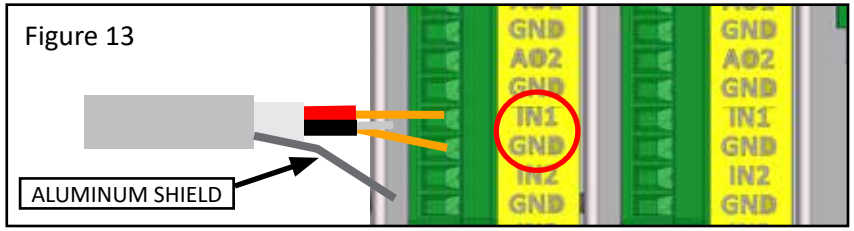
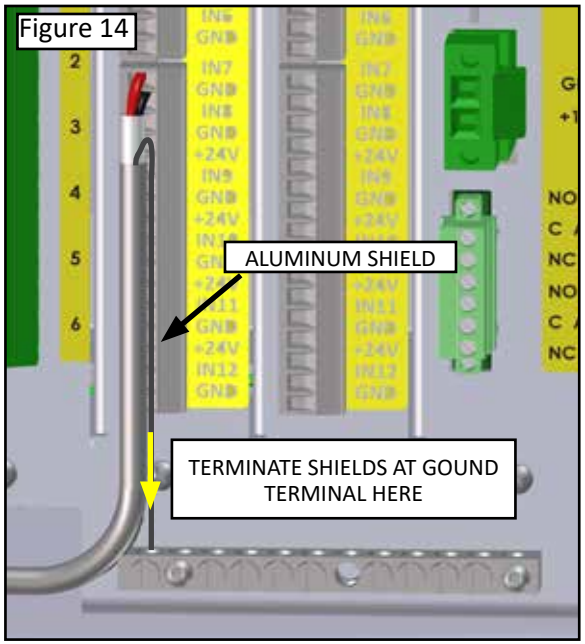
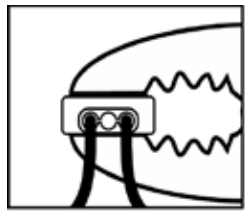


Figure 14



When using Scotchlok® connectors, apply firm, even pressure to the button to ensure good contact. The button will be flush when properly sealed.

Figure 14a



3M Scotchlok® connectors are recommended for splicing (22-24 gauge wire only). Apply firm, even pressure to a button to ensure good contact. The button will be flush when properly sealed.

©2018 Valco Companies, Inc.

WARNING

1. **A QUALIFIED ELECTRICIAN or VAL-CO® service technician should perform all wiring to ensure local and national codes are followed.**
2. **Disconnect all power before inspecting or servicing equipment.**
3. **Always use the proper wire size for wiring systems.**

4.2 SIGNAL CONNECTIONS

Sensors are connected to the Signal terminals on the 920952 controller's GP IOM PCB (I/O board). There are (4) AO analog outputs, (2 at the top of each IO board) and (24) Analog inputs. The IN inputs are designated for sensors not requiring voltage but are wired to gather voltage readings such as temperature, air-speed, anemometer, feed use (via motor runtimes), water use (via meter runtimes), or in cases which alert to ON/OFF contact, such as whisker switch, potentiometers and magnetic door sensors. These all provide digital alarms which can be set up in the control when you set up the configurations. There are 8 24V inputs (4 at the bottom of each terminal set are designated for 24V power use, such as, humidity and static pressure sensors. Refer to Figure 15 for orientation of inputs.

Sensors and wiring examples are on the following pages.

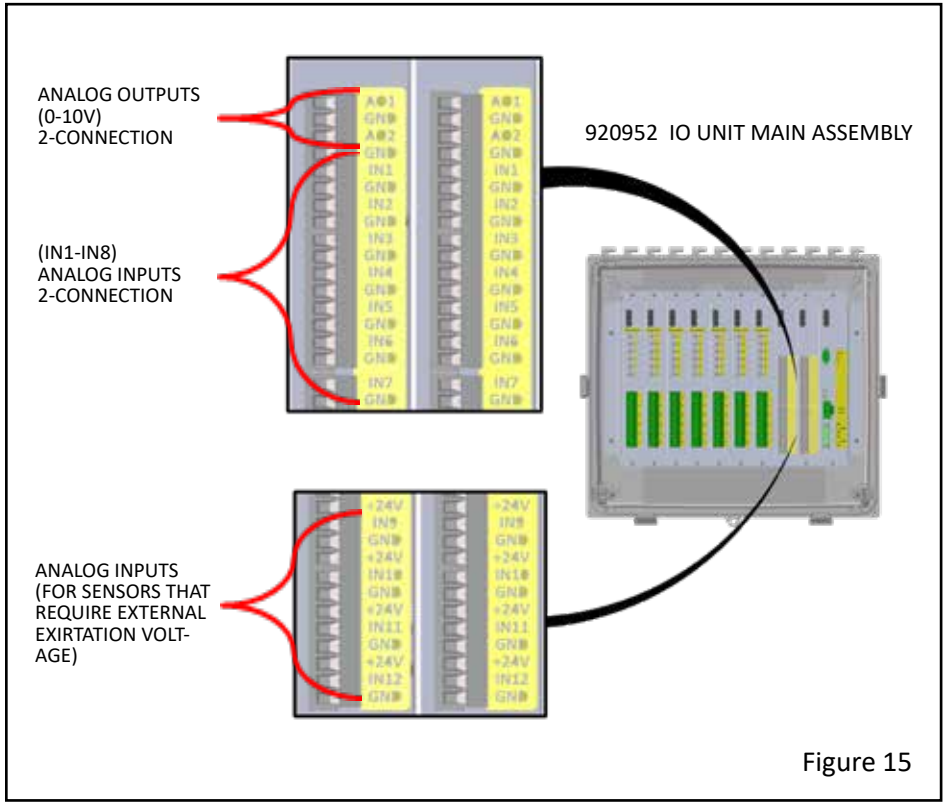


Figure 15

4.3 SETTING JUMPERS ON INPUT BOARDS (GP IOM)

The Jumpers are pre-set to default settings according to typical use. The Jumpers can be re-set for the requirements of the sensor used to either position (A-B) 50K, (B-C)150K or to the far right (C) which negates its use. To do this you must first expose the GP PCB SHUNT CONNECTOR with Jumpers, by removing the 920957 Input board. Disconnect the Cable ribbon, as needed and 2 screws used to secure the board to the frame supporting the input boards. Now pull the 920957 Input board from the control to expose the jumpers which are located on the board, as shown in Figure 16.

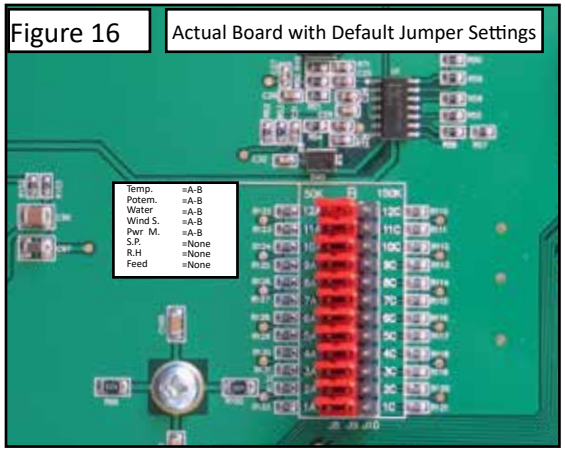
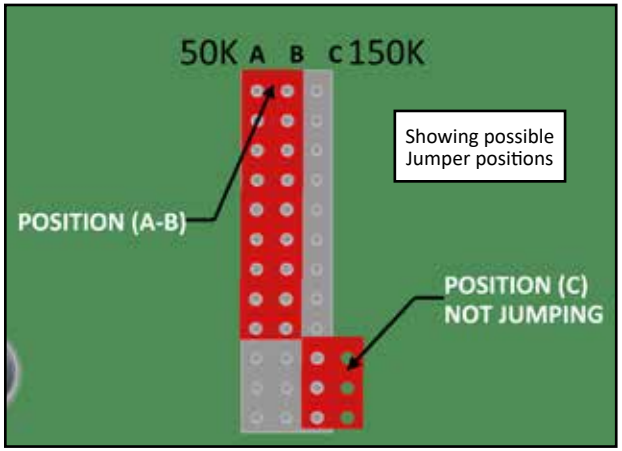


Figure 16 Actual Board with Default Jumper Settings



4.4 (AO) ANALOG OUTPUTS

Analog outputs (AO1-AO2) are used for Variable Lights or Light Dimmers. The Dimmer must be equipped for remote control dimming and accept a 0-10 VOLT signal from the I/O board. Connect the dimmer sensor wires, as shown in Figure 18.

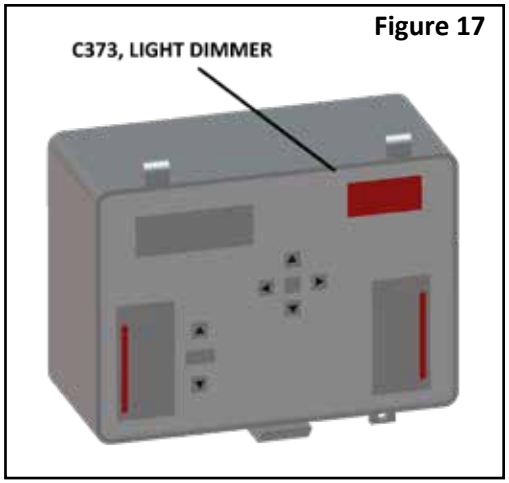


Figure 17

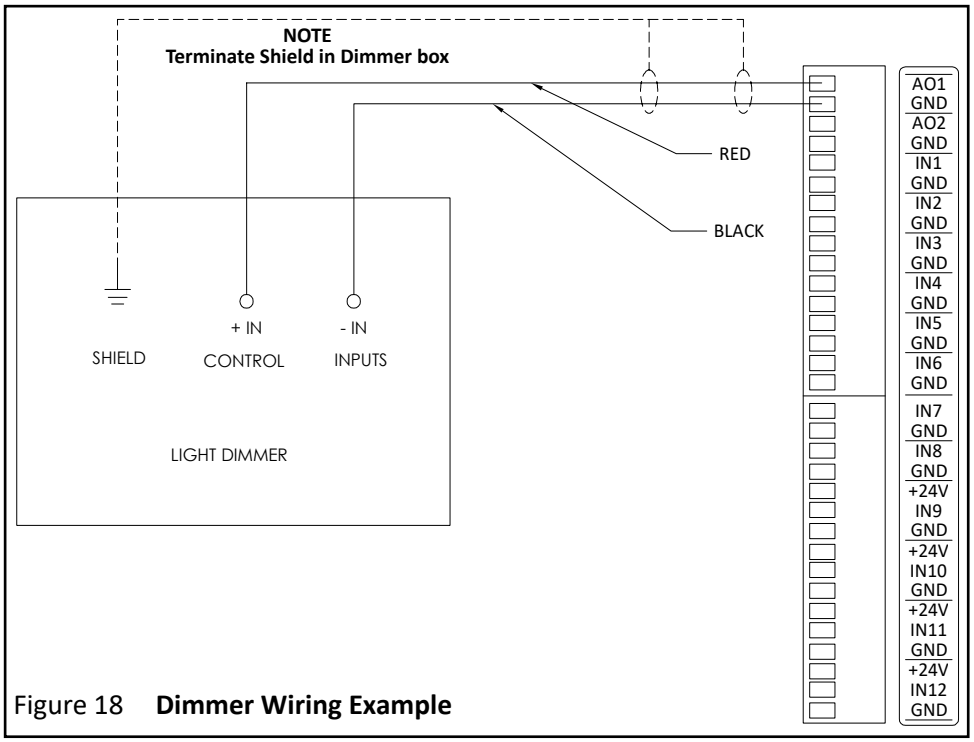


Figure 18 **Dimmer Wiring Example**

4.5 ANALOG INPUTS (IN)

Attach all sensors that require inputs.

The Sensors are detailed with schematics on the following pages.

©2018 Valco Companies, Inc.

Temperature Sensors

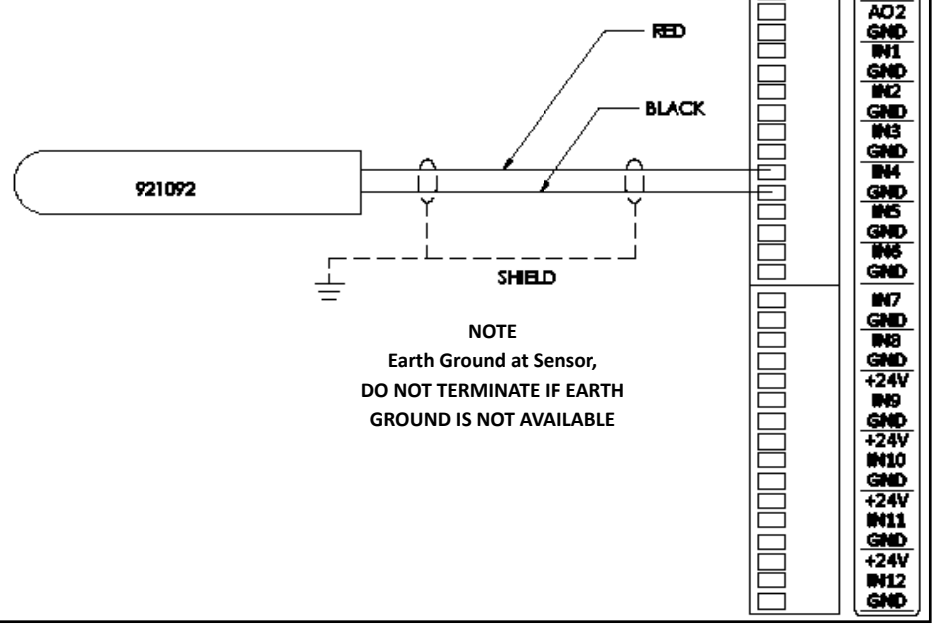
Suspend the 921092 Temperature sensor(s) from the ceiling to ensure free airflow. Sensors should hang close to the animals, but should be out of their reach.

For best results, keep the sensors out of sunlight, away from moving machinery, heaters, power wiring, sprinklers, or lights. Center sensors between heating devices.

Figure 19

Connect temperature sensors to an Analog IN input (IN 1-8) making sure To use Scotchlok® splice and terminate to the input terminal, as shown in Figure 14 on page 4-1. This should be done for all input connections. The default setting for input is A-B jumper setting so you will not need to re-set unless you use a different configuration for your connections.

Figure 20 **Temperature Sensor Wiring Example**



Humidity Sensor

Follow the same procedure as the temperature sensors. Position the 921093 humidity sensor in the center of the building. The humidity sensor is a three-wire device and must be connected to one of the 24V three-connection inputs. Set the jumper setting to C, refer to page 39. Use Scotchlok® connectors for splicing (22-24 gauge wire only).

Figure 21

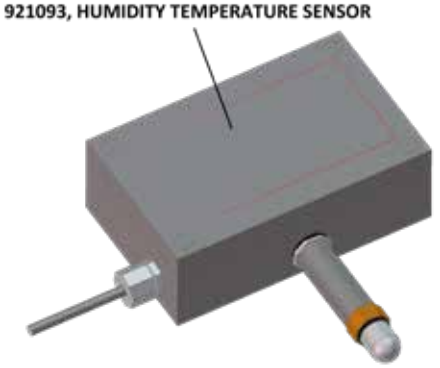
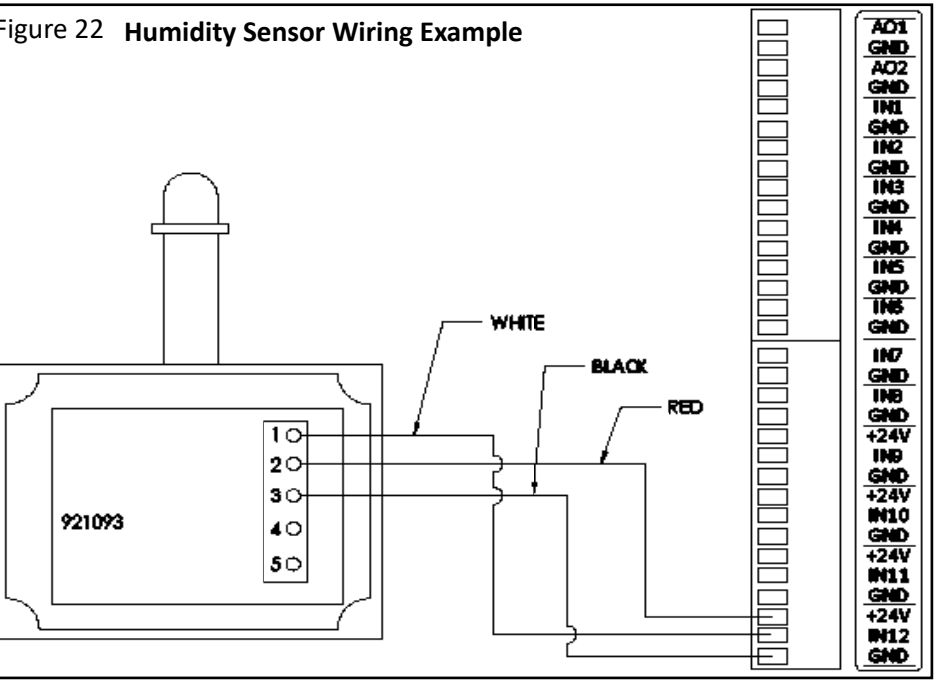


Figure 22 **Humidity Sensor Wiring Example**



Static Pressure Sensor

Connect the 921094 static pressure sensor is a three-wire device and must be connected to one of the 24V three-connection inputs. Set jumper setting to C (not jumping).

Figure 23

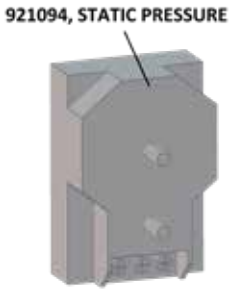
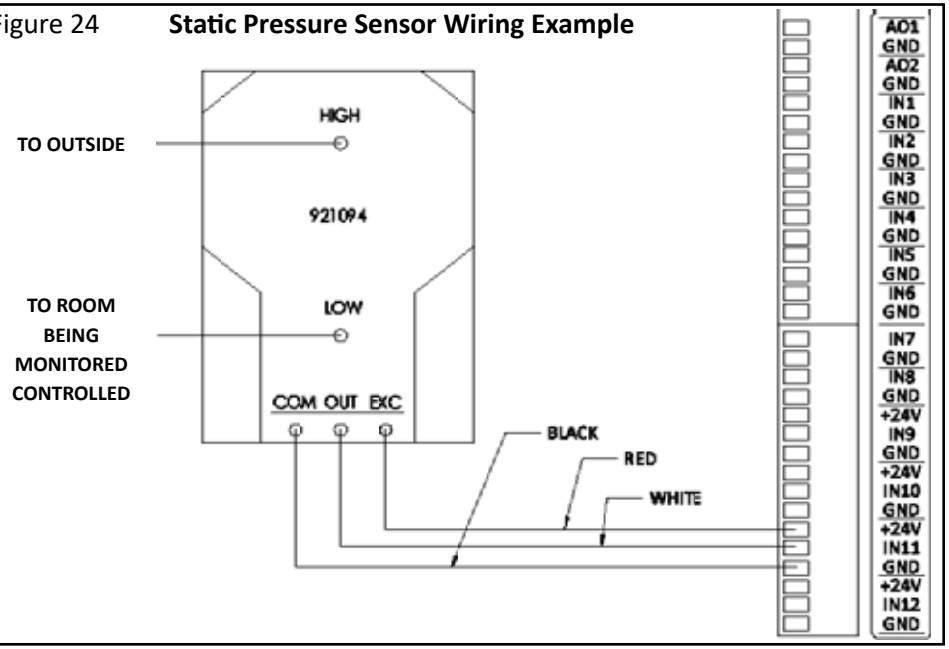


Figure 24 **Static Pressure Sensor Wiring Example**



Air Speed / Anemometer

Connect the 921095 Air Speed / Anemometer sensor is a two-wire device and may be connected to any of the two-wire connection inputs. The device must be installed with the cups on top, with the arm pointing down, as shown in the picture or the readings will be inaccurate. Set jumper setting to A-B, refer to page 39.

Figure 25

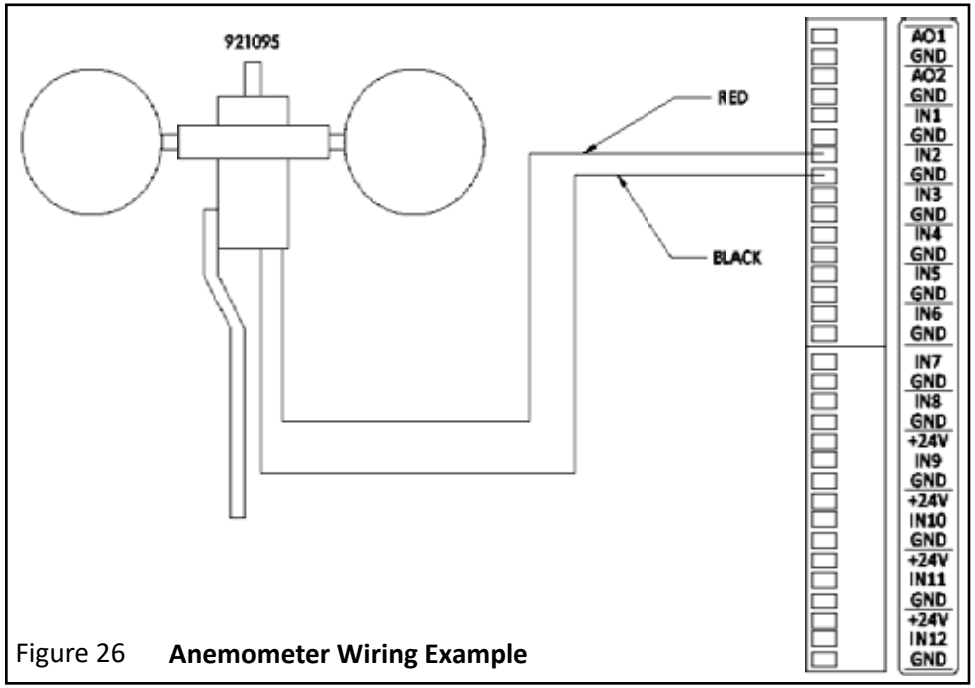


Figure 26 **Anemometer Wiring Example**

©2018 Valco Companies, Inc.

Position Sensor /Potentiometer

A position sensor allows the controller to determine the current opening size of a curtain, ridge vent, chimney damper or inlet. If the position sensor has more than two leads, find two that provide a smooth change in resistance as the sensor is turned. (You may need an Ohmmeter to measure this.) The wire from the middle position of the potentiometer and one from either end should be used. The unused wire may be capped. Set the jumper setting to A-B.

Figure 27

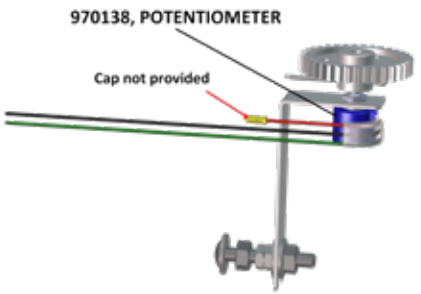
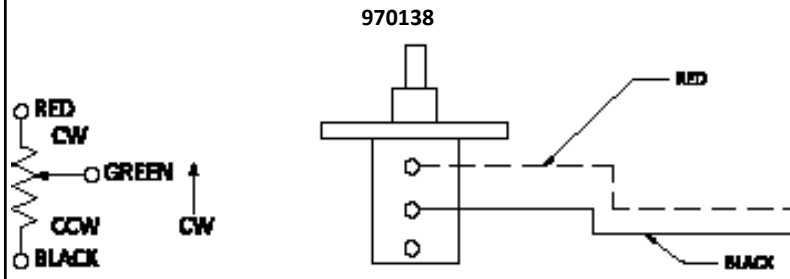


Figure 28 **Position Sensor Wiring Example**

CONNECT RED OR BLACK TO GROUND DEPENDING ON HOW YOU WANT YOUR DEVICE SETUP, CAP THE ONE NOT USED

NOTE:
CHECK INLET/CURTAIN INSTALLATION MANUAL FOR CORRECT WIRING CONNECTIONS OF POSITION SENSOR AS THE INSTALLATION MANUAL MAY HAVE OTHER WAYS OF CONNECTING.



NOTE:
Check Inlet/Curtain Installation manual for correct wiring connections of position sensor as the installation manual may have other ways of connecting.

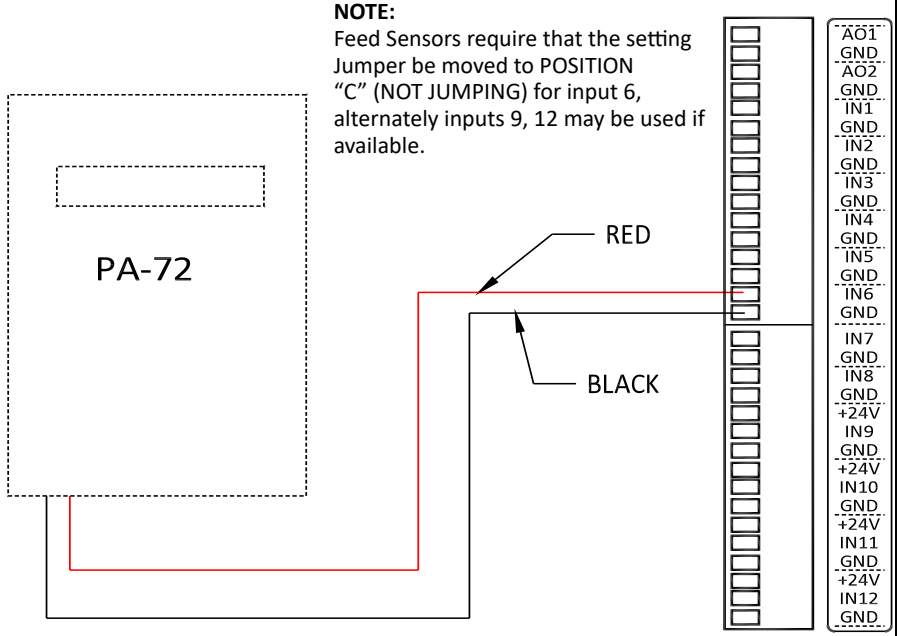
Feed Sensor (Analog)

Feed sensors should be mounted inside the controller enclosure with the feeder power wire running through the sensor loop. If a single sensor monitors multiple feeder circuits, run the wires from all feeder groups the same direction through the sensor loop. Set the jumper setting to C (not jumping), alternately inputs 9-12 may be used if available.

Figure 29

Figure 30 **Feed Sensor Wiring Example**

NOTE:
Feed Sensors require that the setting Jumper be moved to POSITION "C" (NOT JUMPING) for input 6, alternately inputs 9, 12 may be used if available.



PLEASE NOTE THAT IF YOU ARE USING A 3RD PARTY OR UNIDENTIFIED METER

(Meter that doesn't look like any of the meters on the next 2 pages)

CALL VALCO CUSTOMER SERVICE 1-(800)-998-2526, AND REQUEST TECHNICAL SUPPORT.

VAL-CO® IS NOT RESPONSIBLE FOR DAMAGE DUE TO IMPROPER INSTALLATION OR WIRING!

©2018 Valco Companies, Inc.

Water Flow Meter (Digital)

This manual has included several different water meter products. Be sure to choose the correct set of instructions for installing your specific water meter. Your water meter should be shipped with instructions from the manuafacturer. We have included instructions for a few products for your convenience. VAL-CO® is not responsible for meter damage or incorrect readings occuring from inproper installation.

Several types of electronic water meters are available. IT IS RECOMMENDED THAT YOU USE THE DIRECTIONS SHIPPED WITH YOUR SPECIFIC WATER METER FOR INSTALLATION AND WIRING, IMPROPER WIRING WILL RESULT IN PRODUCT DAMAGE.

PA-69 DIGITAL WATER METER

The electronic water meter sensor is made to fit on the Badger™ flow meter RCDL 25 (or a compatible unit) as shown below. Any other orientation may cause inaccurate readings and early Failure. The water meter hooks up to a three-connection input. If you use another meter with two electrical connections, wire through IN and GND and verify that the control is reading the signal. Improper connections or incompatible sensors may ground out the input/ output board and cause noticeable controller malfunction until the wiring is corrected OR DAMAGE TO THE OTHER WATER METER PRODUCTS.

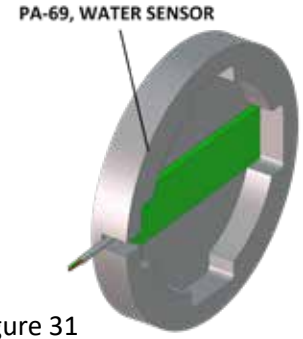
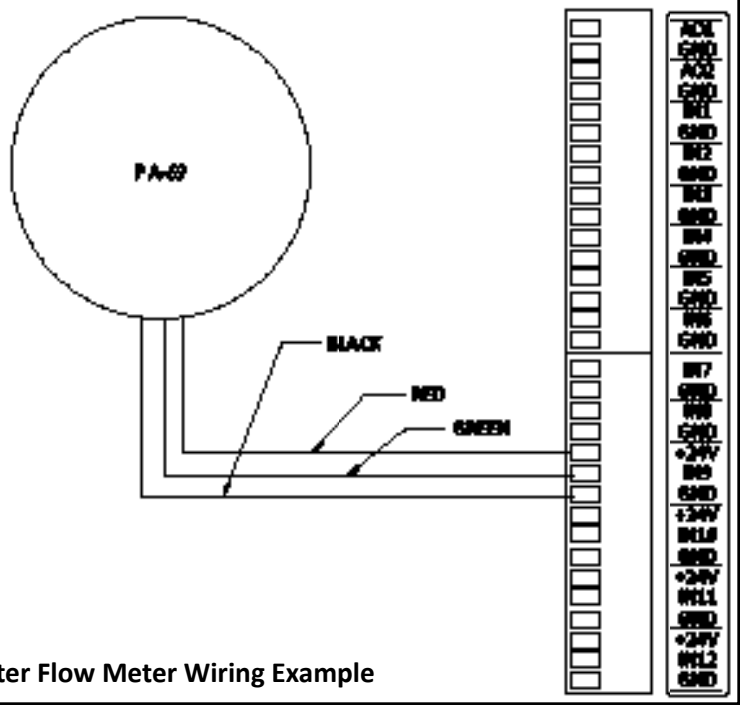


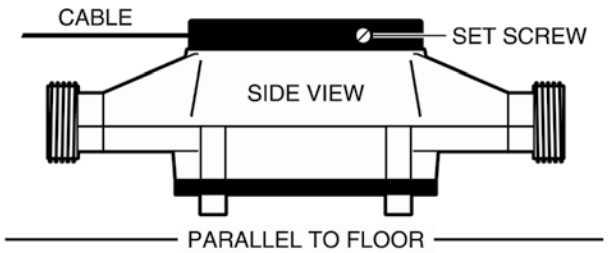
Figure 31

Wire the PA-60 Digital Water Meter as shown in the diagram to the right, Figure 31. BE SURE TO SET THE GP IOM board jumper settings to none (no jumper placed between A-B or B-C), refer to page 39.

Figure 32



Water Flow Meter Wiring Example



Water Flow (Counter) Meters

BADGER COUNTER METER

Wire as shown in the diagram to the right. THIS IS A DRY CONTACT, DO NOT ATTACH ANY OF ITS WIRES TO +24V. Do not use the green wire. On the GP IOM board the jumper setting should be A-B, refer to page 39.

Figure 33

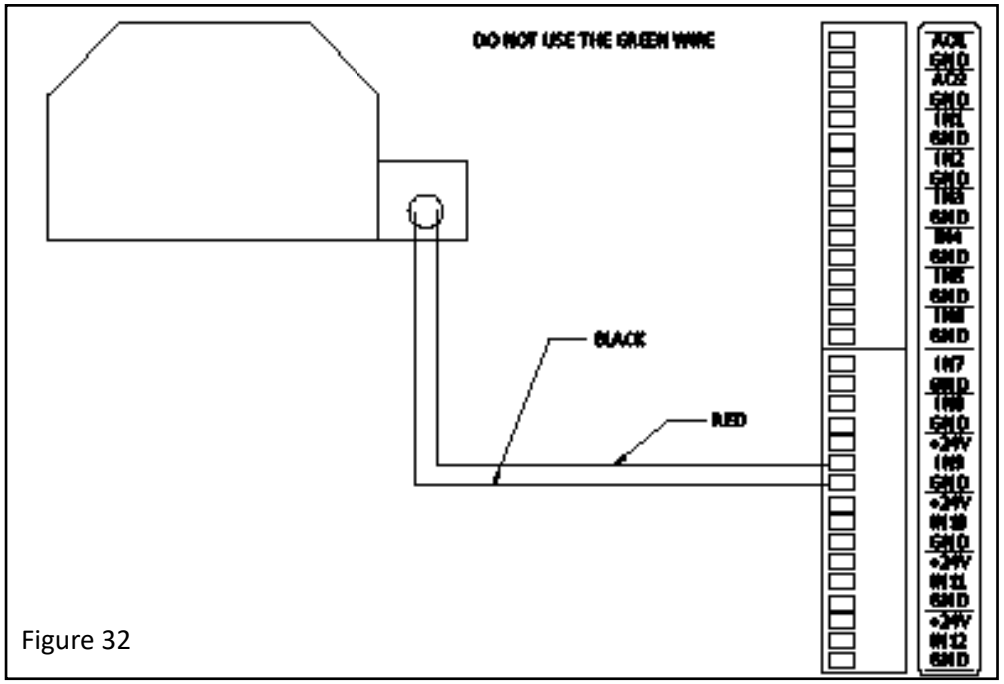


Figure 32

DWYER COUNTER METER

Wire as shown in the diagram to the right. THIS IS A DRY CONTACT, DO NOT ATTACH ANY OF ITS WIRES TO +24V. On the GP IOM board the jumper setting should be A-B, refer to page 39.

Figure 34

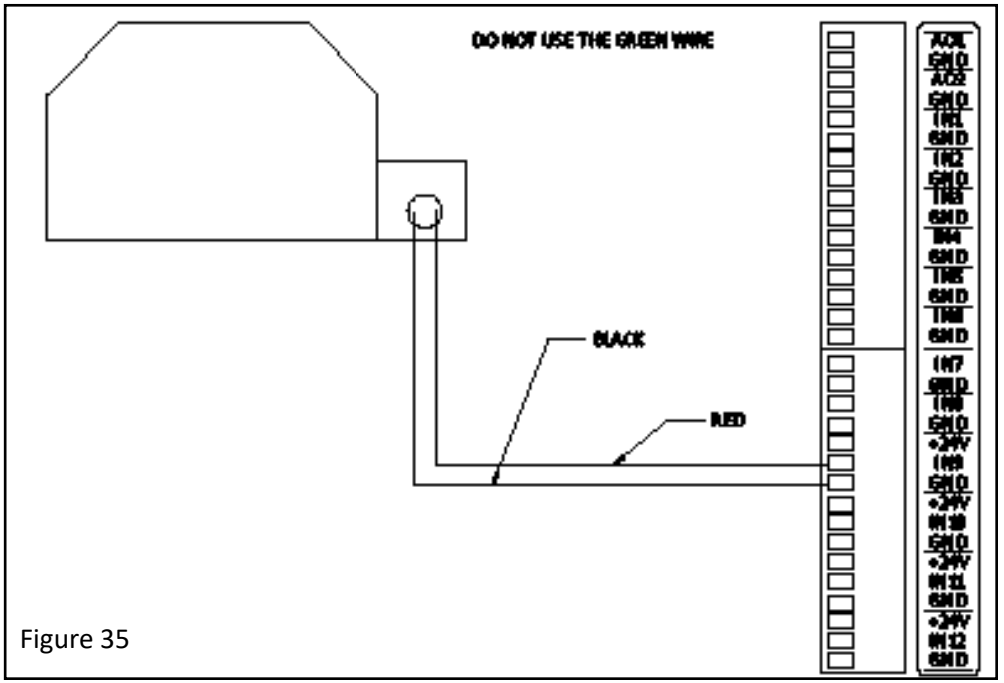
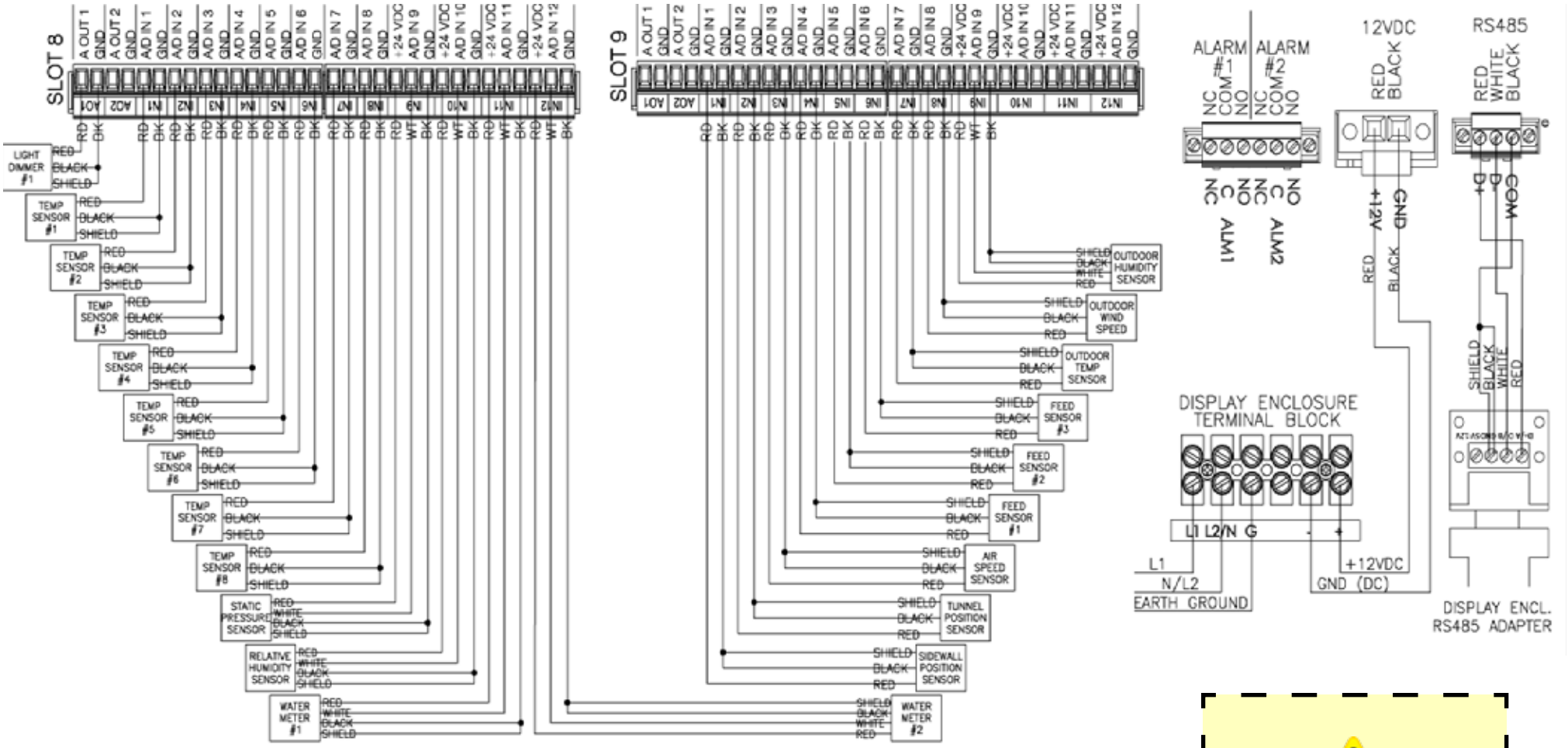
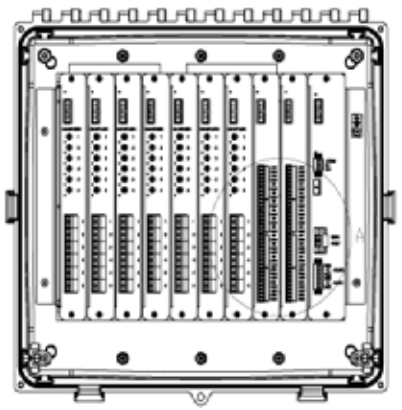


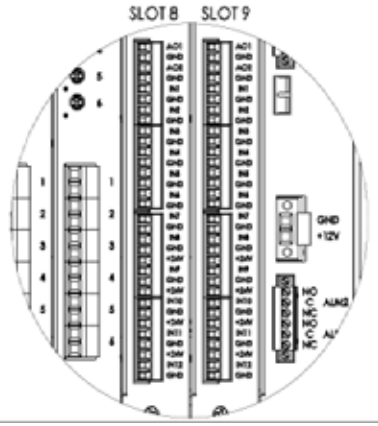
Figure 35

©2018 Valco Companies, Inc.

4.6 INPUT WIRING (EXAMPLE)







NOTE: THE GROUND FOR THE CONTROLLER MUST BE DEDICATED/ISOLATED.
**** It is HIGHLY RECOMMENDED to supply the control with 230 VOLT where available****

When the controller is wired with a 115 VOLT supply the NEUTRAL MUST ALSO BE DEDICATED/ISOLATED.

ATTENTION:
ALL CONTROL BOXES SHALL EACH HAVE THEIR OWN Independent CIRCUIT BREAKER.

NOTE:
ALL SENSOR AND COMMUNICATION WIRING SHALL BE KEPT A MINIMUM OF 12” FROM LINE VOLTAGE AND SHALL CROSS ALL LINE VOLTAGE LINES AT A 90 DEGREES FOLLOWING THESE STANDARDS WILL MINIMIZE NOISE INTERFERENCE.

THIS SCHEMATIC IS PROVIDED AS AN EXAMPLE ON HOW TO CONFIGURE THE CONTROL CIRCUITS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO MAKE ANY NECESSARY CHANGES TO COMPLY WITH ALL CURRENT LOCAL AND NATIONAL ELECTRICAL CODES.

THE ELECTRICAL CONTRACTOR IS ALSO RESPONSIBLE FOR DETERMINING THE NEED FOR ANY ADDITIONAL CONTRACTORS TO HANDLE THE EQUIPMENT LOAD.

VAL-CO® IS NOT RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE /MISUSE OF THIS DOCUMENT.

CHAPTER 5 - Relay Installation

5.1 OUTPUT RELAYS - What you NEED to know!

Output Channel Load Specifications

Check the load on each channel. Light groups and tunnel fan groups will likely be your highest amperage circuits. The relays are rated at 1HP at 120VAC and 1½ HP at 240VAC. *They will sustain a 200 percent startup surge for up to three seconds.*

Use a contactor or divide the equipment into several groups as necessary to avoid overloading a relay. Channel Interlocking, testing and Output Wiring examples are on the following pages.

Fuse Replacement

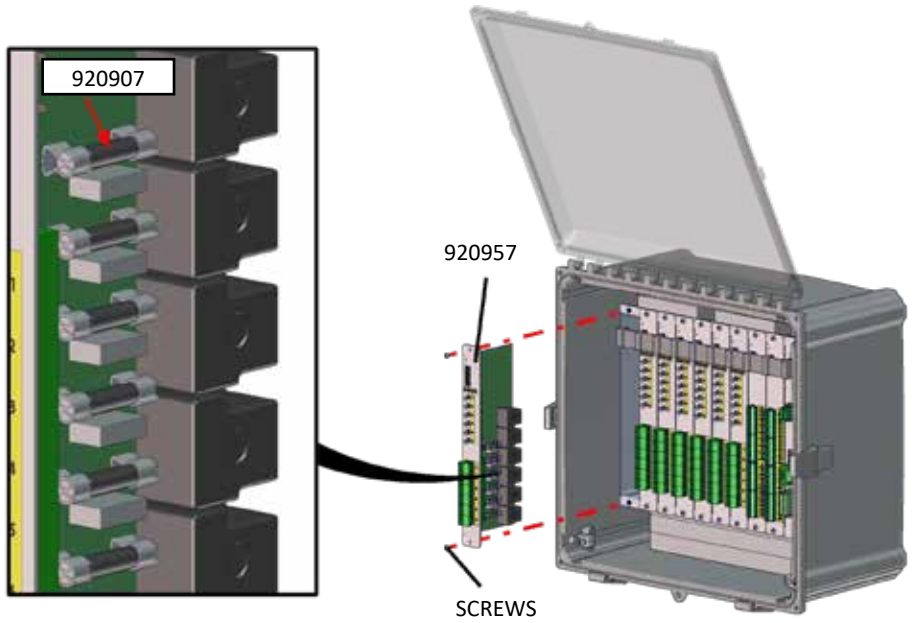
The fuse on the power supply is a 2.0 Amp 250VAC (5 x 20mm) fast-acting interrupting type (Littelfuse 0216002 or equivalent).

Each output relay has a 20 Amp 3AB ceramic body slow-acting fuse (Bussmann MDA-20 or equivalent 0.25 x 1.25"). Electrical load should be no more than 1HP at 120VAC and 1½HP at 240V.

To replace a fuse, first REMOVE EXTERNAL POWER FROM RELAYS, then disconnect the Output connectors to the blade, unscrew the (2) screws to pull out and remove the 920957 IO board. The fuse snaps into the brackets, shown in Figure 33.

When replacing an individual board in the IO box, care must be taken to set the rotary dip switch to match the board being replaced. If the dial is set to the same number as an existing board, the system will have problems recognizing both boards and will not function correctly. More information on page 39 regarding the Rotary Dip Switch settings.

Figure 36



WARNING!

Remove External POWER to Relays prior to changing Fuses.

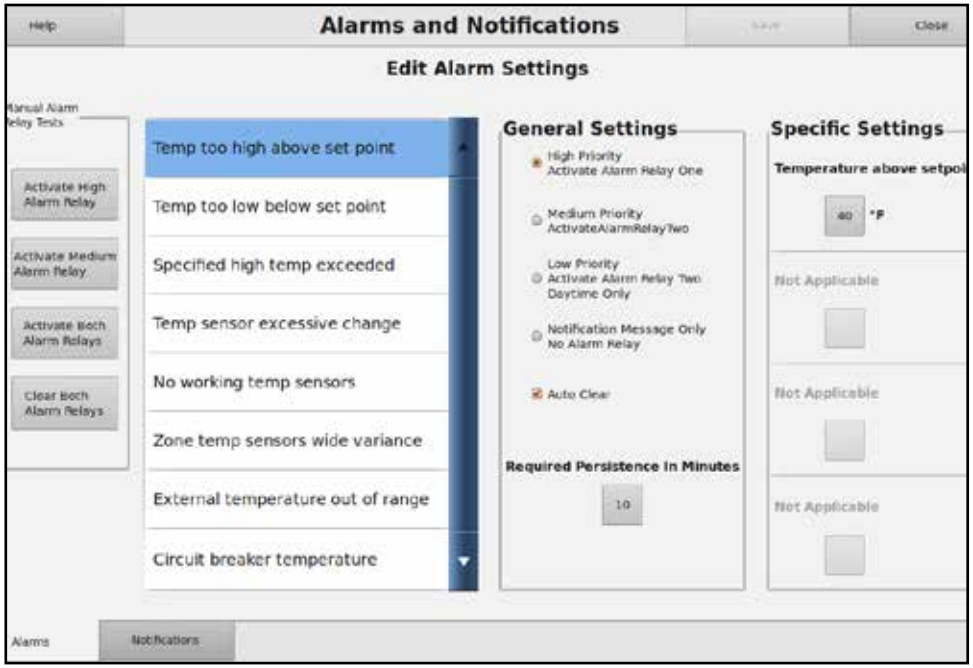
©2018 Valco Companies, Inc.

5.2 OUTPUT RELAY WIRING

Bring the wire from an output channel through a strain relief or conduit on the bottom of the controller and up between the banks of relays to the proper relay. The control wire should run from the circuit breaker to the Horizon™ relay and then out to the device or device contactor.
We recommend dedicating a separate circuit breaker for each channel. That way, if there is a problem with one of the device groups, it won't disable your entire ventilation system. (Schematics wiring diagrams start on page 36 .)

Backup Systems
Test the backup equipment override thermostats and curtain drops. Make sure these devices operate the way they are expected to before depending on them to protect animals.

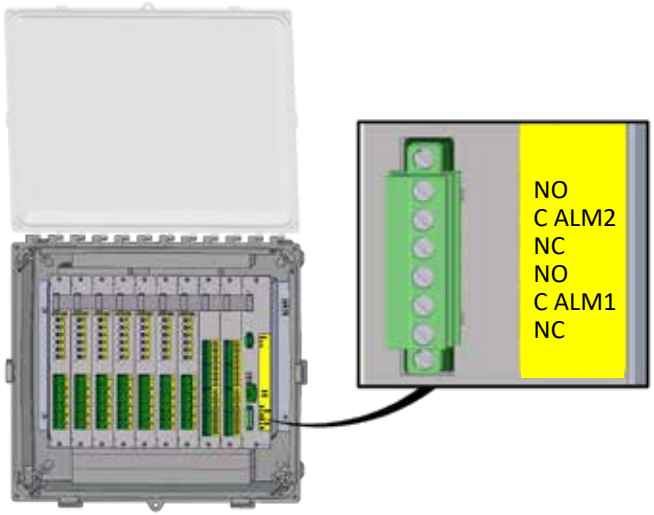
Alarms
Go to the Operation-Alarms and Notifications screen and use the Alarm test buttons to verify that each alarm device is operational. Clear any ACTIVE ALARM by pushing "**Clear both Alarm Relays"** while the alarm is on the screen. Failure to clear an alarm will prevent the alarm relay from resetting.



Bring the wire from an output channel through a strain relief or conduit on the bottom of the of the controller and up between the banks of relays to the proper relay. The control wire should run from the circuit breaker to the Horizon™ relay and then out to the device or device contactor.
We recommend dedicating a separate circuit breaker for each channel. That way, if there is a problem with one of the device groups, it won't disable your entire ventilation system.

120 Volt Wiring Example

Figure 37



The normally **CLOSED** (NC) dry-contact (no voltage) connection has continuity during an alarm condition and could be used to turn on a device such as a siren, strobe light or auto dialer. The normally **OPEN** (NO) connection will have continuity when there is no alarm.

Specifications: The alarm relay is SPDT rated 120/240VAC 10A. *Alarm devices should be fused externally.*

DANGER

Disconnect all POWER while servicing this control!

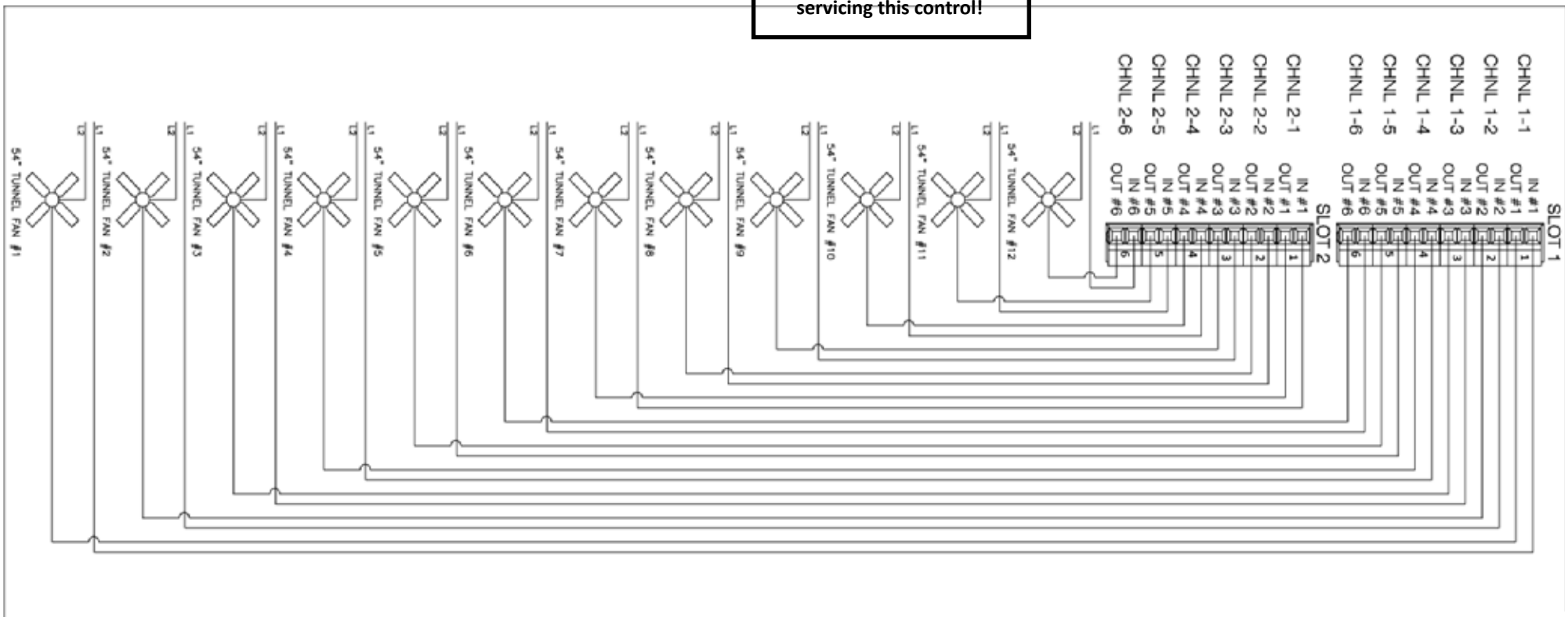
Output wiring schematic examples may be found on the following pages.

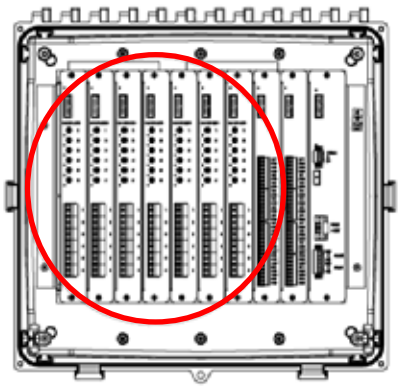
©2018 Valco Companies, Inc.

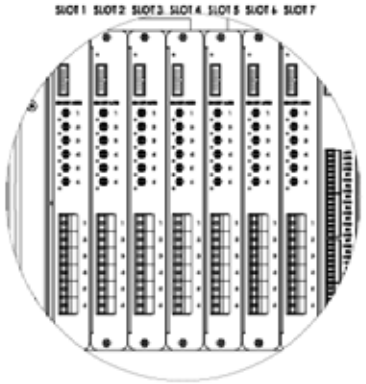
5.3 OUTPUT RELAY WIRING SLOT 1 (EXAMPLE)

DANGER

Disconnect all POWER while servicing this control!







NOTE:
ALL SENSOR AND COMMUNICATIONS WIRING SHALL BE KEPT A MINIMUM OF 12" FROM LINE VOLTAGE (115/230 VOLTS & HIGHER) WIRING WHEN RUN PARALLEL TO LINE VOLTAGE AND SHALL CROSS ALL LINE VOLTAGE LINES AT 90 DEGREES FOLLOWING THESE STANDARDS WILL MINIMIZE NOISE INTERFERENCE.

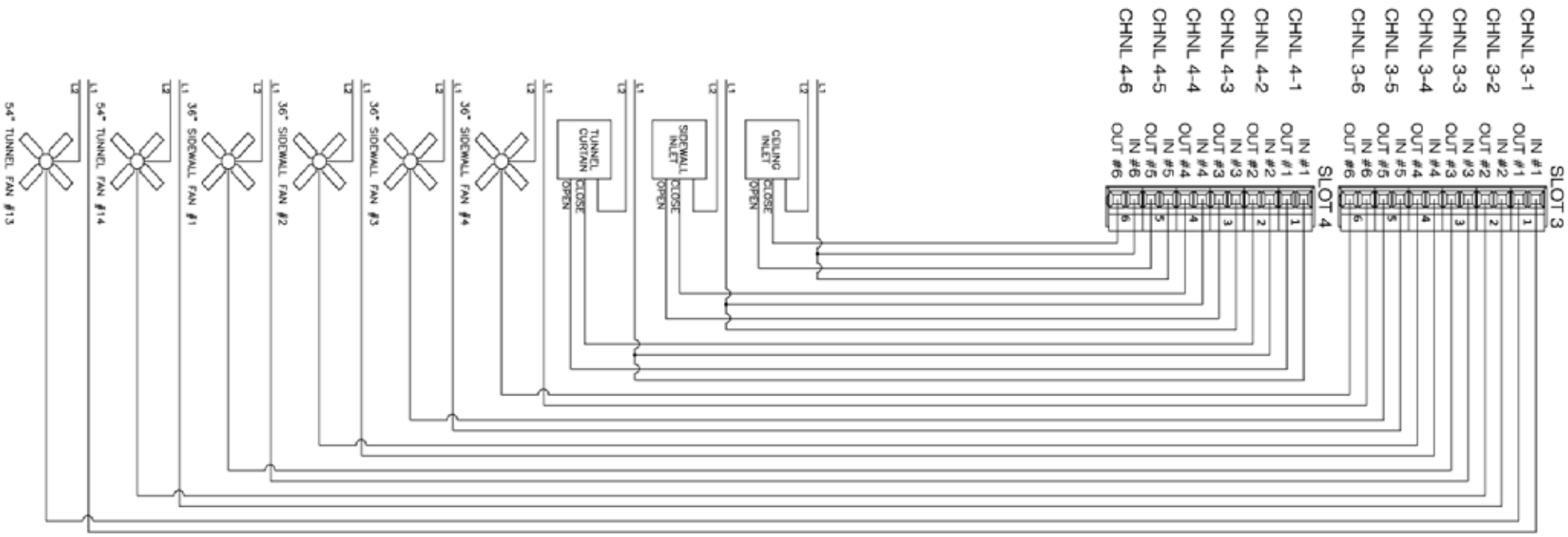
CAUTION:
IF THREE PHASE POWER IS USED ANYWHERE ON THIS SITE, THE CUSTOMER SERVICE DEPARTMENT AT VAL-CO® MUST BE NOTIFIED (1-800-998-2526) TO RECEIVE SPECIAL WIRING INSTRUCTIONS.

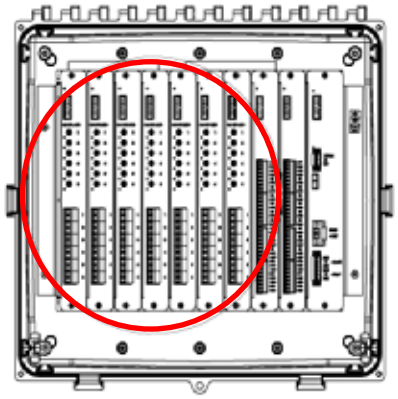
THIS SCHEMATIC IS PROVIDED AS AN EXAMPLE ON HOW TO CONFIGURE THE CONTROL CIRCUITS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO MAKE ANY NECESSARY CHANGES TO COMPLY WITH ALL CURRENT LOCAL AND NATIONAL ELECTRICAL CODES.

THE ELECTRICAL CONTRACTOR IS ALSO RESPONSIBLE FOR DETERMINING THE NEED FOR ANY ADDITIONAL CONTRACTORS TO HANDLE THE EQUIPMENT LOAD.

VAL-CO® IS NOT RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE/MISUSE OF THIS DOCUMENT.

5.4 OUTPUT RELAY WIRING SLOT 3 (EXAMPLE)





DANGER

Disconnect all POWER while servicing this control!

NOTE:
ALL SENSOR AND COMMUNICATIONS WIRING SHALL BE KEPT A MINIMUM OF 12" FROM LINE VOLTAGE (115/230 VOLTS & HIGHER) WIRING WHEN RUN PARALLEL TO LINE VOLTAGE AND SHALL CROSS ALL LINE VOLTAGE LINES AT 90 DEGREES FOLLOWING THESE STANDARDS WILL MINIMIZE NOISE INTERFERENCE.

CAUTION:
IF THREE PHASE POWER IS USED ANYWHERE ON THIS SITE, THE CUSTOMER SERVICE DEPARTMENT AT VAL-CO® MUST BE NOTIFIED (1-800-998-2526) TO RECEIVE SPECIAL WIRING INSTRUCTIONS.

THIS SCHEMATIC IS PROVIDED AS AN EXAMPLE ON HOW TO CONFIGURE THE CONTROL CIRCUITS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO MAKE ANY NECESSARY CHANGES TO COMPLY WITH ALL CURRENT LOCAL AND NATIONAL ELECTRICAL CODES.

THE ELECTRICAL CONTRACTOR IS ALSO RESPONSIBLE FOR DETERMINING THE NEED FOR ANY ADDITIONAL CONTRACTORS TO HANDLE THE EQUIPMENT LOAD.

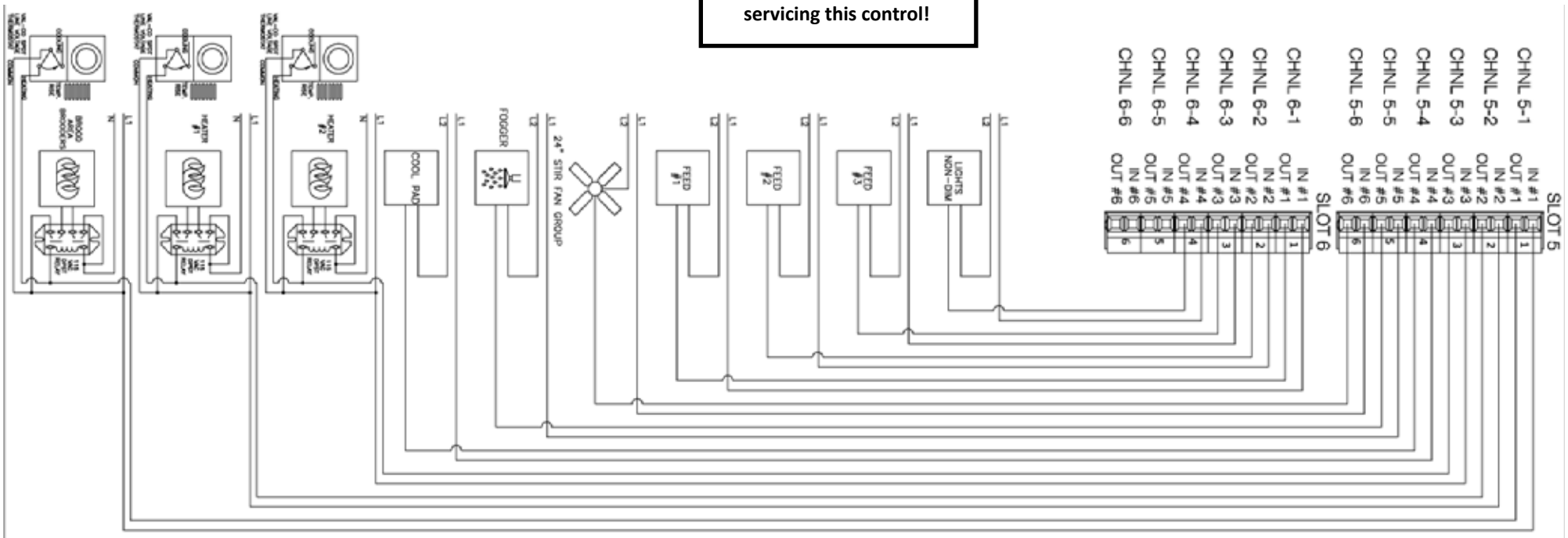
VAL-CO® IS NOT RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE/MISUSE OF THIS DOCUMENT.

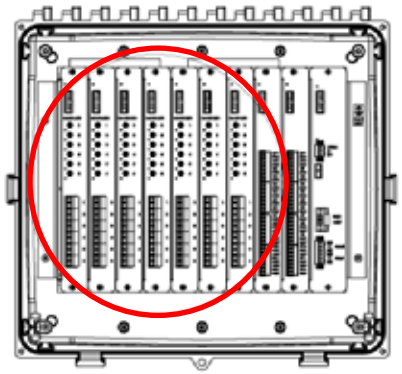
©2018 Valco Companies, Inc.

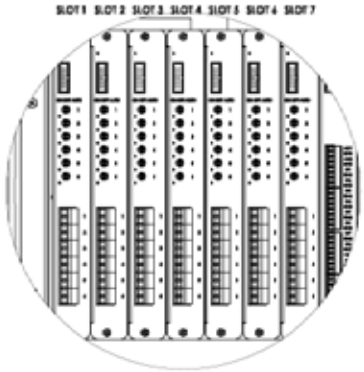
5.5 OUTPUT RELAY WIRING SLOT 5 (EXAMPLE)

DANGER

Disconnect all POWER while servicing this control!







NOTE:
ALL SENSOR AND COMMUNICATIONS WIRING SHALL BE KEPT A MINIMUM OF 12" FROM LINE VOLTAGE (115/230 VOLTS & HIGHER) WIRING WHEN RUN PARALLEL TO LINE VOLTAGE AND SHALL CROSS ALL LINE VOLTAGE LINES AT 90 DEGREES FOLLOWING THESE STANDARDS WILL MINIMIZE NOISE INTERFERENCE.

CAUTION:
IF THREE PHASE POWER IS USED ANYWHERE ON THIS SITE, THE CUSTOMER SERVICE DEPARTMENT AT VAL-CO® MUST BE NOTIFIED (1-800-998-2526) TO RECEIVE SPECIAL WIRING INSTRUCTIONS.

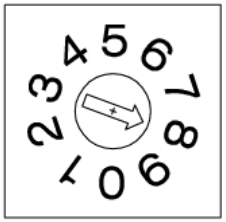
THIS SCHEMATIC IS PROVIDED AS AN EXAMPLE ON HOW TO CONFIGURE THE CONTROL CIRCUITS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO MAKE ANY NECESSARY CHANGES TO COMPLY WITH ALL CURRENT LOCAL AND NATIONAL ELECTRICAL CODES.

THE ELECTRICAL CONTRACTOR IS ALSO RESPONSIBLE FOR DETERMINING THE NEED FOR ANY ADDITIONAL CONTRACTORS TO HANDLE THE EQUIPMENT LOAD.

VAL-CO® IS NOT RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE/MISUSE OF THIS DOCUMENT.

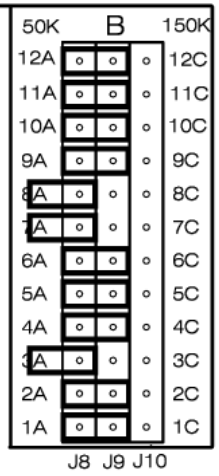
5.6 SLOT - DIP SET 7 (EXAMPLE)

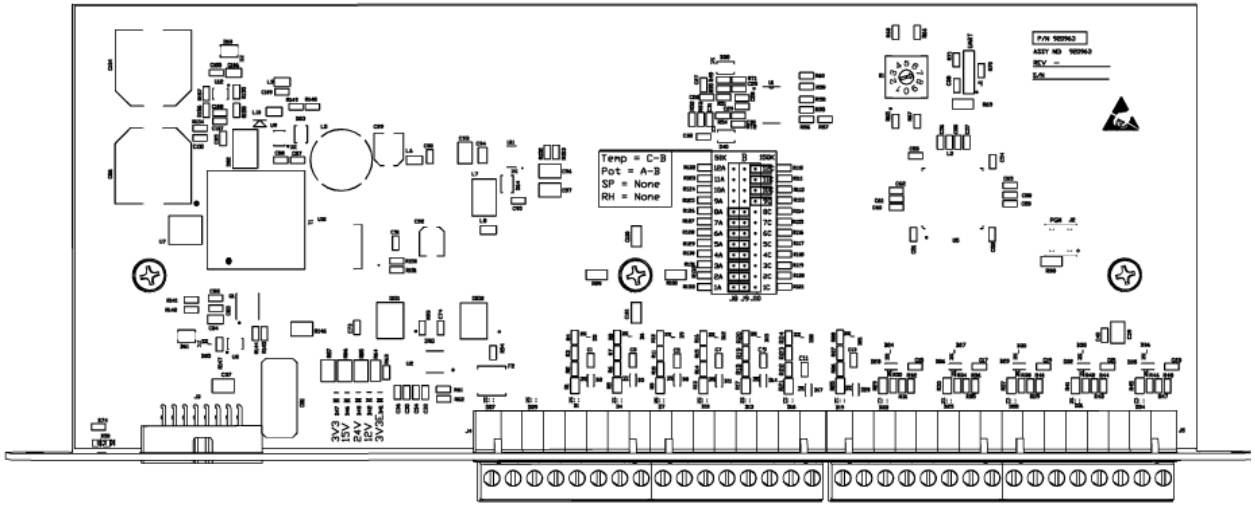
SLOT 9 - DIP SET TO 8



JUMPER SETTINGS GUIDE	
SENSOR TYPE	**SET**
TEMPERATURE SENSOR	A-B
POSITION (POT) SENSOR	A-B
RELATIVE HUMIDITY	None
STATIC PRESSURE	None
AIR SPEED CUP TYPE	A-B
MOTOR CURRENT	None
WATERMETER	A-B

Temp. = A-B
Poten. = A-B
Water = A-B
S.P. = None
R.H. = None
Feed = None





DANGER

Disconnect all POWER while servicing this control!

NOTE:
ALL SENSOR AND COMMUNICATIONS WIRING SHALL BE KEPT A MINIMUM OF 12" FROM LINE VOLTAGE (115/230 VOLTS & HIGHER) WIRING WHEN RUN PARALLEL TO LINE VOLTAGE AND SHALL CROSS ALL LINE VOLTAGE LINES AT 90 DEGREES FOLLOWING THESE STANDARDS WILL MINIMIZE R.F. NOISE INTERFERENCE.

CAUTION:
IF THREE PHASE POWER IS USED ANYWHERE ON THIS SITE, THE CUSTOMER SERVICE DEPARTMENT AT VAL-CO® MUST BE NOTIFIED (1-800-998-2526) TO RECEIVE SPECIAL WIRING INSTRUCTIONS.

THIS SCHEMATIC IS PROVIDED AS AN EXAMPLE ON HOW TO CONFIGURE THE CONTROL CIRCUITS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO MAKE ANY NECESSARY CHANGES TO COMPLY WITH ALL CURRENT LOCAL AND NATIONAL ELECTRICAL CODES.

THE ELECTRICAL CONTRACTOR IS ALSO RESPONSIBLE FOR DETERMINING THE NEED FOR ANY ADDITIONAL CONTRACTORS TO HANDLE THE EQUIPMENT LOAD.

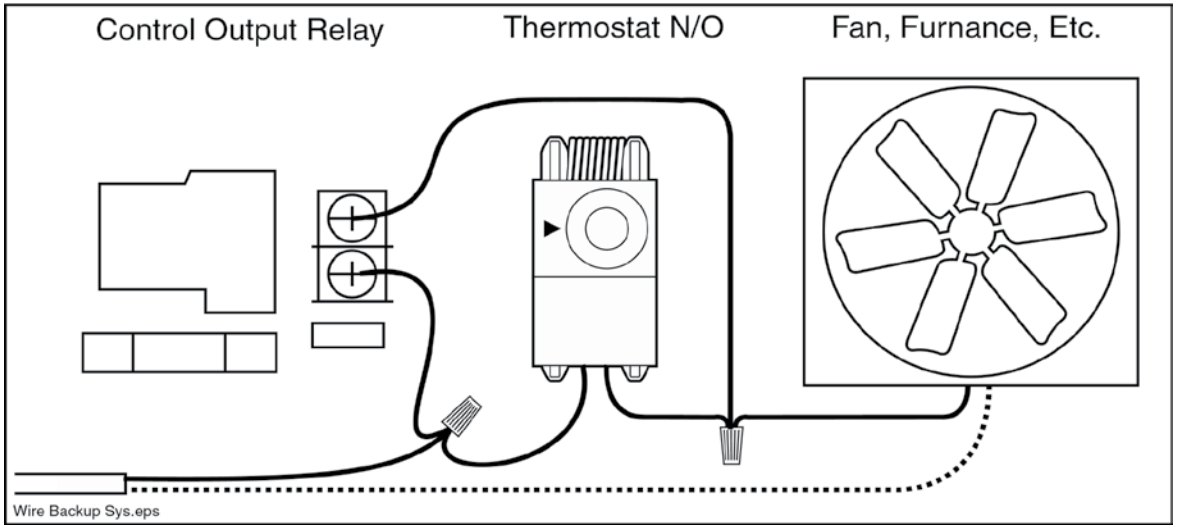
VAL-CO® IS NOT RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE/MISUSE OF THIS DOCUMENT.

©2018 Valco Companies, Inc.

5.7 BACKUP SYSTEMS AND ALARMS

Backup Systems

Setting backup devices that allow heat and ventilation in case of a power failure or other type of failure is essential for the safety of the animals.



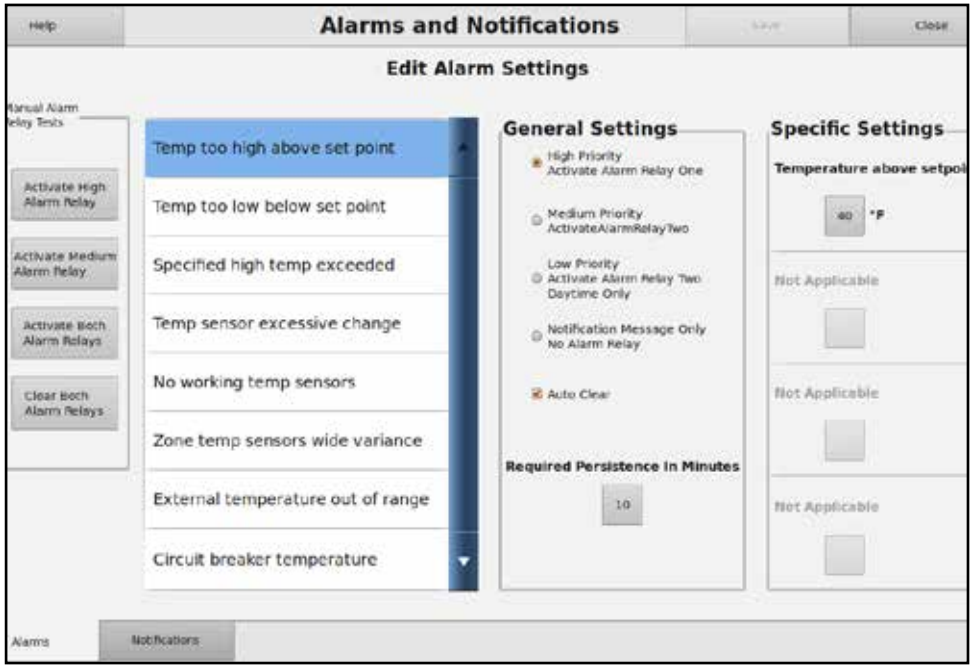
Alarm Information

Note: Always test alarm operation.

The Horizon™ will alarm on:

- High/low temperature, as well as other temperature sensor problems
- Power outage
- Feeder over/under run time (with optional feed motor sensor)
- Over/under consumption of water (with optional water meter sensor)
- Static pressure (with optional static pressure sensor)
- Humidity sensor problems
- Communication errors and certain memory errors

The alarm connection may be wired to whatever device is necessary to provide a warning of alarm conditions, usually an auto dialer or siren.



Backup alarm devices must be installed in case of controller failure.

CHAPTER 6 - Special Features

6.1 SETTING UP (VIRTUAL NETWORK COMPUTING) VNC - REMOTE ACCESS

The Horizon has the capability to setup remote access to the controller via a smart phone or computer though VNC. It allows the user to look at current conditions as well as make changes to the program through a remote connection. VNC is Virtual Network Computing and is a graphical desktop sharing system that uses the Remote Frame Buffer protocol to remotely control another computer. It transfers the control of the keyboard and mouse events from one computer to another. VNC is platform independent - a VNC view on one operating system may connect to a VNC server on the same or any other operating system. The most popular use for this technology is for remote technical support.

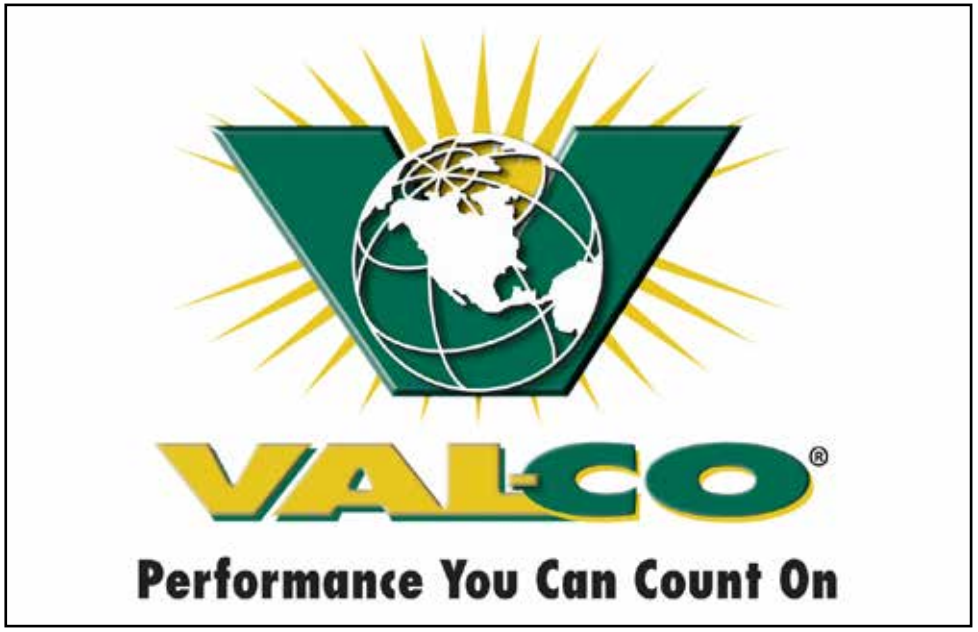
To set this up, the user will need an internet connection at the location of the Horizon. Once the connection is setup the user will need to download an app onto their phone or computer to access the Horizon. An example of a VNC viewing app would be VNC Viewer or TightVNC. If help is required to do this, you may go to our website at www.val-co.com and go to the Support heading for a quick sheet on how to setup Horizon remote access, but it may require a knowledgeable networking person to finalize the setup.

©2018 Valco Companies, Inc.

Intentionally left blank.

CHAPTER 7 - Touch Screen Navagation

Once you have all the controls mounted and devices and sensors wired properly it is time to power up the control. The first screen will be the America Megatrends computer software setup screen. After the computer software setup has completed it will bring up the VAL-CO® Screen for a brief minute and then the Main Menu will display. *It should be noted that the initial start up of the system will not display any information from your system and the buttons on the Main Menu screen are inactive until you setup your system.* The next several pages will explain the details of the Main Menu navigation and the following section of this manual will detail how to set up your system.



©2018 Valco Companies, Inc.

7.1 NAVIGATION OVERVIEW

This chapter of the manual will provide a basic overview of the Horizon® Control's Display and how to navigate to the different screens. The Horizon® uses a **TOUCH SCREEN** to move about, to configure and/or make changes to the settings. *(A mouse and/or keyboard may also be used.)* Many of the screens provide ***HELP NOTES,*** on the display, to guide you through the screens for more detail. The device buttons on the display will take you to detailed information for that device.

When the system starts up, the first screen you will see is the Main Menu. The devices, ***which must be configured first***, will each show current values, as exampled below with the Temperature device button outlined in ***green***. If a device has ***not*** been configured, the button for that device will be gray, as exampled with the Curtains device button shown outlined in ***red***. Touching the buttons and images on any of the screens will take you to different screens or will open a window to provide more information for the selection or allow you to change a setting.

TOP INFORMATION BAR *(details on next page)*

CURRENT STATUS DEVICE BUTTON (DEVICE CONFIGURED)

GRAY DEVICE BOX (NO DEVICE CONFIGURED)

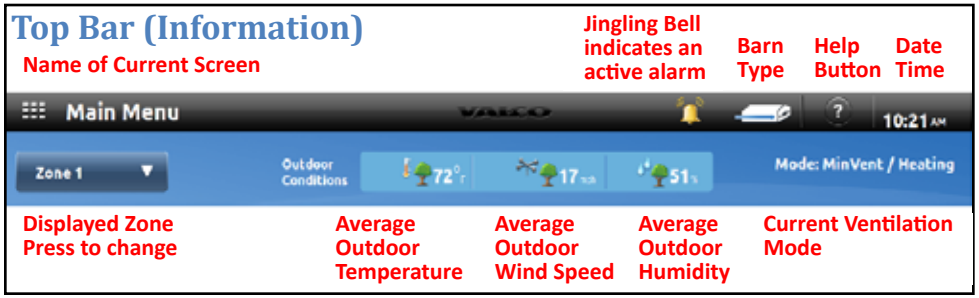
ALARM DETAIL

BOTTOM NAVIGATION BAR *(details on next page)*

The Button on the Bottom Navigation Bar turns green when selected.

Information and Navigation Bars

The Top Information Bar and the Bottom Navigation Bar, shown below contain some features that are used throughout most of the screens discussed in this manual.



The buttons on the Bottom Navigation Bar, shown above, are used to navigate to the different sections of the Horizon system:

Left Arrow – use this to return to the last previously viewed screen.
Main Menu – displays an overview of the current status of the devices confiured on the system.
House View - displays a graphical representation of the devices configured on the system.
History – displays history graphs of the devices configured on the system.
Operation - allows access to the configuration settings, as well as exporting data.
Switches - displays the status of the output relays and varible lights, as well as providing a way to manually override the relays.

Mode Information

The Mode in the upper right corner displays the current operating mode of zone being displayed. The following modes can be displayed:

Self Test – system is initializing.

MinVent / Heating – average zone temperature is under the Temperature Setpoint and the system is providing minimum ventilation.

Cooling(x) – average zone temperature is above the Temperature Setpoint and the system is providing cooling ventilation. The “x” indicates which cooling stage the system is currently running under.

Tunnel(x)- *detail continued on top right side of page.*

Tunnel(x) - average zone temperature is above the Temperature Setpoint, is running the cooling stages and is currently running a stage that was indicated as a tunnel stage. The “x” indicates which cooling stage the system is currently running under.

Zone Selection

When you press the **Zone** button a drop down window appears with a choice of zones configured for your facility. Press one of the **Zone** buttons to change the view to that zone.

Minimum Vent Adjustment

The Minimum Vent Adjustment is located just above the Bottom Navigation Bar. It allows for a quick adjustment to the Minimum Vent Settings. Push the Up /Down arrows to pull up a screen with a number pad to make the adjustment.

©2018 Valco Companies, Inc.

The screens used throughout the following pages do not depict an actual system.
Some information was included for the purpose of displaying a larger number of examples.

7.2 MAIN MENU

The Main Menu provides an overview of the current status for the zone selected, as shown below with outlined current readings for each configured device. It also shows the current animal stats and indicates any active alarms and notifications. To drill down (view/display) more detail for each device, touch/press the device button. To see the information for other zones, touch/press the **Zone** button in the upper left corner of the screen and choose the zone you desire to view. ***If a button is grayed out, it indicates the zone does not contain any of the device types configured for that zone.***

Pressing the buttons in the Main Menu will open detail screens for the individual devices. In each of these detail screens, the left side of these screens will be similar. They will all have the Zone button at the top, to allow changing the zone being viewed. They will also show the Status of the Setpoint, Effective and Actual temperatures for each zone chosen, as it was displayed on the Main Menu. Depending on the devices being viewed, there may be additional information and buttons below the status readings for that device.

©2018 Valco Companies, Inc.

TEMPERATURE, AIR QUALITY AND STATIC PRESSURE

The first 3 buttons on the screen, shown to the right, display the information for Input sensors configured for the zone selected. These are outlined red for reference.

Temperature

Temperature button displays the Zone's Setpoint, as well as the average temperature readings of all the sensors in the Zone. *The average temperature is shown both for the Effective (wind chill affect, if available) and Actual Temperature.*

Air Quality

Air Quality button displays the Zone's average Humidity reading.

Static Pressure

Static Pressure button displays the Zone's average Static Pressure reading.

Temperature, Air Quality and Static Pressure detail graphs

When the 3 Input sensor buttons above are pressed, they will display a graphical representation of the individual sensor readings in the zone, as exampled by the Temperature Sensor screen shown to the right. The vertical **GREEN** band indicates the current Setpoint for the zone. The vertical **BLUE** band indicates the average temperature reading when the average is **LOWER** than the Setpoint. If the average is **ABOVE** the Setpoint, the vertical band will be **ORANGE**.

The left side displays the temperature readings at the top, (as displayed on the device button of the Main Menu) and will display any relevant information, as outlined in red, for the sensors being viewed. The **Temp Sensors** screen, graph view, will display the Daily Min and Max temperatures, as well as up to ten Attic and Circuit Breaker Temperature sensor readings. The **Air Quality** screen will display the Average Humidity reading for each sensor and **Static Pressure** screen will display the Static Pressure readings.

For any sensor that is disabled for some reason (out of range, invalid reading, etc), the sensor will be displayed in the graph with a black splash mark across it as shown in the image below.

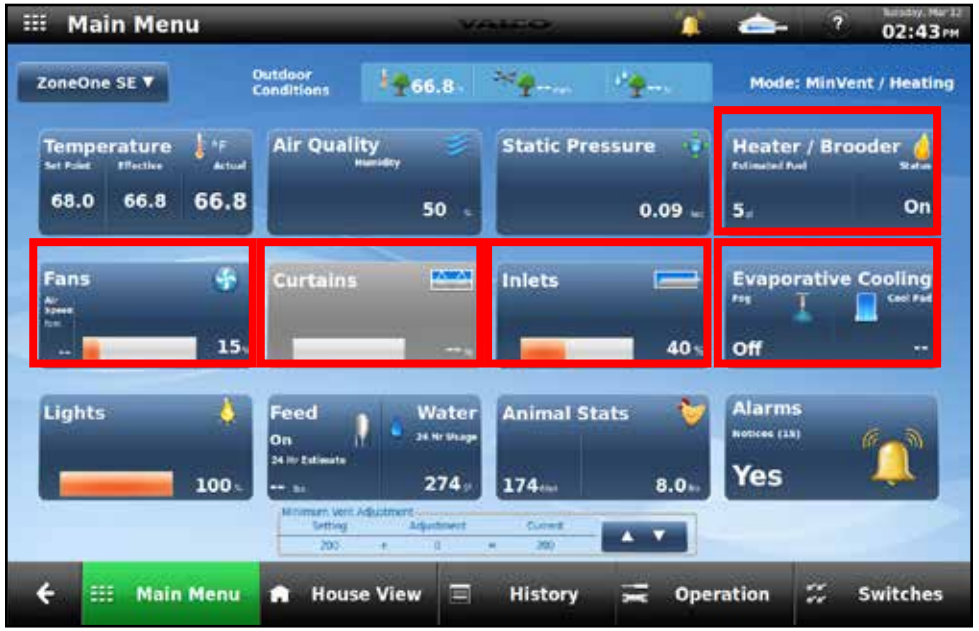
Graph above displays average temperatures below setpoint

Graph below displays average temperature above setpoint

©2018 Valco Companies, Inc.

HEATERS/BROODERS, FANS, CURTAINS, INLETS AND EVAPORATIVE COOLING

The 5 device buttons in the Main Menu shown (outlined in red to identify the buttons in reference) to the right are output ventilation devices which show current status for configured devices. The Curtain device, not configured for this zone, shows gray. The next few pages describe these 5 buttons with detail of each screen.



Heater / Brooder

The first box being the Heater/Brooder box which indicates if any of the heaters or brooders are currently On in the zone. It will also display the estimated fuel used for the heating devices. *This is based on the BTU and fuel type settings set up when they were configured.*

Press the **Heater/Brooder** button to see the status of the individual heating devices. If the device is On, the icon for that device will be highlighted with a **YELLOWISH-ORANGE COLOR**, as seen with Heaters 1 & 3 and Brooders 2 & 3.

It is possible to filter the heater types by pressing one of the buttons on the left side of the screen, as shown outlined in red.

Press the icon for the device to open a window displaying the runtimes of the device for the last day, week and month.

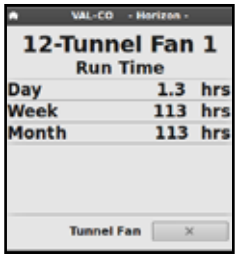
Fans

The **Fans** button indicates the percentage of the fans currently running in the zone. The percentage is for all the fans in the zone, not just the ones used during the current ventilation mode. It also displays the air speed (in feet per minute), if an air speed sensor is configured for the zone.

Press the button to see the status of the individual fans. If the device is On, the icon for that device's fan blades will appear blurry, as shown by Tunnel Fan 1 and Pit Fan 1.

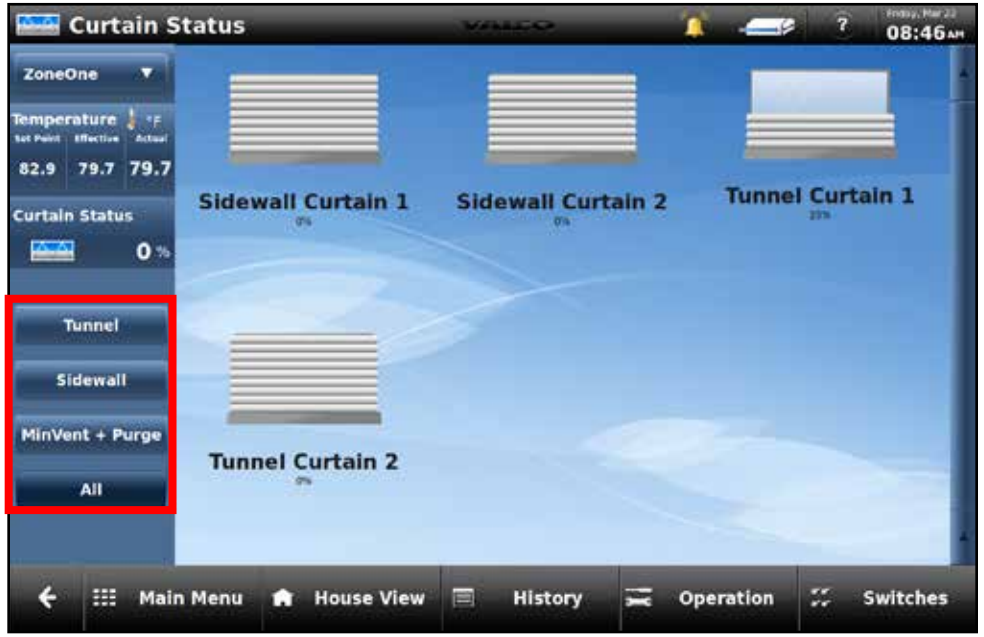
It is possible to filter the fans by type and function, shown outlined in red to the right, by pressing one of the buttons on the left side of the screen.

Press the **Fan** icon to open a window displaying the runtimes for the device for the last day, week and month.



Curtains and Inlets

The **Curtains** and **Inlets** buttons on the Main Menu show the same type of information and indicate the open percentages of the inlet devices in the zone. *The example on the right is displaying Curtains and would look similar for the Inlet screen.* It is possible to filter the Curtains or Inlets by type and function, shown outlined in red to the right, by pressing one of the buttons on the left side of the screen.

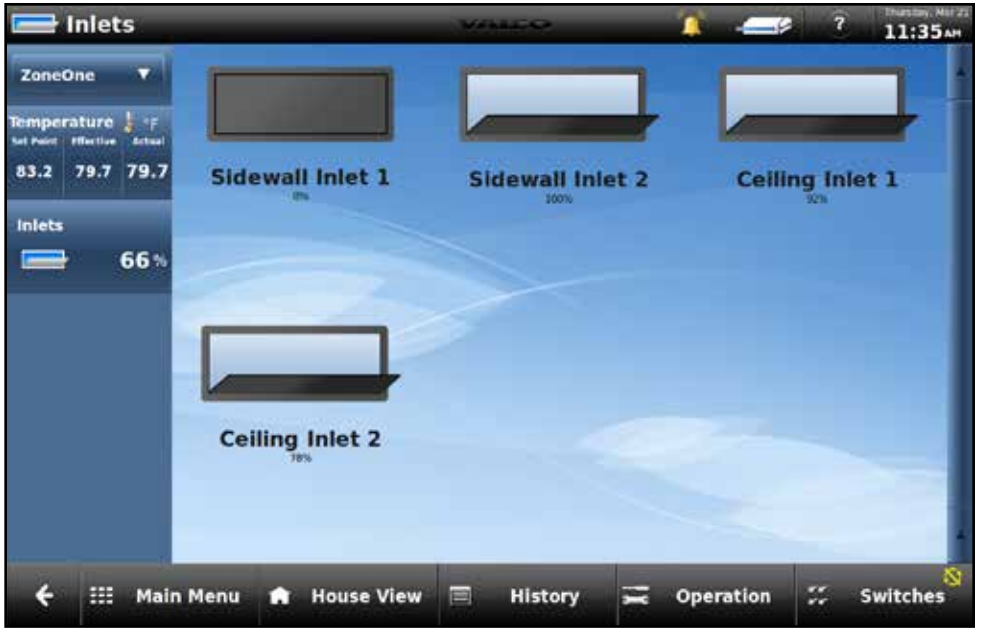


Press the **Curtain** or **Inlet** button to see the status of the individual inlet devices. The icon will indicate their opening percentage, as shown on Tunnel Curtains 1.

©2018 Valco Companies, Inc.

Curtains and Inlets - continued

Press the icons in these screens to open a window displaying the **OPEN** time for the device for the last day, week and month.



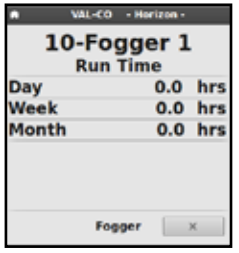
Evaporative Cooling

Evaporative Cooling box above displays On/Off. Below is an example of a device not configured

The **Evaporative Cooling** button on the Main Menu is used to display the On/Off status of any Cool Pads and Foggers configured for the zone, as shown in the box to the left. If one of the device types is not installed, the display will show "—", instead of On or Off , as shown in the Evaporative Cooling button below to the left.

Press the box and the individual devices will display showing when the Cool Pads and/or Foggers are On or Off. When a Cool Pad is On it turns **BLUE** and displays "On" below the device name. When a Fogger is On it shows a blurry spray of water and states "On" below the device name, as shown to the right. When either device is OFF they appear gray and displays "Off", as shown with the Cool Pad and Fogger to the right.

Press the button to see the status of the individual devices. Press the icons to open a window displaying the **RUN TIME** for the device for the last day, week and month.

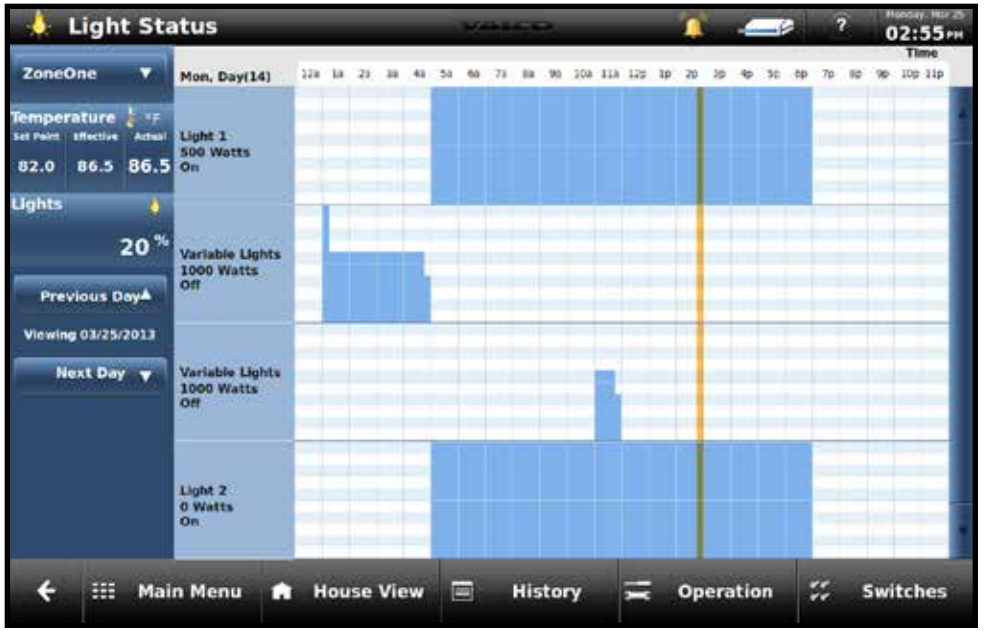


The 4 device buttons in the Main Menu shown (outlined in red to identify the buttons in reference) to the right are Light/Feed/Animal Status and Alarm devices which show current status for configured devices. The next few pages describe these 4 buttons with detail of each screen.

Lights

The **Lights** button on the Main Menu displays the percentage of light devices that are currently on in the zone. The percentage is based on the **TOTAL WATTAGE** of all the light devices configured for the zone.

Press the button to see the status of the individual devices and a graphical display of the light schedules for the individual devices. Each device is displayed in its own row and indicates the time of day the lights will be on. The **ORANGE** vertical band in the graph indicates the current time of day. For variable lights, the ramping of the light level is shown at the beginning and end of the light schedule, along with any light spikes set up.



Each horizontal line in the graph represents a 10% light level, allowing you to see what percentage the variable lights will be at for a given time period. The vertical lines represent one hour increments, with the graph displaying light levels and spikes in 15 minute increments.

For the Lights detail screen, since each light schedule can be set up to run only on certain days, it is possible to scroll through the days of the week to view those days' schedules. This is done by touching/pressing the **Previous Day** and **Next Day** buttons on the left panel.

©2018 Valco Companies, Inc.

Feed - Water

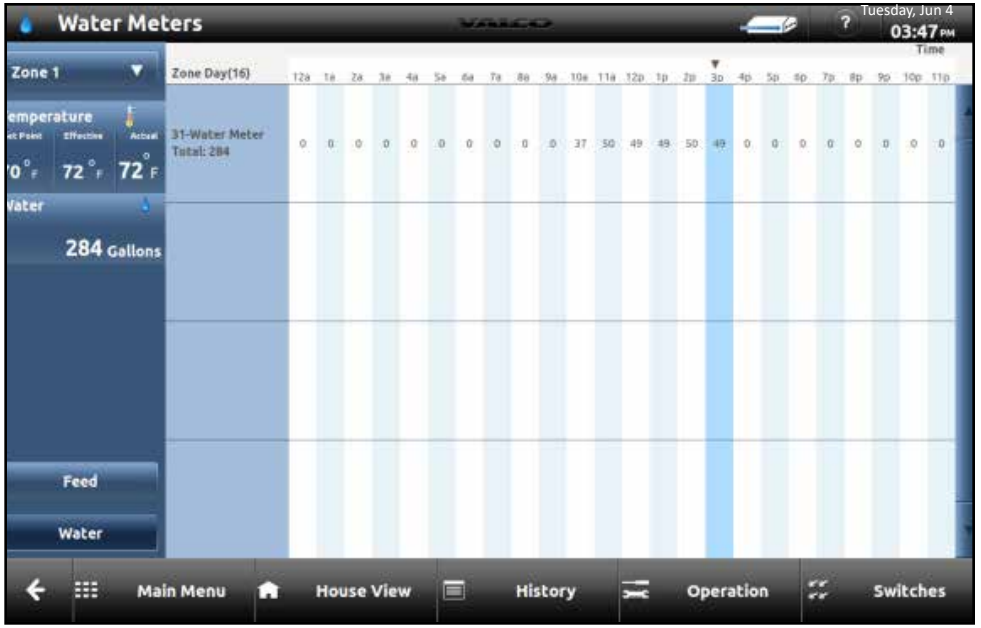
The **Feed – Water** button displays information on the Feeders and Water Meters configured in the zone. For the Feed, the button shows if any of the feeders are

on and displays the pounds of feed used by all the feeders in the zone. It also will display a small thermometer, with some down-pointing green arrows, if the feed schedule current running has lowered the Temperature Setpoint to help cool down the suddenly active animals.

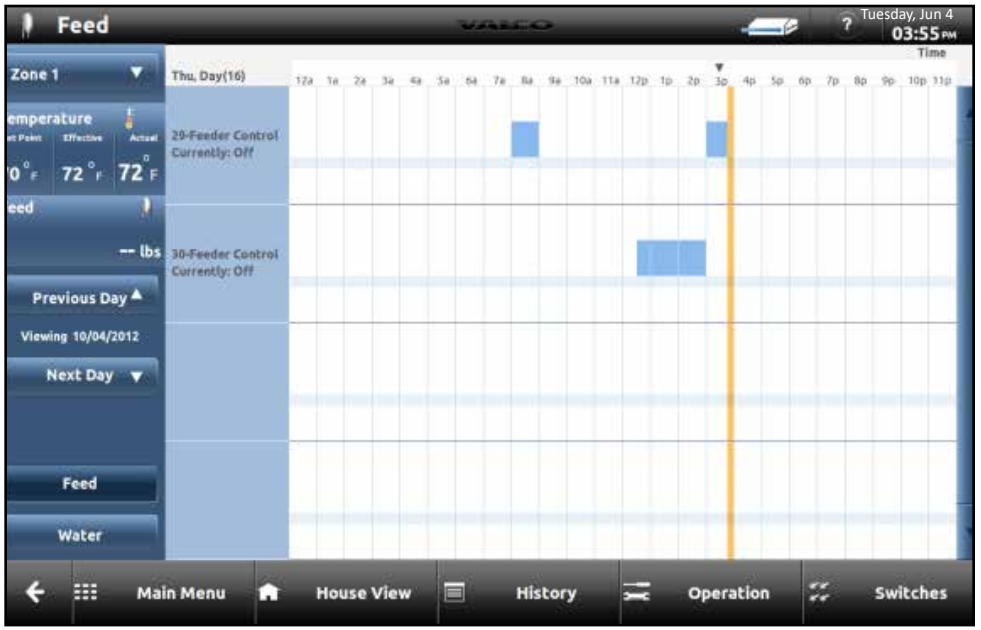
For the **Water**, the button shows the water usage for all the water meters in the zone during the last 24 hours.

Pressing the button will open a screen to view the details for the individual devices. To switch between the graphical view of the feeder schedules, and the daily water usage, press the **Feed** and **Water** buttons at the bottom of the left panel.

The **Water** detail screen shows the hourly water usage for the current day. Each device is shown on its own row.



The **Feed** detail screen shows a graphical representation of the feed schedules due to run during the day. The **ORANGE** line indicates the current time of day. For the **Feed** detail screen, since each feed schedule can be set up to run only on certain days, it is possible to scroll through the days of the week to view those day's schedules. This is done by pressing the **Previous Day** and **Next Day** buttons on the left panel.



Animal Stats

The **Animal Stats** button displays the Age and Weight of the animals in the zone.

Press this button to display more information regarding the animals. You are able to adjust the head count of the animals due to deaths or shipping.

Press the **Adjust Head Count** button to change the number of animals in the building. This will pop up a numeric touch pad to allow the entering of a new head count value.

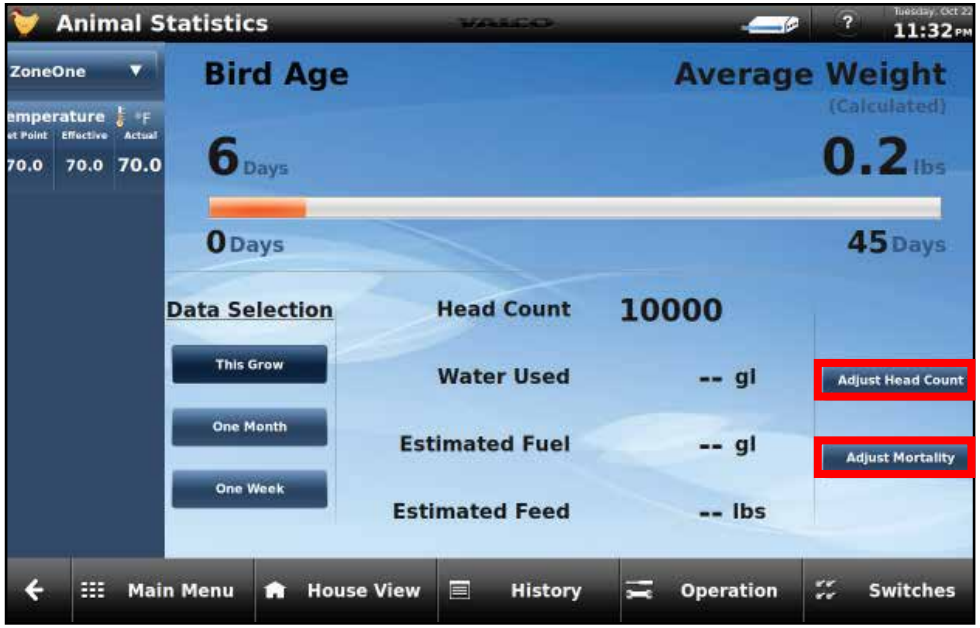
Press the **Adjust Mortality** button to enter the number of deaths into the numeric touch pad that appears. This will decrease / adjust the Head Count.

The Water Used, Estimated Fuel, and Estimated Feed values display the usage for the group. You can change the time period displayed by the usage values by pressing one of the buttons to the left of the values.

This Grow will display the usages since the animal were placed in the building.

One Month will display the usages for the last 30 days.

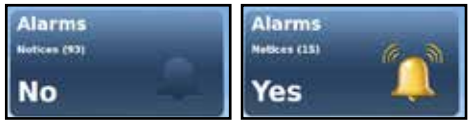
One Week will display the usages for the last 7 days.



©2018 Valco Companies, Inc.

Alarms

The Alarms button provides an indication of the alarm status, as well as, displays the number of alarms and notices that have NOT been acknowledged. The first image to the left shows the button when there are no active alarms on the system. The second image shows the button with an active alarm. ***The top of all Main Menu screens will show a yellow jingling bell if there is an active alarm.***

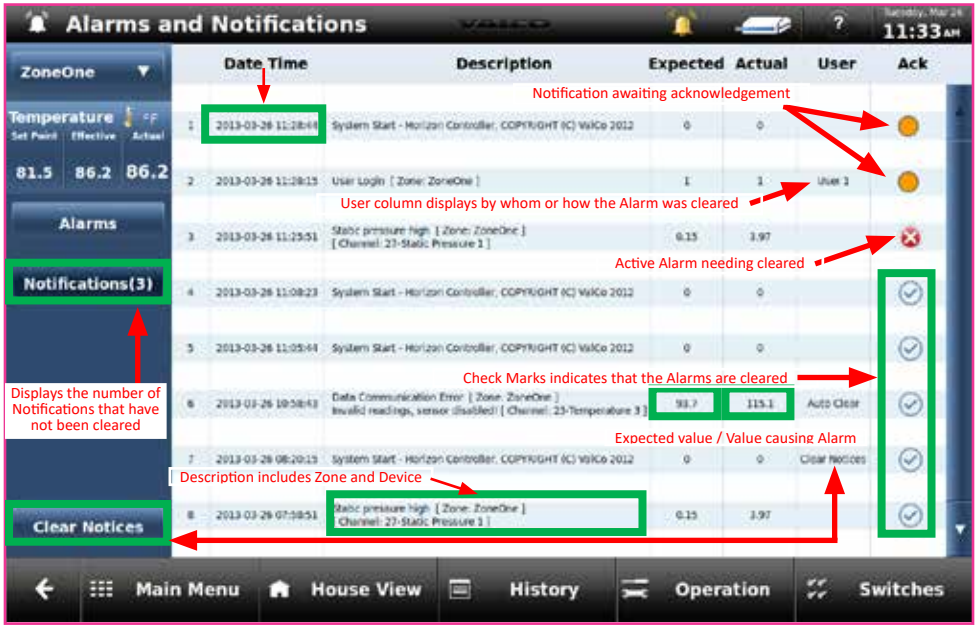


Press the button to view the alarms and notifications. The screen that appears has two pages available.

Pressing the **Alarms** button on the left side of the screen will display the active alarms, if any, on the system.

Pressing the **Notifications** button on the left side of the screen will display all the alarms and notifications on the system. This page will display any active alarms, alarms that have been cleared and all the notifications, whether cleared or not.

Any active alarm will show a RED X in the Ack column of both pages. On the Notifications page, any notifications that still needs to be acknowledged will have an ORANGE CIRCLE in the Ack column, as shown to the right with a red arrow. All previously cleared alarms and notifications will show a circle with a CHECK MARK in the Ack column, as shown outlined to the right. To acknowledge the alarms and notifications, press the RED X and ORANGE CIRCLES.



You can clear all the uncleared notifications by pressing the Clear Notices button at the lower left side of the screen. However, this will not clear any active alarms. Those have to be cleared individually.

How the Alarms and Notifications work

The Horizon has two alarm relays built in. This allows two different external alarm systems to be connected to the Horizon. One of these external alarm systems can be used for highly critical alarms, where immediate attention is needed. The other external alarm system can be used for less critical alarms when somebody needs to be notified of the problem, but not immediately.

To accomplish this, alarms and notifications, which are set up in the Operation – Alarms and Notifications section, can be set up with four types of priorities:

1. **High Priority** – Turns on Alarm relay #1 any time of the day or night. Used for critical, life threatening problems that need immediate attention.
2. **Medium Priority** – Turns on alarm relay #2 any time of the day or night. Used for less critical problems that need to be addressed quickly, but is not a life threatening problem.
3. **Low Priority** – Turns on alarm relay #2 only during the designated day-time hours (set up in the **Operation – System Configuration – Global** section). If the alarm condition happens during the nighttime hours, the alarm relay will not activate. This is used for problems that need to be addressed, but are not critical and can wait.
4. **Notification Message Only** – No alarm relays are turned on. These are used to just notify a problem occurred.

When an alarm condition happens, the system will activate the designated alarm relay, if needed, and will display a message on the screen (see image to the right). The message explains what the alarm was for and, if multiple zones are used, which zone the alarm came from. It will also display the device that caused the alarm.

When an alarm is displayed, all other pop-up windows are closed. If you were in the process of entering a value in a numeric keypad or keyboard, you will have to close the alarm message and re-enter the value.

Once an alarm condition occurs and the message appears, the alarm has to be cleared before the alarm relay will turn off. To clear the alarm, close the alarm message, then press the **Alarms** button on the **Main Menu** to open the **Alarms** and **Notifications** screen. ***All the alarms have to be cleared before the alarm relays will turn off. Closing the alarm message will not clear the alarm; you MUST acknowledge/clear the alarm or notification as instructed on the previous page in the Note box.***

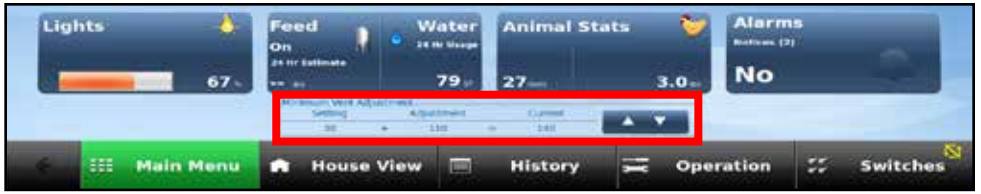
Alarms and notifications can also be set up to clear themselves once the alarm condition is no longer present. When the Auto Clear setting is checked for the alarm, if the system has determined the alarm condition has not been present for at least one minute, it will automatically clear the alarm. When this happens, a message will display indicating the alarm was cleared automatically and the alarm log will be updated to indicate the alarm was "Auto Clear"ed. It will also change the **Red x of the alarm to an orange circle**, indicating the alarm was cleared, ***but it still needs to be acknowledged.***

If there is more than one active alarm, the alarm message will change to reflect the newest alarm. Clearing one active alarm will cause an alarm message to appear again displaying the next newest alarm.

©2018 Valco Companies, Inc.

Minimum Vent Adjustment

The last feature on the Main Menu is the **Minimum Vent Adjustment** buttons. This feature will only appear if the MinVent fans are set up to run based on time and not CFM. This feature displays what the current MinVent fan runtimes are. It also allows a quick way to adjust their runtimes without having to return to the **Minimum Vent** screens in the **Operation** section. Pressing the arrow buttons will pop up a numeric touch pad, allowing you to enter a positive or negative number to adjust the run times by. This will change how long the fans run, but will not affect the total MinVent cycle time. The change is not saved and will be lost when the system shuts down. To make the change permanent, go to the **Operation** section to change the **Minimum Vent** settings.



7.3 HOUSE VIEW

The House View displays a graphical representation of the devices configured in the selected zone and their current status. This view gives an idea of what devices are configured and not the actual number of devices installed or their location in the building. The image below shows what devices each icon represents. Pressing these icons will open up the same device detail screens as pressing the buttons in the **Main Menu**. The left side of the screen also displays the same information for the devices as the Main Menus buttons display.

The devices in the image will change as their status changes. The fan images will go from blue to green as more fans turn on. The inlets and curtains will appear to open as the actual devices open. The heating devices will glow orange when they are on.

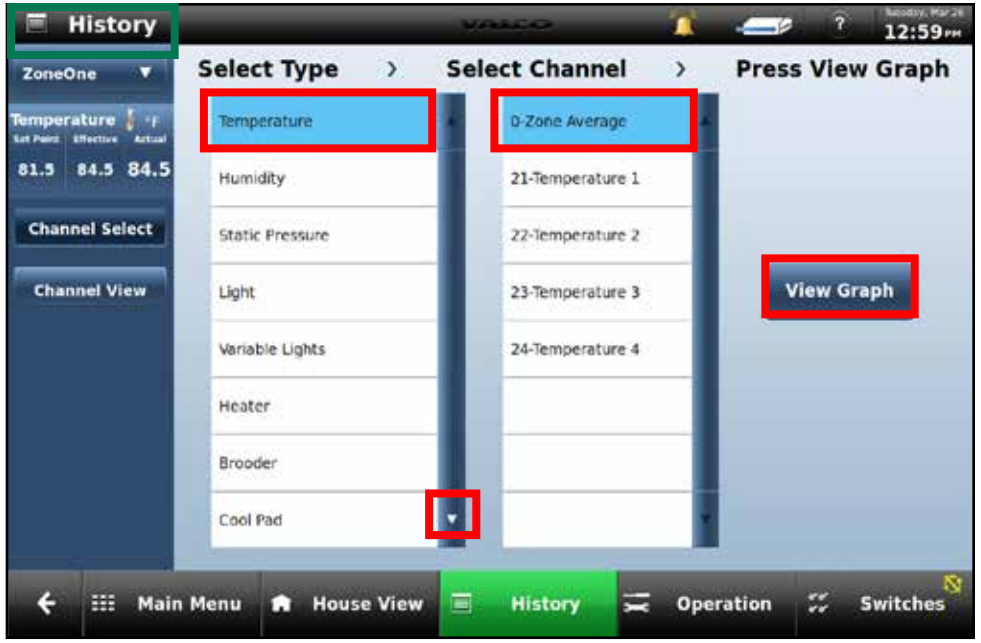
©2018 Valco Companies, Inc.

7.4 HISTORY

The History section allows you to view graphs of historical information for the devices. The graphs are displayed on a ***per zone bases***.

The creating of the graphs is done in a three step process.

1. **Select Type** - Press the device type in the first column that you wish to view. *Only one device type can be viewed at a time.* If the device type is not visible, press the white arrow on the scroll bar of the column to view more items. When the selected device type changes, the second column will change to display the available devices. If more than one device of the selected type is available, you can also view a graph showing the average values for all the devices of that type.
2. **Select Channel** – Press the device in the second column that you wish to view. Only one device can be selected at a time. If you wish to view an average of all the available devices, select the first row in the column (0-Zone Average). If the device you wish to view is not visible, press the white arrow on the scroll bar of the column to view more devices of the same type.
3. **View Graph button** – Press this button to view the graph. You can also press the **Channel View** button in the left panel to view the selected graph.

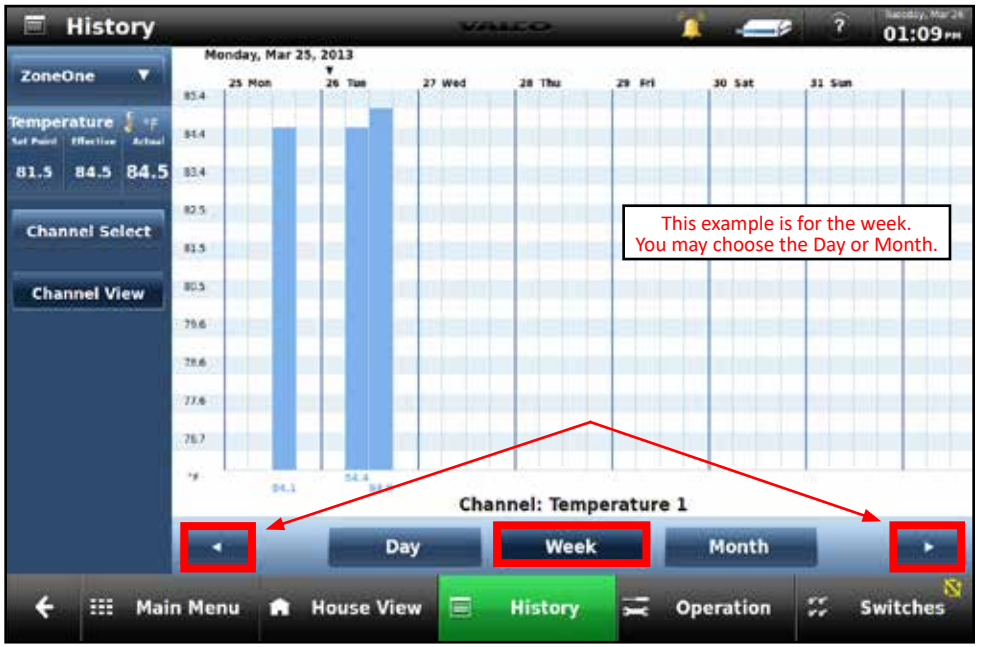


Graph Screens

The Graph screens of the History section shows the selected device's information in a graphical format. The information can be viewed by:

1. **Month** – displays the accumulative totals for each day of the month.
2. **Week** – displays the accumulative totals for each day of the week in 6 hour increments, as shown to the right.
3. **Day** - displays the accumulative totals for each hour of the day.

Regardless of which format **(Day, Week or Month)** the information is viewed in, pressing the arrow buttons at the bottom of the graph will scroll the data to the previous or next time period.



Once the graph is open, press the CHANNEL SELECT BUTTON in the left panel to return to the selection screen.

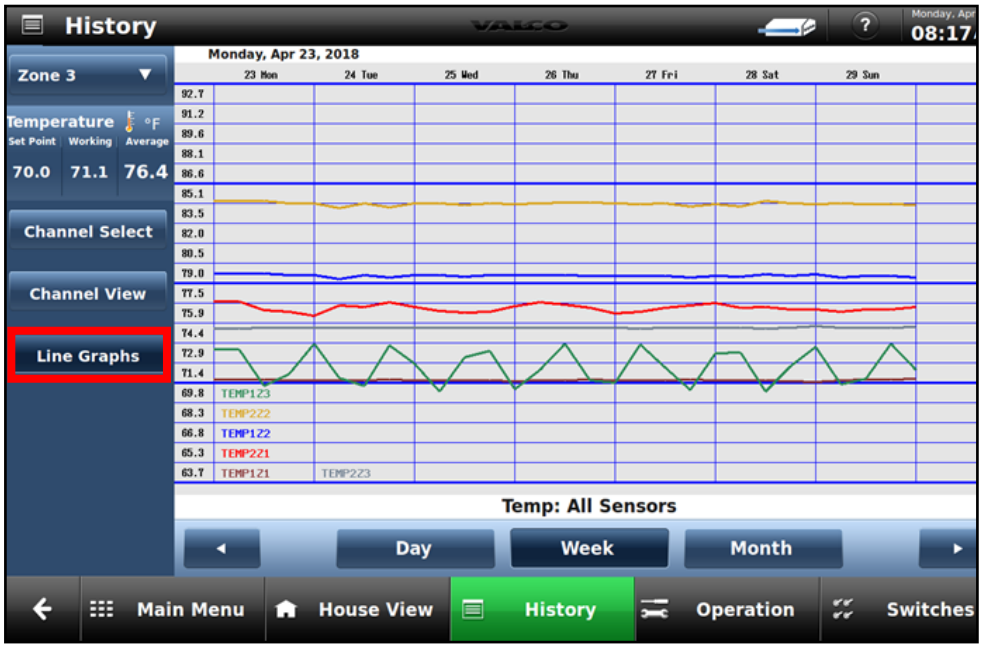
Temperature History

In addition to the normal barn graphs, the history for the Temperature sensors can also be viewed in as a line graph, or in report style.

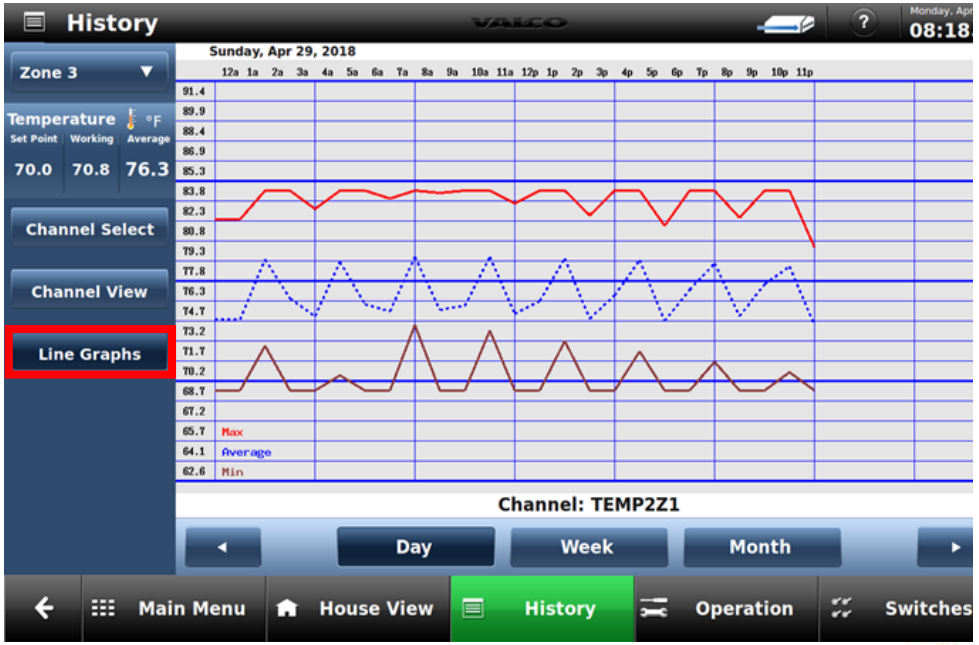
Temperature Line Graphs

Press the **Light Graphs** button to open the history of the temperature readings. This button is only visible when the **Select Type** column has **Temperature** selected.

If the **Zone Average** is selected in the **Select Channel** column, the line graph will display the average hourly temperature reading for each sensor.



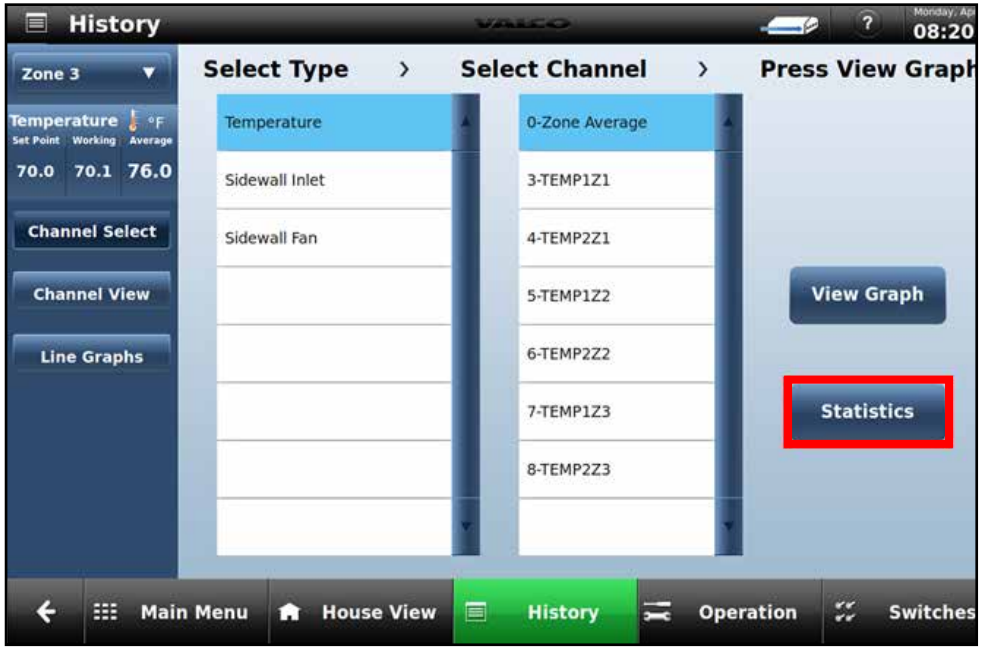
If an individual temperature sensor is selected in the **Select Channel** column, the line graph will display the hourly average reading of the temperature sensor, as well as the highest average and lowest average readings.



©2018 Valco Companies, Inc.

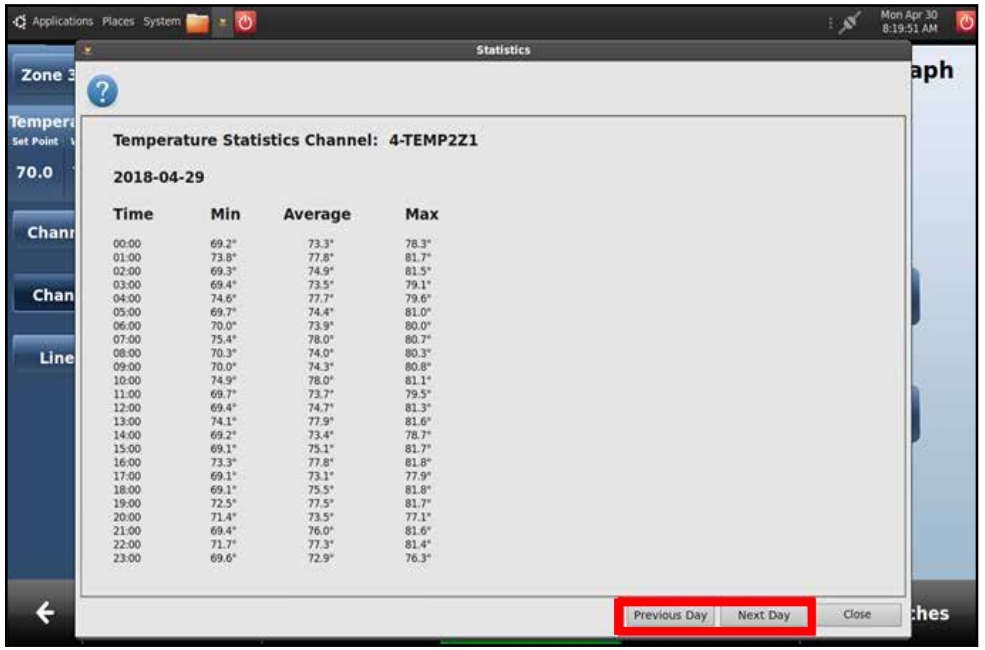
Temperature Statistics

To see a report style readout of the temperature sensors, press the **Statistics** button. This button is only visible when **Temperature** is the **Selected type**.



The **Temperature Statistics** screen will show the hourly **Minimum, Average,** and **Maximum** temperature readings for each hour of the day. If viewing the Zone Average, the readings will be a combined total of all the sensors. If an individual Temperature Sensor is being viewed, the readings will be for that sensor only.

Use the **Previous Day** and **Next Day** buttons to view the statistics for other days.



7.5 OPERATION

The Operation menu displays a selection of buttons used to set up and configure the Horizon system.

Pressing these buttons will open the configuration screens for that particular feature of the Horizon system.

Below is a short description of each button. ***More detailed information is presented on the following pages.***

System Configuration – This is where the global settings (language, animal type, barn type) are set as well as telling the system the type and number of devices installed in the house, how many zones to set up, and what ports the devices are connected to.

Cooling – the operational settings for when the temperature is above the Temperature Setpoint.

Minimum Vent – the operational settings for when the temperature is below the Temperature Setpoint.

Natural – This button is disabled (future feature).

Lighting – the lighting schedules for the system.

Feed - the feeding schedules for the system.

Zone Control – used to enable and disable zones. Also used to set up the heating and ventilation for inactive zones.

Environmental Control – Temperature Setpoint settings, including Ramping and temporary adjustments of the Setpoint.

Alarms and Notifications – Set when and how the alarms and notifications are handled.

Security – Set up and enable security on the Horizon to limit access.

Data File Operation – Allows the exporting of the Horizon history and alarm data, as well as backing up of the configuration settings database. In addition, it provides a way to import a saved database back into the system.

Channel Status – Displays technical information of the system and the devices configured on it.

Shut Down Horizon – Used to close the program and return to the Linux desktop. If this is done, double press the chicken on the desktop to restart the program.

©2018 Valco Companies, Inc.

7.6 SWITCHES

The Switches section displays a graphical representation of the switches of the Output boards on the hardware. It also displays the status of the relay, based on the switch position of the relay.

Each column in the display represents one of the Output boards in the Input / Output enclosure. If there are more than seven Output boards, or ***to see the Variable Light relays, press the Switches button again to see the other boards.***

Each cell in the column represents the corresponding relay on the board. ***If there are no devices configured for a port, the corresponding cell on the screen is left blank.*** If the port does have a device configured on it, the name of the device will be displayed at the top of the cell, along with an icon to indicate what type of device is configured. In addition, if the device type is an inlet or curtain, the cell will also display "Open" above the On button for the Open relay of the inlet/ curtain and "Close" for the Close relay. Note: For inlets and curtains, the odd numbered relay is always the Open relay and the next even numbered relay is always the Close relay.

The **On** and **Off** buttons can be used to override the system. Press the **On** button to manually turn on the relay. Press the **Off** button to manually turn off the relay. Press the Auto button to return control of the relay back over to the Horizon system.

Warning!
Pressing the On and Off buttons will prevent the system from automatically controlling the relay. Always press the Auto button when finished.

Note: any time a relay is being overridden, either by the Switches screen or the toggle switch, the Switches button on the Navigation Bar at the bottom of the screen will display a crossed-out yellow circle to indicate the override condition (outlined in red, top right corner of the Switches Button, in the top example to the right).

Relays, Toggles and Switches screen interaction

The control of the relays can be done in three different ways on the Horizon. The **On, Off** and **Auto** buttons, as well as the label above the Auto button, will change based on the status of the relay, the position of its toggle switch and which of the buttons on the Switches has been pressed. Below are the different possible combinations and what they mean:

1. **Auto button is green, On and Off buttons are blue** – This indicates the hardware toggle switch is in the Auto position and the Horizon has full control of the relay. The program will turn on and off the relay as required by the configuration set up. The label above the Auto button will display “Auto-Off” and “Auto-On” depending on how the program has the relay set.

2. **On button yellow or Off button orange, other two buttons blue** – This indicates the relay is being overridden due to the On or Off button on the screen being pushed. The toggle switch on the hardware is still in the Auto position. The label will show “Manual-On” or “Manual-Off”. In this state, the relay will be on or off, based on the highlighted button, and the program will not change the relay’s status until the Auto button is pressed again.

3. **On button yellow or Off button orange, other two buttons and the cell has a gray background** - This indicates the hardware toggle switch is in the On or Off position. The label will show “Override-On” or “Override-Off”. Until the toggle switch is returned to the Auto position, pressing the buttons on the screen will have no effect on the relay status, and the program will not be able to change the status of the relay.

Inlets and Curtains can display one additional type of relay override for its relays. The hardware is set up so when an inlet or curtain is configured to a set of ports, both relays cannot be turned on at the same time. If both toggle switches are switched to On, both relays will turn off and stay off until at least one of the toggles is returned to Off or Auto. This is reflected in the Switches screen by highlighting both On buttons and showing “Conflict-Off” in both relay cells. For inlets and curtains, if one of the On buttons is pressed on the Switches screen, the opposite box’s Off button will be selected and the Auto button in both boxes will be disabled (grayed out). To return the relays to Auto, both Off buttons need to be pressed (highlighted in orange) before the Auto buttons will become available again.

Switches screen and Variable Light devices.

The Variable Light devices are configured to an Input board, but their light intensity level can be viewed on the **Switches** screen. Press the **Switches** button to flip between the **Output relay** screens and the **Variable Light** screen. The Variable Light cells work the same way as the Output cells with one exception. When you press the **On** button, an **Up** and **Down** button appear. Pressing these arrow buttons will increase or decrease the level intensity level by one percent per press.

Warning!

Pressing the On and Off buttons will prevent the system from automatically controlling the relay. Always press the Auto button when finished.

©2018 Valco Companies, Inc.

Intentionally left blank.

CHAPTER 8 - Control Setup

8.1 OPERATION - SYSTEM CONFIGURATION

The following pages provide step by step procedures to configure/set up and add the devices to the Horizon controller.

When the program first starts up, the Main Menu appears. To set up the Horizon, press the **Operation** button on the Navigation Bar at the bottom of the screen to drill down to the Configuration Screens. (Each menu item will need some set up.)

This opens the **Operation** screen. Press the **System Configuration** button to open the setup screens, which is used to set up the Language, Date/Time, Animal Type, Barn Type, Ports, Zones, Port Configurations and Global settings of the Horizon program.

©2018 Valco Companies, Inc.

Language and Units Setup

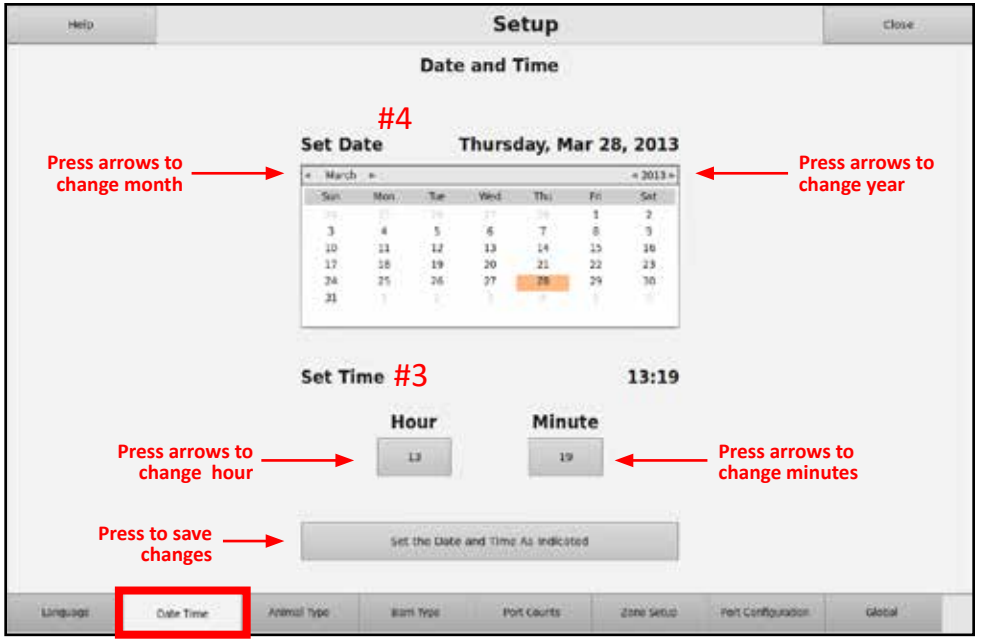
1. At the bottom of the **System Configuration** screen you will see the Bottom Navigation Bar with a tab for each possible option to configure. The **Language and Units** screen, being the first to the far left, will appear automatically. Press the language you wish to use, then press the Save button on the Top Navigation Bar at the top right corner of the screen to save the changes.

Important!
The HELP tab on the Top Navigation Bar of ALL configuration screens will display a drop down window with information guiding you through each section.

Date and Time Setup

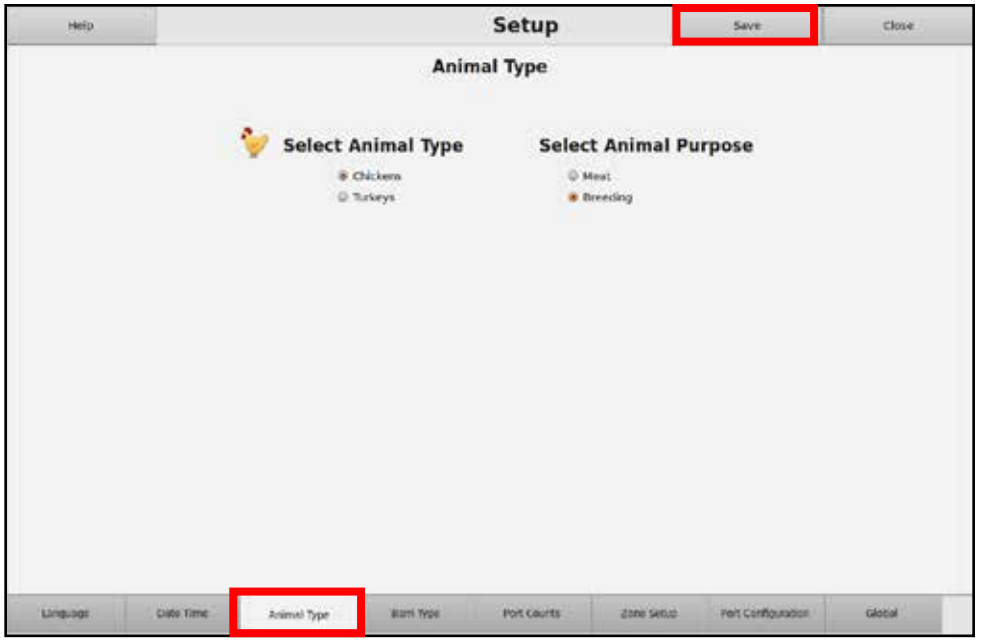
1. Press the **Date Time** tab at the bottom of the screen to set the date and time on the Horizon.
2. To s**et the date**, press the arrows at the top of the screen to set the month and year, and then press a number for the day.
3. To **set the time**, press the Hour and Minute numeric buttons to pop up a screen that allows you to change the values.
4. Once the date and time are set, press the **Set the Date and Time** As Indicated button to save the changes.

Warning: Changing the time and date from this screen can cause problems with any timed operations currently in progress within the program. If you change the time and date from this screen, it is recommended that the Horizon program be shut down and restarted. Another option would be to shut down the program and change the time and date from the Linux operating system.



Animal Type Setup

1. Press the **Animal Type** tab at the bottom of the screen.
2. Press the button next to the **type** of animal in the barn.
3. Press the button next to the **purpose** of the animals.
4. Press the **Save** button at the top of the screen to save any changes.

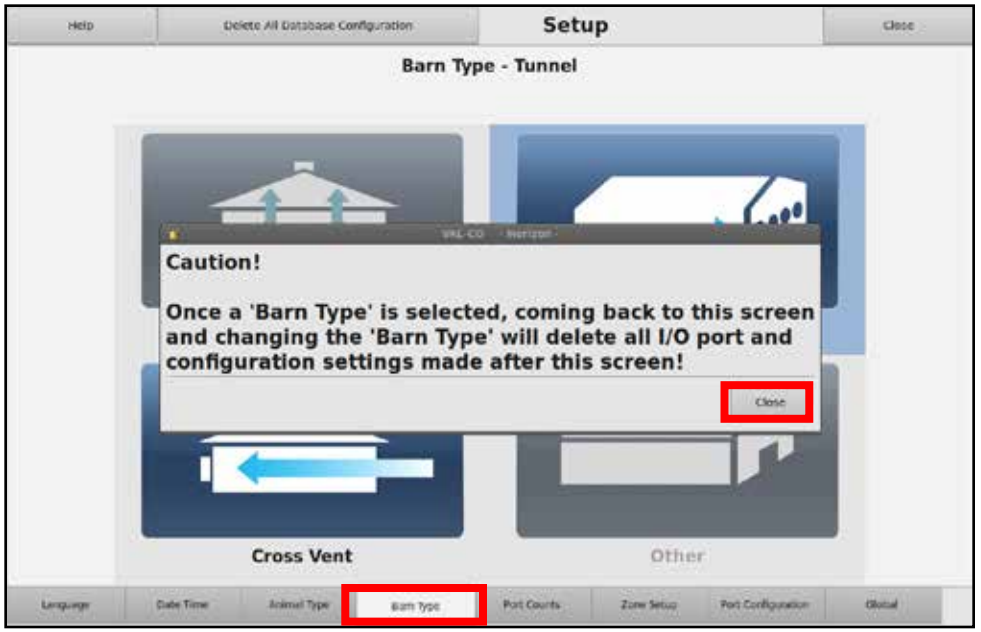


Barn Type Setup

1. Press the **Barn Type** tab at the bottom of the screen.

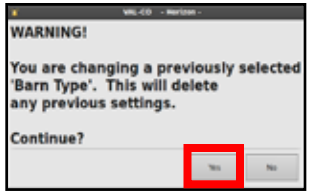
A popup message will appear in front of the new screen warning you that changes to the Barn Type will delete the setup configuration already on the Horizon. You can disregard this warning for now, as nothing has been set up yet.

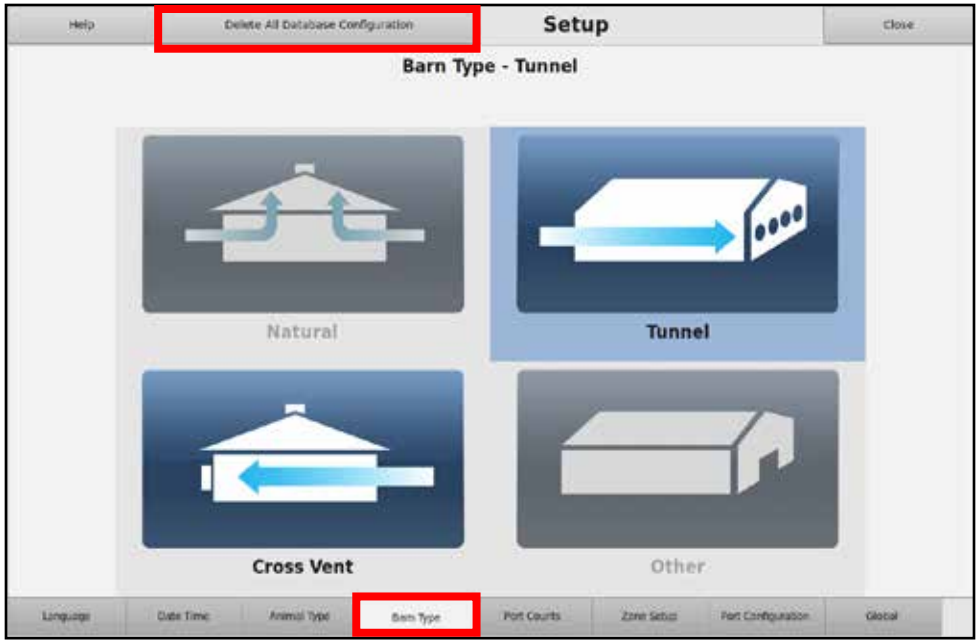
2. Press the **Close** button on the warning message.



©2018 Valco Companies, Inc.

3. Press the picture which best describes the operation of your barn. When you press the icon, a popup will appear with a second warning about changing the **Barn Type**. Press the **Yes** button to save the change and close the message.

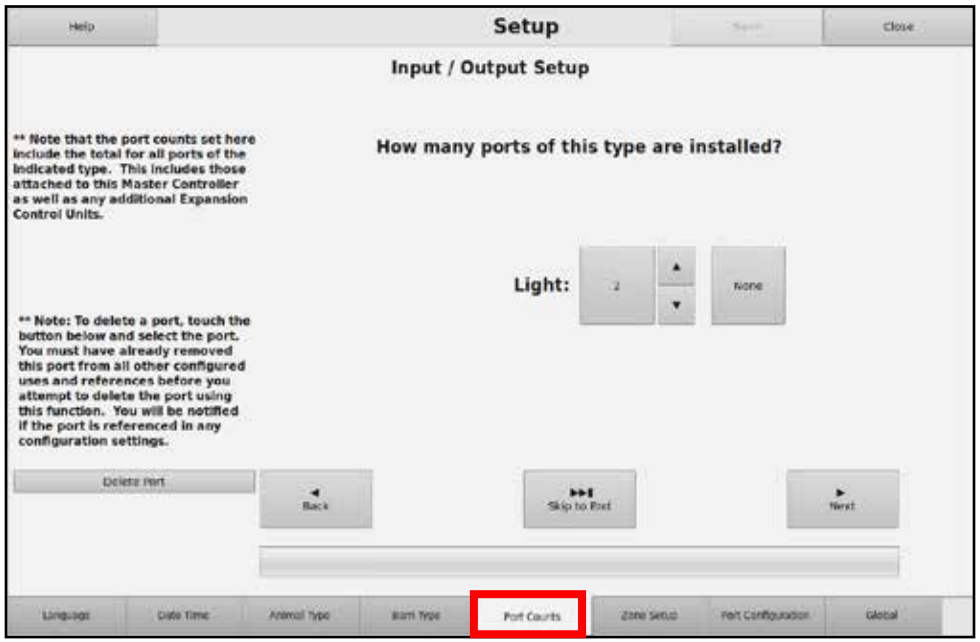




Warning: the Delete All Database Configuration button in the top left corner is for clearing the database and starting completely over. Pressing this button will remove ALL the settings in the program and will not be retrievable.

Port Counts - Input / Output Setup

1. Press the **Port Count** tab at the bottom of the screen to show the Input / Output Setup screens. ***Use the HELP tab is you have questions.***



The Input / Output screens are where you tell the Horizon of all the devices you have in the barn. This includes all the devices in all the zones. At this point in time, you are only entering the total number of each device in the barn. Telling the Horizon what port the devices are hooked up to, and what zone they belong in, will come later in the Port Configuration screens.

2. The following devices can be used with the Horizon

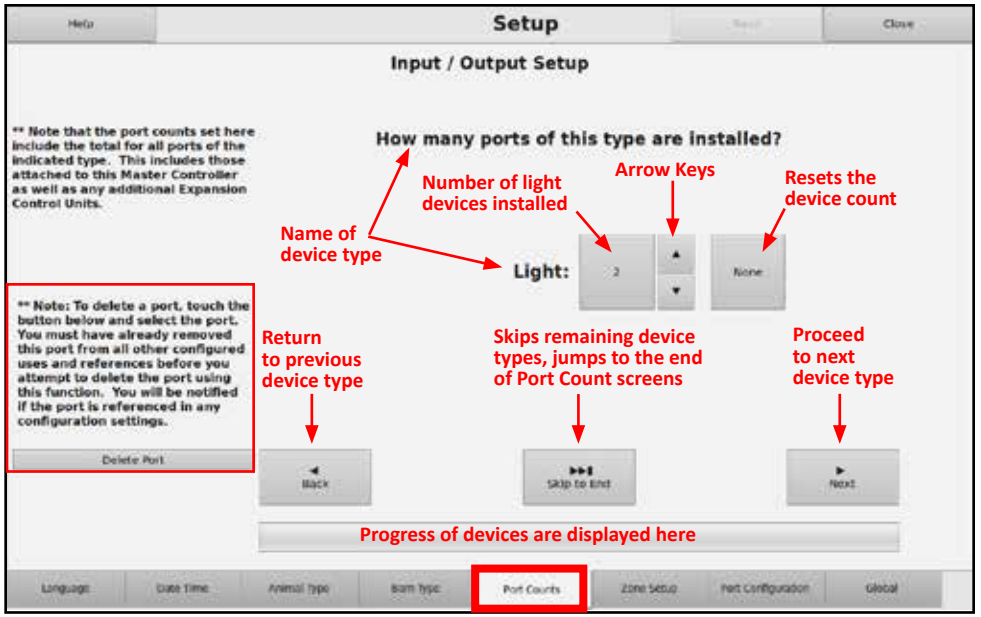
Outputs / Inputs	
Lights, Variable Lights	Temperature – Attic, Outdoor, Indoor, Circuit Breaker
Heaters, Brooders	Windspeed – Outdoor, Indoor
Cool Pads, Foggers	Humidity – Outdoor, Indoor
Feeders (Feeder Control)	Static Pressure
Fans – Tunnel, Sidewall, Stir, Pit, Attic	Feed Motor Current Sensor
Curtains – Tunnel, Sidewall	MinVent Current Sensor
Inlets - Sidewall, Ceiling	Water Meter
Power Monitor	Cooling Compressor

3. There is a separate screen for each type of device mentioned in the rows above, but all the screens work in the same way. The following steps explain the entering of the information for the Light devices. The steps should be repeated for each device type installed in the barn.

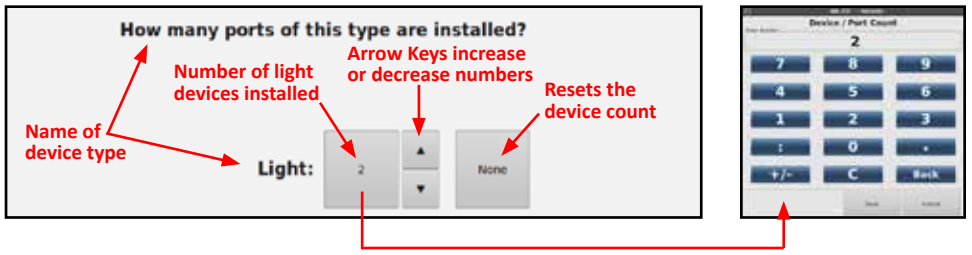
Reminder!
Don't forget to use the HELP tab if you have questions.

4. The name of the device type being entered is displayed on each screen.

5. There are three ways to change the number of each device type.
   - Use the **Arrow keys** to increase and decrease the value.
   - Press the **None** button to reset the value to zero.
   - Press the numeric value itself to pop up a numeric touch pad to enter the value manually.



The following screen images in this column only show the portion of the screen image which pertains to the step on its left. Please compare the screen portions to the image in the previous row above to see where the portion was taken from.

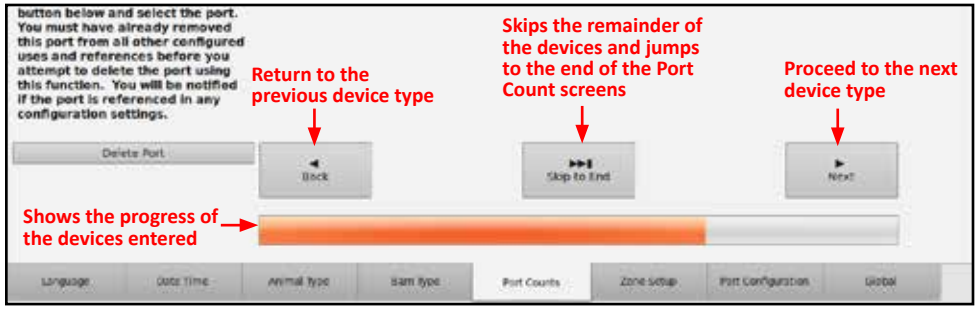


The number of devices entered cannot be lowered below the number of devices which has already been entered and saved. You need to use the Delete Port button, to delete those devices (see below).

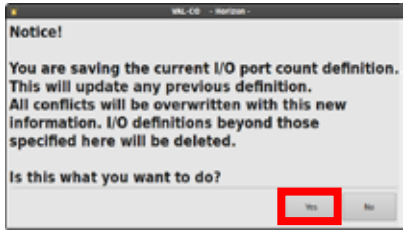
©2018 Valco Companies, Inc.

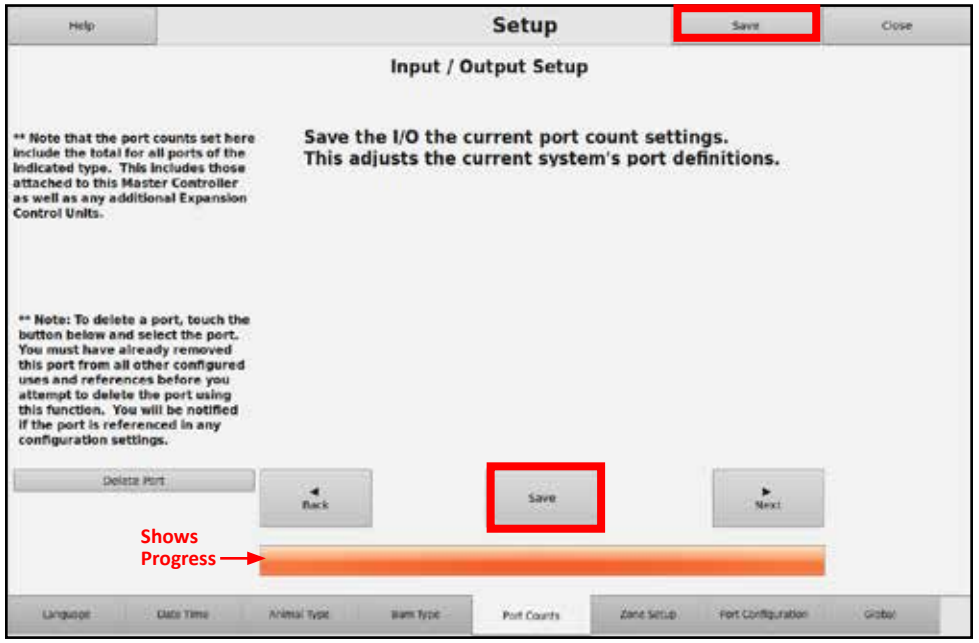
6. To move to another device type, press either the **Back** button, to return to the previous device type, or the **Next** button, to go to the next device type in the list.

7. If you have entered all the devices in the barn, you can use the **Skip to End** button to jump immediately to the last screen of the **Port Count** screens.



8. Once you have entered the counts for all device types in the barn (or you pressed the **Skip To End** button), you will be given the chance to save all the changes you made. Press the **Save** button, and press **Yes** in the confirmation pop up to save the changes.

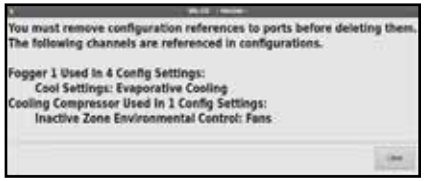




You can also save your changes anytime by pressing the Save button on the top right corner of any of the Port Count screens.

9. The **Delete Port** button is used to remove any devices that have already been set up and saved. When pressed, a pop up window will appear showing all the devices that have been set up.

In order to delete a specific device, that device has to be removed from all other settings (MinVent, Cooling, Zone, etc). When attempting to delete a device that is still being used in one of the other settings, an error message will appear, explaining where the device was found. The reference needs to be removed from that setting, before the device can be deleted.



Zone Setup

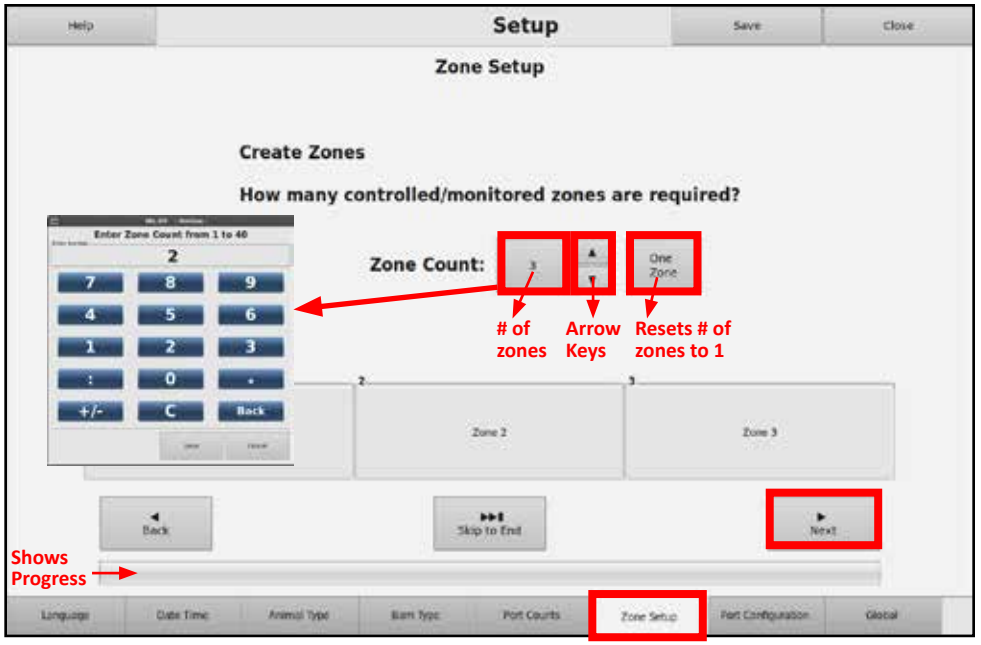
1. Press the **Zone Setup** tab at the bottom of the screen to show the Zone Setup screens.

These screens are used to tell the Horizon how many zones will be used, including nested zones (zones within zones). At least one Zone has to be set up. On the first screen, set the total number of zones to be used. The following screens will allow the setting of which zones, if any, are nested zones.

There are three ways to change the number of Zones:

- Use the **Arrow keys** to increase and decrease the value.
- Press the **One Zone** button to reset the value to 1.
- Press the numeric value itself to pop up a numeric touch pad to enter the value manually.

When the number of zones is set, press the **Next** button to continue with the zone setup.

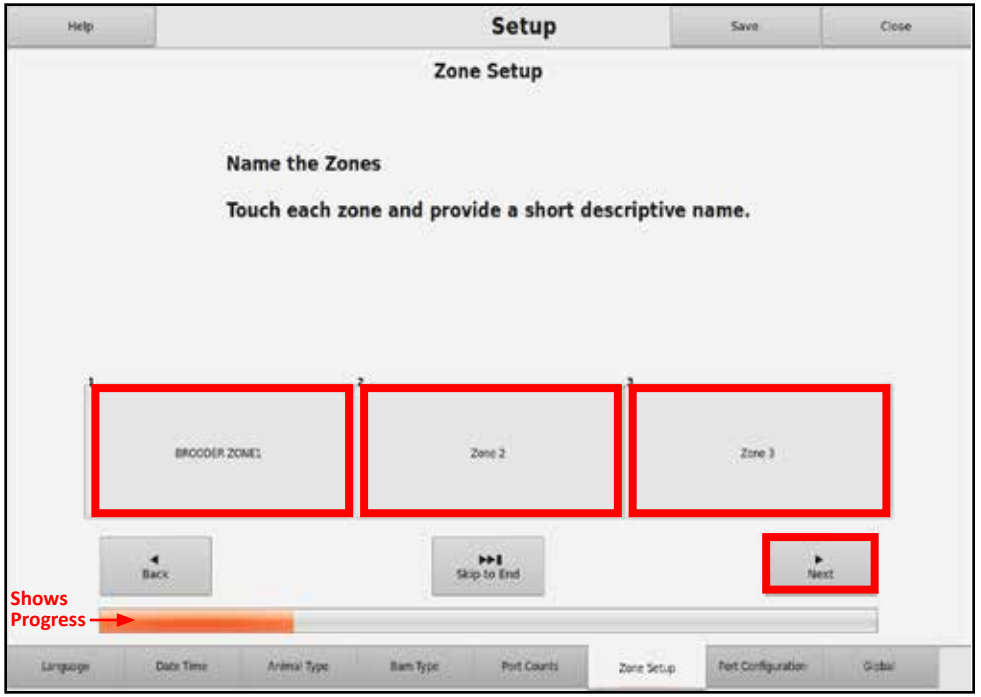


> Once the system is setup and configured, reducing the number of zones will not change any other settings in the system. You will need to return to all the System Configuration settings and verify/change the settings to work with the new zone setup.

2. The second screen of the Zone Setup allows the entering of a descriptive name for each zone using the key pad, which will pop up once you touch each zone. It is these names which are shown throughout the program when changing or setting the current zone. When entering the names, keep in mind that only lower numbered zones can be nested into the higher zone numbers. Example: if there is a Brooder zone within another zone. The Brooder zone needs to be the lower numbered zone.

Press each of the **Zone buttons** to pop up a virtual keyboard to enter a new name for the zone.

Press the **Next** button to proceed to the next Zone Setup screen.

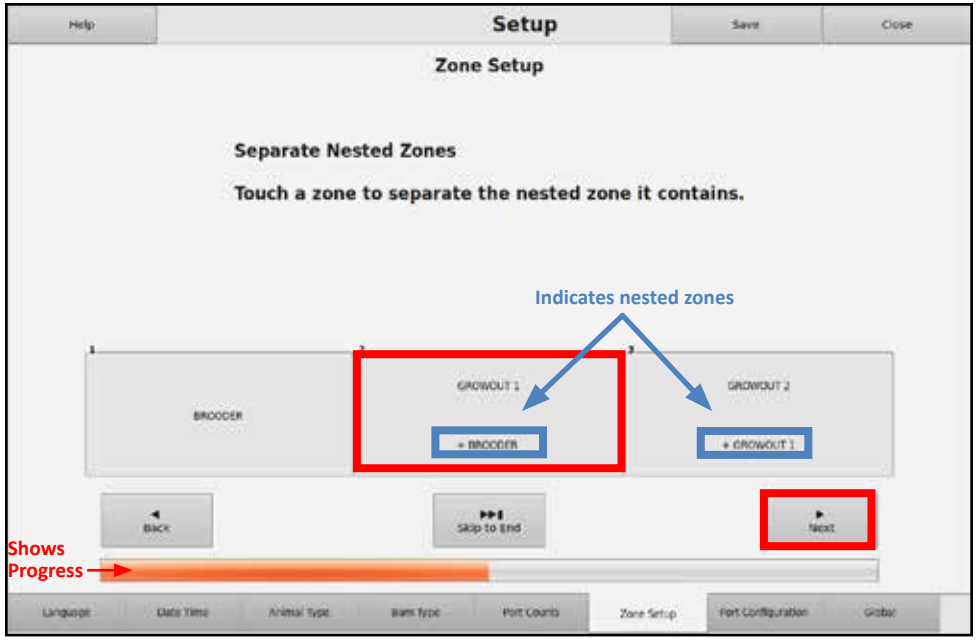


©2018 Valco Companies, Inc.

3. The third screen in Zone Setup is where nested zones can be removed from their parent zones. Press the zone button to separate a nested zone from its parent zone. (Setting up nested zones occurs in the next Zone Setup screen)

Example: the image to the right shows the **Brooder** zone is nested within the **Growout 1** zone, and **Growout 1** is nested within **Growout 2**. To remove the **Brooder** zone from **Growout 1**, press the **Growout 1** button.

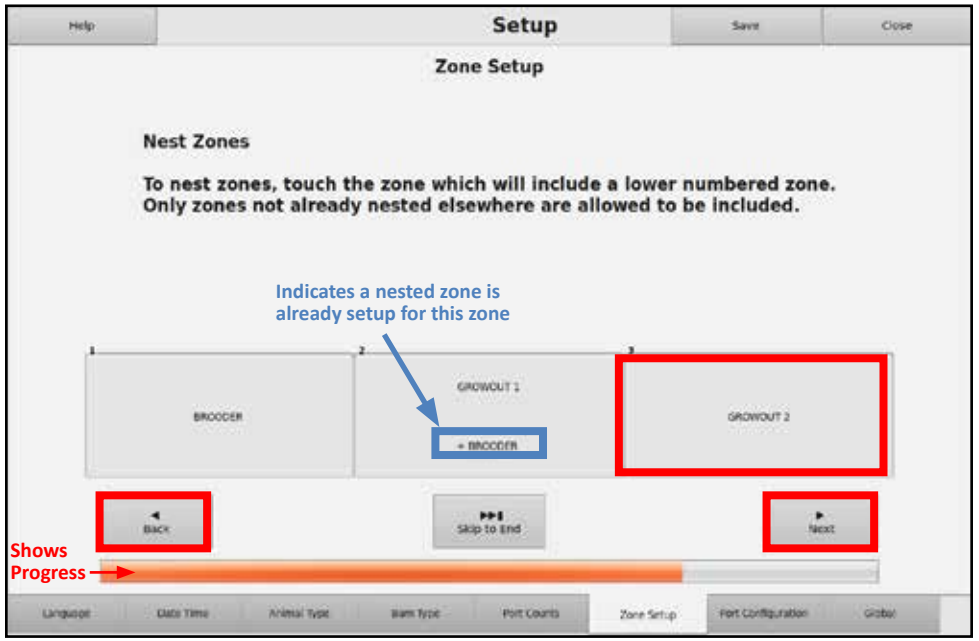
Press the **Next** button to move on to the next Zone Setup screen (Nested Zones setup)



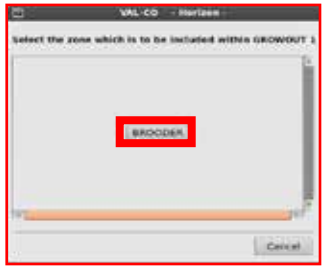
Once the system is setup and configured, changing the makeup of the nested zones will not change any other settings in the system. You will need to return to all the System Configuration settings and verify/change the settings to work with the new nested zone setup.

4. The fourth screen in the Zone Setup is where the nested zones are set up.

Only lower numbered zone can be nested into a zone and each zone can only have one nested zone.



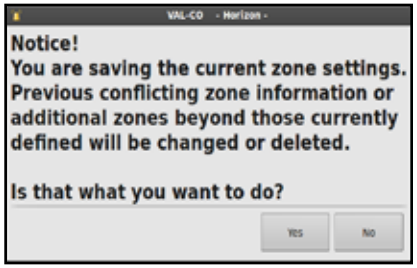
To set up a zone to include a nested zone, press the button of the zone which will be the parent zone. A popup window will appear containing the available zones which can be nested within that zone.



To remove a nested zone, press the **Back** button to return to the **Separate Nested Zones** screen.

Once all the nested zones are set up, press the **Next** button to move to the next Zone Setup screen.

5. The last screen allows the saving of the Zone Setup changes. Press either of the **Save** buttons to save the changes. A Notice message will appear.



Reminder!

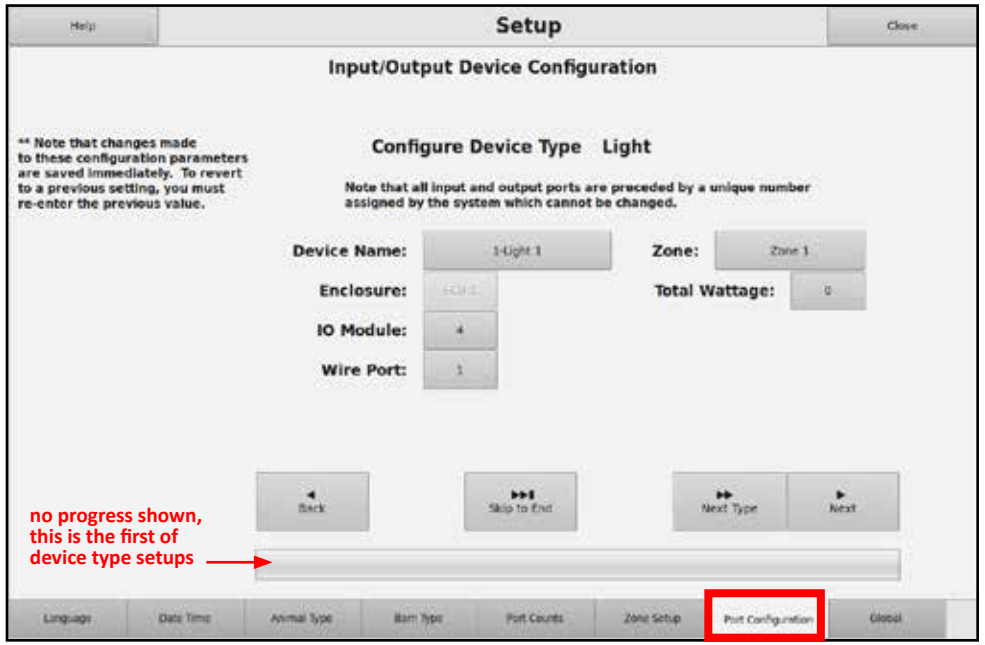
Don't forget to use the HELP tab if you have any questions about how the zone setup works before you save your input.

Port Configuration - Input/Output Setup

1. Press the **Port Configuration** tab at the bottom of the screen to show the Input / Output Device Configuration screens.

The Input / Output Device Configuration screens tell the Horizon what port the devices are wired to, what zone they belong in, and the information the program needs, such as, total wattage, BTU consumption, fuel type, maximum CFM, use for Min. Vent, wear leveling, etc. in order to use the device and provide critical information.

Changes to any values in the Port Configuration screens are saved automatically.



2. There is a separate screen for each device installed, but all the screens work in the same basic way. However, each device will have different information settings based on the information needed for that device.

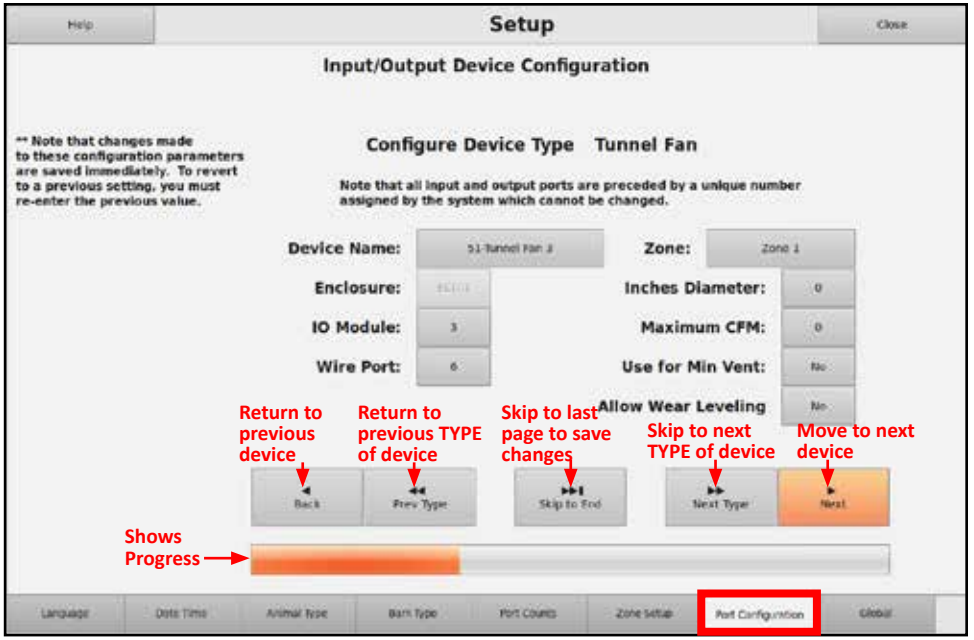
©2018 Valco Companies, Inc.

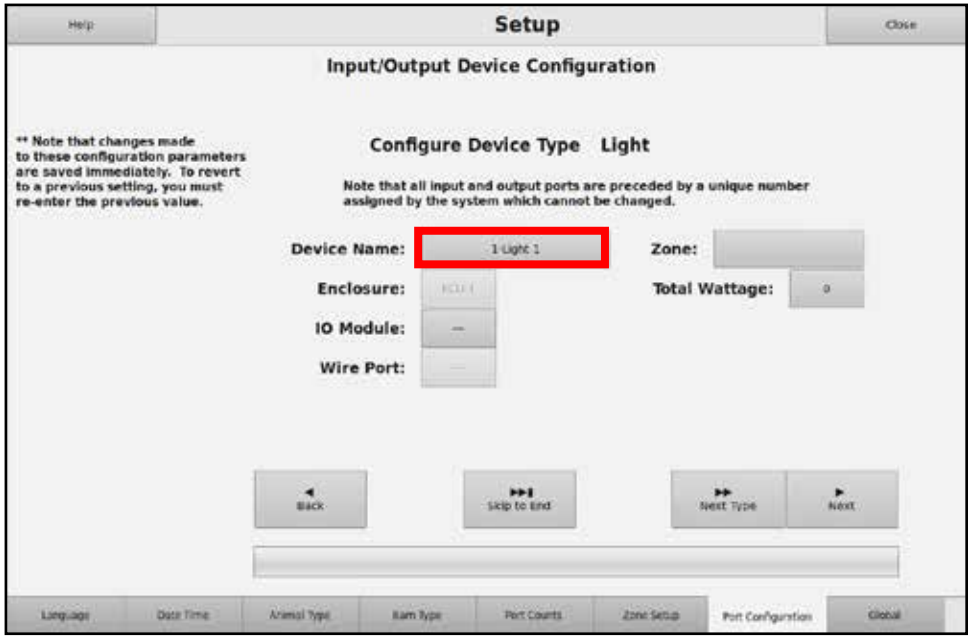
3. The navigation of the **Port Configuration** screens works the same way the **Port Count** screens work. *(Tunnel Fan device examples port information).*
4. To move to another device, press the **Back** button to return to the previous device in the list, the **Prev Type** button to return to previous Type of device, the **Next** button to go to the next device in the list, or **Next Type** button to go to the next device type.

Using the Next Type button will skip the port configuration of any remaining devices of the current type.

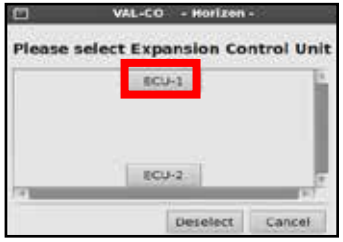
5. If you have entered the configuration of all the devices in the barn, you can use the **Skip to End** button to jump immediately to the last screen of the **Port Configuration** screens.
6. The **Progress Bar,** at the bottom of the screen, shows how far you have navigated through the **Port Configuration** Screens, and gives you an idea of how many more devices are left to set up.
7. The following are the basic steps to set the port information for each device. These steps need to be repeated for each device.
8. Press the **Device Name** button to change the device's name to something meaningful such as, output number with type (example: 41-Ceiling Inlet). A virtual keyboard will appear to make the change. Press the Save button to save the new name.

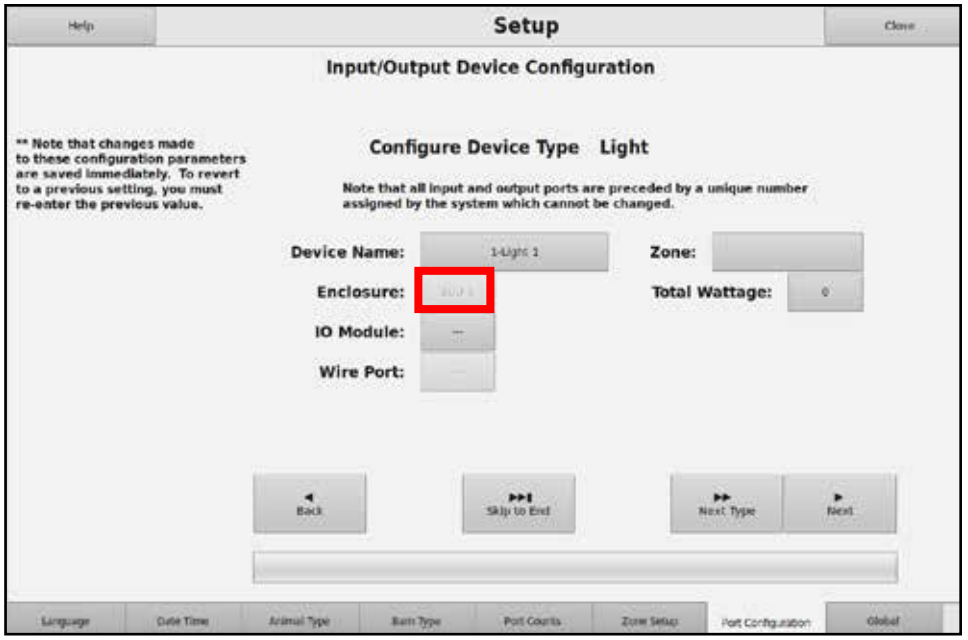
The number in front of the name is a special number assigned to the device by the program, is used by the program internally, and cannot be changed. This number will not appear on the keyboard.





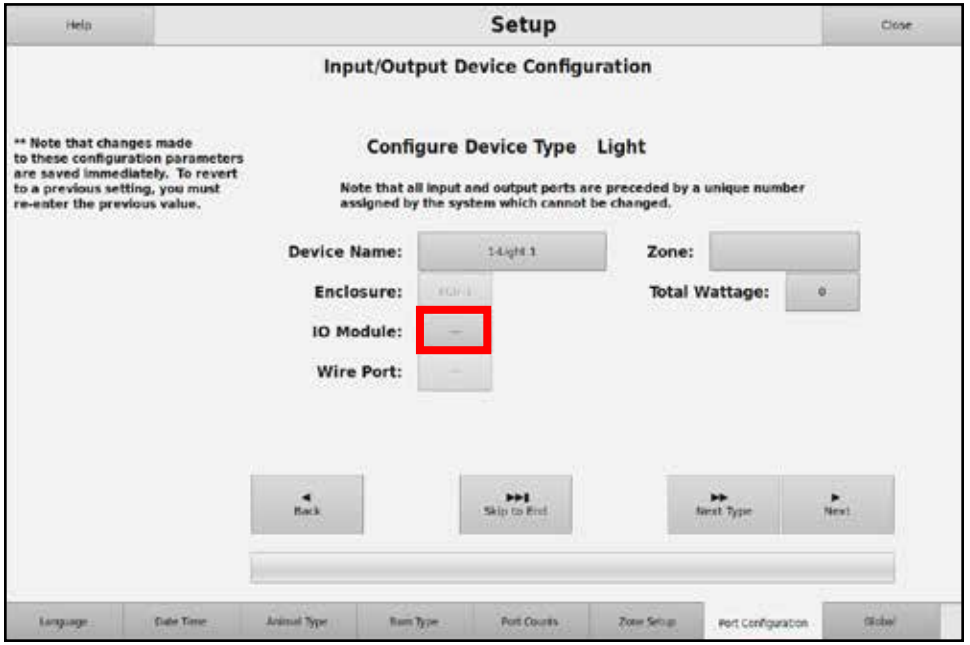
9. Press the **Enclosure** button to select which button (main or expansion) the device is wired into. A window will pop up showing the enclosures available. Press on the desired enclosure to select it and close the window. If only one enclosure is available, this button will default to that enclosure and the **Enclosure** button will be disabled. *Use the Help tab for information on Setup.*





10. Press the **IO Module** button to select which board in the enclosure the device is wired to. A window will pop up showing the available boards. Only boards the device will work with are available. All other boards will be grayed out. Press the desired board to select it and close the window.

The small arrows show the currently selected board if it had been set up previously.



©2018 Valco Companies, Inc.

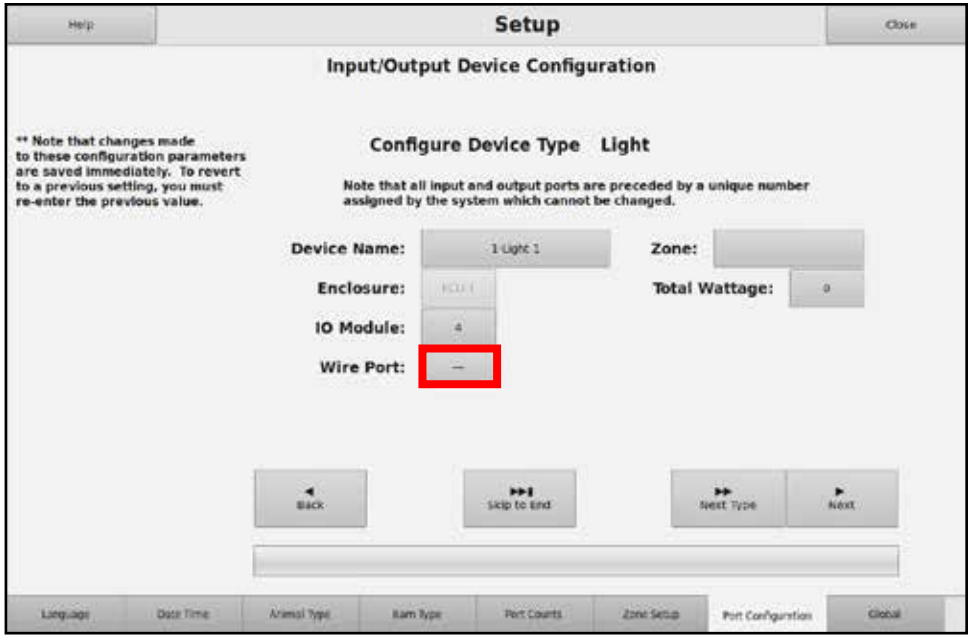
11. Press the **Wire Port** button to select which port of the IO board the device is wired to. A window will pop up showing the available ports. Only ports the device will work with, and are not being used by another device, are available. All other ports will be grayed out. Press the desired port to select it and close the window. Note: the small arrows show the currently selected port.

In this scenario, there are two (2) choices.

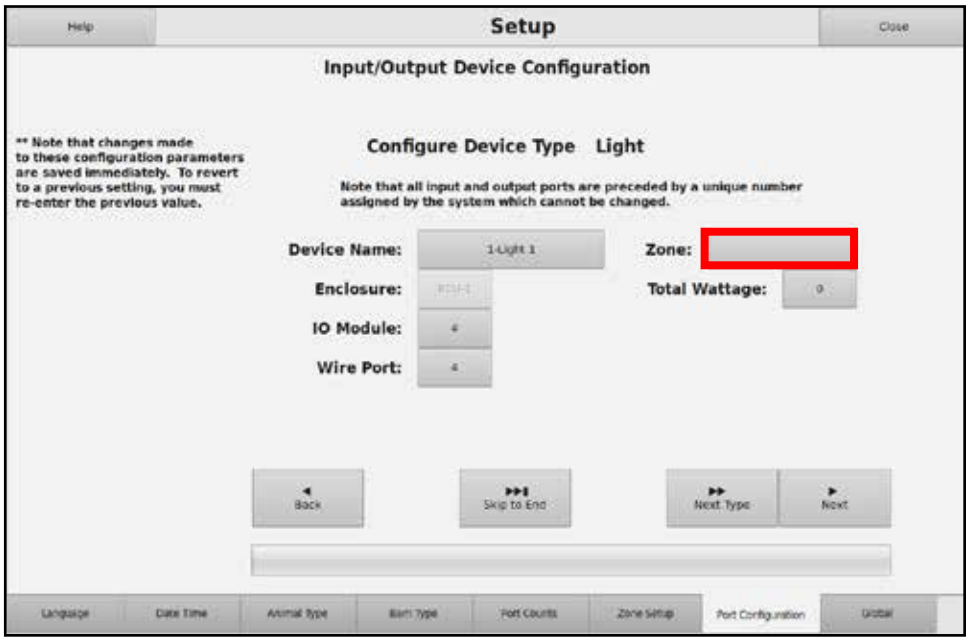
Reminder!
Don't forget to use the HELP tab if you have questions.

12. Press the **Zone** button to select which zone the device should belong to. A window will pop up showing the available zones. Press the desired Zone to select it and close the window. FYI: if only one zone is set up, the **Zone** button will default to that zone and the **Zone** button will be disabled.

When using nested zones, select the lowest nested zone the device is to be used in when configuring the device. Any devices configured in a lower nested zone are available in the higher parent zones. Optimally, all devices should be configured in the lowest nested zone. The exceptions here would be temperature sensors and heaters that are needed to monitor and heat the higher zones when they are inactive, and any devices that will never be used in the lower nested zones.



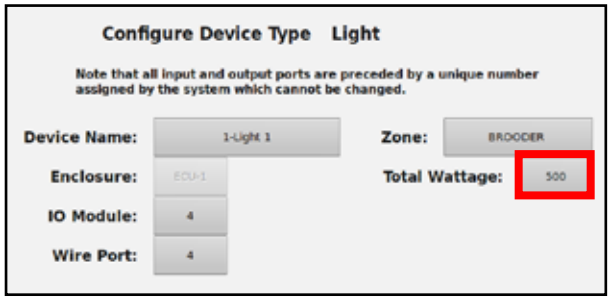
You cannot set the Zone value for the Outdoor devices. These devices are used by all the zones and the Zone button will display "Global Outdoor".



13. The following steps explain the additional property (information) settings of each type of device. Each step will list which device type the properties belong to. Unless mentioned otherwise, to change the setting in these steps, press the property button to pop up a numeric window to change the value. Press the number keys to enter the value, then press the **Save** button to save the value and close the window. *(The examples used below and on the following pages are a partial Setup screen.)*

Lights and Variable Lights

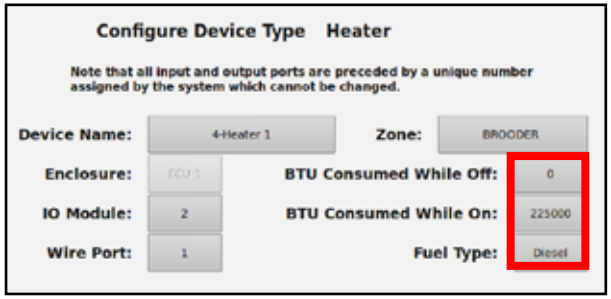
13.1 For this type of device, enter the total wattage used by this particular device. This value is used to determine the percentage of lights on in the Main Menu.



Heaters, Brooders

13.2 For these types of devices, enter the BTUs of the device, as well as the type of fuel the heating unit uses.

BTUs Consumed while off is for the gas usage of the pilot light. **BTUs Consumed while on** is for the gas usage when the device is running.



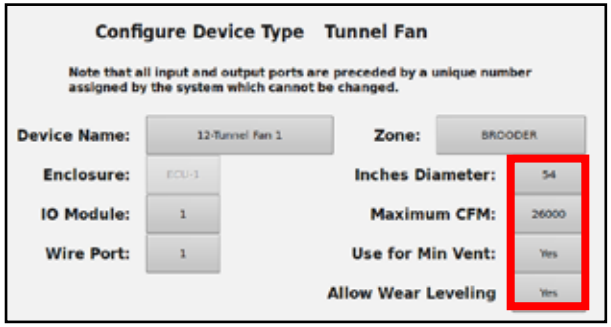
Fuel Type can be set to Propane, Natural Gas, Diesel, or None.

Cool Pads, Foggers, Stir Fan, Outdoor Windspeed and Air Speed Sensor

13.3 There are no additional properties for these types of devices.

Fans – Tunnel, Sidewall, Pit, Attic

13.4 For these devices, enter the size of the fan, rated CFM of the fan, and if the fan should be used during the Minimum Venting phase of the program. Pressing the **Use for Min Vent** button will alternate the setting between Yes and No.



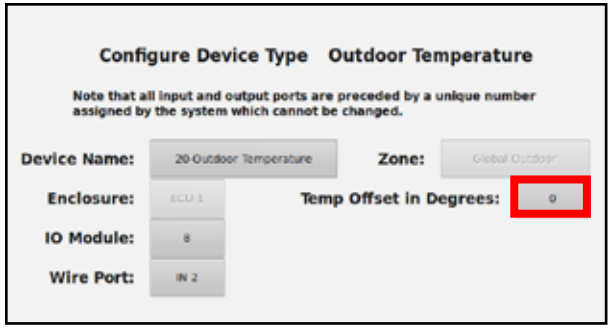
Attic Fans cannot be used for MinVent.

The Tunnel Fan has an additional setting, Allow Wear Leveling, which is used to indicate the fan is to be used in the Tunnel Wear Leveling feature.

©2018 Valco Companies, Inc.

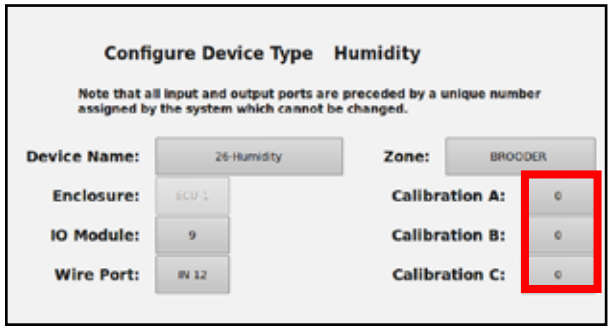
Temperature Sensors – Attic, Outdoor, Temperature (inside), Circuit Break

13.5 The **Temp Offset in degrees** setting is used to adjust the reading of the sensor to better match the actual reading at the sensor's location.



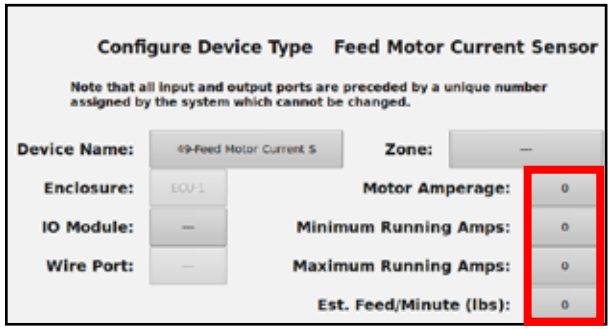
Static Pressure Sensor, Humidity Sensor (Indoor and Outdoor)

13.6 For this type of device, the three calibration values are used to adjust the sensor for accuracy. *(If needed, call VAL-CO® Service for the values to use here.)*



Feed Motor Current Sensor and MinVent Current Sensor

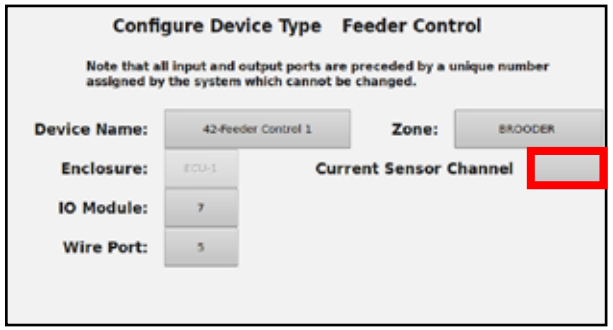
13.7 For these types of devices, set the **Motor Amperage**, **Minimum Running Amps** and **Maximum Running Amps** of the device.

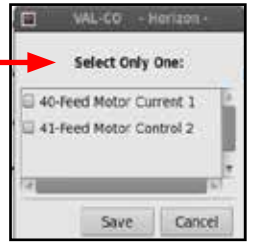


For Feed Sensors, set the number of pounds per minute the feed system will deliver. This is used to estimate the feed usage displayed on the Main Menu, the Animal Stat screen, and the Feed Sensor History screen

Feeder Controls

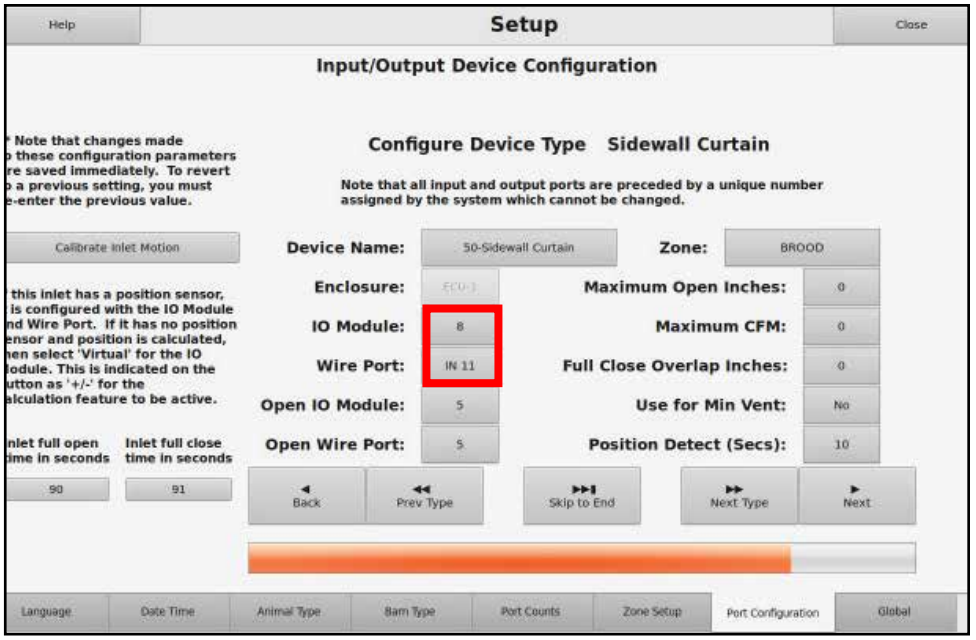
13.8 For these types of devices, if there is a Feed Sensor used to monitor the motor runtimes, press the button and a selection window will appear. Check the Feed Sensor which is monitoring this feeder





Curtains and Inlets

13.9 The setting of the port information for Curtains and Inlets is handled slightly different than the other devices. The **Enclosure**, **IO Module** and **Wire Port** values are set to the input port where the Position Sensor of the device is attached to. If no Position Sensor is used, set the **IO Module** to Virtual (The IO Module button will show +/- and the **Wire Port** button will be disabled).



The **Open IO Module** and **Open Wire Port** values are set to the output port of the Open relay of the device. Since these devices use two channels, only the odd numbered ports are available for selection.

The wire used to open the curtain/inlet needs to be wired to an odd numbered relay, with the next even numbered relay used for the wire to close the device.

Curtains – Sidewall, Tunnel, Inlets – Sidewall, Ceiling
These devices have the following settings:

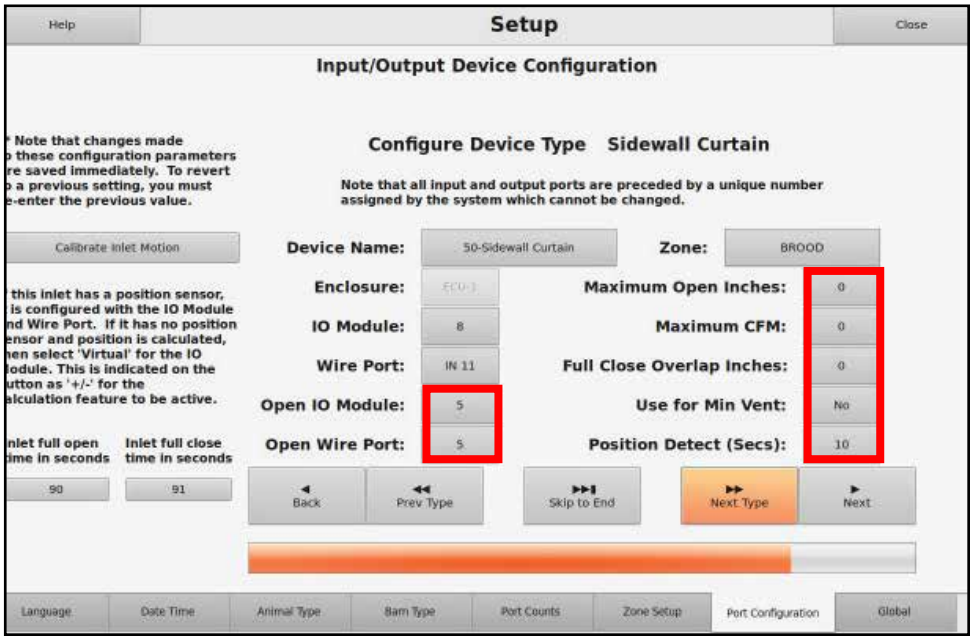
Maximum Open Inches: opening size when device is fully open.

Maximum CFM: number of CFM when device is fully open.

Full Close Overlap Inches: number of inches of overhang before the device is considered to have started opening.

Use for Min Vent: Yes or No: use for minimum ventilation. Note: Tunnel curtains cannot be used for MinVent.

Position Detect (Secs): number of seconds to wait for the position sensor to change readings before activating the "Position Sensor not moving" alarm.



Once all the properties are set and saved, the device needs to be calibrated. Proceed to the Calibrate Inlet section below to perform the calibration.

©2018 Valco Companies, Inc.

Calibration of curtains/inlets/vents

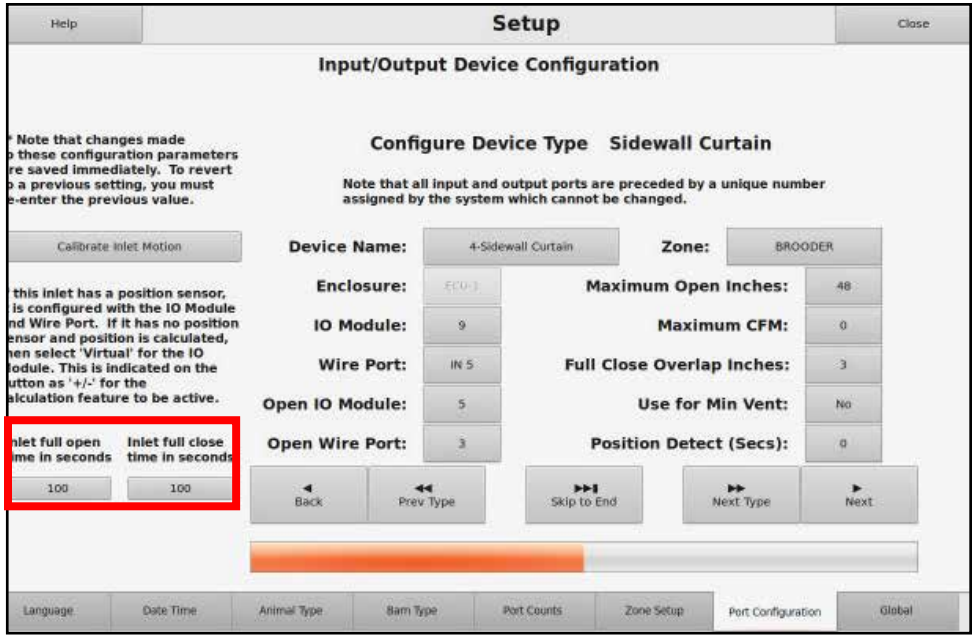
13.10 There are two ways to calibrate curtains and inlets if a Position Sensor is not being used.

When No Position Sensor is used - Manual Calibration

The first way involves entering the Open and Close travel times manually. *Only use this method if the exact travel times of the device are known and a Position Sensor is not being used with the device.*

To manually enter the travel times, press the buttons in the lower left of the screen and enter the exact number of seconds it takes to go from fully closed to fully open and back closed.

Reminder!
Don't forget to use the HELP tab if you have questions.



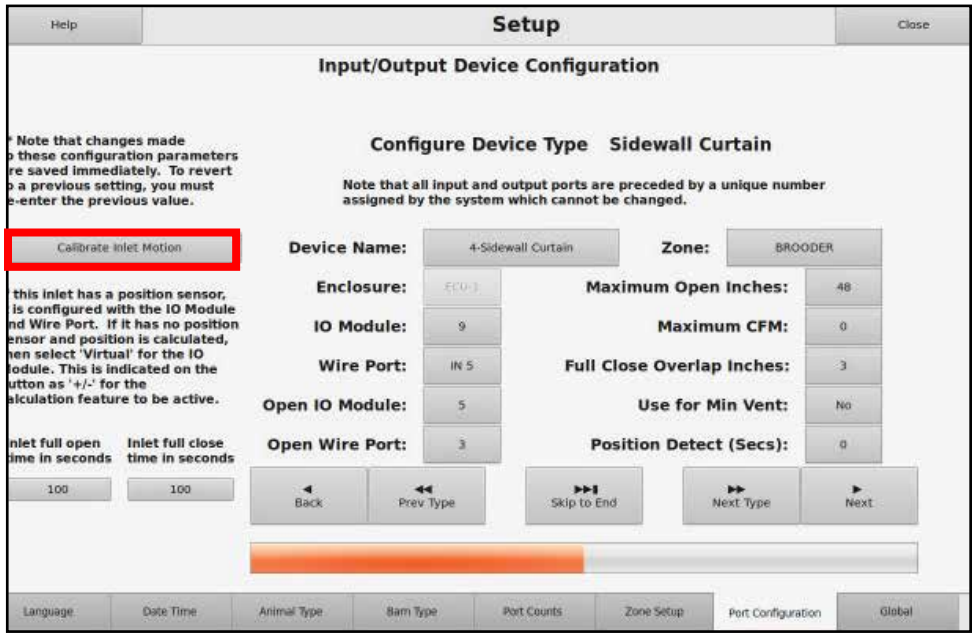
The second method to calibrate the curtains and inlets when no position sensor is being used, is by allowing the program to calculate the times.

This calibration process is a three step process:

1. Closes the inlet fully to start the process.
2. Opens the inlet fully to time the opening of the inlet.
3. Closes the inlet fully to time the closing of the inlet.

Note: As explained in the steps below, steps 2 and 3 require immediate attention.

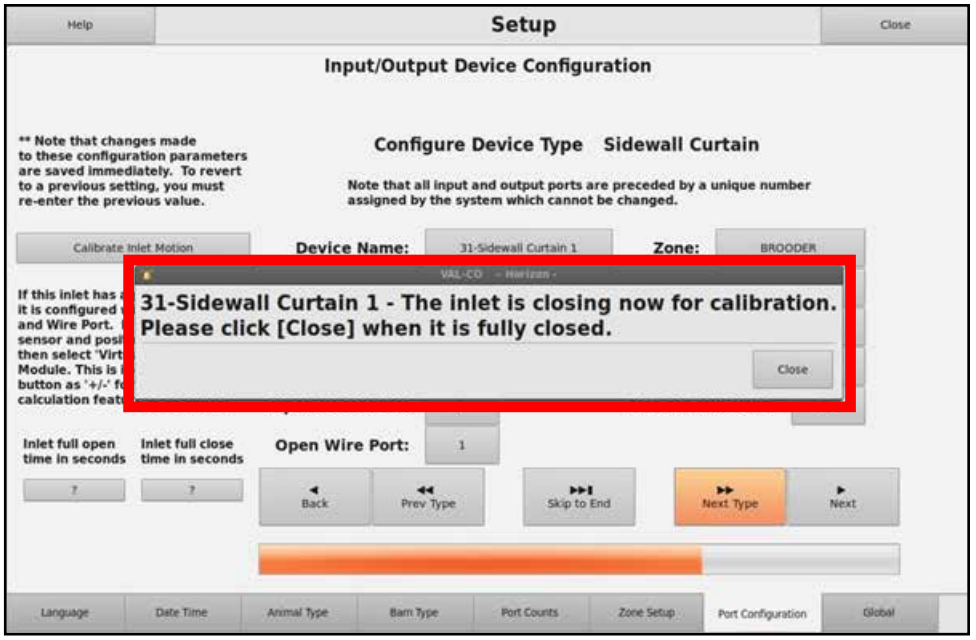
To start the calibration process, press the **Calibrate Inlet Motion** button on the left hand side of the device's screen. *(Continue to next page for further instructions.*



If this is the first time the system is being set up, it may take a minute for the calibration dialog window to appear after pressing the Calibrate Inlet Motion button, as the system has to initialize the output boards before running the calibration.

1. When the Calibrate Inlet Motion button is pressed, a pop up window/dialog box will appear and the device will start to close. When the inlet is completely closed, press the Close button.

2. The device will start to open. Observe the device and when it is open completely, immediately press the Close button.



3. The device will start to Close. Observe the device and when it is completely closed, immediately press the Close button.

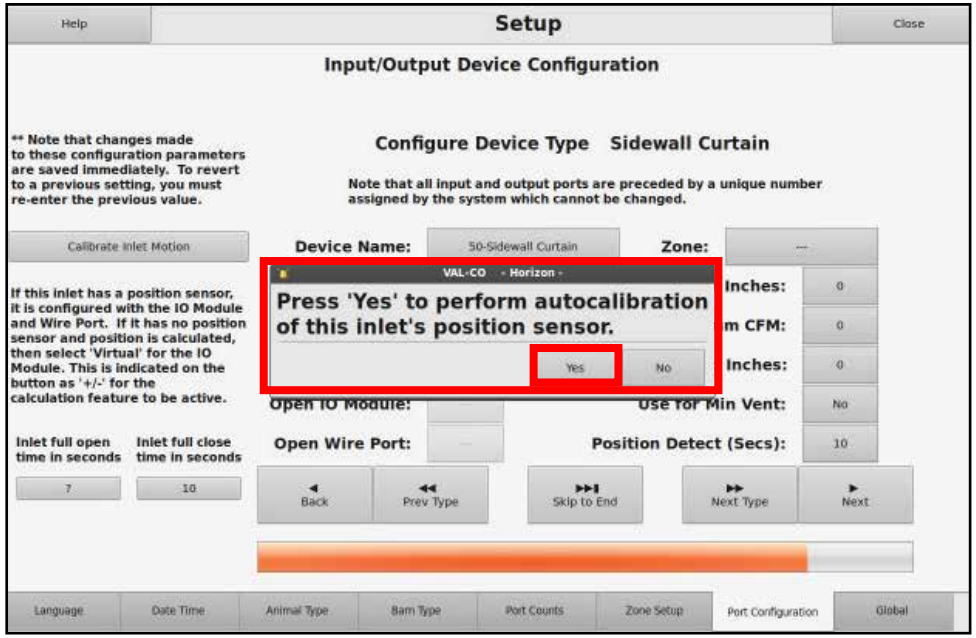
If the inlet fails to move, or the total movement is under 10 seconds, the calibration will fail.

When the calibration is finished, the message will appear with the calculated travel times

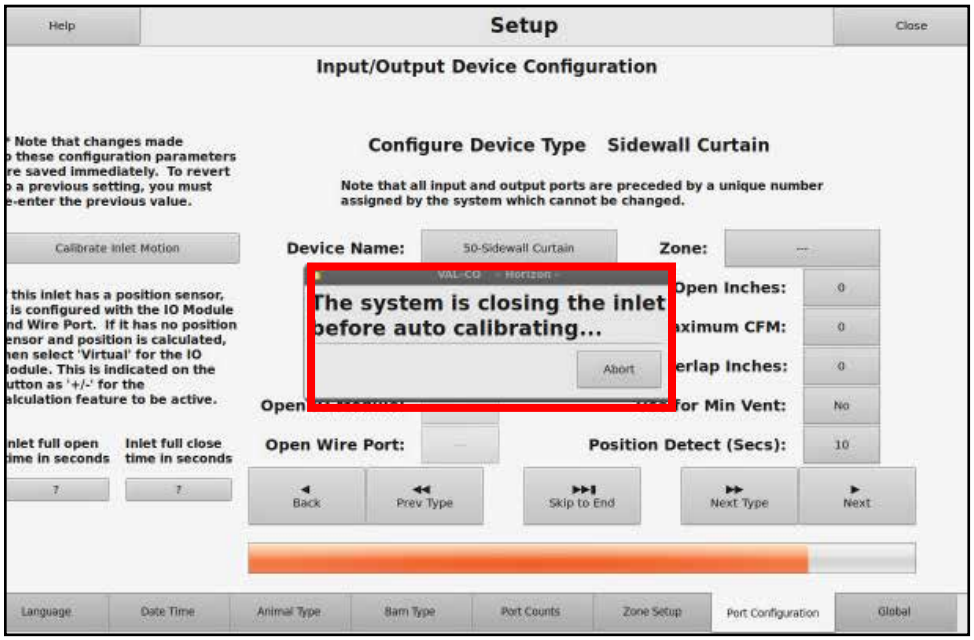
©2018 Valco Companies, Inc.

When A Position Sensor is used - Automatic Calabration

When a Position Sensor is attached to the inlet or curtain, the calibration process is similar to the second option above, but the process is automatic. When you press the Calibrate Inlet Motion button, a popup window will appear asking for confirmation to perform the calibration. Press Yes to continue with the calibration process. (Example at top right.)



1. The System will close the inlet before calibrating, example below.



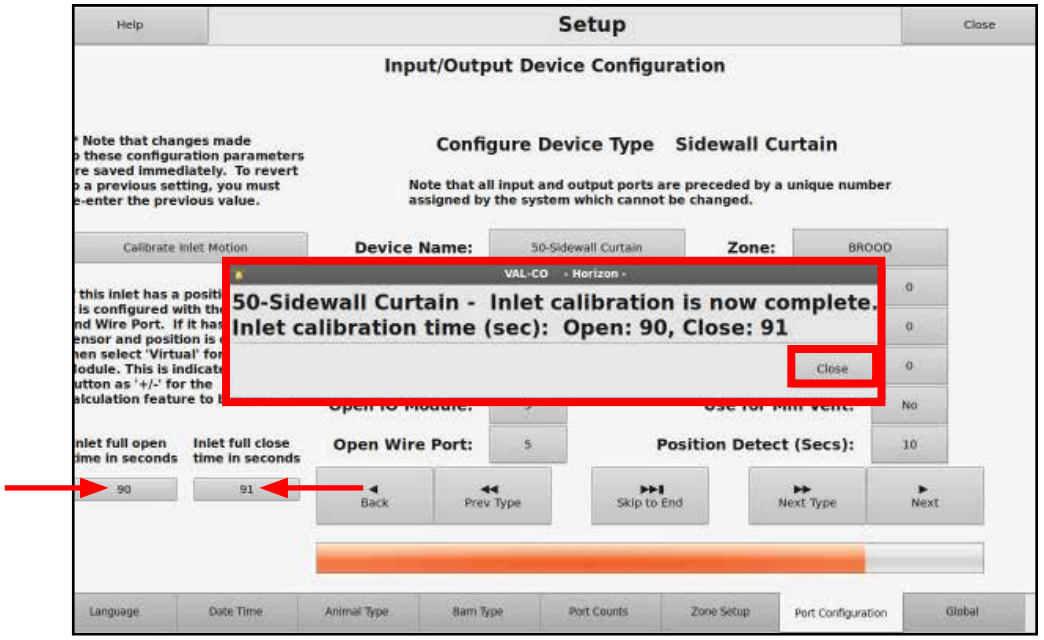
2. System will open the inlet fully while timing the opening, as shown to right.

3. The Inlet will close fully while timing the closing, as shown to right.

4. When completed, a message will appear showing the calculated travel times.

When the process has the inlet fully closed and fully open, it takes 15 seconds to verify the inlet has reached its limits, so be patient and do not press the Abort button to soon.

5. Press the Close button to continue to set up other devices.

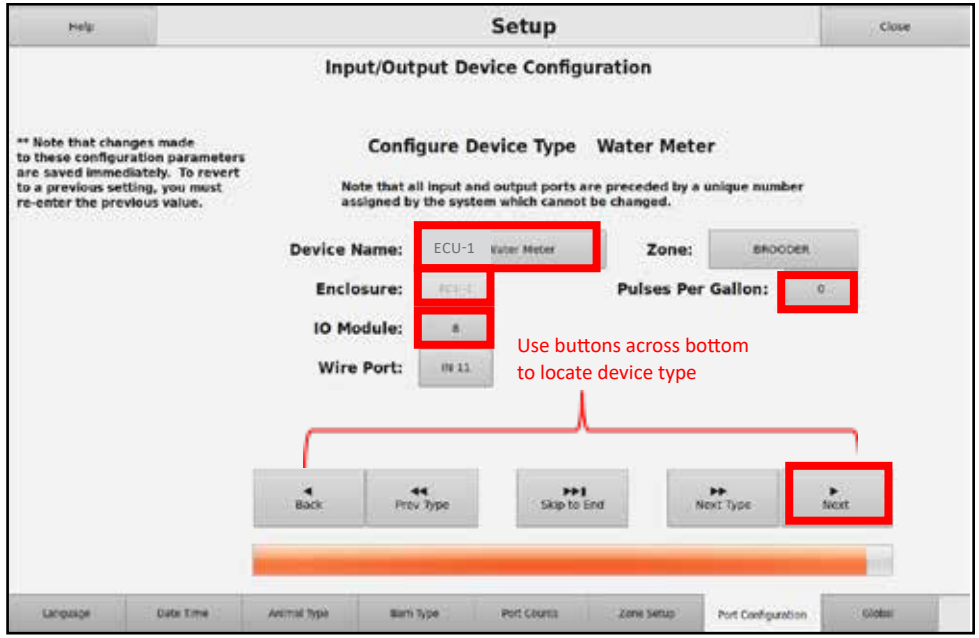


Once the calibration is done, the buttons in the lower left will display the travel times.

©2018 Valco Companies, Inc.

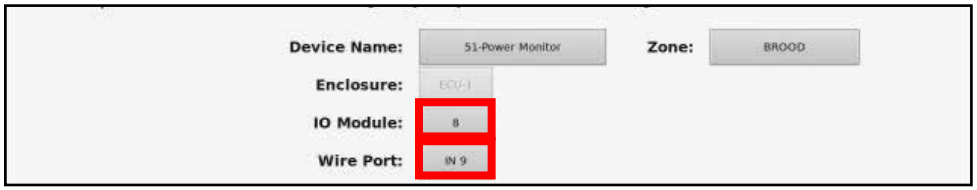
Water Meter Sensor

This device is used to calculate the water useage based on the pulses per gallon. Enter the **Pulses per Unit** value. This value should have come with the device. (Example at top right.)



Power Monitor

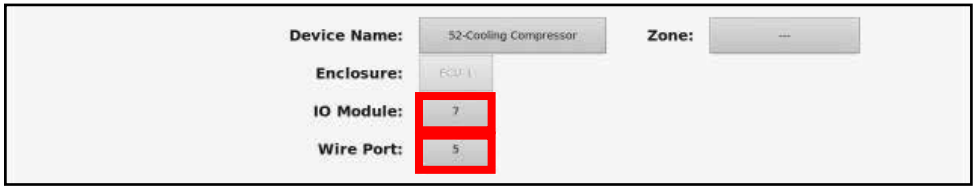
This device is used to create an alarm if the power fails. It provides a way to monitor the power in the building when the Horizon is connected to a Power Backup system, such as a Universal Battery Backup unit. (Example below)



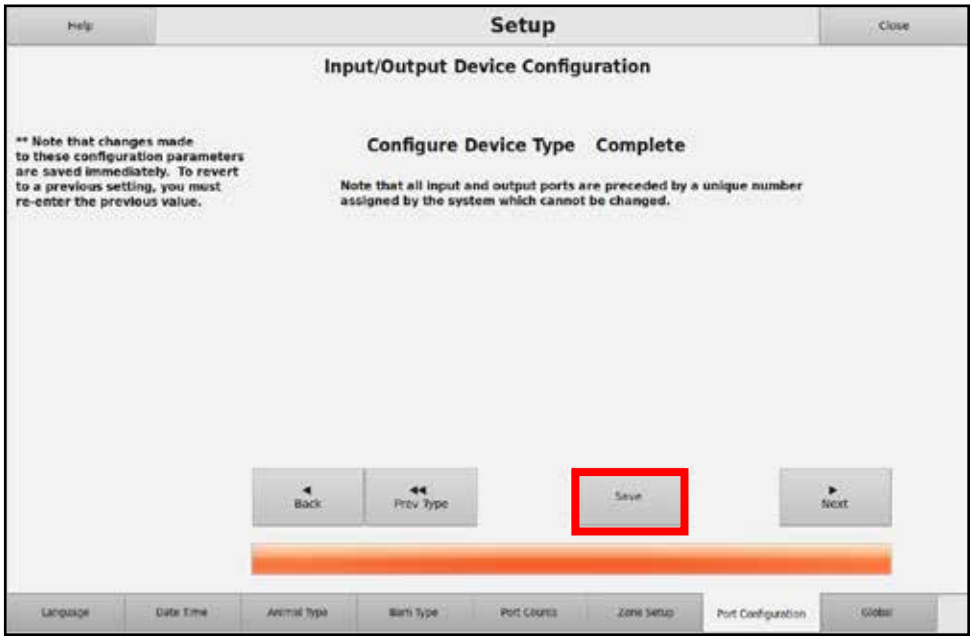
The input connection is usually attached to a device that will provide a closed circuit when power is applied to it. If the power is removed from the device, the circuit will open and break the connection to the input connection on the Horizon. If the circuit stays open for the "Power Failure" time interval set in the Alarms section, the Horizon will activate the selected alarm relay.

Cooling Compressor

This device is used to control the cooling compressor for refrigerating units, as well as other devices, where turning the device on and off quickly can cause damage to the device. Once this device is turned off, it will remain off for the time interval set in the Global settings before it will turn on again. (Default is set to 5 minutes, example below).

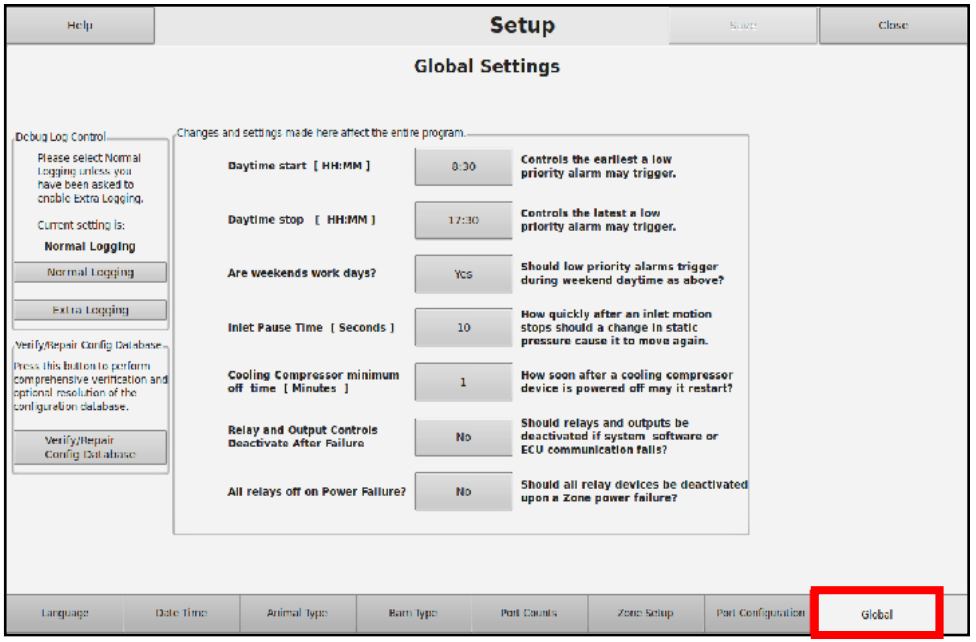


Once you have entered the properties for all the devices (or you pressed the **Skip To End** button), you will be given the chance to save all the changes you made. Press the **Save** button. (Example at bottom right.)



Global - Setup

Press the **Global** tab at the bottom of the screen to show the Global Settings screen.



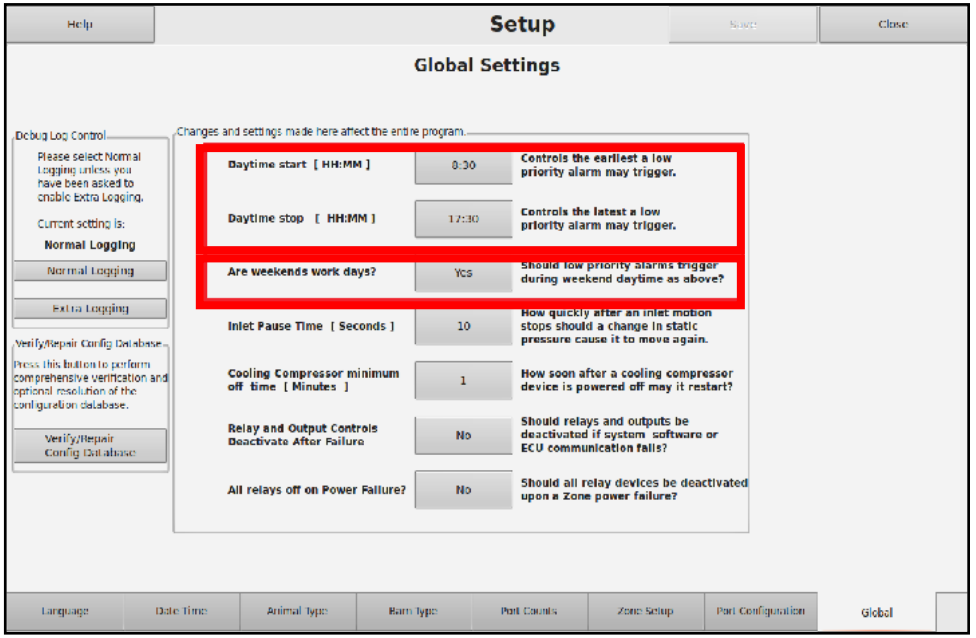
The Global Settings screen contains settings that are used throughout the program.

When pressing the button next to each selection, a pop up window/ dialog box will appear to set the values, otherwise, when you press the button it will give you a yes or no choice.

Each pop up window had selection title

Daytime Start and **Daytime Stop** – These settings tell the Horizon® what time of day is considered daytime and what is considered night time. This is used in places such as alarms when the alarm relay should only be activated during the day.

Are weekends work days? – Set this to Yes to have the daytime hours during the weekends considered as times the alarm relay can be activated for low priority alarms.



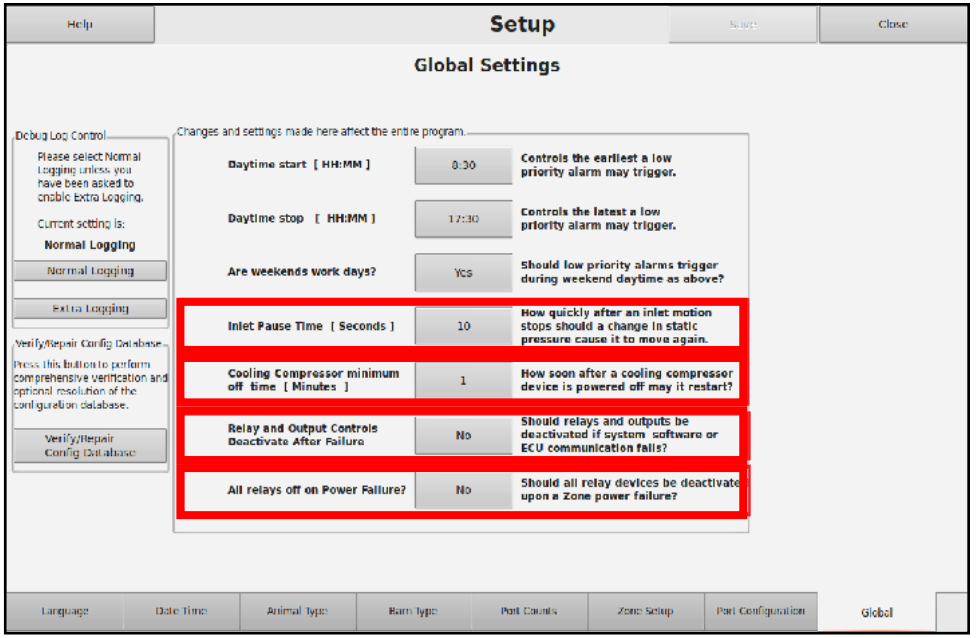
©2018 Valco Companies, Inc.

Inlet Pause Time – Set the number of seconds the static pressure controlled inlets and curtains have to be stopped before moving again. This helps prevent unneeded movements due to sudden, temporary changes in the static pressure due to things like the wind, or the opening/closing of doors.

Cooling Compressor minimum off time – Set the number of minutes a cooling compressor will wait before it starts up again once it is powered down. This prevents the compressor from turning on and off rapidly, possibly causing the compressor to burn out.

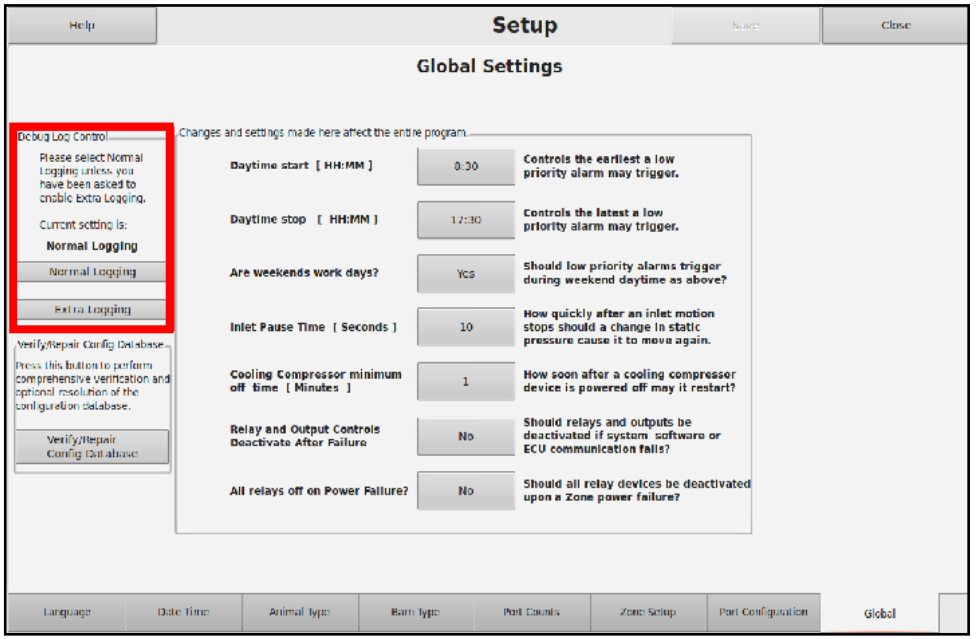
Relay and Output Controls Deactivate After Failure - If set to Yes, causes the output relays to turn off when the Horizon program stops communicating to the relay box. This can be due to a power failure to the main processor, but not the IO box, or a broken communication wire. If set to No, the output relays will remain at their last on/off state.

All relays off on Power Failure - If set to Yes, when a Power Monitor indicates a power failure, the Horizon will tell all the output relays to turn off. If set to No, the Horizon will continue to turn on and off the output relays based on the sensor inputs. Setting this to Yes will prevent the starting of the output relays all at once when power returns.



This is an exact temperature and not an offset of the zones setpoint.

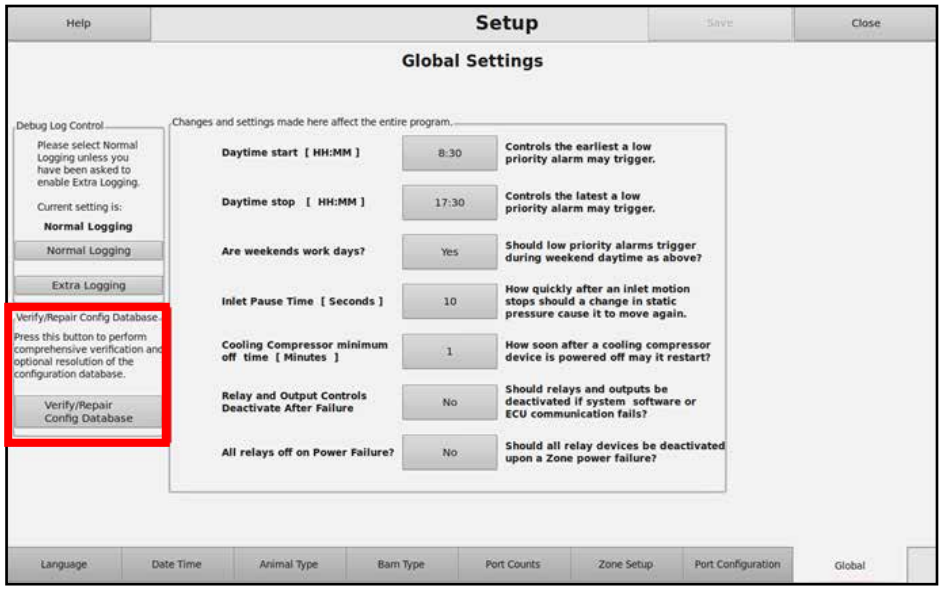
Debug Log Control – This box is used to help determine what is causing certain problems with the controller. Unless told by VAL-CO support, the setting should be at Normal Logging. When requested by VAL-CO support, press the Extra Logging button to increase the debug logging levels. Once the problem has re-occurred, press the Normal Logging button again to minimize the size of the debug files. At this point, VAL-CO support will ask you to use the Exporting features in the Data File Operations screen to export the log files, and inform you how to send them to Val-co for diagnostics.



After seven days, the logging will automatically return to Normal Logging. To continue to log the extra information, the Extra Logging button will have to be pressed again. Extra logging should only be used when needed. Continued use of extra logging can cause the system to fill the hard drive and slow the system down.

Verify/Repair Config Database – Pressing this button will allow the checking of the database settings to see if there are any items that need attention. If there are problems with the system, the first step is to use this feature to determine what, if anything, needs to be fixed.

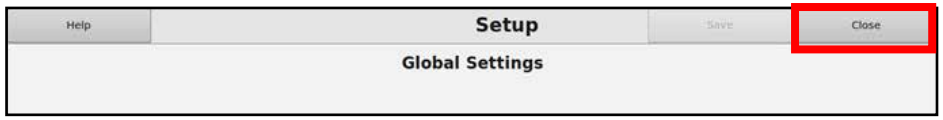
When you press the button, the following popup message appears. Pressing the **YES** button will try to fix any problems found by the verification process and display a window with the problems found and what the program did to try to fix the problem. Pressing the **NO** button will simply display the problems found, but will not change anything in the database. It will be up to you to fix any remaining problems.

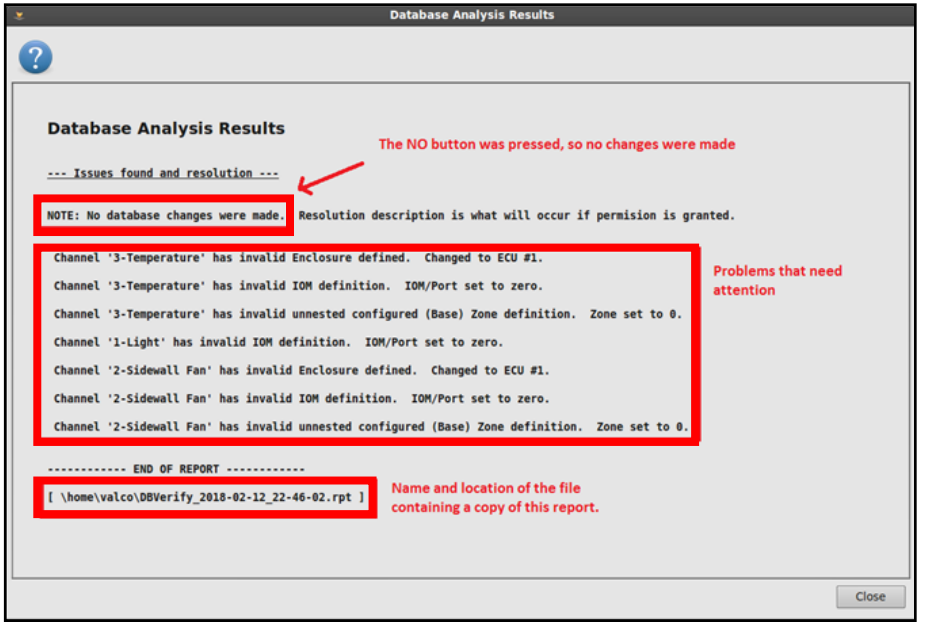


The information displayed in the **Database Analysis Results** window is also saved to a text file in the "\home\valco" directory. The name of the file is "DBVerify_xx.rpt", where the "xx" shows the date and time the verification was run. This allows the information to be moved to PC where it can be printed out and used to fix any problems found. Once the problems are fixed, run the **Verification** feature again to verify everything was fixed.

When all the changes have been made, press the Save button to save any changes to the Global Settings.

At this point all the devices are configured and the operational settings can be configured. Press the Close button in the upper right corner to return to the Operation screen.





©2018 Valco Companies, Inc.

8.2 OPERATION - COOLING SETUP

You should already have the System Configuration Setups completed. You will need to set up the different operations of the Horizon® to monitor and control the devices *(These are outlined in red, to the right).*

If you have already closed this screen, begin from the Main Menu and press the Operation Tab on the Information Bar at the bottom of the Main Menu.

Cooling

The following pages provide the step by step procedures to set up the Cooling stages.

On the **Operation** menu, press the **Cooling** button to open the **Cooling Setup** screen.

Cooling Mode is the mode which operates when the average temperature is above the On Temperature of the first Cooling stage.

Reminder!
When setting up Cooling - Don't forget to use the HELP tab if you have questions.

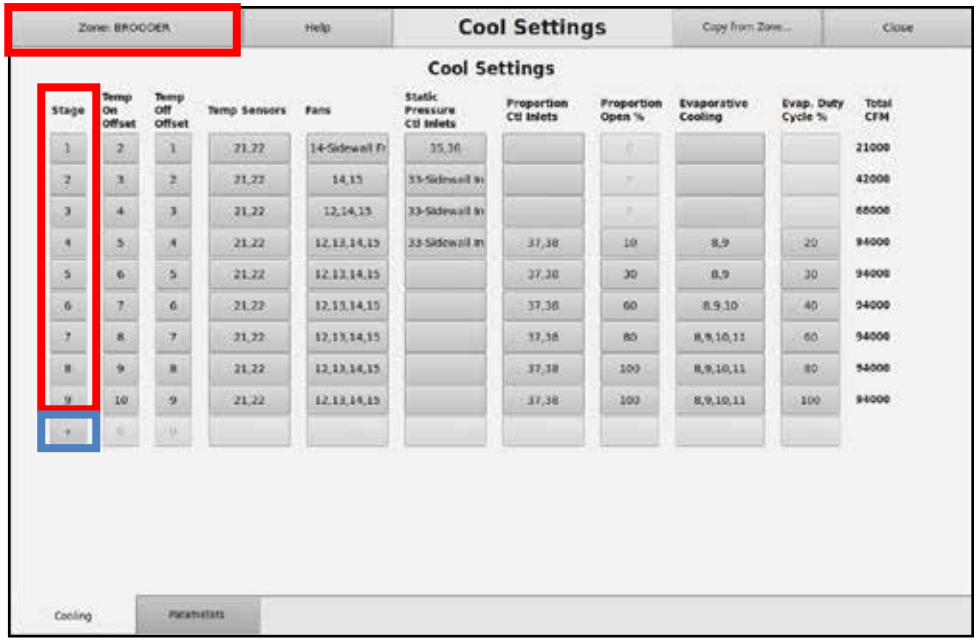
Cooling needs to be set up separately for each zone. Press the **Zone** button in the top left corner to select which zone to work on.

The first screen is the **Cooling** settings. The Horizon® uses stages to perform the cooling function. Each stage is run based on its On temperature and Off temperature. These temperatures are offsets from the Zone's Setpoint temperature. There can be up to 14 stages for each zone.

Temperature sensors, fans, inlets, curtains, cool pads and foggers are assigned to the stage and are operated when the stage is active. Only devices assigned to the select zone, or its lower nested zones, will be available for selection. If a device is installed in a higher zone, but is needed for the lower zone, return to the **System Configuration** screens and set the device to a lower zone.

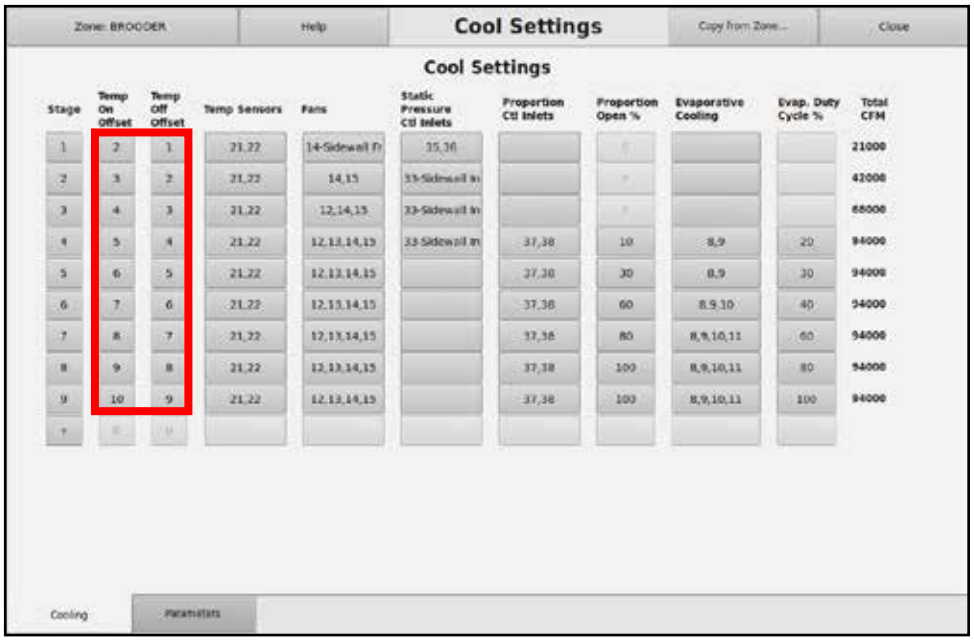
Stage – To start a new stage, press on the **"+"** button under the Stage column. This will add a new row (stage) to the screen and enable the rest of the buttons of the selected row. When the "+" is pressed to add a new stage, the settings from the previous stage will be added to the new stage automatically. Press the appropriate buttons to change any of those settings.

The example to the right shows 9 stages setup. To add a stage, press the "+" sign on the bottom row, which is outlined in blue to the right.



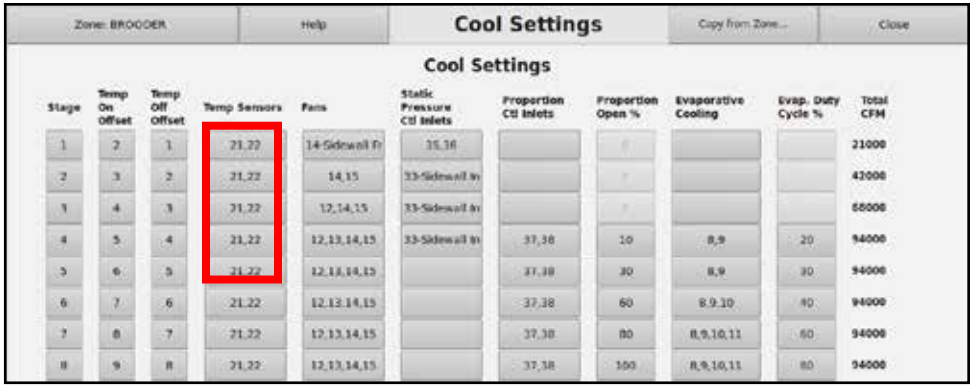
Temp On Offset and Temp Off Offset – Press these buttons to set the temperature range the stage is to be active at. A numeric key pad will appear to allow the setting of the offsets.

Under normal circumstances, the first stage's Off Offset would be set to 1 or 2 degrees, indicating the stage starts just above the Zone's Temperature Setpoint. The On Offset should be set 2 to 3 degrees higher. For the next stages, the Off Offset should be set to match the On Offset of the previous stage. This would allow the stages to progress in a linear fashion.



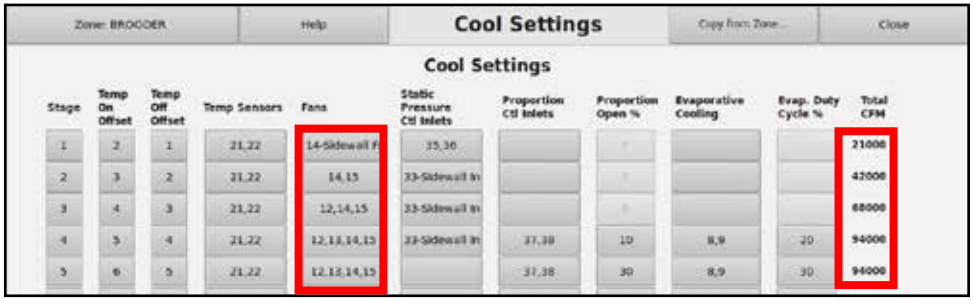
©2018 Valco Companies, Inc.

Temp Sensors – Press these buttons to assign temperature sensors to the stage. A popup window will appear to allow the selecting of the sensors. Press the sensors to check and uncheck them. Any checked sensor will be assigned to the stage.

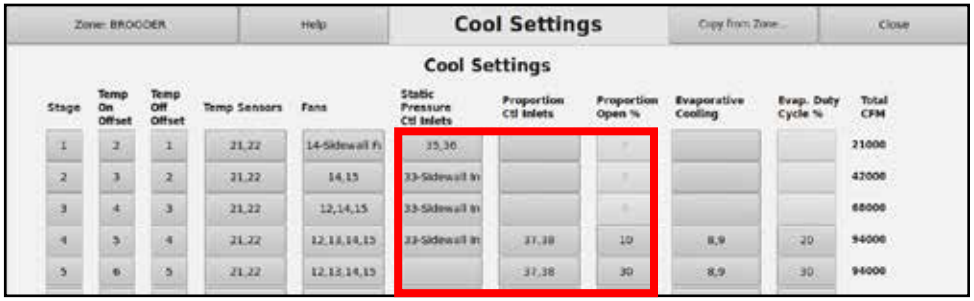


Fans – Press these buttons to assign fans to the stage. A popup window will appear to allow the selecting of the fans. Press the fans to check and uncheck them. Any checked fans will be assigned to the stage. Any fans assigned to the stage will run continuously when the stage is active.

When the fans are assigned the **Total CFM** values will change to reflect the CFM's of the stage, based on the fans selected.



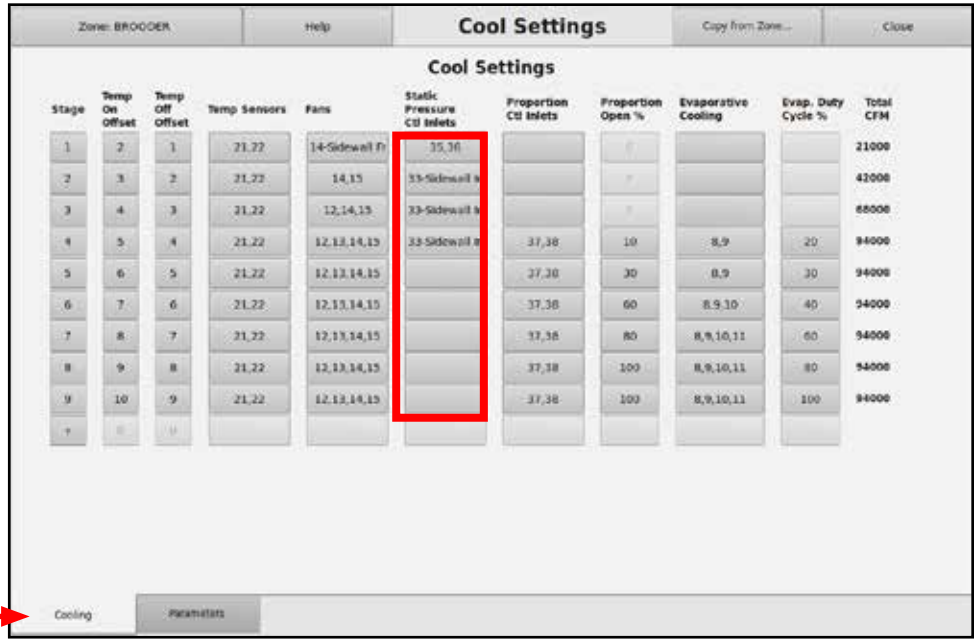
Inlets and curtains can be controlled by static pressure or can be opened a certain percentage (Proportional) for each stage.



When assigning inlets and curtains to a stage, be certain to assign the inlet or curtain as Static or Proportional and not both, as the Horizon® will not know how to handle the device if assigned to both control options.

Static Pressure Ctl Inlets – Press these buttons to assign inlets and curtains to the stage which will be operated by static pressure. A popup window will appear to allow the selecting of the devices. Press the **devices** to check and uncheck them. Any checked device will be assigned to the stage. Press the **Save** button at the bottom of the window.

Static controlled inlets and curtains use the same pressure range for all stages. The Static Pressure Setpoint and Offsets are set under the **Parameters** tab (see below). For more detail on setting Static Pressure Setpoint and Offsets, see Static Pressure Setting for Inlet Control in the next section, under **COOL SETTINGS** - Parameters.



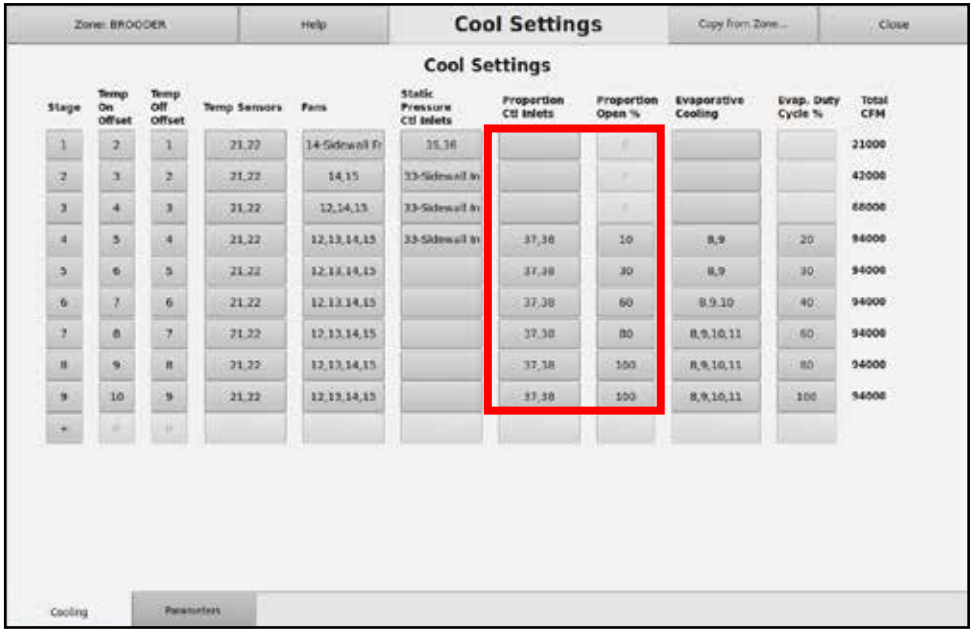
If more than one inlet or curtain is set to operate at the same time using Static control, the devices will move to the same open percentage, regardless of full open sizes or travel times.

It is recommended that only inlets/curtains with the same opening sizes and travel times be used together for Static control.

Proportional Control Inlets and Proportion Open % -

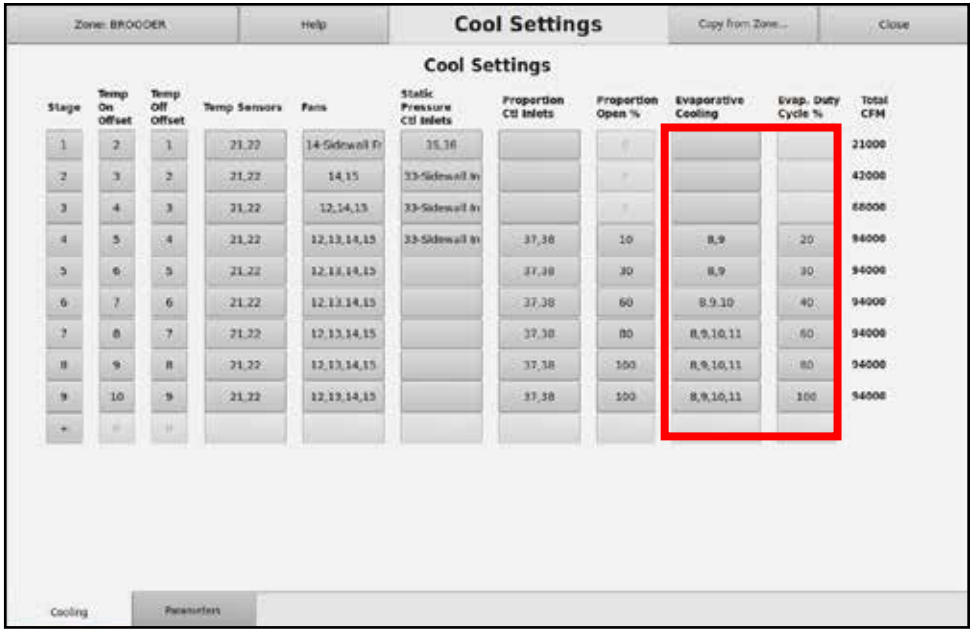
Press the **Proportional Control** button to assign inlets and curtains which are to be controlled proportionally to the stage. A popup window will appear to allow the selecting of the devices. Press the devices to check and uncheck them. Any checked device will be assigned to the stage.

Press the **Proportion Open %** button to set the open percentage for the assigned devices when the stage is active. For the inlets and curtains controlled proportionally, the assigned devices will open to the specified open percentage and stay there as long as the stage is active.



©2018 Valco Companies, Inc.

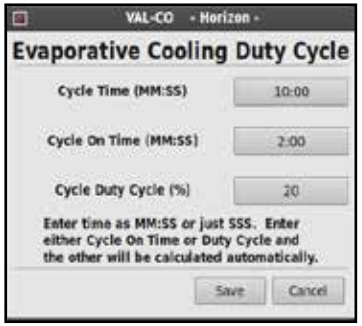
Evaporative Cooling – Press this button to assign a Cool Pad or Fogger to the stage. A popup window will appear with the available devices. Press on the device to check and uncheck it. Checked devices will be assigned to the stage.



Evap. Duty Cycle % - Press this button to set up the operation of the Evaporative devices for the stage. This is only enabled if a cool pad and/or a fogger has been assigned to the stage.

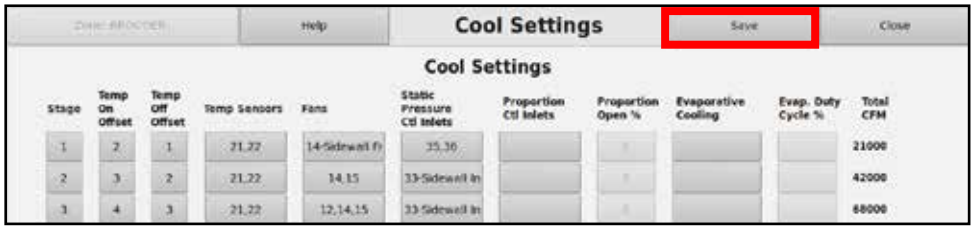
The pop up that appears has three settings:

1. **Cycle Time** – The total time of the cycle (includes the On time and Off time).
2. **Cycle On Time** – The amount of time, out of the total **Cycle Time**, the device will be on for each cycle.
3. **Cycle Duty Cycle** – The percentage of the total **Cycle Time** the device will be on for each cycle.

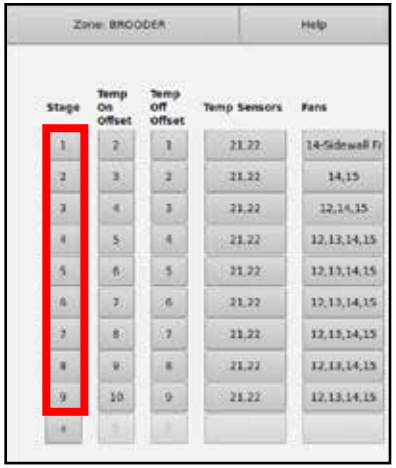


The Cycle On Time and the Cycle Duty Cycle percentage represent the same values. Changing one of them will cause the other one to be recalculated.

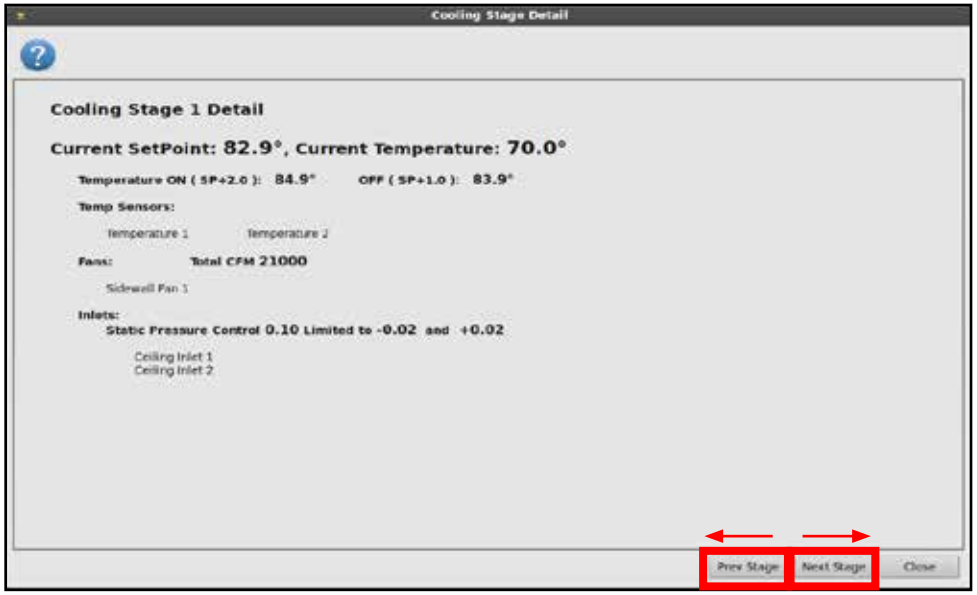
Repeat the previous steps to set up the other stages for the zone. When all the stages are set up, press the **Save** button in the upper right corner to save the changes.



Once the information has been saved, pressing one of the **Stage** buttons will open a window showing the details of the stage.



Use the **Prev Stage** and **Next Stage** buttons at the bottom of the window to scroll to the other stage details.



Copy Setting From Zone - For multiple zone systems, it is possible to copy all the Cooling settings from one zone to the other. To accomplish this:

1. Press the **Cooling** tab.
2. If you have NOT already saved the settings, press the **Save** button to save any changes. *If settings have already been saved the Copy Settings from Zone button will display instead of a Save button.*
3. Press the **Zone** button and select the zone you wish to copy the configuration to.
4. Press the **Copy Settings from Zone…** button to open the Zone selection window.
5. Press the **Zone name** you wish to copy the configuration information from.

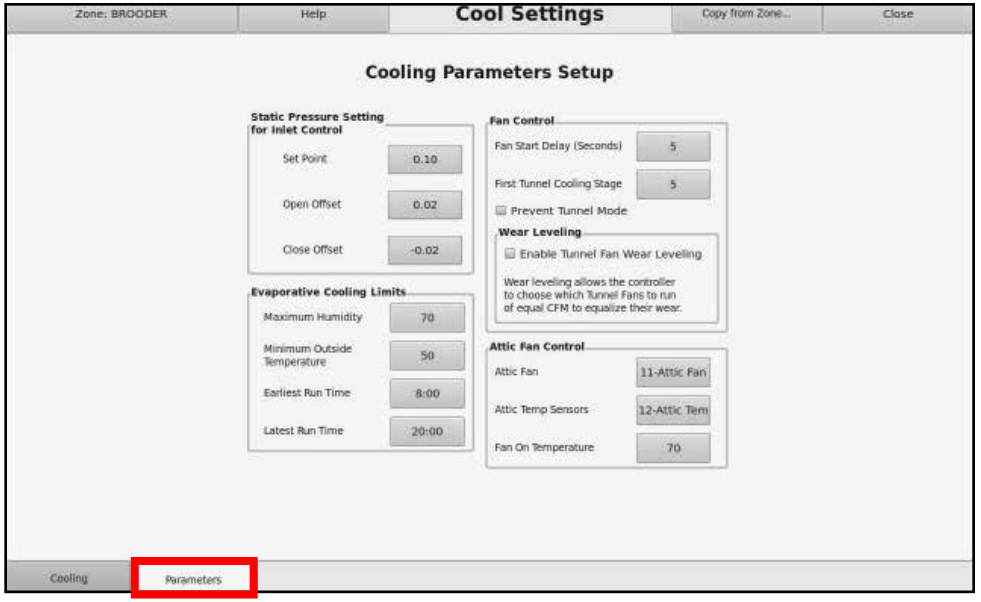
Once the Zone name is pressed, the Zone selection window will close. The process will try to match up as many temperature sensors, fans, and inlets as possible. If the process can not find a device in the selected zone which matches the one found in the copied-from zone, *that device will not be copied over.*

Warning: When copying from one zone to another, ALL settings much be checked for accuracy.

If there is more than one zone, repeat the above steps for each additional zone.

©2018 Valco Companies, Inc.

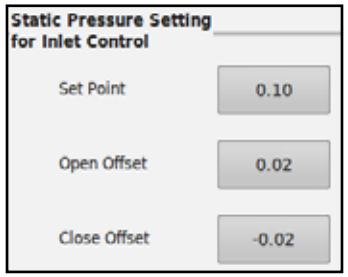
COOL SETTINGS - Parameters



Press the **Parameters** tab at the bottom of the screen to open the **Parameters** screen.

This screen is used to set up the Static Pressure information for the cooling stages, wear leveling of the tunnel fans, attic ventilation and miscellaneous settings. Only the appropriate boxes for the devices installed will appear.

Reminder!
Don't forget to use the HELP tab if you have questions.



Static Pressure Setting for Inlet Control has 3 settings, Setpoint, Open Offset and Close Offset. These are for setting the static pressure range used by any Cooling stages that have static pressure controlled inlets or curtains.

Press the **Setpoint** button to set the of static pressure setpoint the barn should try to maintain.

Press the **Open Offset** button to set the high static pressure range. The static controlled devices will start to open once the static pressure goes above this value.

Press the **Close Offset** button to set the low static pressure range. The static controlled devices will start to close once the static pressure goes below this value.

The **Fan Control** buttons are for setting miscellaneous information for the Cooling stages.

Press the **First Tunnel Cooling Stage** button to indicate which Cooling stage is considered the beginning of Tunnel Mode.

Press the **Fan Start Delay** button to enter the number of seconds to delay the start of each fan, when multiple fans turn on in the cooling stages. Check the Prevent Tunnel Mode box to prevent the system from entering any stage above the First Tunnel Cooling Stage setting.

Wear Leveling is used to enable the swapping of the largest tunnel fans to equalize their wear. Check the Wear Leveling box to enable wear leveling.

Wear leveling only occurs for the largest, same-sized, tunnels fans. At midnight, or when the program starts up, the runtimes of the largest tunnel fans will be compared, and the fans in the Cooling stages with the shortest runtimes will be swapped with the fans with the longest runtimes. The Cooling stages will reflect this swapping, but the swapping is not permanent unless you make changes in the cooling settings and save them.

The **Attic Fan Control** box is used to set up Attic Ventilation.

Press the **Attic Temp Sensors** button to select which Attic Temperature sensors to monitor the attic temperature with.

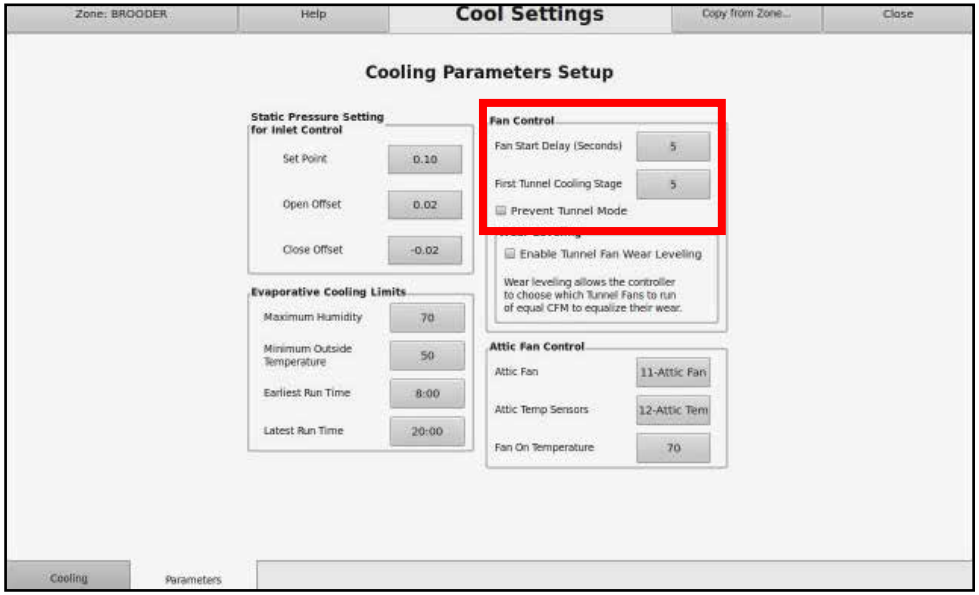
Press the **Attic Fan** button to select the Attic fans to use. Press the **Fan On Temperature** to set the temperature at which the Attic fans will turn on. The fans will turn off 2 degrees below this value.

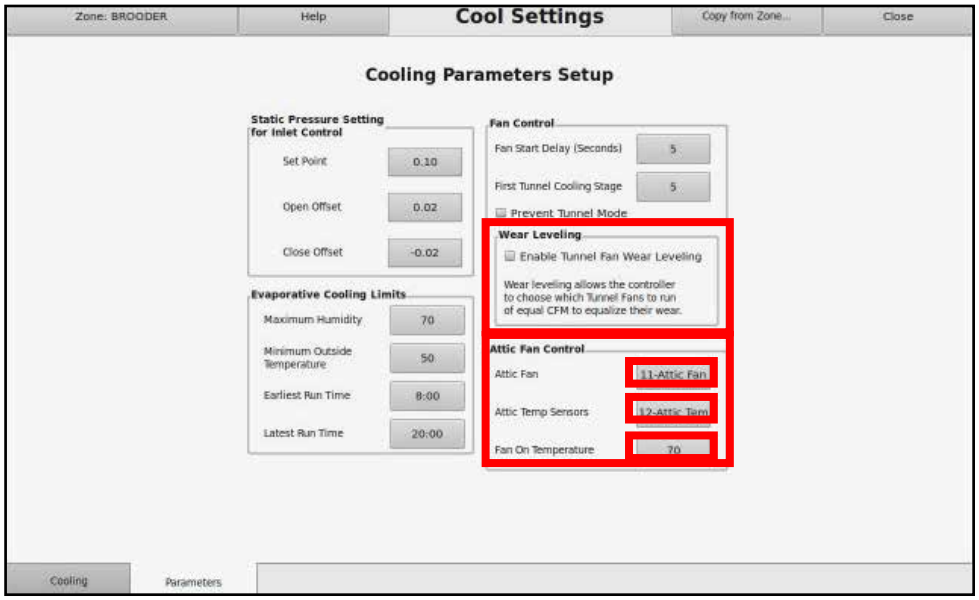
When setting up additional zones, it is possible to copy all the settings from one zone to another, including the settings under the Parameter tab. Refer to page 95 instructions.

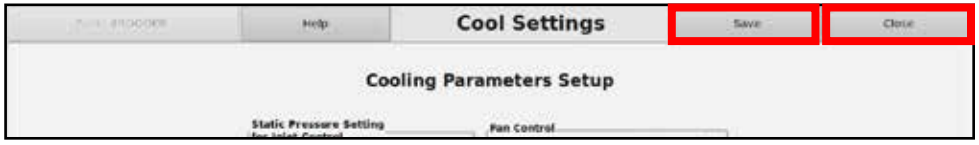
When all the information has been entered, press the **Save** button in the upper right corner to save the changes.

If there is more than one zone, repeat the above steps for each additional zone by pressing the **Zone** button in the upper left corner and selecting the next zone.

When the information for all the zones has been entered and saved, press the **Close** button in the upper right corner to return to the **Operation** screen.







©2018 Valco Companies, Inc.

8.3 OPERATION - MINIMUM VENT SETUP

The following pages provide step by step procedures to set up the **Minimum Vent** screens. The devices in the barn should have already been set up on the Horizon® using the **System Configuration** screens found under the **Operation** menu.

When the Horizon® starts up, the **Main Menu** is displayed. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the **Operation** menu.

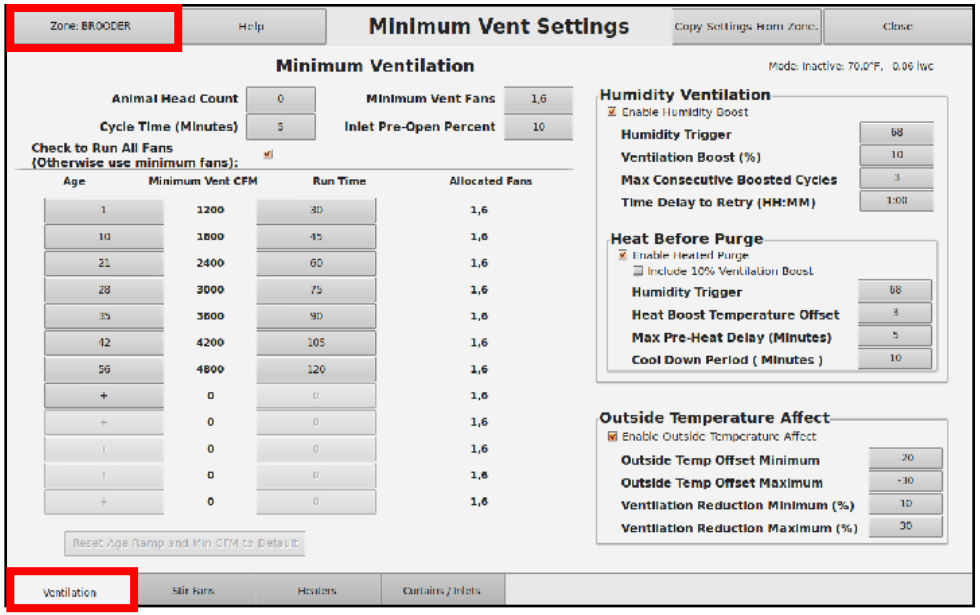
On the **Operation** menu, press the **Minimum Vent** button to open the **Minimum Vent Settings** screen.

Minimum Vent is the mode which operates when the average temperature is below the Temperature Setpoint.

Minimum Vent Settings

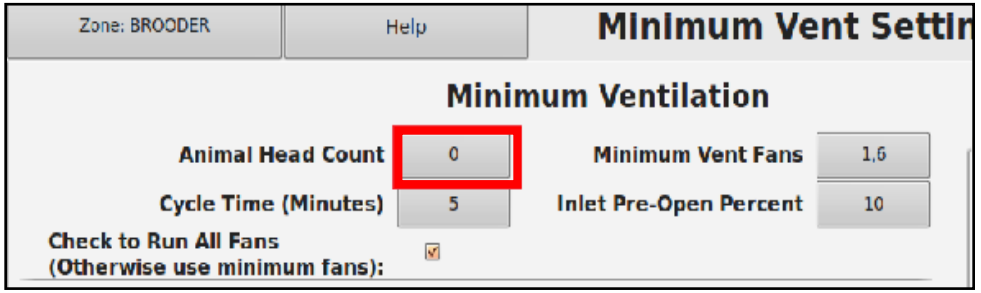
Minimum Ventilation needs to be set up separately for each zone. Press the **Zone** button in the top left corner to select which zone to work on.

The first screen is the **MinVent Ramp** screen. The following are set on this screen:



1. Age periods to be used throughout the growing period of the animals for all the Minimum Ventilation operations.
2. Which fans are to be used for Minimum Vent and whether the fans are run based on time or the minimum CFM per cycle.
3. If the zone should be heated before the fans are turned on during each Minimum Vent cycle.
4. If Humidity levels should affect how long the fans run during the Minimum Vent cycle.
5. If the outside temperature should affect how long the fans run during the Minimum Vent cycle.

Animal Head Count – Enter the number of animals in the Zone. This value is used to determine the minimum CFM needed for each Age period, if the air movement is based on CFM. Press the button to pop up a window to enter the head count. If you wish to have the CFM's updated based on the new head count, press the Reset Age Ramp and Min CFM to Default to calculate the new CFM's.



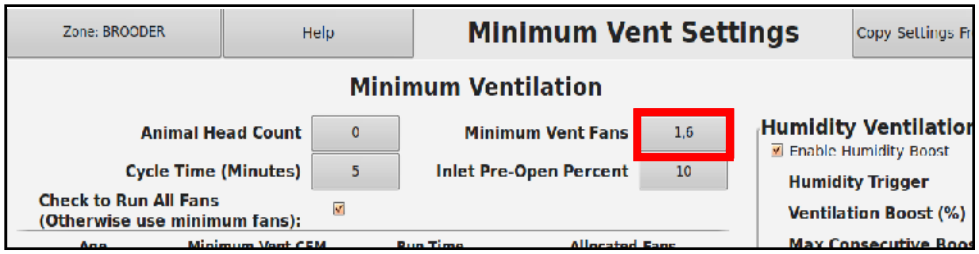
Pressing the Reset button will also reset the Age Values.

Reminder!
Don't forget to use the HELP tab if you have questions.

©2018 Valco Companies, Inc.

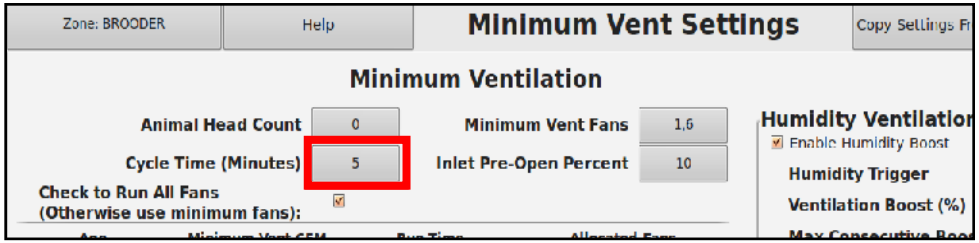
Minimum Vent Fans – Select which fans should be used to provide the air movement for this zone during minimum ventilation.

Press the button to pop up a window which displays the fans available for minimum ventilation. Press each fan to be included in this zone. A check mark will appear in the box next to the fans used for minimum ventilation. Press the fan again to remove the check mark and prevent the fan from being used during minimum ventilation. Only devices assigned to the select zone, or its lower nested zones, will be available for selection. If a device is installed in a higher zone, but is needed for the lower zone, return to the System Configuration screens and set the device to a lower zone.

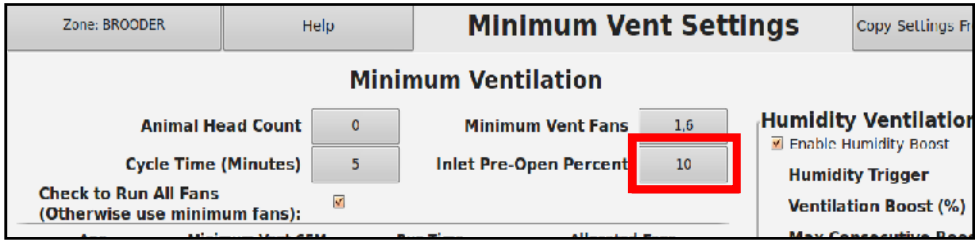


Cycle Time (Minutes) – Set the total number of minutes for each Minimum Vent cycle. This time includes both the amount of time the fans will run and the pause time before repeating the cycle.

Press the button to pop up a window to enter the amount of time (in minutes) each Minimum Vent cycle should last.

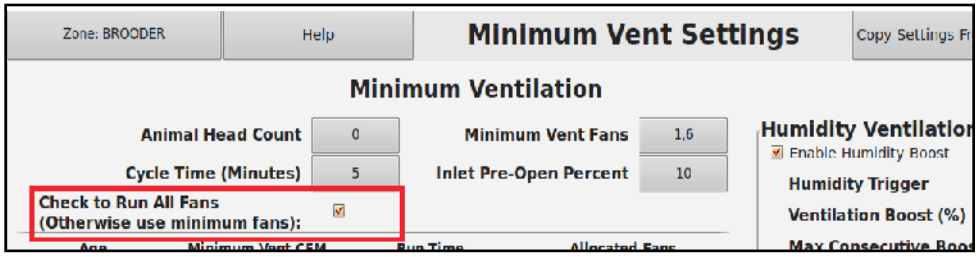


Inlet Pre-Open Percent – Set the percentage you want the Minimum Vent inlet to open before the Minimum Vent fans turn on. If the inlets are closed less than this, the inlet will open to this percentage. If the inlets are open greater than this percentage, the fans will turn on immediately.



Reminder!
Don't forget to use the HELP tab if you have questions.

Check to Run All Fans – This setting determines if the Minimum Vent fans are run based on time, or run based on the amount of CFM the fans will remove. If the check box is checked, for each Age period, the fans will run for the number of minutes entered under the **Run Time** column for that Age period. If it is unchecked, the fans will run only long enough to move the amount of CFM listed in the **Minimum Vent CFM** columns. Press the check box to toggle between the two modes.



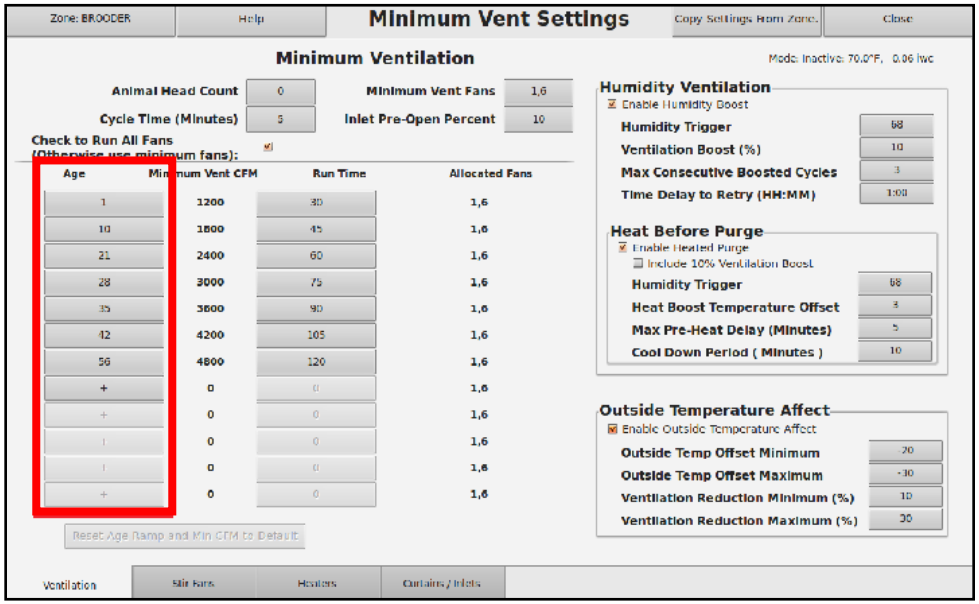
If the fans are run based on time, all the fans set up in the Minimum Vent Fans setting will run for the allotted Run Time of the Age period. If the fans are run based on CFM, only the number of fans required to move the Minimum Vent CFM will run during each minimum vent cycle and the fans will shut off once the required CFM has been reached. If the required CFM's for the age period is greater than the rated CFM of one or more of the allocated fans, some fans will run continuously to keep the moving CFM's close to the required amount, with the other fans turning on and off as needed to reach the full CFMs.

Checking and unchecking this box will cause the values in the Minimum Vent CFM column to recalculate based on the animal head count.

Age – Use these twelve settings to set up the different Age periods used during the full growth cycle.

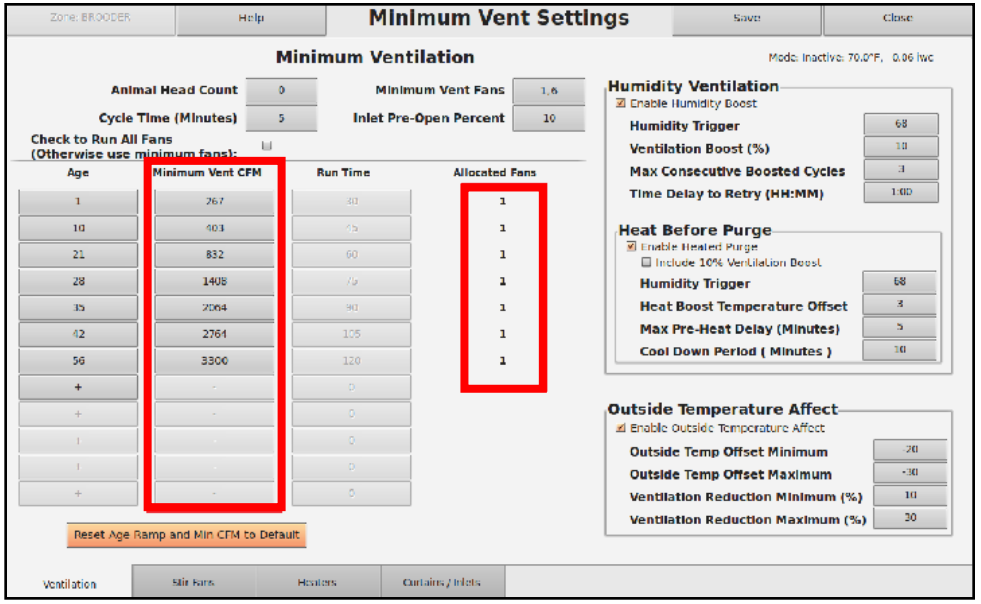
These **Age** periods are used throughout the program to determine how the devices should operate. Each day the animal age is tracked incrementally and the program uses these **Age** settings to determine which Age period to use.

Press each of the buttons in turn, to pop up a window to enter the animal age the period should start at.



©2018 Valco Companies, Inc.

Minimum Vent CFM – These buttons are only enabled if the **Check to Run All Fans** is not checked. Use these settings to set the total number of CFM's removed during the Minimum Vent cycle, for each period. When these values are changed, the **Allocated Fans** will change to reflect which fans will run during the Minimum Vent cycle to remove the required CFM. The allocated fans will only run long enough to remove the specified CFM at the start of each Minimum Vent cycle. The program will determine which fans to allocate to the period, based on the fan's total CFM, and cannot be changed.

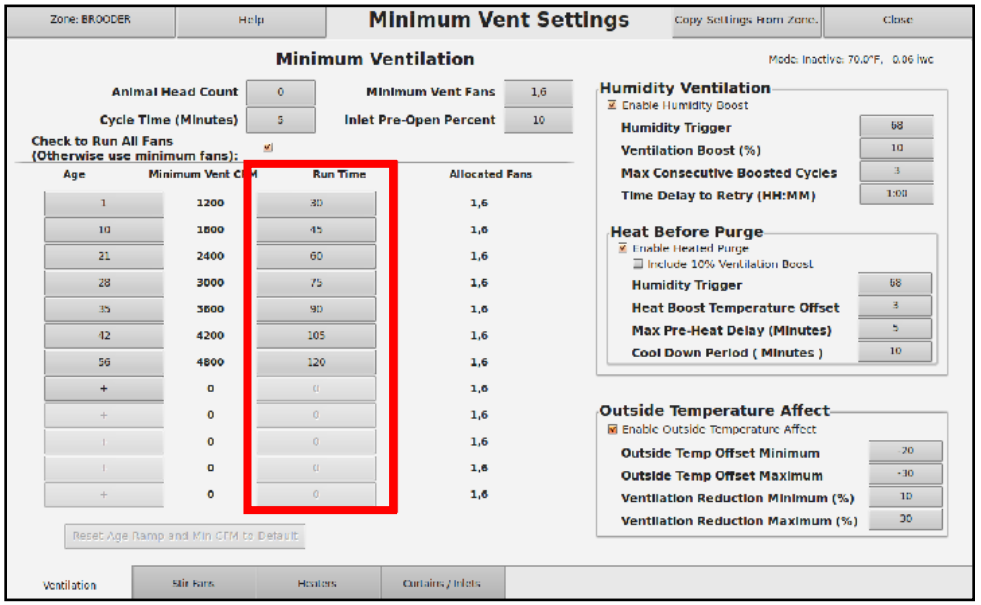


Some fans may run continuously, while other turn on and off as needed. See note on previous page

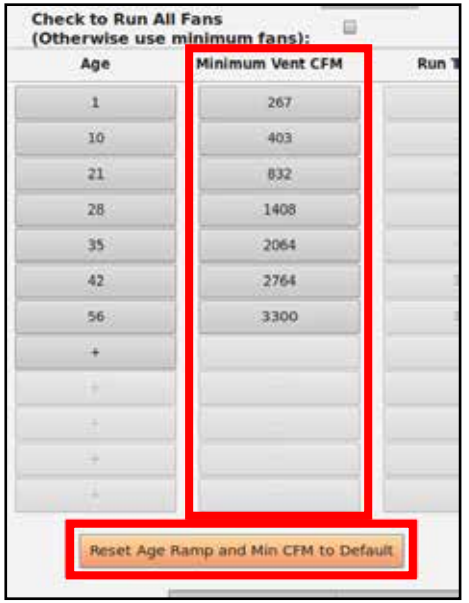
Press each of the buttons in turn, to pop up a window to enter the minimum CFM to be removed.

Run Time - These buttons are only enabled if the **Check to Run All** Fans is checked. Use these settings to set the number of seconds the fans will run during the Minimum Vent cycle, for each period. The **Allocated Fans** will include all the fans set up using the **Minimum Vent Fans** button. All the allocated fans will run for the specified seconds at the start of each Minimum Vent cycle.

Press each of the buttons in turn, to pop up a window to enter the number of seconds the fans should run during each Minimum Vent cycle for that period.



Reset Age Ramp and Min CFM to Default– Press this button to reset the **Age** column and the **Minimum Vent CFM** values back to their defaults, based on the **Animal Head Count**.



Humidity Ventilation – This option allows an increase in the air movement during a Minimum Vent cycle if the Humidity is high, allowing the removal of more moist air. Press the Enable Humidity Boost box to enable and disable this option.

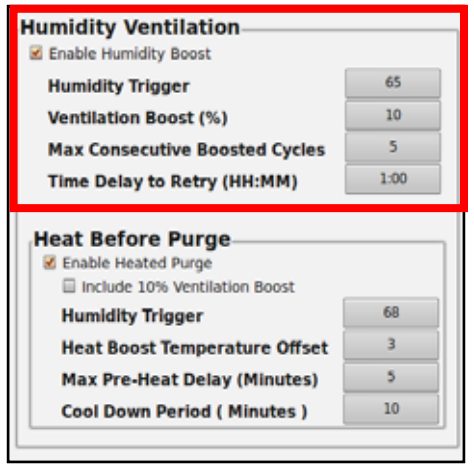
There are four settings for this option:

1. **Humidity Trigger** – The increased air movement will only occur when the humidity is above this percent when the Minimum Vent cycle starts.

2. **Ventilation Boost (%)** – The amount of time the fans run during the Minimum Vent cycle will be increased by this percentage in order to remove more moisture. If running based on CFM's, the CFM value will be increased by this percentage. If running based on time, the fan's run times will be increased by this percentage.

3. **Max Consecutive Boosted Cycles** – The number of consecutive Minimum Vent cycles this increased air movement is allowed before delaying this option for the specified time. This delay prevents a zone from getting to cold during high humidity levels and the increased air movement is not lowering the humidity level below the **Humidity Trigger** percent.

4. **Time Delay to Retry (HH:MM)** – The amount of time, in hours and minutes, to delay the increase in air movement after the **Max Consecutive Boosted Cycles** have been run without dropping the humidity level below the **Humidity Trigger** percentage.



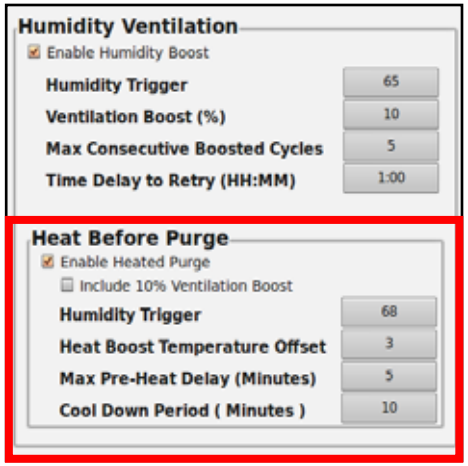
Pressing the buttons for these settings will pop up a numeric key pad to allow the entering of the values.

Note: If the inside temperature is more than 10 degrees below the setpoint, the Humidity Boost will not occur.

©2018 Valco Companies, Inc.

Heat before Purge – This option is part of the Humidity Ventilation feature and is in addition to the increased ventilation set up in that feature.

The **Heat before Purge** allows the heating of the air before the fans are turned on during a Minimum Vent cycle. Heated air holds more moisture, so heating the air before turning on the fans causes more moisture to be removed from the zone. This works by closing all the inlets, shutting off the fans, and then temporarily increasing the Temperature Setpoint by the amount of the **Heat Boost Temperature Offset** plus the largest Off offset of the heaters in the zone and starts a timer set to the **Max Pre-Heat Delay**. This should force the heaters in the zone to turn on. Once the temperature in the zone increases to the original Temperature Setpoint plus the **Heat Boost Temperature Offset**, or the timer runs out, the MinVent Inlets are opened and the MinVent fans turn on. The Temperature Setpoint will remain at the elevated level until the fans turn off, allowing the heaters to continue to heat the air while the fans are running. Once the fans turn off, the Temperature Setpoint will return to normal and normal operations will continue. Note: if the heating of the air causes the zone to stay above the normal Temperature Setpoint once the fans turn off, the system will delay going into Cooling mode for the **Cool Down Period.** This is to prevent the system from jumping in and out of the Cooling stages due to the heating of the zone. However, if the average zone temperature remains at least three degrees above the Temperature setpoint plus the **Heat Boost Offset** when the Min Vent fans turn off, the system will immediately go into Cooling mode, without waiting for the **Cool Down period** to expire.



If the inside temperature is more than 10 degrees below the setpoint, the Heat Before Purge Boost will not occur.

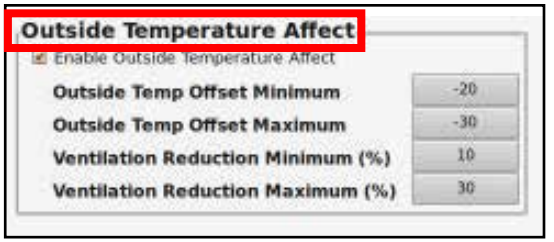
Press or check the **Enable Heated Purge** box to enable and disable this option. Humidity Ventilation has to be enabled before the Heat before Purge will work.

There are four settings for this option:

1. **Include 10% Ventilation Boost** – Check this to increase the ventilation by an additional 10% above the Ventilation Boost when the zone is to be heated before the Minimum Vent cycle starts. This allows the removal of more of the moist air and helps lower the humidity level. If the fans are running based on the amount of CFM moved, the fans will move an additional 10% more CFMs. If the fans are running based on time, the fan run times will be increased by an additional 10%.
2. **Humidity Trigger** – The heating will only occur when the humidity is above this percent when the Minimum Vent cycle starts. This value should be set higher than the **Humidity Ventilation Trigger**, so heating will only occur if the Humidity Ventilation boost does not lower the humidity level.
3. **Heat Boost Temperature Offset** – The temperature will be increased by this many degrees before the fans are turned on.
4. **Max Pre-Heat Delay** – The number of minutes to try to increase the temperature by the degrees set in the **Heat Boost Offset.** This is the maximum number of minutes allowed for the heating of the zone before the **Heat before Purge** is aborted and the fans are turned on.
5. **Cool Down Period** – The number of minutes after the **Heat before Purge** ventilation cycle completes before the system will be allowed to go into Cooling mode.

Pressing the buttons for settings 2, 3, 4 and 5 will pop up a numeric key pad to allow the entering of the values.

Outside Temperature Affect – This option allows a decrease in the amount of time the fans run during the Minimum Vent cycle if the outside temperature is below a certain temperature. Press the **Enable Outside Temperature Affect** box to enable and disable this option.



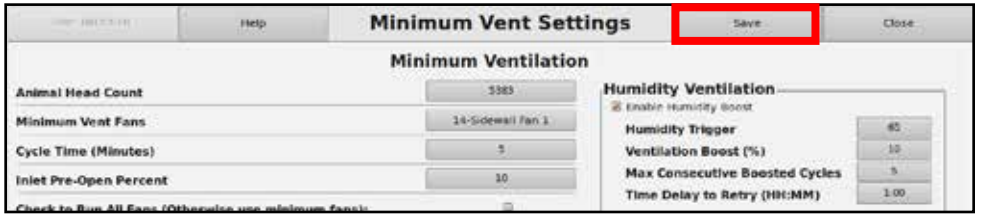
There are four (4) settings for this option:

1. **Outside Temp Offset Minimum and Outside Temp Offset Maximum** - Set these to the minimum and maximum offset range, from the temperature setpoint, where the ventilation reduction will occur due to the outside temperature.

2. **Ventilation Reduction Minimum and Ventilation Reduction Maximum (%)** - Set these to the minimum and maximum percentage of ventilation reduction that can occur when the outside temperature is inside the range set by the offsets.

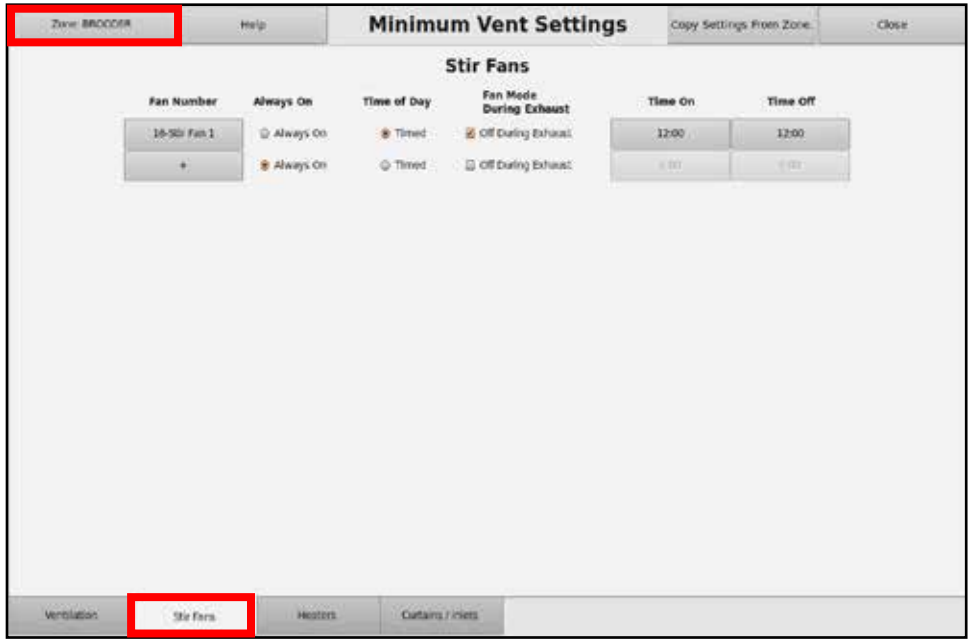
Pressing the buttons for these settings will pop up a numeric key pad to allow the entering of the values.

Press the **Save** button in the top right corner to save any changes.



Note: While the outside temperature is between the Temperature setpoint and the Outside offset value, there will be no reduction in the fan runtimes. The fan runtimes will ramp based on the minimum and maximum offsets and reduction settings, when the outside temperature is within the Offset ranges. Once the outside temperature falls below the Offset Maximum, the fan runtimes will be reduced by the maximum reduction percentage.

Stir Fans - The second tab in the **Minimum Vent Settings** screens is used to set up the operation of the Stir Fans during Minimum Vent mode in the zone.



Each zone has its own Stir Fan settings. Press the **Zone** button to select the zone to set up.

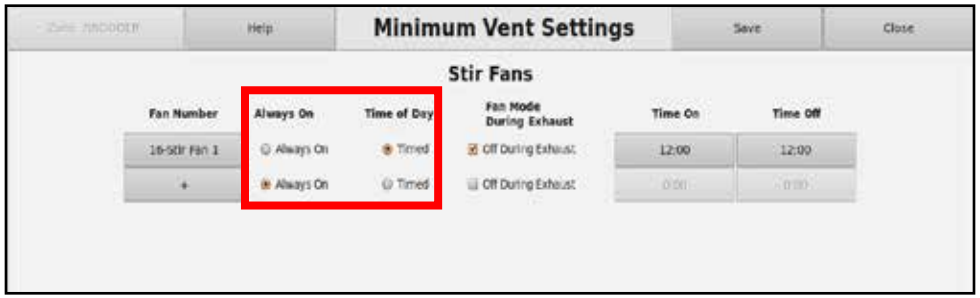
©2018 Valco Companies, Inc.

There can be multiple Stir Fan groups for each zone. Press the **Fan Number** button to select the Stir fans to use in the group. A popup will appear displaying the available stir fans in the zone. Press the fans to check and uncheck them. A checked fan will be included in the group.

Note: a stir fan should only be used in one group.

Note: When the Fan Number is pressed, another group row will be added.

Stir fans can run in one of two modes:



Press **Always On** to have the fans in this group run continuously while in Minimum Vent mode.

Press **Timed** to have the fans turn on and off based on the Time of Day (see **Time On** and **Time Off** below). Note: selecting **Timed** will enable the **Time On** and **Time Off** buttons.

The stir fans can be turned off when the Minimum Vent fans turn on.

Press **Fan Mode During Exhaust** to check and uncheck it. When checked, the Stir fans in this group will turn off when the Minimum Vent fans turn on, and will turn back on with the Minimum Vent fans turn off again.

When the Stir Fan group is set to run based on time, press the **Time On** and **Time Off** buttons to set the time of day the group should run.

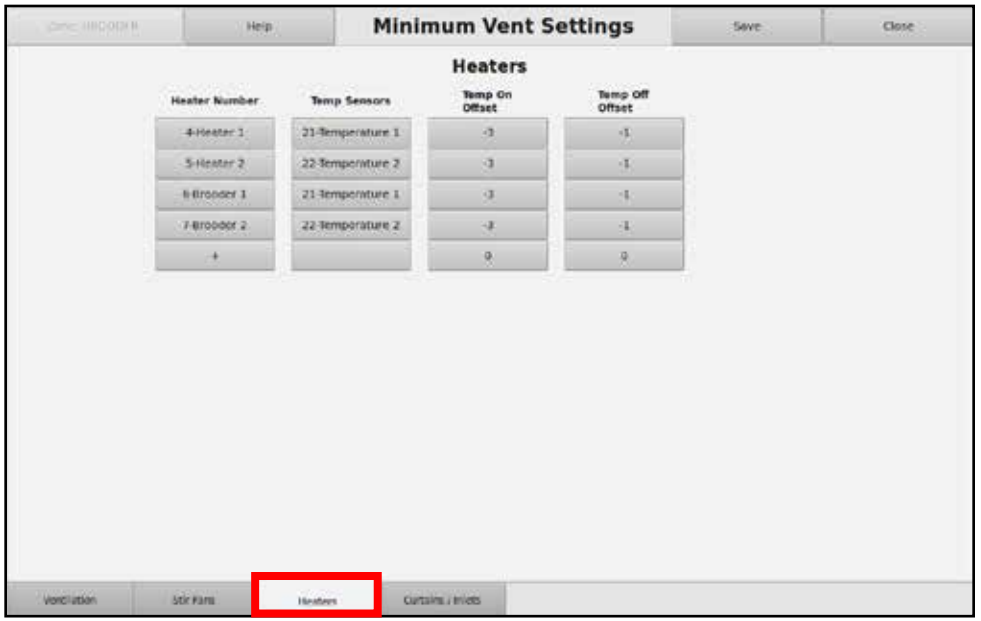
When pressed, a numeric pad will appear to allow the setting of the On and Off times.

Press the **Save** button in the top right corner to save any changes.

Heaters – The third tab in the Minimum Vent Settings screens is used to set up the operation of the heaters during Minimum Vent mode, in the zone. *(The screen to the right has four (4) heaters already setup as an example. The bottom row displays a "+" sign for adding more heaters. In an initial setup there would, of course, be no heaters setup.)*

There can be multiple heater groups per Zone. Each heater group can have:

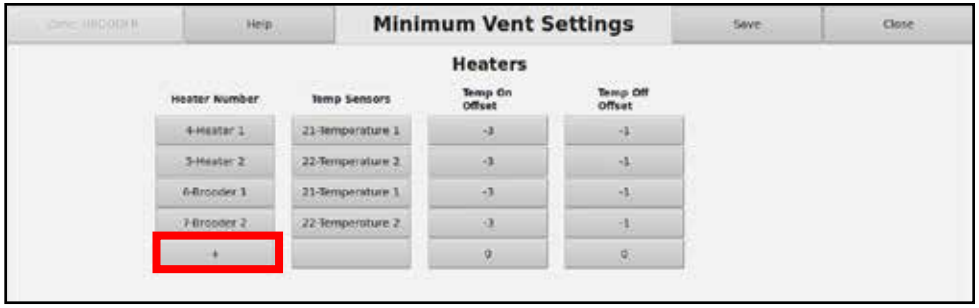
1. One or more heaters attached to it.
2. One or more temperature sensors attached to it to be used to determine the On/Off status of the heater group.
3. Has its own On and Off temperature settings.



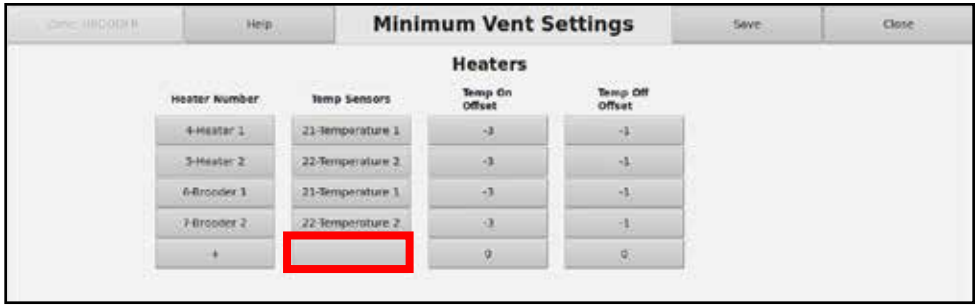
- **If more than one heating device is attached to heater group, the devices will operate together.**
- **A heater should be assigned to only one group.**

©2018 Valco Companies, Inc.

To set up a new Heater group, press the box with the **“+”** in the **Heater Number** column. This will pop up a window displaying the available heaters for the zone and allow the selection of the heaters to include in this group. Press the boxes next to the heaters to check and uncheck them. A checked heater will be included in the heater group.

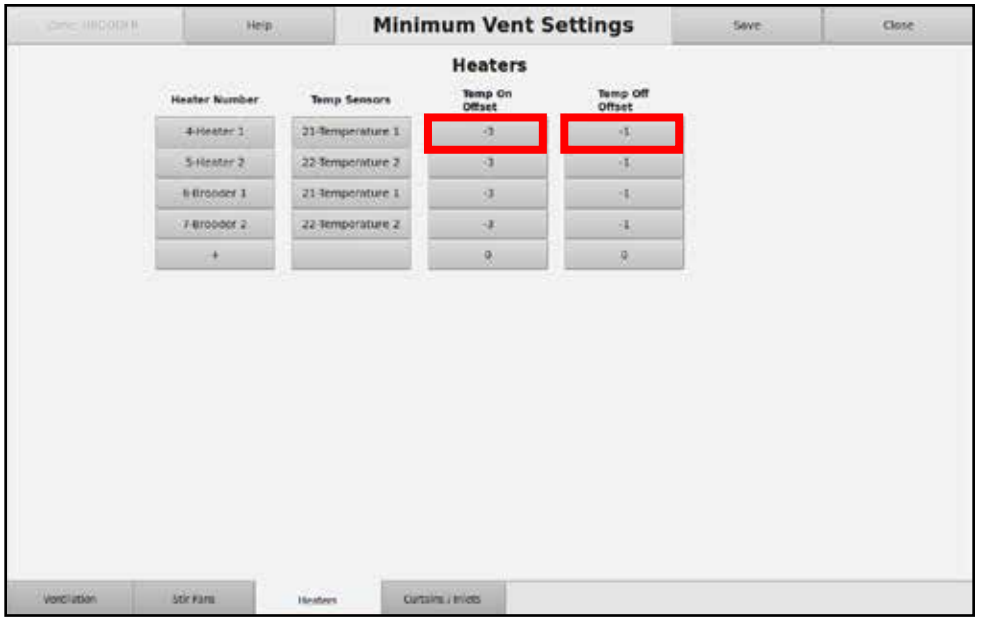


Press the button in the **Temp Sensors** column to select the temperature sensors which will be used to control the heater group. This will pop up a window displaying the available Temperature sensors for the zone and allow the selection of the sensor used to control this group. Press the boxes next to the sensors to check and uncheck them. A checked sensor will be used for the heater group.

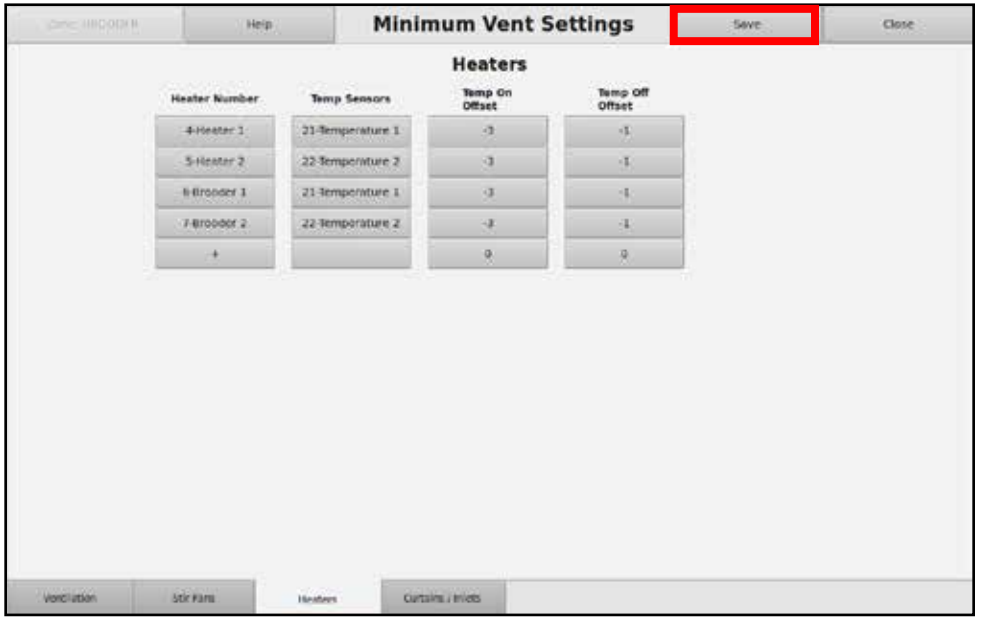


To set the **On** and **Off** temperatures for the group, press the button under either the **Temp On Offset** column or under the **Temp Off Offset** column. A pop up window will appear to allow the setting of the offset values.

These settings are offset values from the Zone Setpoint. When the Zone's average temperature falls below the temperature based on the **Temp On Offset**, the heater group will turn on. When the Zone's average temperature goes above the temperature based on the **Temp Off Offset**, the heater group will turn off.



Repeat the previous steps to add more heater groups. When all the heater groups for the zone have been set up, press the **Save** button in the upper right corner to save the changes.



Reminder!
Don't forget to use the HELP tab if you have questions.

©2018 Valco Companies, Inc.

Curtains / Inlets – the fourth tab in the **Minimum Vent Settings** screens is used to set up the curtains and inlets to be used for Minimum Vent. Each Age period needs to have curtains and inlets assigned to them.

The values in the Age column, Fans column and CFM column are taken from the MinVent Ramp settings. To adjust these values, return to the MinVent Ramp tab.

Each period can have more than one curtain or inlet assigned to it. The assigned curtains/inlets for a period are all controlled in the same matter. Their openings can be controlled by either Static Pressure, or by a specified opening size (Proportional).

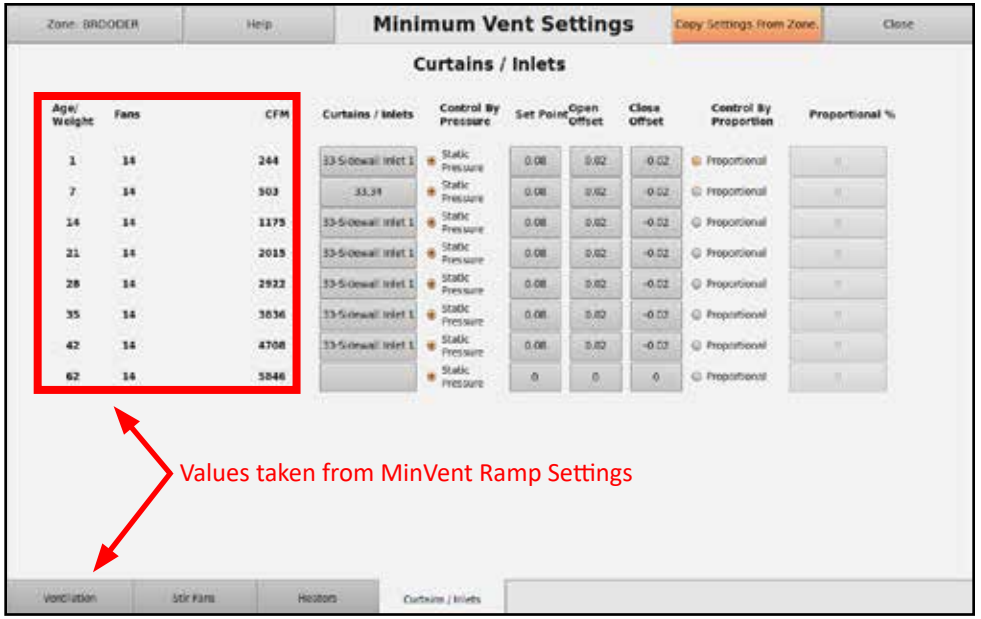
If controlled by static pressure, the inlets will open and closed based on the Static Pressure reading, regardless of the on/off status of the MinVent fans.

If more than one inlet or curtain is set to operate at the same time using Static control, the devices will move to the same open percentage, regardless of full open sizes or travel times.

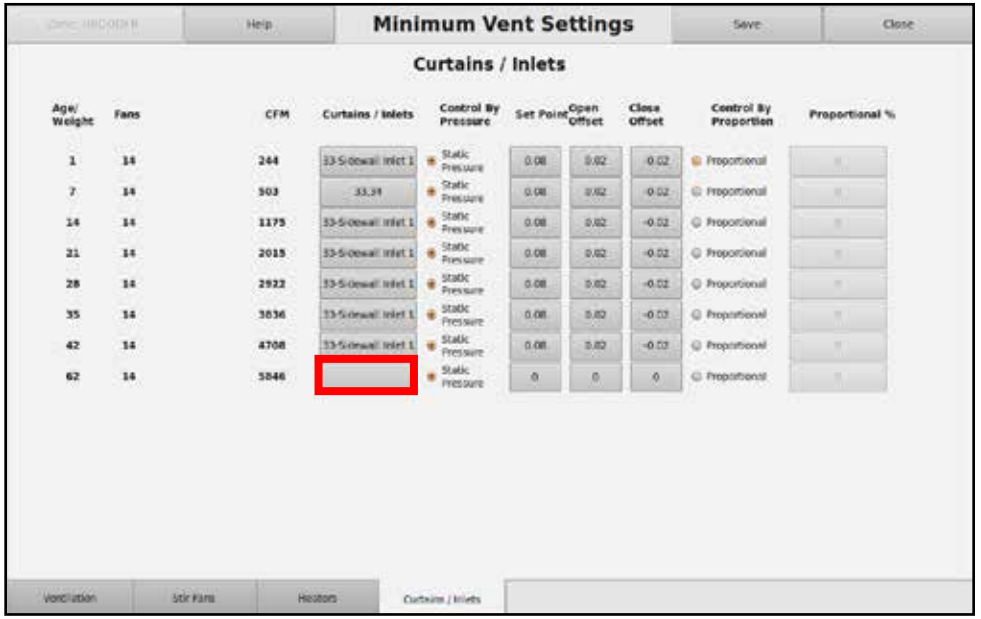
It is recommended that only inlets/curtains with the same opening sizes and travel times be used together for Static control.

If controlled Proportionally, the assigned curtains/inlets will open to the specified opening, when the fans turn on and will close completely when the fans turn off.

(The examples on this page show a system already set up.)



To assign curtains and inlets to the Age period, press the button under the **Curtains / Inlets** column for that Age period. A pop up window will appear displaying the available devices for the zone. Check the curtains and inlets to assign them to the period.



Press the circle under the **Control By Pressure** column to have the assigned curtains and inlets for the period controlled by Static Pressure.

Press the circle under the **Control By Proportional** column to have the assigned curtains and inlets for the period controlled proportionally. Press the Proportional % buttons to enter the open percentage for the proportionally controlled inlet devices for the Age group. *If the Minimum Ventilation is run based on CFM's, set the opening percentage based on the CFM value shown in the CFM column of the Age bracket. This percentage will be the opening size when all the assigned fans are running. As individual fans turn on and off, the Horizon® will open and close the assigned inlet devices based on the actual number of fans running, based on their CFM rating, in order to maintian the same air speed throughout the cycle. The Proportioal % button is only enabled for the Age bracket if the Control by Porportion option is selected.*

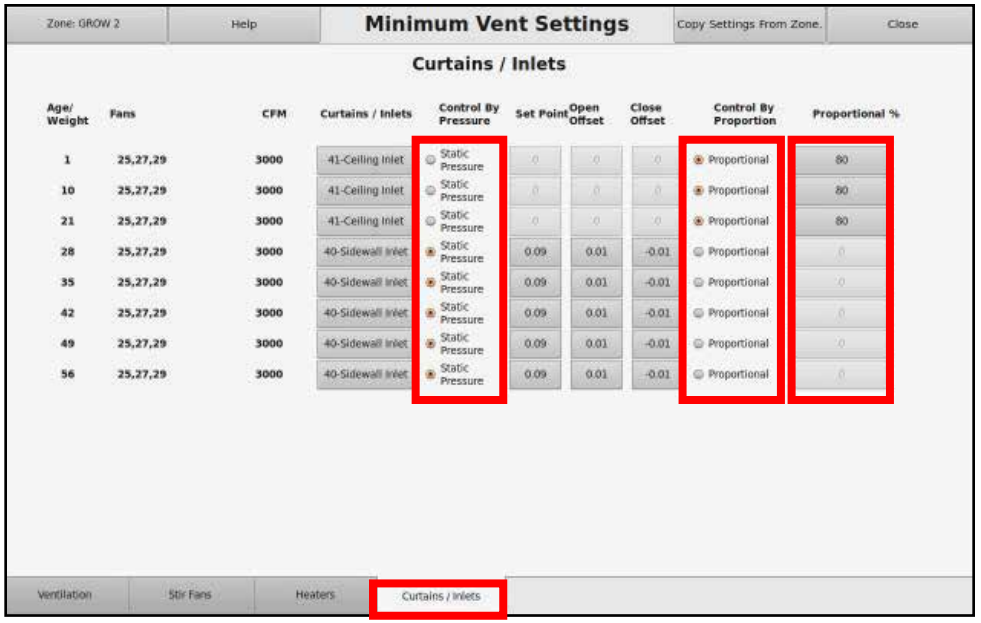
When you press one the other will automatically deactivate.

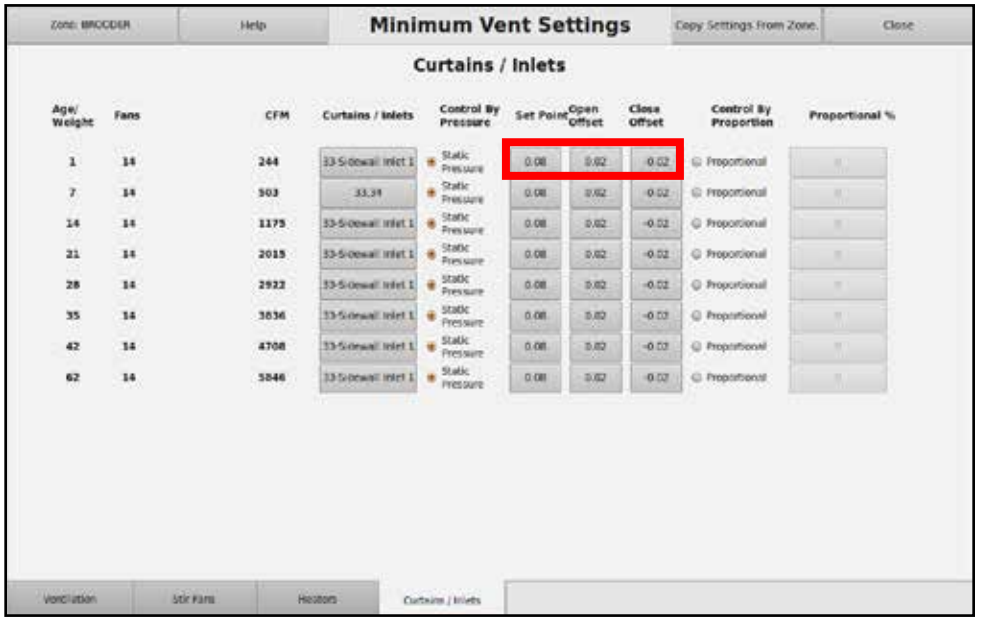
If the curtains and inlets for a period are **Controlled by Pressure**, there are three settings which need to be set:

1. **Setpoint** – This is the static pressure reading the program will try to maintain by opening and closing the curtains/inlets.
2. **Open Offset** – If the static pressure reading is above the Setpoint by this amount, the assigned curtains/inlets will start to open.
3. **Close Offset** – If the static pressure reading is below the setpoint by this amount, the assigned curtains/inlets will start to close.

Press any of these three buttons will pop up a numeric key pad for entering their values, as shown below.

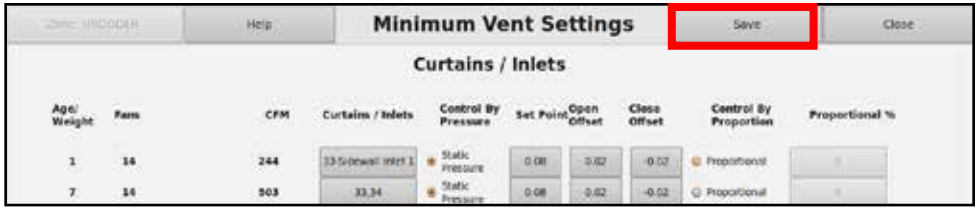
These settings are only enabled when the Static Pressure circle is marked.



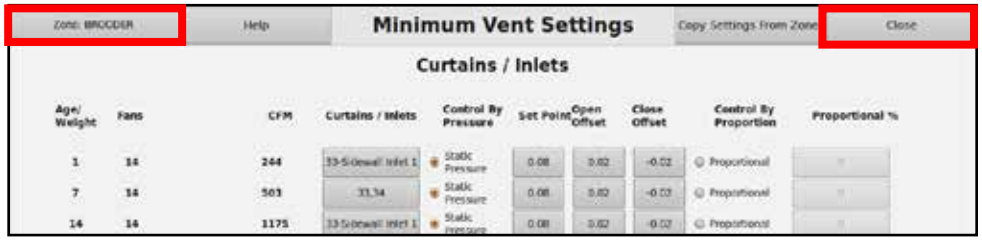


©2018 Valco Companies, Inc.

Repeat the previous steps to set up the other Age periods for the zone. When all the periods are set up, press the **Save** button in the upper right corner to save the changes.



Minimum Vent for the zone is now complete. Either press the **Zone** button to start on the next zone or press the **Close** button to close the Minimum Vent Settings screens and return to the Operation screen.



Copy Setting From Zone - For multiple zone systems, it is possible to copy all the Minimum Ventilation settings from one zone to the other. To accomplish this:

1. Press the **Ventilation** tab.
2. If you have NOT already saved the settings, press the **Save** button to save any changes. If settings have already been saved the Copy Settings from Zone button will display instead of a Save button, as shown to right.
3. Press the **Zone** button and select the zone you wish to copy the configuration to.
4. Press the **Copy Settings from Zone…** button to open the Zone selection window.
5. Press the **Zone name** you wish to copy the configuration information from.

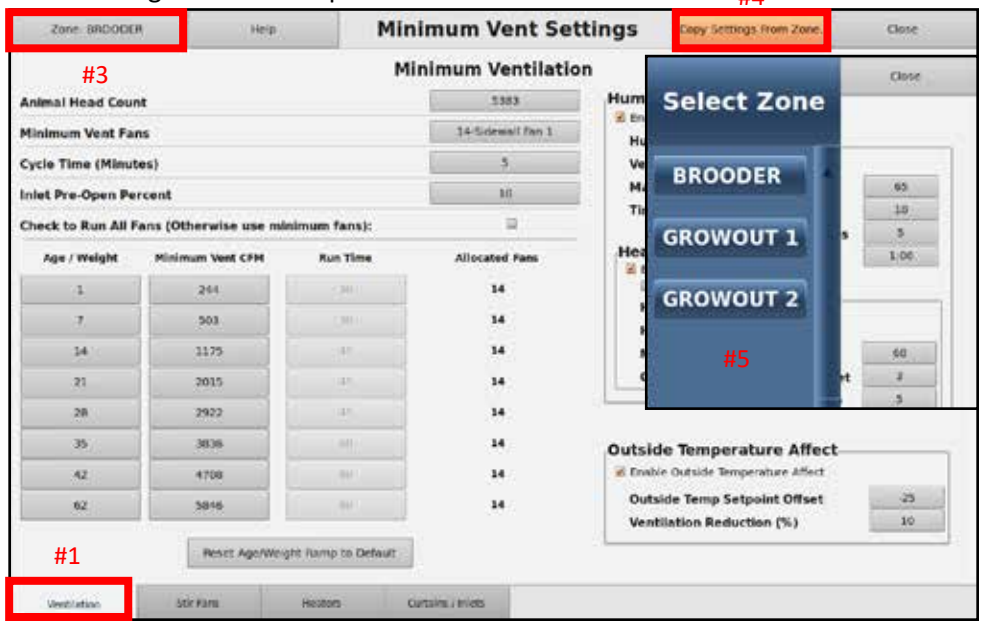
Once the Zone name is pressed, the Zone selection window will close and all the Ventilation, Stir Fan, Heater and Curtains/Inlets settings will be copied to the current zone.

UN-Saved screen example

#2

Saved settings screen example

#4



Warning!

An attempt will be made to match the devices from the "copied from" zone to appropriate devices in the "copy to" zone. But this may not always be possible, especially between unrelated, non-nested zones. Once the Copy procedure is finished, review all the settings in the new zone to verify the right devices are being referenced and to add any devices that did not get swapped.

8.4 OPERATION - NATURAL SETUP (THIS OPTION NOT AVAILABLE)

©2018 Valco Companies, Inc.

8.5 OPERATION - LIGHTING SETUP

The following pages provide step by step procedures to set up the Lights and Variable Lights devices. The devices in the barn should have already been set up on the Horizon® using the **System Configuration** screens found under the Operation menu.

When the Horizon® starts up, the Main Menu is displayed. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the Operation menu.

On the **Operation** menu, press the **Lighting** button to open the **Light Settings** screen.

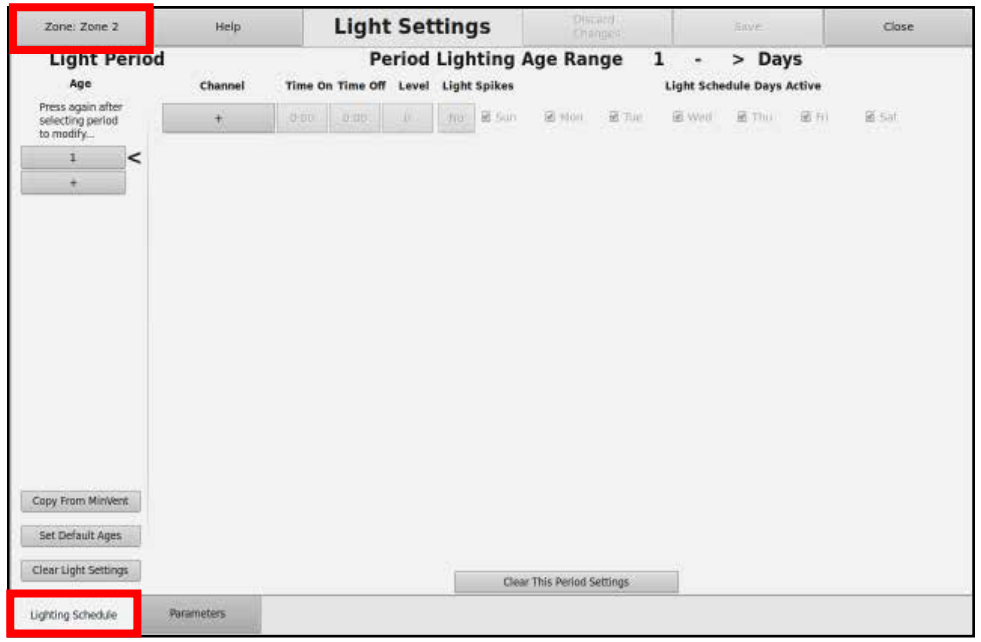
Light Settings

Each Zone, and each Age period has its own light settings. There is no carryover of a schedule between the zones or age period. If a device has to operate in two different age periods, or in two or more nested zones, a schedule has to be entered for each age period or zone.

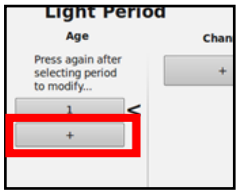
To select the zone to work with, press the **Zone** button. A popup window will appear showing the available zones. Press the desired zone to select it and close the popup.

Age Periods

There can be up to 12 different **Age Periods** set up for each zone, as seen in the green box to the right.

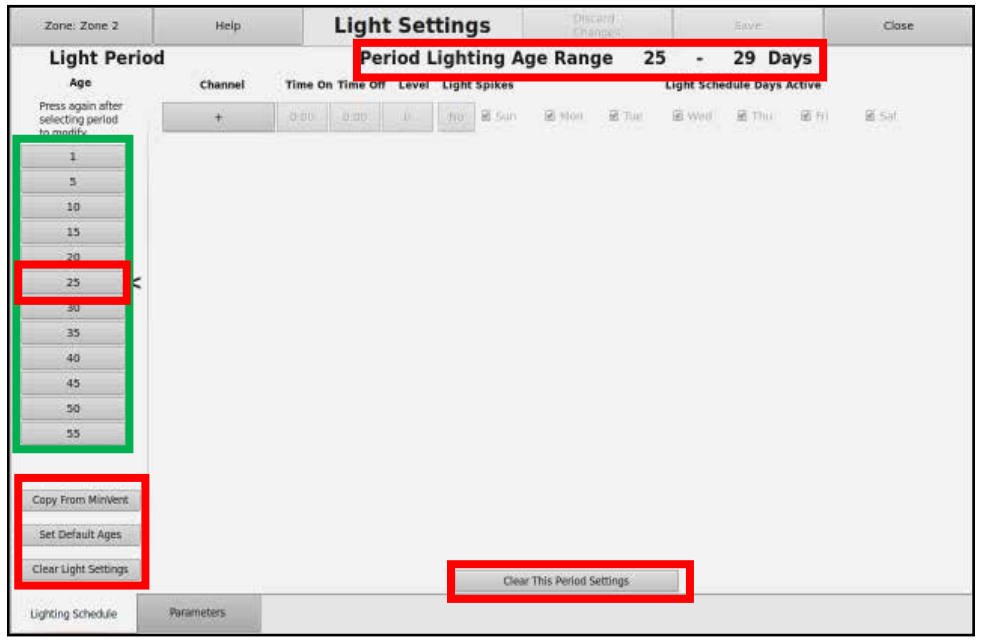


When updating from an older version of software, the Age Period settings are taken from the Min Vent Age Ramp settings.



To add an **Age Period** to the zone, press the button with the **+** to open a window to enter the new Age. To change an existing Age, press the button to select that **Age Period** then press it again to open the **Animal Age** window. To remove an Age period, set the Age value to 0 and that button will be removed from the column.

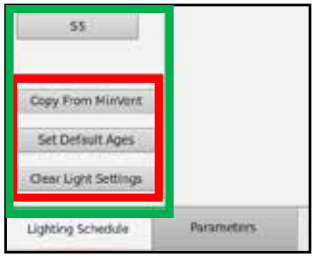
You cannot delete an Age Period that has existing device schedules. Use the Clear This Period Settings button to remove the schedules before settings the Age value to zero.



There are two ways to tell which Age Period is being viewed. The currently selected button in the Age column will display a **<** next to it. In addition, the **Period Light Age Range** near the top of the screen will show the range of days the current schedules will operate.

©2018 Valco Companies, Inc.

You are allowed to enter the **Age Period** values in any order you wish. So if you have entered some age periods, then discover you missed an age range. You can enter the new Age value at the bottom of the Age column.



Once the changes are saved, the Age column will be sorted by Age.

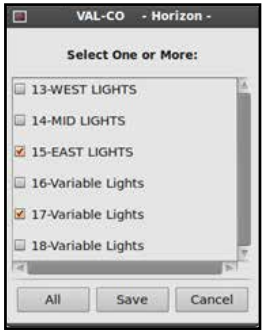
To help in entering **Age Periods**, there are two buttons provided:
Copy From MinVent – Pressing this button will set the **Age Period** values to match the settings from the **Min Vent Ramp** settings.
Set Default Ages – Pressing this button will set the **Age Period** values to match default values which are 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55.

Press the **Clear Light Settings** to clear all **Age Periods** and light schedules from the current zone.

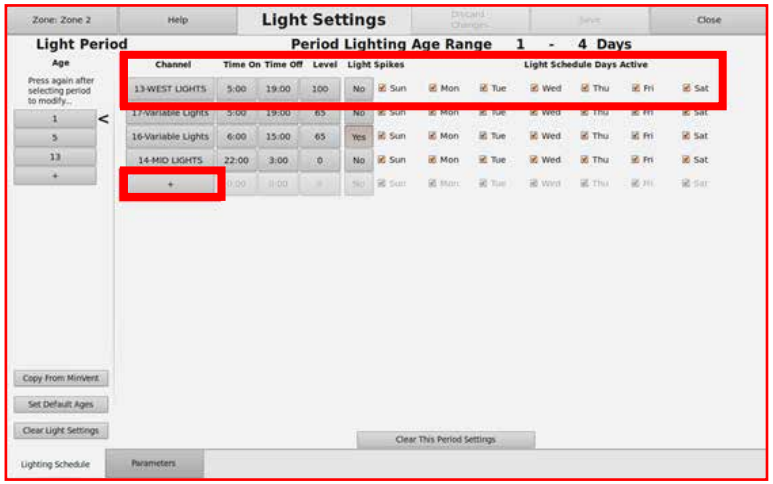
Press the **Discard Changes** button to discard any changes since the last time the **Save** button was pressed.

Light Schedules

Each Age Period can have up to 15 different **Light Schedules**. This allows for up to 180 different light schedules for any one zone.



To add a new **Light Schedule**, press the **Channel** button with the **+** to open a selection window. Check the boxes for the devices you wish to include in this schedule, then press the Save button. You can include as many devices in the schedule as you wish. All the devices will operate at the set time. To change which devices are used in a schedule, press the **Channel** again to open the selection window and make the changes. To remove a Light Schedule from the list, press the **Channel** button, clear all the checkboxes in the selection window, and press the Save button to close the selection window. The **Channel** button will now be blank and the other settings for this schedule will be disabled. When all the changes are saved, any schedules with blank **Channel** buttons will be removed.



Press the **Time On, Time Off** and **Level** boxes to set their values. A popup window with key pad will open to allow you to set the values. Press the Save button to set the value and close the popup.

The **Time On** and **Time Off** values are the points in time when the lights have reached the intensity of the Level setting. If Dusk-to-Dawn ramping is enabled, the ramping up will occur before the **Time On** is reached and the ramping down will occur just before the **Time Off** is reached.

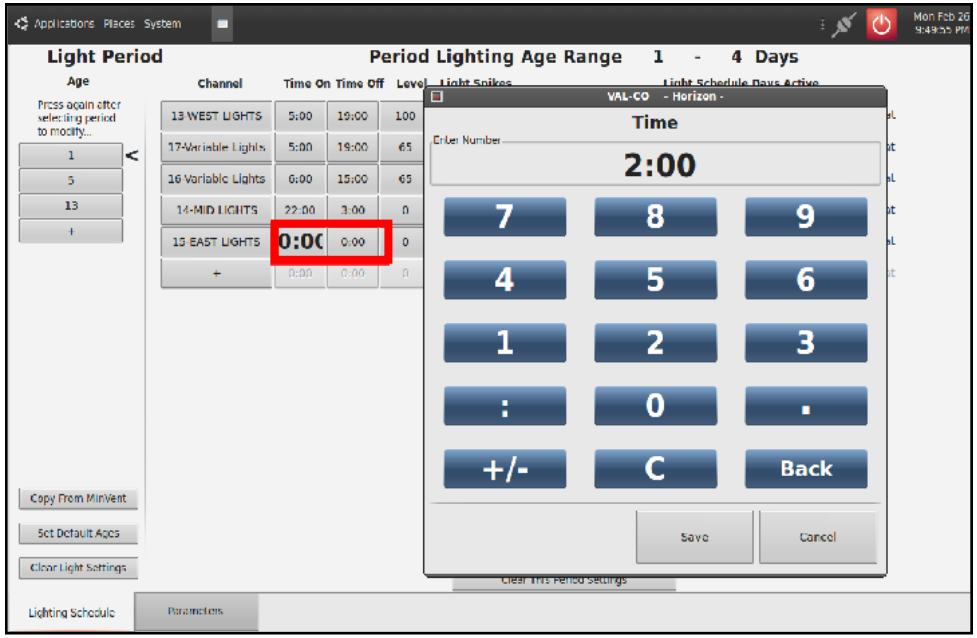
The **Time On** can be set later in the day than the **Time Off** value. If this is done, the lights will turn on at the set time, but will not turn off until the next day at the **Time Off** time. This allows a light schedule to cross over midnight.

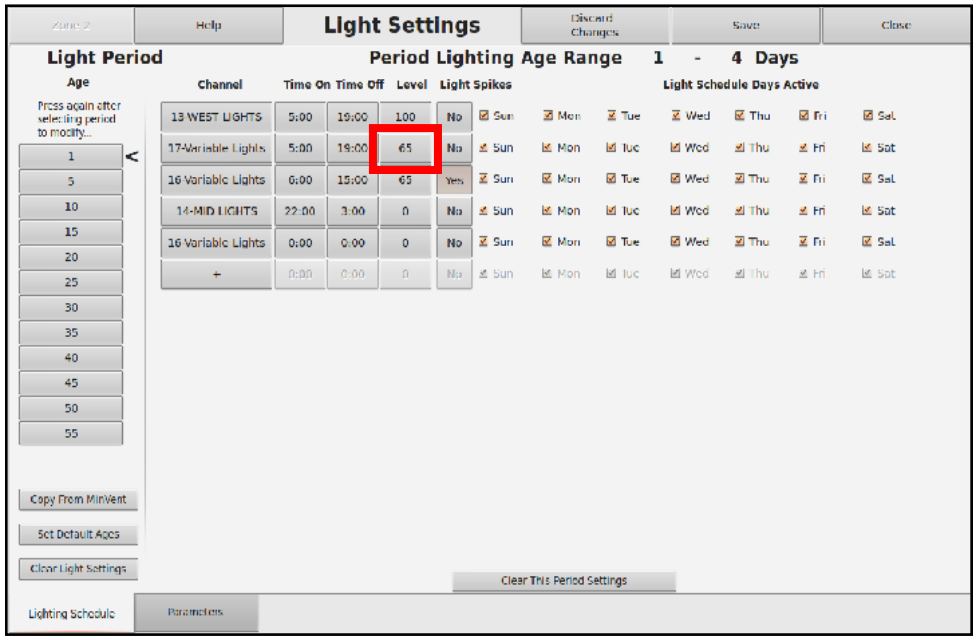
Keep in mind that if the schedule does cross over midnight, depending on the animal age or **Day-of-the-Week** settings the light may turn on/off at midnight, or, in the case of variable lights, may ramp up/down before midnight, if the current schedule calls for the lights to be at an on/off state and tomorrow's schedule calls for the device to be at the opposite state.

For variable lights, all ramping is performed as smooth as possible over the **Time To Ramp** time duration, with as little jump in intensity as possible. In the cases where the lights are on before and after an **Age Period** change, the ramping may take longer to occur, but it will be a smooth transition.

The **Level** setting is the normal light intensity desired for the cycle, and is expressed as a percentage of the maximum light intensity of the device.

Note: The **Light Level** has to be a non-zero value in order for the VARIABLE lights to turn on.





Only one cycle row can be active at one time. Due to this, each row should have times that do not overlap. Any overlapping will cause the lights to stay on until the Off time is reached for the second overlapped light schedule. In case of variable lights, if there is a difference in the intensity of the two overlapping schedules, there will be no ramping. The light intensity will simply jump from the one level to the other at the appropriate time.

©2018 Valco Companies, Inc.

Light Spikes are the sudden increase in light intensity to maximum in order to stimulate the birds. Only Variable Light devices will use the Light Spikes.

Press the **Light Spikes** button to enable or disable light spikes for the cycle. When the button is pressed to enable the Light Spikes, the **Light Spike Definition** popup will appear.

To set the times for the light spikes, press one of the buttons in the popup to display a numeric pad to enter the time the spike should start. When you have set all the starting times of the light spikes, press the **Save** button to close the popup.

Light Spike times have to be within the Time On and Time Off settings. Any Light Spikes set out side of these times will be ignored.

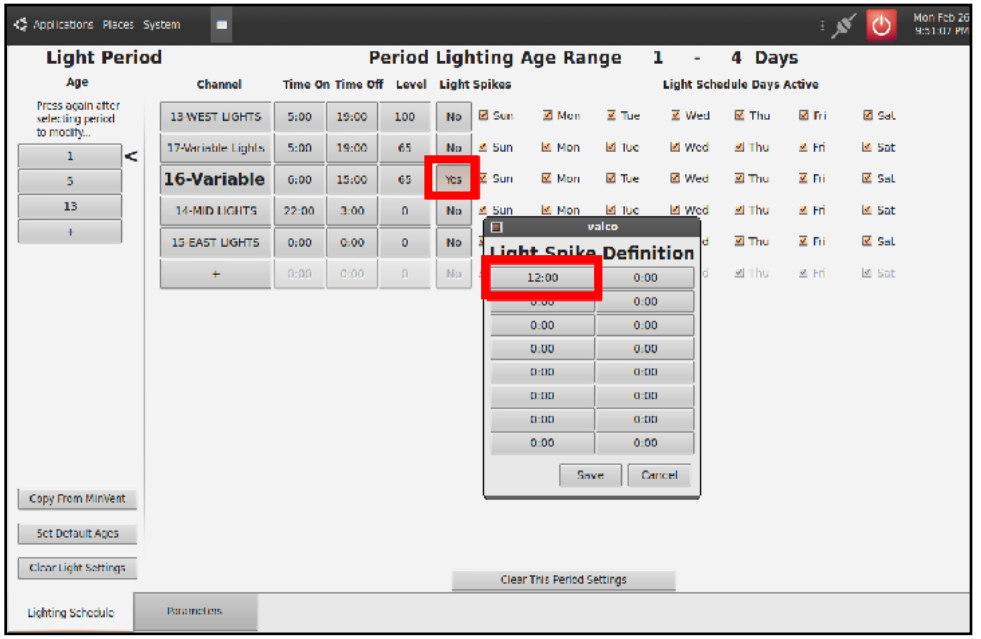
The duration of the spikes is the same for all the Light Spikes set up. The duration time is set up under the Parameters tab.

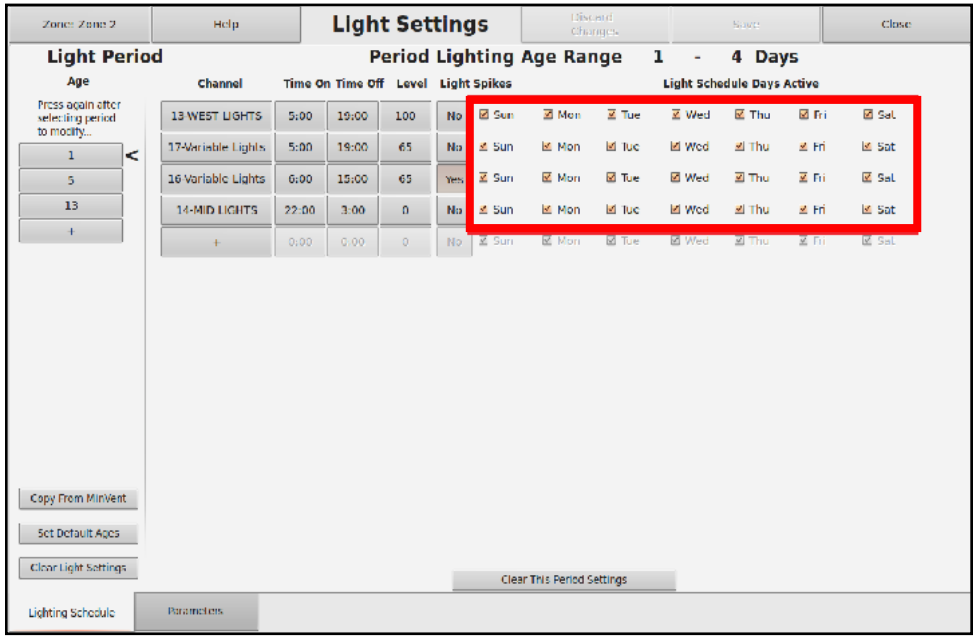
The **Light Schedule Days Active** allows the setting of specific days of the week for the cycle to run. The cycle will only run at the set time on the days of the week that are checked.

If the Light Schedule crosses over midnight and calls for the lights to be on one day, but off the next, or vice-versa, the light will turn on/off at midnight, regardless of the On/Off times of the schedule.

Repeat the steps above for all of the Light Periods, as well as the Light periods of any other zones. Press the Save button on top right corner when you have completed your setups and press the Parameters tab to finish setting up the lights.

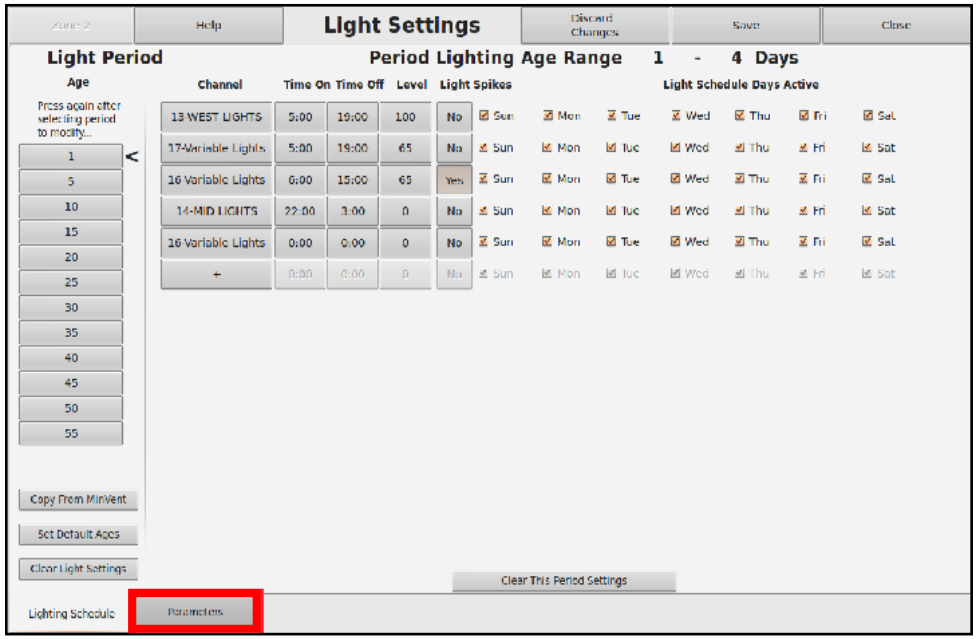
To discard changes without saving them, press the **Discard Changes** button to discard the changes and return the previous settings when the **Save** button was last pressed.





If a period has no light schedules setup, the lights will operate based on the settings of the previous period.

Press the **Parameters tab** at the bottom of the screen to set the general light settings for this zone.



The Parameter settings are used to control Variable Light devices.

The **Parameters setting** screen is used to set:

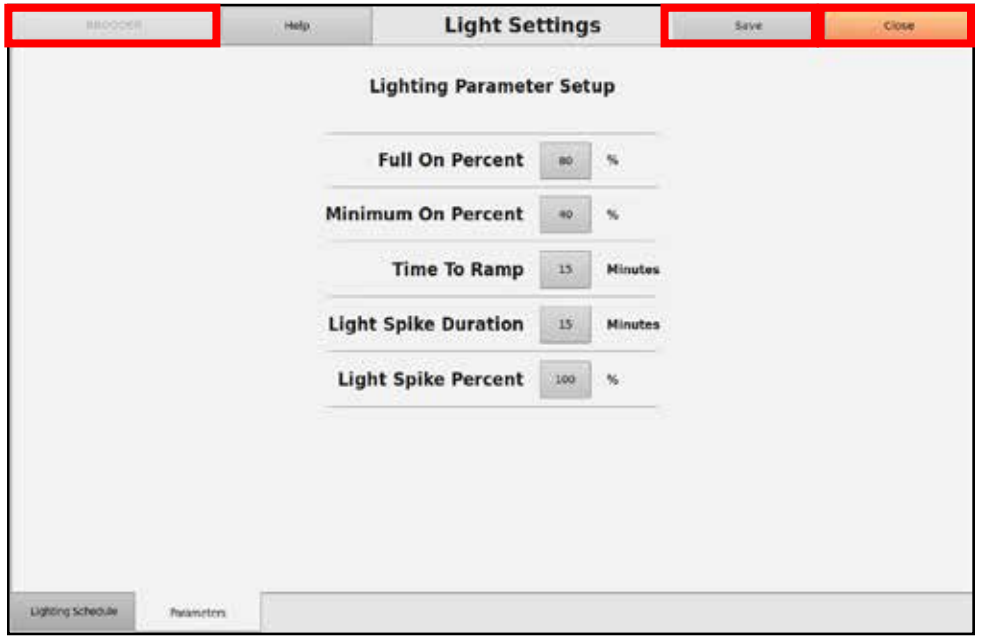
Full On Percent: the percentage of light intensity when the lights are on fully. The lights will not go above this level, unless there is a Light Spike active.

Minimum On Percent: the percentage of light intensity the lights will be at when they turn on and before they start to ramp to the cycle's light level. If a Light Schedule for a variable light has its light Level set below this value, the light will turn on to the set intensity without ramping.

Time To Ramp: the time to go from **Minimum On Percent** to the cycle's level intensity before the **Time On** is reached and back to **Minimum On Percent** just before the **Time Off** is reached. This is also called Dusk-to-Dawn ramping. This time duration is used for all ramping, with the exception of schedules that need to change intensity at midnight due to an Age Period change. Depending on tomorrow's schedule, the light may ramp up to twice this time duration.

Light Spike Duration: the length of time a light spike remains on, each time a Light Spike time is reached.

Light Spike Percent: the light intensity level during the light spikes.



Once all the Lighting variables are set up, press the **Save** button in the top right corner of the screen to save all the settings.

Press the **Close** button to close the screen and return to the **Operation Menu.**

©2018 Valco Companies, Inc.

8.6 OPERATION - FEED SETUP

Feed Settings

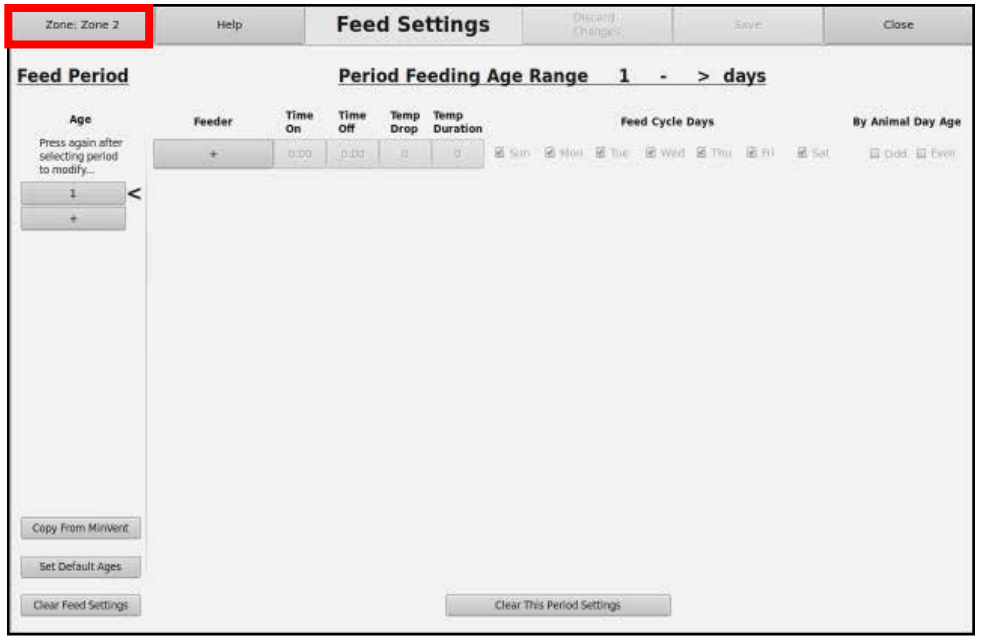
The following pages provide step by step procedures to set up the Feed devices. The devices in the barn should have already been set up on the Horizon® using the **System Configuration** screens found under the **Operation Menu**.

When the Horizon® starts up, the **Main Menu** is displayed. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the **Operation Menu**.

On the Operation menu, press the **Feed** button to open the **Feed Settings** screen for the devices.

Each **Zone**, and each **Age period** has its own Feeder settings. There is no carryover of a schedule between the zones or age periods. If a device has to operate in two different age periods, or in two or more nested zones, a schedule has to be entered for each **Age period** or zone.

To select the zone to work with, press the **Zone** button. A popup window will appear showing the available zones. Press the desired zone to select it and close the popup.



Age Periods

There can be up to 12 different **Age Periods** set up for each zone, as seen in the green box to the right.

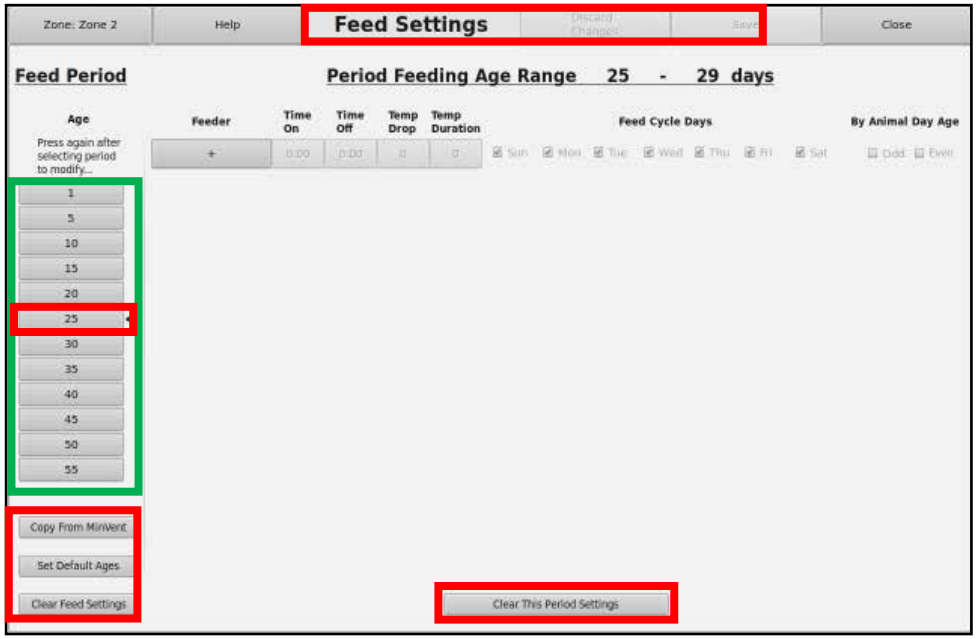
When updating from an older version of software, the starting Age Period settings are taken from the Min Vent Age Ramp settings.

To add an **Age Period** to the zone, press the button with the **+** to open a window to enter the new Age. To change an existing Age, press the button to select that **Age Period** then press it again to open the **Animal Age** window. To remove an Age period, set the Age value to 0 and that button will be removed from the column.

You cannot delete an Age Period that has existing device schedules. Use the Clear This Period Settings button to remove the schedules before settings the Age value to zero.

There are two ways to tell which **Age Period** is being viewed. The currently selected button in the Age column will display a **<** next to it. In addition, the **Period Feeding Age Range** near the top of the screen will show the range of days the current schedules will operate during.

You are allowed to enter the **Age Period** values in any order you wish. So if you have entered some age periods, then discover you missed an age range. You can enter the new Age value at the bottom of the Age column.



©2018 Valco Companies, Inc.

Once the changes are saved, the Age column will be sorted by Age.

To help in entering **Age Periods**, there are two buttons provided:
Copy From MinVent – Pressing this button will set the **Age Period** values to match the settings from the **Min Vent Ramp** settings.
Set Default Ages – Pressing this button will set the **Age Period** values to match default values which are 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55.

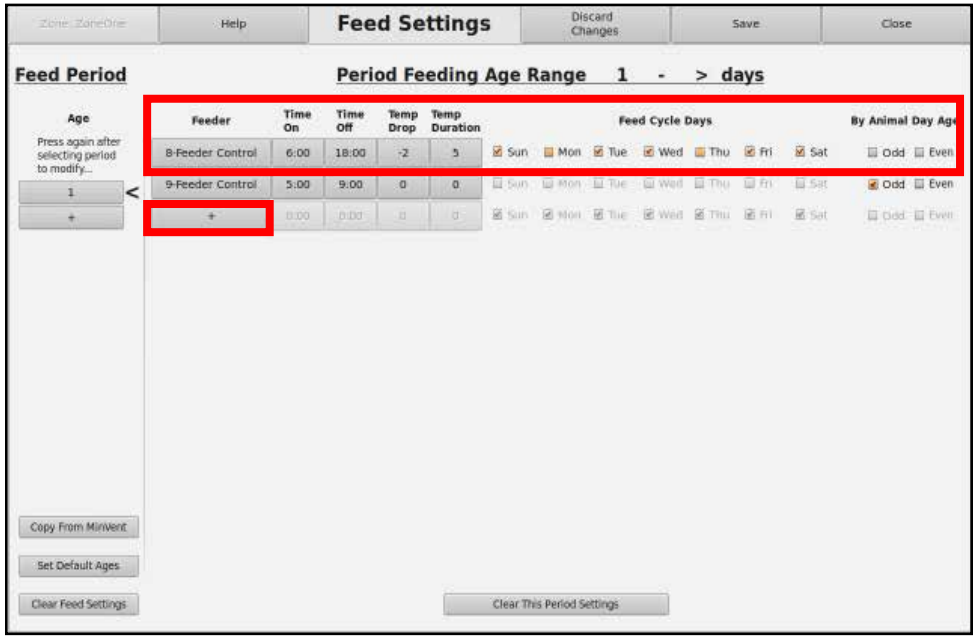
Press the **Clear Feed Settings** to clear all **Age Periods** and feed schedules from the current zone.

Press the **Discard Changes** button to discard any changes since the last time the **Save** button was pressed.

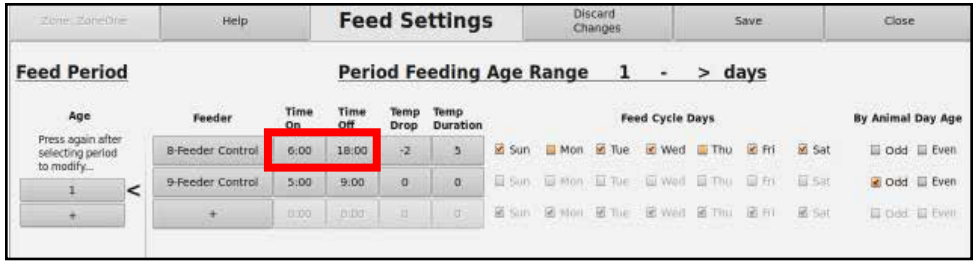
Feed Schedules

Each **Age Period** can have up to 15 different **Feed Schedules.** This allows for up to 180 different schedules for any one zone.

To add a new **Feed Schedule**, press the **Channel** button with the + to open a selection window. Check the boxes for the devices you wish to include in this schedule, then press the Save button. You can include as many devices in the schedule as you wish. All the devices will operate at the set time. To change which devices are used in a schedule, press the **Channel** again to open the selection window and make the changes. To remove a schedule from the list, press the **Channel** button, clear all the checkboxes in the selection window, and press the **Save** button to close the selection window. The **Channel** button will now be blank and the other settings for this schedule will be disabled. When all the changes are saved, any schedules with blank **Channel** buttons will be removed.



Press the **Time On** and **Time Off** buttons to set their values. A popup window will open to allow you to set the values. Press the **Save** button to set the value and close the popup.



The **Time On** and **Time Off** values are the points in time when the Feeders will turn on and off.

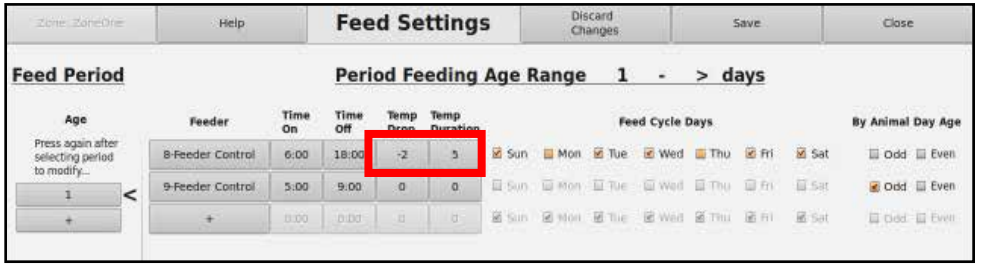
The **Time On** can be set later in the day than the **Time Off** value. If this is done, the feeder will turn on at the set time, but will not turn off until the next day at the **Time Off** time. This allows a schedule to cross over midnight.

Keep in mind that if the schedule does cross over midnight, depending on the animal age, **Day-of-the-Week**, or **Odd/Even** settings the feeders may turn on/off at midnight if the current schedule calls for the feeders to be at an on/off state and tomorrow's schedule calls for the feeder to be at the opposite state.

Only one cycle row can be active at one time. Due to this, each row should have times that do not overlap. Any overlapped times will cause the feeders to stay on for the combined time periods of the overlapped settings.

Press the **Temp Drop and Temp Duration** buttons to specify a drop in the Temperature Setpoint during the feeding time. This helps compensate for the heat generated due to the increased activity of the animals while feeding.

The **Temp Drop** setting is the amount the Temperature Setpoint will decrease at the start of the feed schedule.. The **Temp Duration** is the amount of time the lower setpoint will be in effect. If the duration is zero, the drop will be in effect for the duration of the feed cycle. Otherwise, the drop will continue for the set duration, regardless of when the Feed cycle ends.



©2018 Valco Companies, Inc.

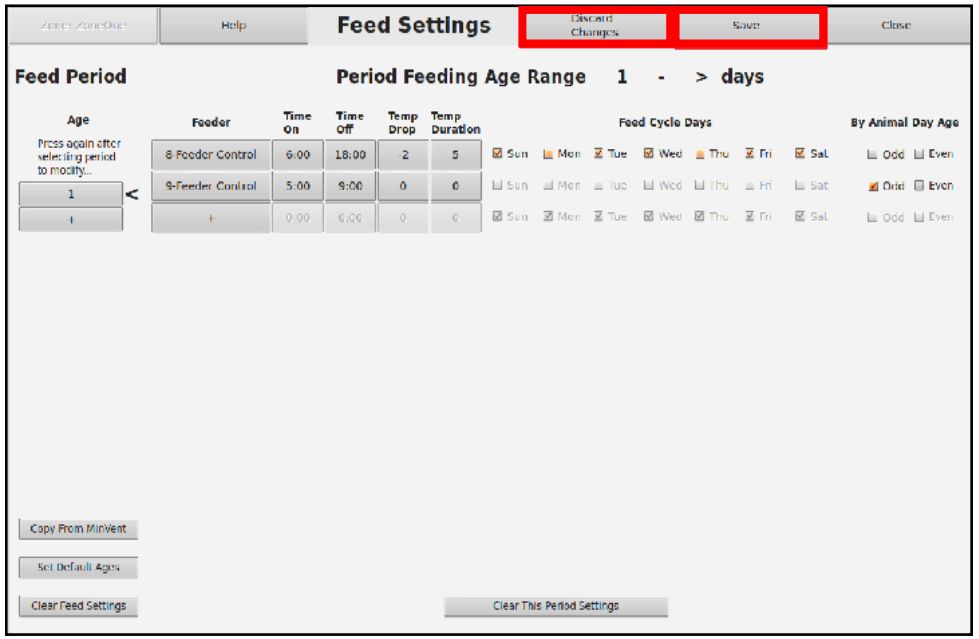
The **Feed Cycle Days** allows the setting of specific days of the week for the cycle to run. The cycle will only run at the set time on the days of the week that are checked.

The **By Animal Day Age** allows operating the feeders on either odd or even days. The day the feeders run is based on the animal age, not the day of the month.

If the schedule crosses over midnight and calls for the feeders to be on one day, but off the next, or vice-versa, the feeder will turn on/off at midnight, regardless of the On/Off times of the schedule.

Repeat the steps above for all of the **Feed Periods**, as well as the feed periods of any other zones. Press the **Save** button on top right corner when you have completed your setups.

To discard changes without saving them, press the **Discard Changes** button to discard the changes and return the previous settings when the **Save** button was pressed last.



If a period has no Feed schedules setup, the feeders will operate based on the settings for the previous period which has settings.

8.7 OPERATION - ZONE CONTROL SETUP

The following pages provide step by step procedures to set up the **Zone Control.** The devices in the barn should have already been set up on the Horizon using the System Configuration screens found under the Operation menu.

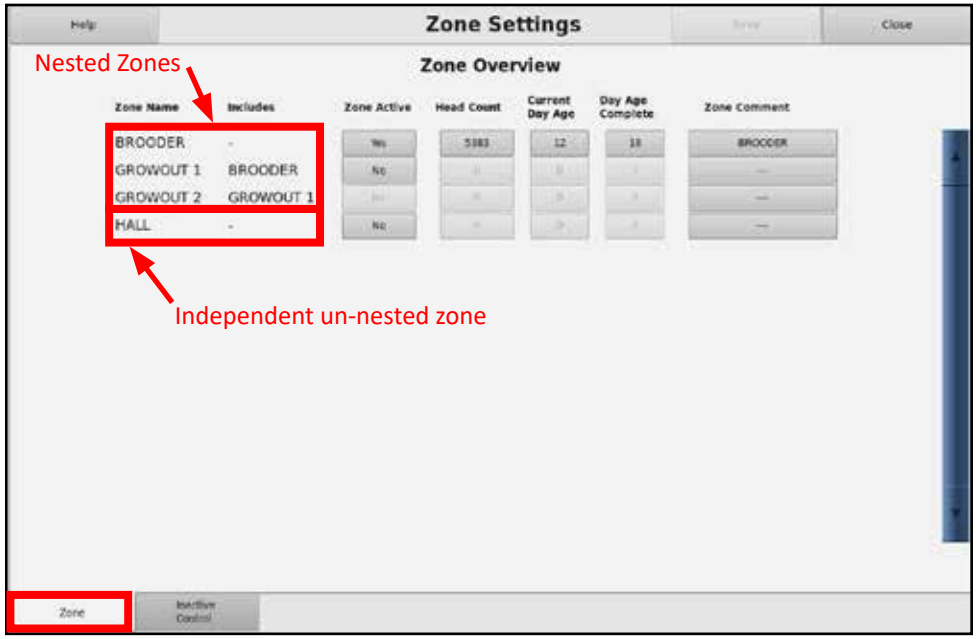
When the Horizon starts up, the **Main Menu** is displayed. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the Operation menu.

On the Operation menu, press the **Zone Control** button to open the Zone Settings screen.

©2018 Valco Companies, Inc.

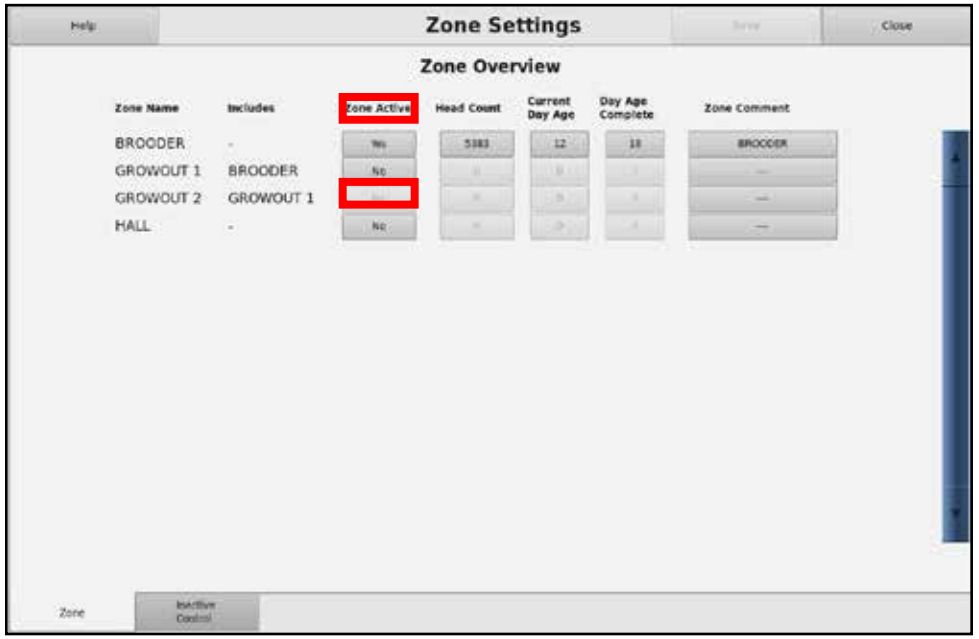
Zone Control Settings

The **Zone Overview** screen is where the zones are enabled and disabled. It is also where the initial animal information is set up.



The first column displays the name of the zones. The second column displays the names of any nested zones included in the zone.

To enable and disable a zone, press the **Zone Active** button. The button will toggle between Yes and No.



Enabling and disabling of nested zones occurs in sequence. Activating a zone will cause the buttons for any lower nested zone to be disabled. In order to activate a previous nested zone, it is necessary to deactivate any higher zones first.

When a zone is active, the program will monitor all aspects of the zone, and its nested zones, and will use the devices in the currently active zone, as well as the devices in any lower nested zones to maintain the environment of the zone.

After a zone is activated, press the **Head Count** button to enter the number of animals moved into the zone.

Press **Current Day Age** button to enter the current age of the animals. The program uses this age to determine how the environment should be maintained. This number normally starts at age 1, but can be set to any starting age. The program will automatically increment it every day.

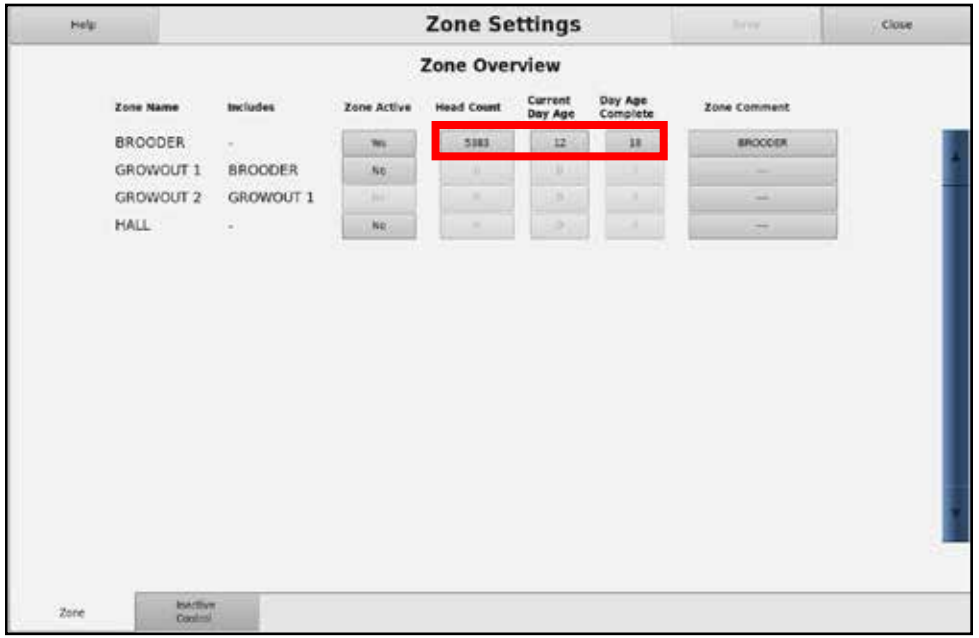
Press the **Day Age Complete** button to set the age of the animals when they will be shipped out.

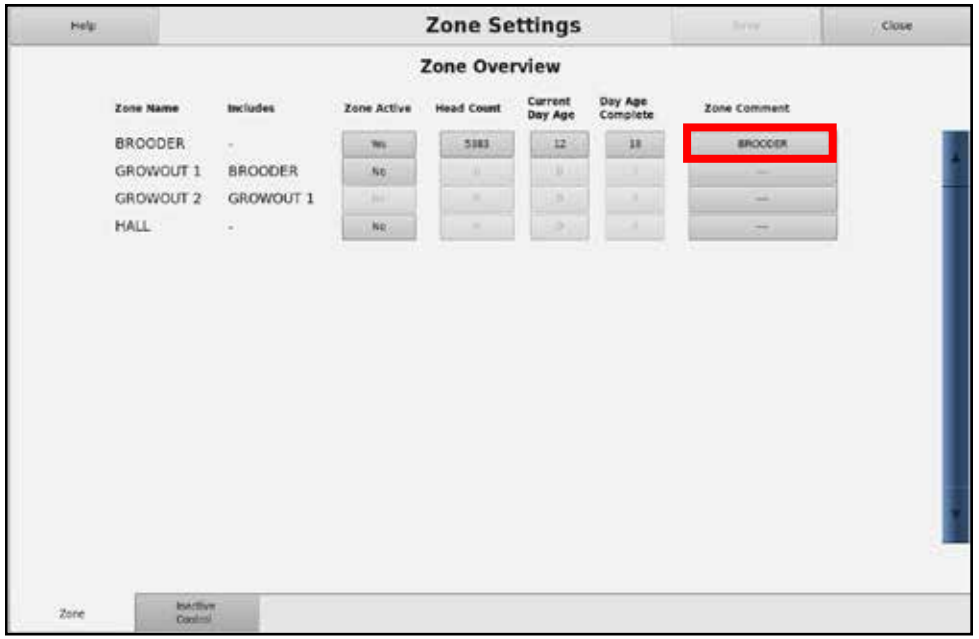
Note: pressing each of these buttons will pop up a window to allow the value to be entered.

For nested zones, as the larger zones are activated, these three settings move with the zone.

Press the **Zone Comment** button to pop up a virtual keyboard to allow the entering of any comment. This comment if for informational purposes only and is not used by the program.

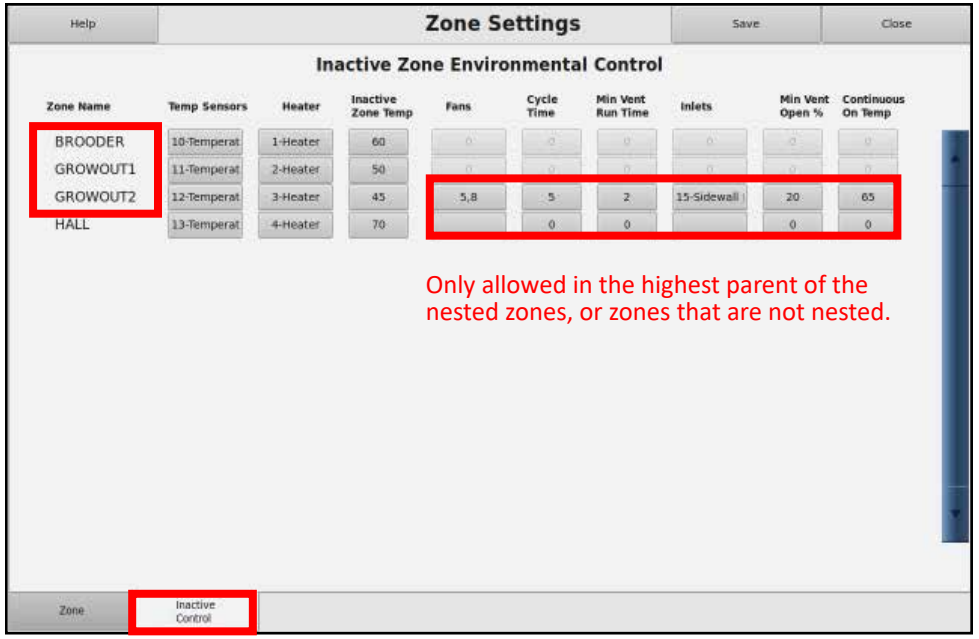
If there are additional zones which do not have nested zones, or are a different group of nested zones, repeat the above steps for each of those zones.





©2018 Valco Companies, Inc.

The **Inactive Control** tab allows the setting up of heaters and minimum ventilation for any zones which are inactive. Each inactive zone will have its own temperature setpoint, allowing the heating of each zone independently.

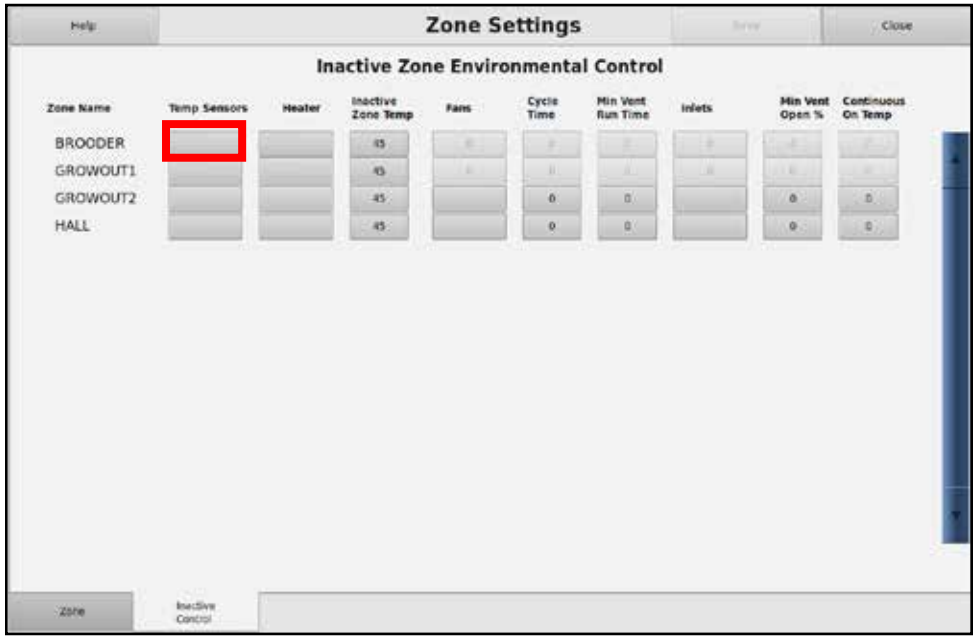


In order to heat an inactive zone, each zone has to have its own Temp Sensor and Heater. This allows the heating of the individual inactive zones.

However, only the highest parent of a group of nested zones is allowed ventilation settings for inactive zones. This is due to the fact that the fans and inlets will be used in all the nested zones, so they are only available when all the nested zones are inactive.

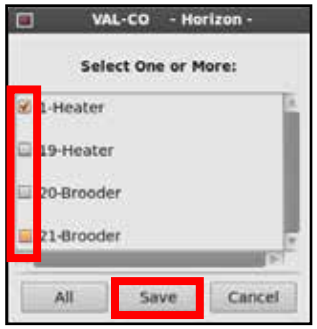
Press the **Temp Sensor** button to select the temperature sensors to use to maintain the temperature in the zone, when the zone is inactive.

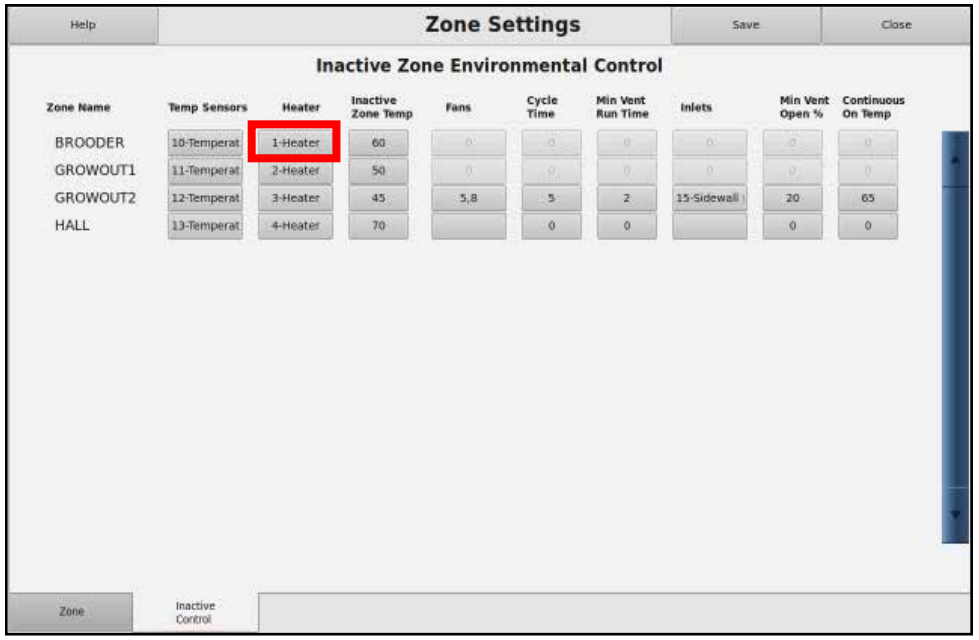
Press the sensors to select and unselect them. Only the temperature sensors configured for the selected zone will be available in the selection window. Multiple sensors can be selected in the popup window. Press the **Save** button to save the selections and close the window.



Press the **Heater button** to select the heating devices to use to keep the zone from freezing, when the zone is inactive.

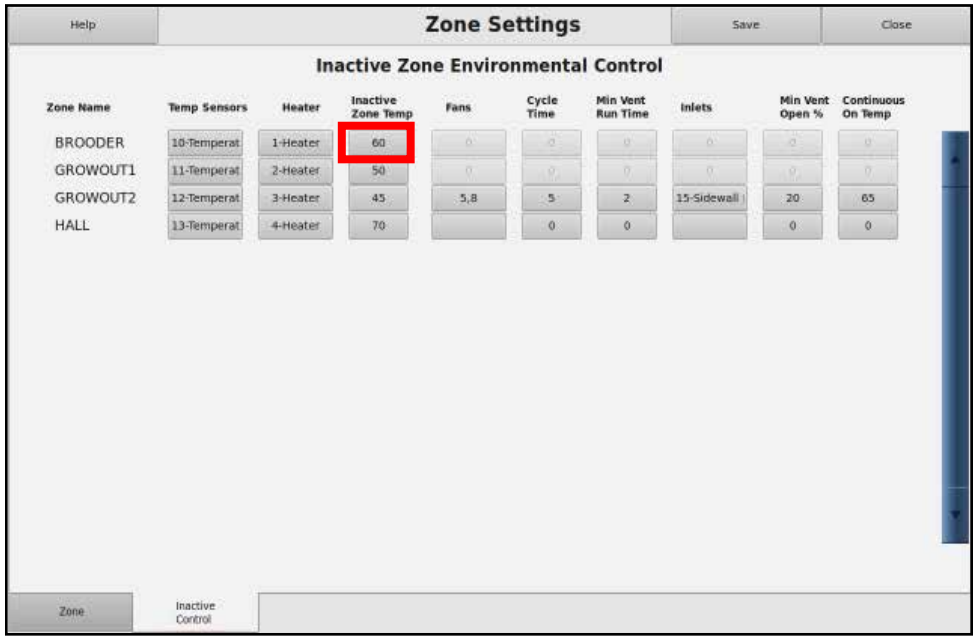
Press the heater names to select and deselect them. Only the heating devices configured for the selected zone will be available in the selection window. Multiple heating devices can be selected in the popup window. Press the **Save** button to save the selections and close the window.





Press the **Inactive Zone Temp** button to set a Temperature Setpoint for this zone while it is inactive. When the zone is inactive, the zone's configured heater will be used to keep the temperature in the inactive zone above this setpoint.

Enter the temperature for the Setpoint, then press the **Save** button to save the value and close the window.



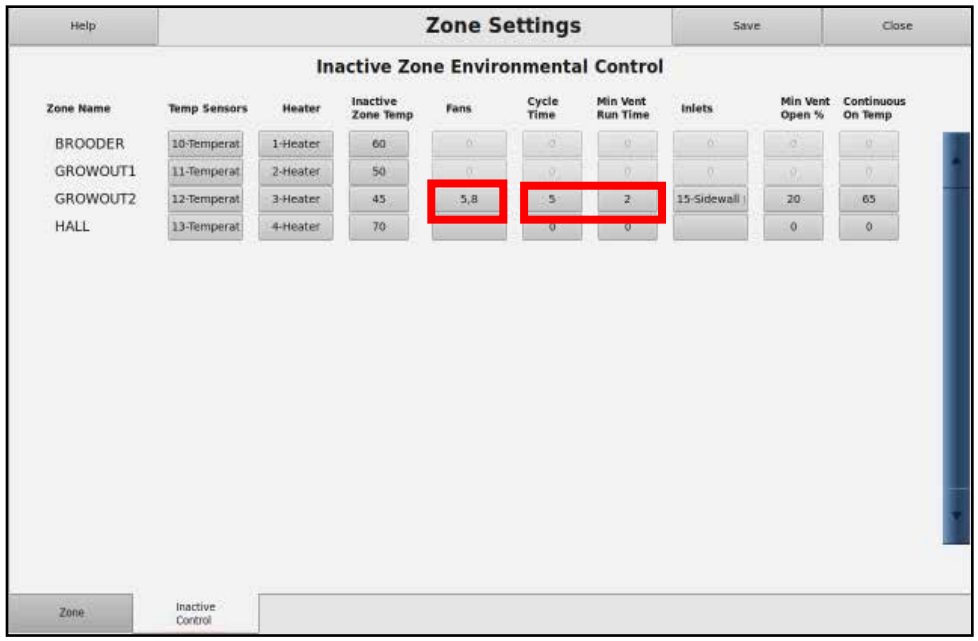
©2018 Valco Companies, Inc.

For the highest parent of nested zones, or independent inactive zones, fans can be set up to run a minimum ventilation based on time.

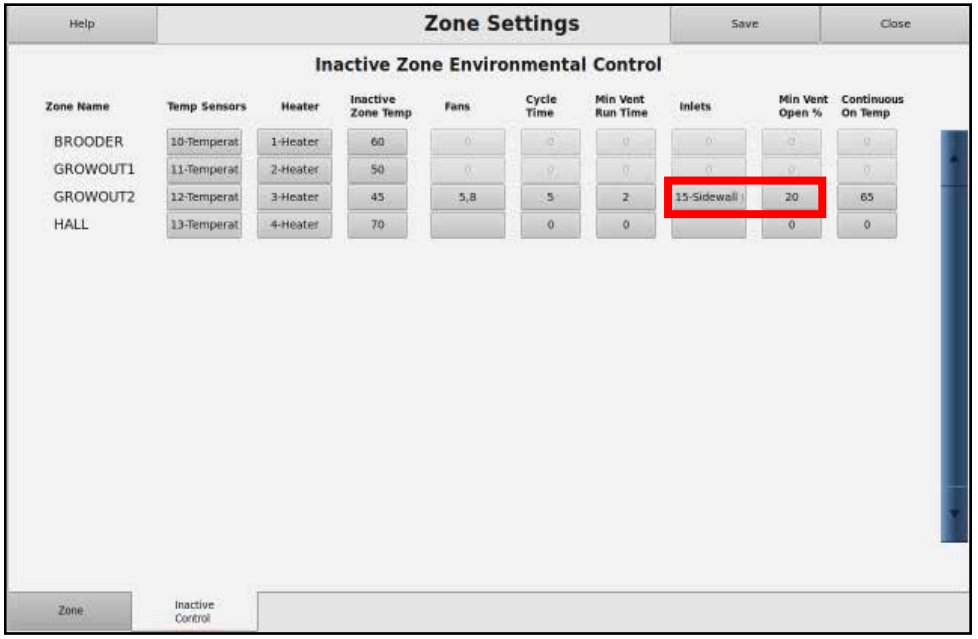
Press the **Fans** button to pop up a window to select the fans to use for minimum ventilation of the zone. For zones which contain nested zones, all the fans in all the associated nested zones will be available. Press the fan names to select and deselect them. Multiple fans can be selected. Press the **Save** button to save the selections and close the window.

Press the **Cycle Time** button to pop up a numeric keypad to enter the total minimum vent cycle time in minutes.

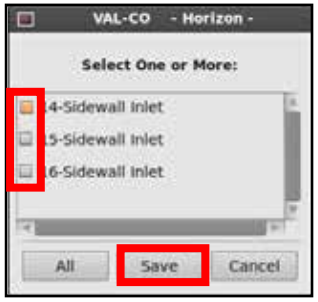
Press the **MinVent Run Time** button to pop up a numeric keypad to enter the amount of time, in minutes, the fans should run during the total minimum vent cycle.



If an inactive zone has fans set up for minimum ventilation, an inlet can also be set up to open a certain percentage while the fans are running.



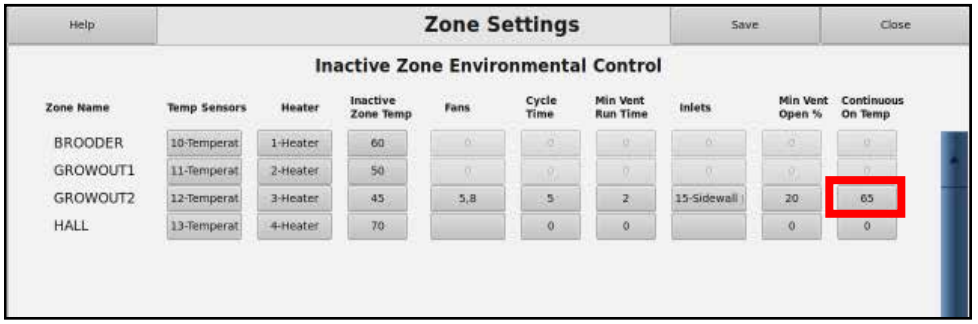
Press the **Inlets** button to select the inlets to use. As with the fans, any curtains or inlets configured for this zone, and any of its lower nested zones, will appear in the list.



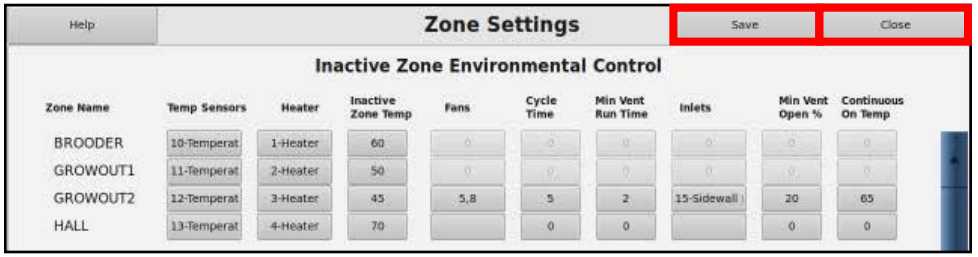
Press the fan names to select and deselect them. Multiple fans can be selected. Press the **Save** button to save the selections and close the window.

Press the **MinVent Open Pct** button to pop up a numeric keypad to enter the opening size, as a percentage, of the inlet when the fans are running.

Set the **Continuous On Temp** to a temperature value where the fans will run continuously and the inlets will stay open, whenever the temperature is above it. When the temperature is below this value, the fans and inlets will cycle based on the Cycle Time setting.



When finished, press the **Save** button to save the Zone Control settings.

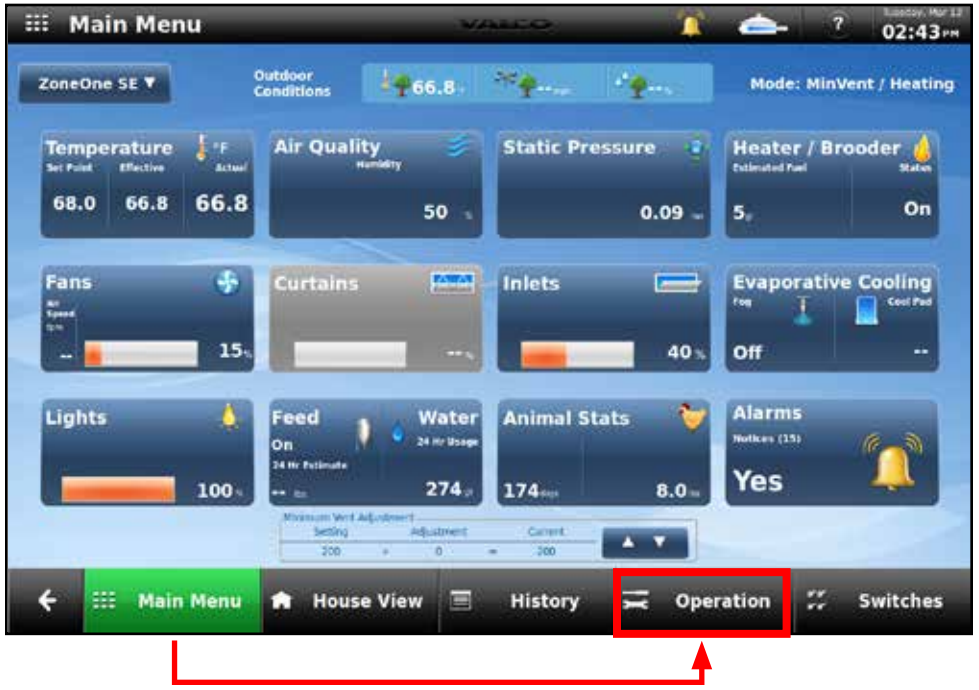


Press the **Close** button to close the Zone Settings window and return to the Operation window.

©2018 Valco Companies, Inc.

8.8 OPERATION - ENVIRONMENTAL CONTROL SETUP

When the Horizon starts up, the **Main Menu** is displayed. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the Operation menu.

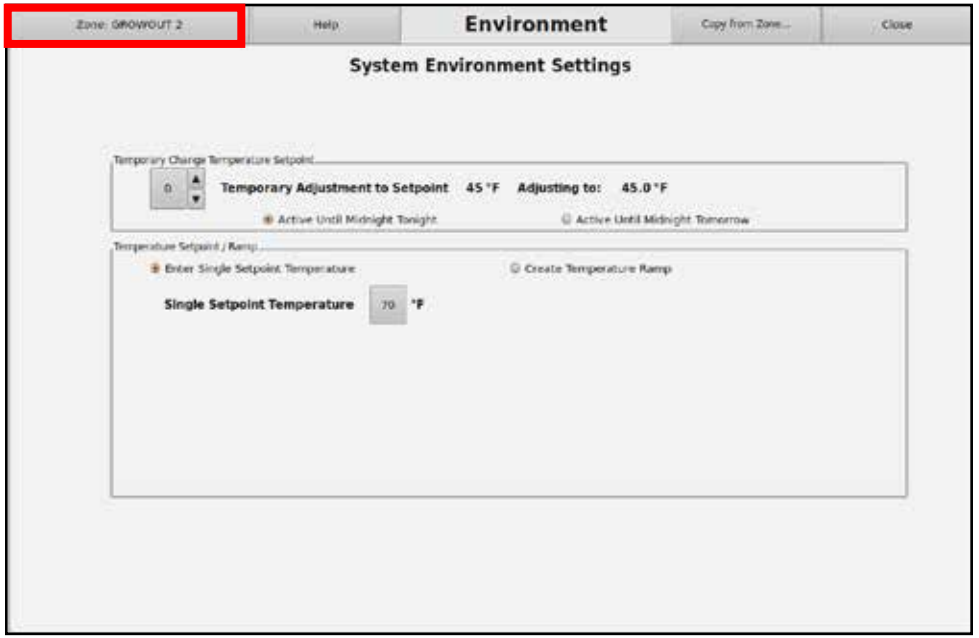


On the **Operation** menu, press the **Environmental Control** button to open the System Environment Settings screen.

Environmental Control Settings

The **System Environment Settings** screen is where the Temperature Setpoint settings are entered. Each zone has its own setpoint and needs to be set up separately.

To select the zone to work with, press the **Zone** button. A popup window will appear showing the available zones. Press the desired zone to select it and close the popup.

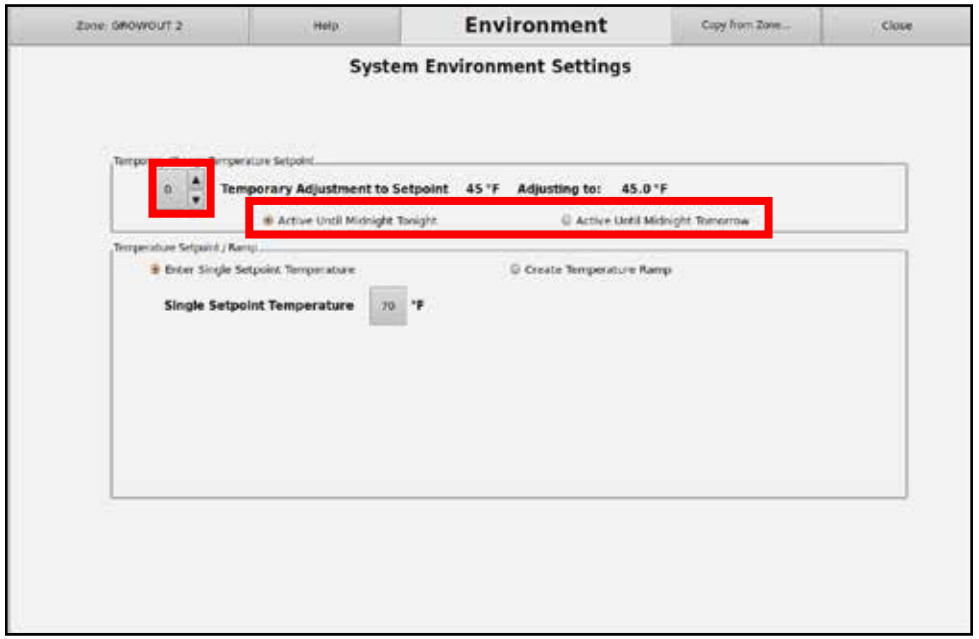


Note: pressing any of the value buttons on this screen will pop up a numeric pad to allow entering of the value. The name on the top of the pad will change to indicate what is being changed. Press the Save button, after entering the value to close the popup.

The **Temporary Change Temperature Setpoint** section allows a temporary change of the temperature setpoint for up to 48 hours.

Press the **Value** button or the arrows to set how much to adjust the current Setpoint. The text to the right of these buttons will show what affect the change will have on the setpoint.

Select either the **Active until Midnight Tonight** to have the change last up to 24 hours, or the **Active Until Midnight Tomorrow** to have the change last up to 48 hours.

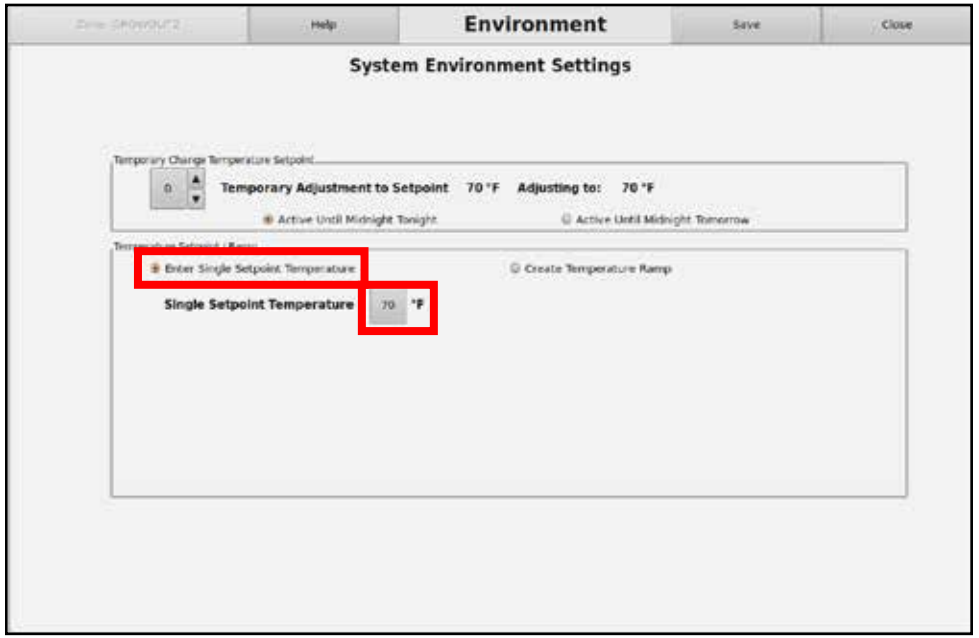


©2018 Valco Companies, Inc.

The Temperature Setpoint / Ramp sections allows you two options:

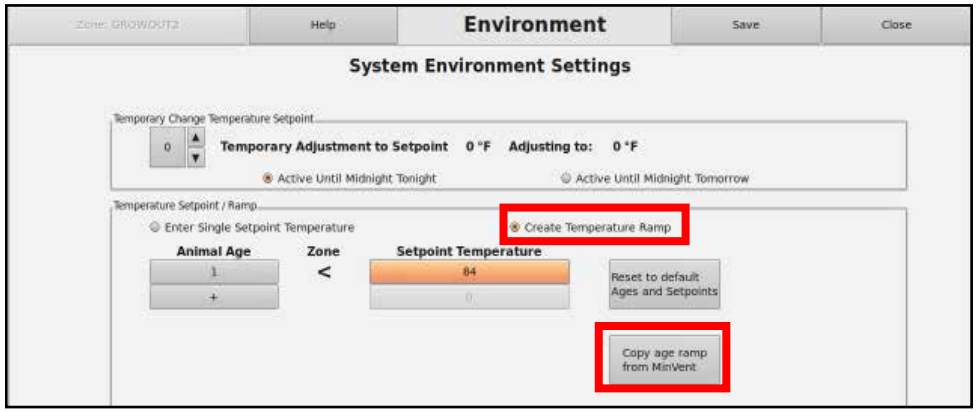
Option 1: Press **Enter Single Setpoint Temperature** to use one Temperature Setpoint for the full grow out cycle. This setpoint will not change automatically and will need to be manually changed as the animals grow.

Press the **Single Setpoint Temperature** button to enter the value to use as the setpoint.

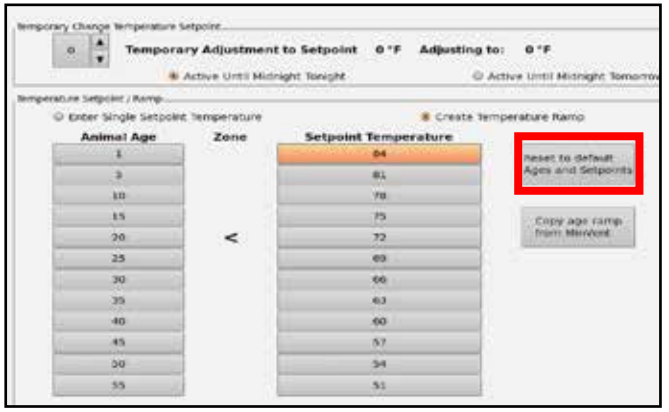


Option 2: Press **Create Temperature Ramp** to set up a Setpoint ramp table and have the Temperature Setpoint automatically change during the grow out period.

The Temperature Setpoint Ramp table allows up to 12 different age points, with a Temperature Setpoint for each one of those ages. When the animals are at one of the set Age values, the temperature setpoint will be set to the corresponding Setpoint Temperature. As the animals age, the Temperature Setpoint will be ramped evenly between each Age period. The setpoint will change at midnight every night.



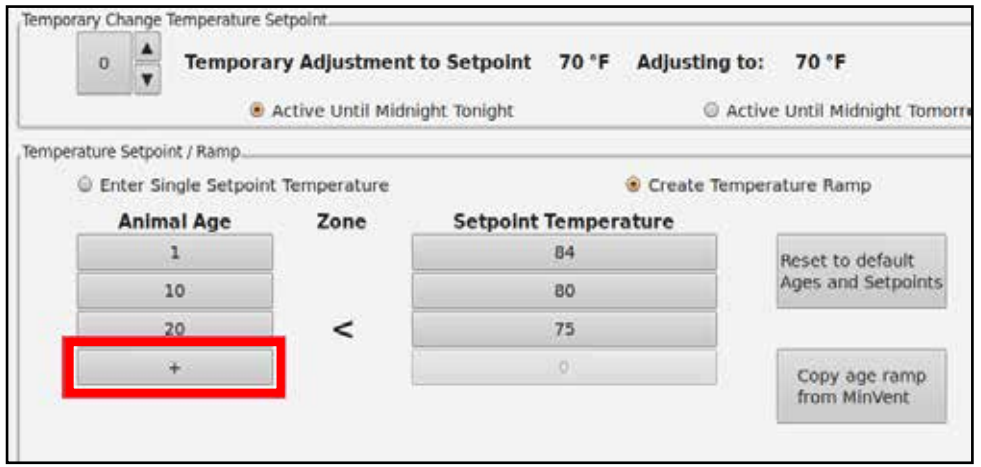
The **Temperature Setpoint Age Ramp** is completely separate from the other age ramps on the Horizon. However, pressing the **Copy age ramp from MinVent** button will change the **Animal Age** values to match the age periods used by the Minimum Ventilation ramping. The Minimum Vent Age periods are used as the starting values of the Temperature Setpoint ramping, when upgrading from an earlier version of the Horizon software, that only used the Min Vent Age values for all Horizon ramping.



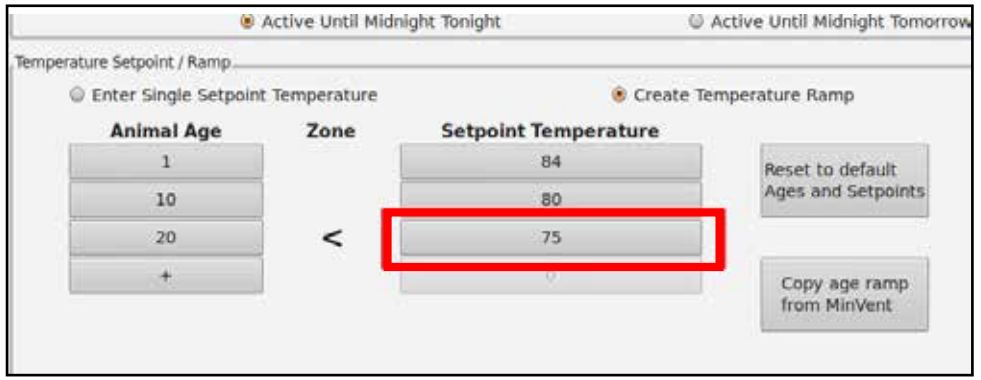
Use the **Reset to default Ages and Setpoints** button to set the Ramp table to its default values, as shown.

To enter a new **Animal Age** period, press the button with the **+** on it. This will open a window to allow the **Animal Age** to be entered. To change an existing Age point, press the button again, to open the same window to allow changing the value. Press **Save** to save the value to the ramp table.

To remove an **Animal Age** period, and its corresponding Setpoint, enter a 0 in the **Animal Age** popup window and save the change. This will remove the selected row from the table.



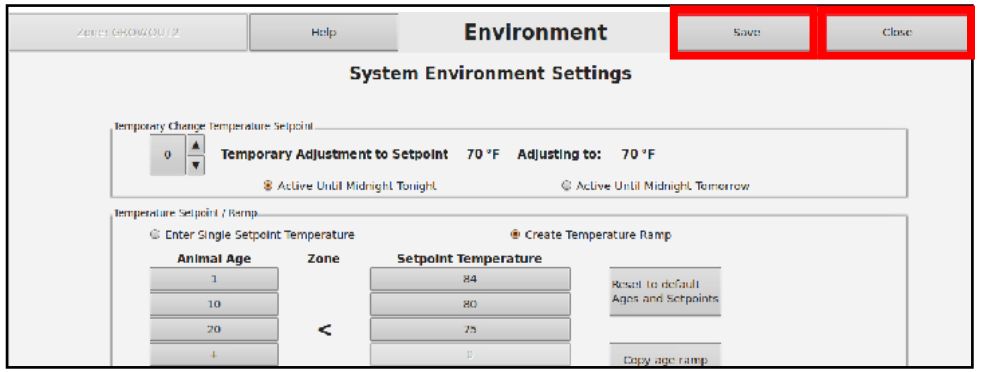
To enter or change a **Setpoint Temperature** for one of the **Animal Age** periods, press the **Setpoint Temperature** button to open a window, allowing the **Ramp Temperature** to be entered or changed. Press **Save** to save the value to the ramp table.



Press the **Save** button in the upper right corner of the screen to save the changes for this zone.

Repeat the steps above for the other zones.

Once the **Temperature Setpoint** information for all the zones has been entered and saved, press the **Close** button to return to the menu.



©2018 Valco Companies, Inc.

8.9 OPERATION - ALARMS AND NOTIFICATIONS SETUP

The Horizon has two alarm relays which can be used to activate different alarm systems. This allows the ability to set up the alarms so the more important alarms can activate one relay, which could notify more people, and the less critical alarms can activate the other relay, such as non-life threatening conditions where an immediate response is not necessary. It is also possible to have an alarm activate the low priority alarms only during the daytime hours, or only display a notification of the alarm condition on the screen, without activating any of the alarm relays.

The following guide provides the step by step procedures to set up the alarms for the Horizon.

When the Horizon starts up, the **Main Menu** is displayed. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the **Operation** menu.

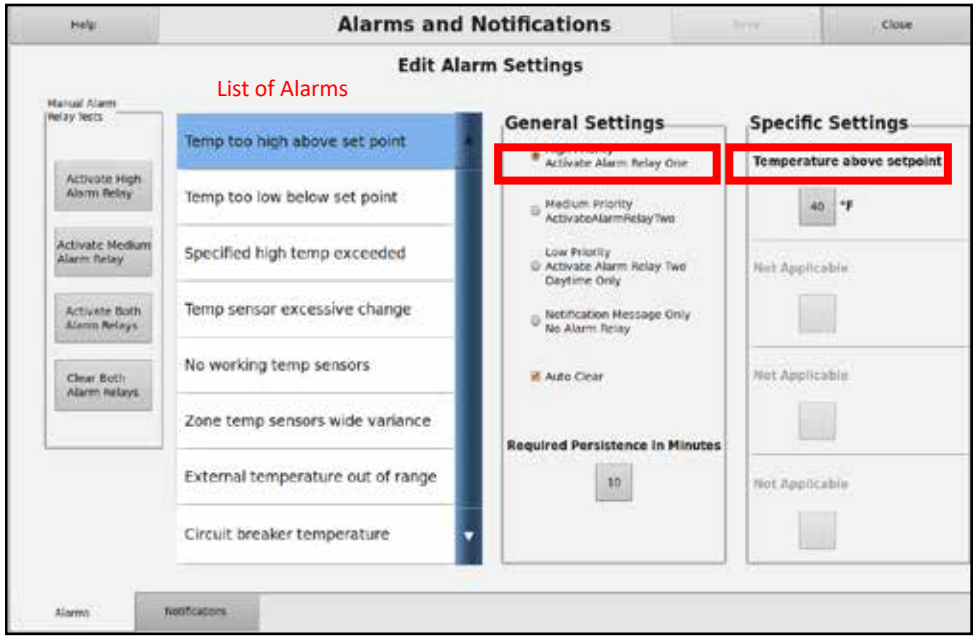
On the **Operation** menu, press the Alarms and Notifications button to open the Alarms screen.

The **Alarms** tab is where the settings for the different alarms are changed.

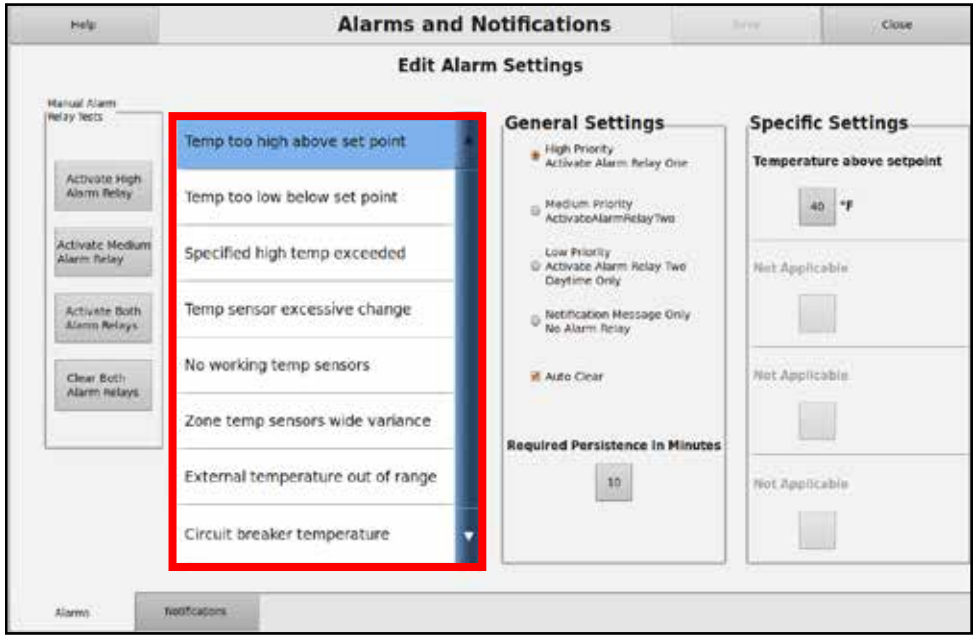
The left side of the screen contains the list of alarms. To view more alarms, press the scroll bar arrows on the right side of the list.

The center box is where the alarm's priority is set, as well as if the alarm should clear itself automatically, and how long the alarm condition needs to be present before the alarm will display a notification message and, if needed, activate one of the two relays.

The right hand boxes will display the specific settings for each alarm. What these boxes displays will change, based on the selected alarm in the Alarms List.



To select an alarm to setup, press the **alarm's name** in the **Alarm list**. The selected alarm will be highlighted. The **General Settings** box and the **Specific Settings** box will change to display the current settings for that alarm.



©2018 Valco Companies, Inc.

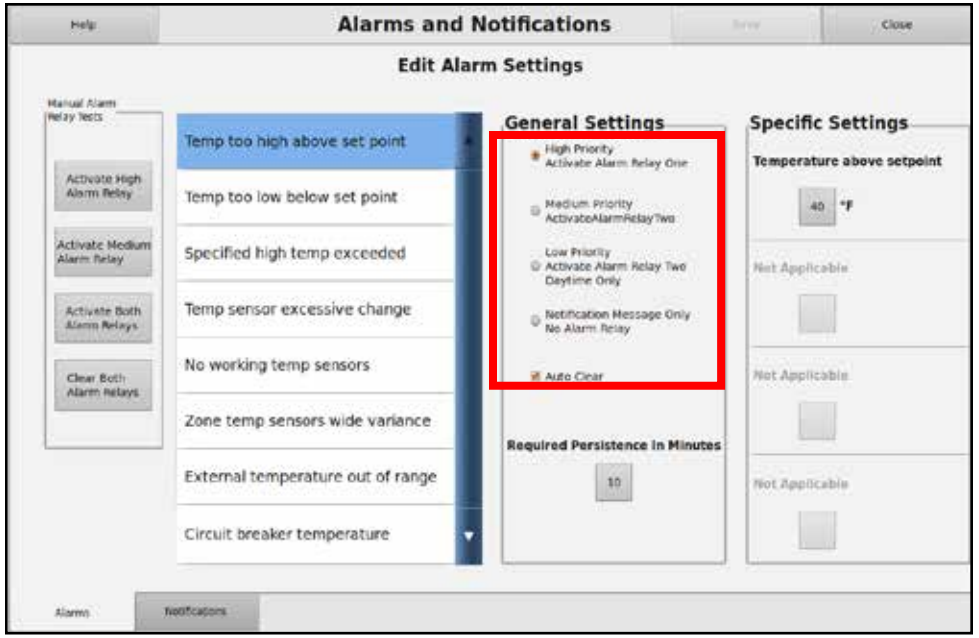
The General Settings box is used to set the priority of the alarm. There are four options here:

1. **High Priority** – Use this priority to **activate alarm relay one** to notify someone that a critical problem is present and needs immediate attention. This alarm will activate the relay any time, day or night.

2. **Medium Priority** - Use this priority to **activate alarm relay two** to notify someone that a non-critical problem is present and needs attention. This alarm will activate the relay any time, day or night.

3. **Low Priority** - Use this priority to **activate alarm relay two** to notify someone that a non-critical problem is present and needs attention. This alarm will activate the relay **only during the daytime** hours, but will display a notification on the screen of the problem if it occurs during the nighttime hours. The daytime hours defaults to 8:30 to 17:30, but can be changed in the **System Configuration – Global settings**.

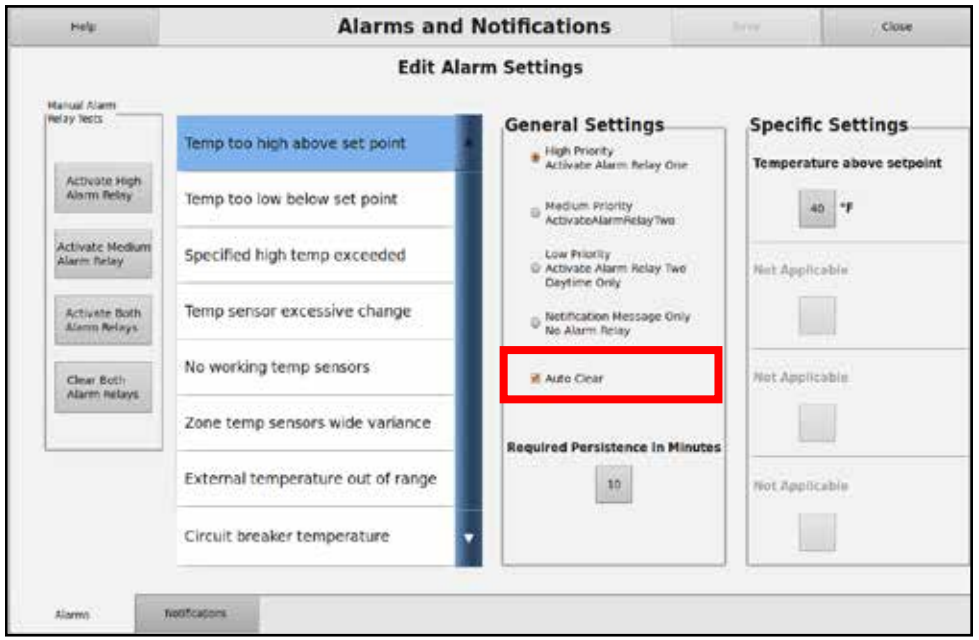
4. **Notification Message Only** – Use this priority to display a message on the screen when the condition is present, but is not critical enough to activate the alarm system to notify someone of the problem.



The **Auto Clear** feature is used to allow the alarm to clear itself and to shut off the alarm relay if there are no other alarms using the same relay. This setting is not used for some alarms, where automatically clearing the alarm could cause problems with the animals.

If **Auto Clear** is set, when the alarm condition which caused the alarm clears up for at least 1 minute, the alarm will be cleared and the relay will be turned off. Note: A message will be displayed on the screen for any alarms that cleared themselves.

If **Auto Clear** is not set, a user has to clear the alarm manually by navigating to the **Main Menu** – Alarms screen and pressing the red X for the alarm.

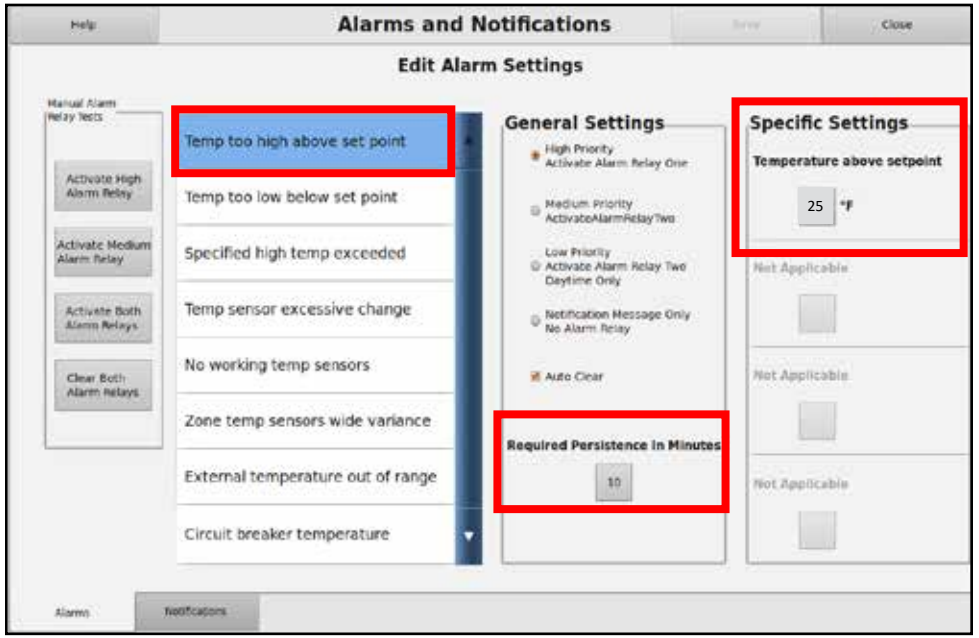


The **Required Persistence In Minutes** setting is used to delay the activation of an alarm. This helps prevent nuisance alarms for sudden, temporary changes in some condition that would otherwise cause the alarm to activate immediately.

This setting is ignored for some alarms, where adding additional delay time to the alarm doesn't make sense.

If this setting is set to zero, the alarm will activate as soon as the alarm condition is present.

If this setting is set to a non-zero value, the alarm condition has to be present for the set amount of minutes before the alarm will activate. If the alarm condition clears up before the elapsed time has passed, the alarm will not activate and no message will be displayed.

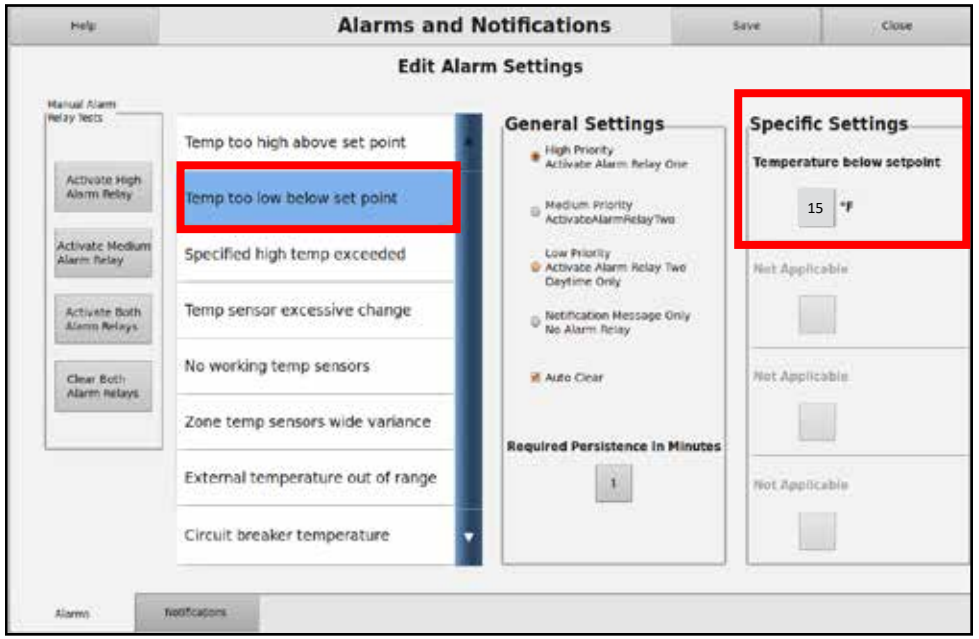


The following alarms are available:

Temp too high above setpoint: - this alarm will activate if the Zone's average temperature goes to high. This alarm condition will change when the Zone's Setpoint changes.

Defaults – High Priority, Auto Clear, Persistence: 0

Settings:
Temperature Above Setpoint – default: 25 – an offset to the Zone's Setpoint.



Temp too low below setpoint: - this alarm will activate if the Zone's average temperature goes too low. This alarm condition will change when the Zone's Setpoint changes.

Defaults – Medium Priority, Auto Clear, Persistence: 1

Settings:
Temperature below Setpoint – default: 15 – an offset to the Zone's Setpoint.

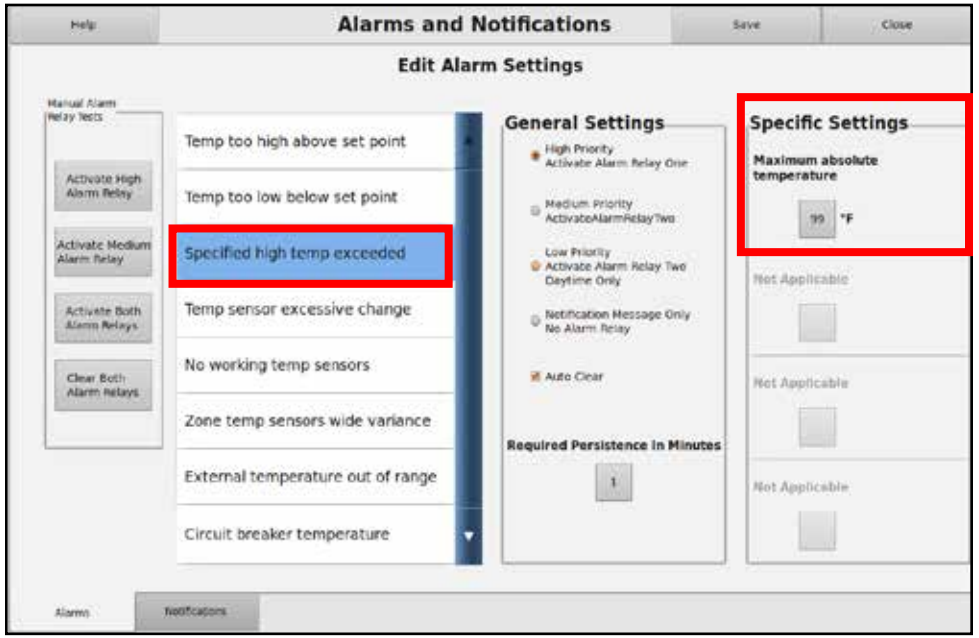
©2018 Valco Companies, Inc.

Specified high temp exceeded: - This alarm will activate if the Zone's average temperature goes to high. This alarm condition is an absolute temperature setting and will not change when the Zone's Setpoint changes.

Defaults – High Priority, Auto Clear, Persistence: 5

Settings:

1. **Maximum absolute temperature** – default: 95 – Absolute temperature reading.

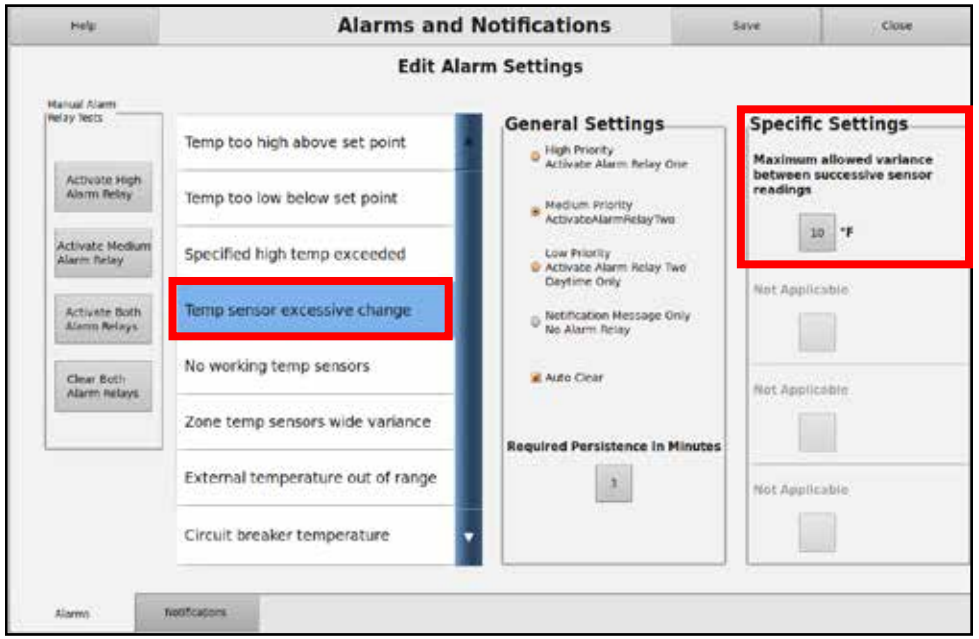


Temp sensor excessive change - This alarm will activate if the temperature reading changes too much between readings. It is used to notify someone when the temperature changes too quickly.

Defaults - High Priority, Auto Clear, Persistence: 1

Settings:

1. **Maximum allowed variance between successive sensor readings** - default: 20 - the amount of change between readings before the alarm activates.



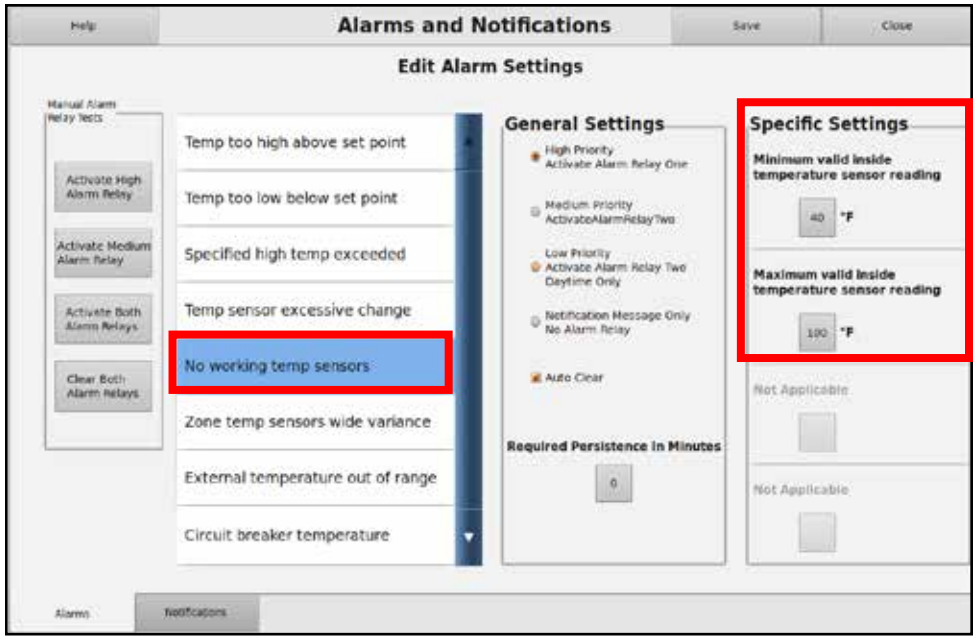
No Working Temp Sensors – This alarm will activate when all the inside temperature sensors in a zone are reading outside the specified range. If this happens, the Horizon will maintain the output device's status at the same On/ Off condition just before the alarm activated. Note: if the individual temperature sensors are out of this range, the system will activate a Communication Data alarm for the sensor.

Defaults – High Priority, Auto Clear, Persistence: 0

Settings:

1. **Minimum valid inside temperature sensor reading** – default: 40 – reading below this absolute setting will cause the sensor to be ignored and an alarm activated.

2. **Maximum valid inside temperature sensor reading** – default: 80 – reading above this absolute setting will cause the sensor to be ignored and an alarm activated.

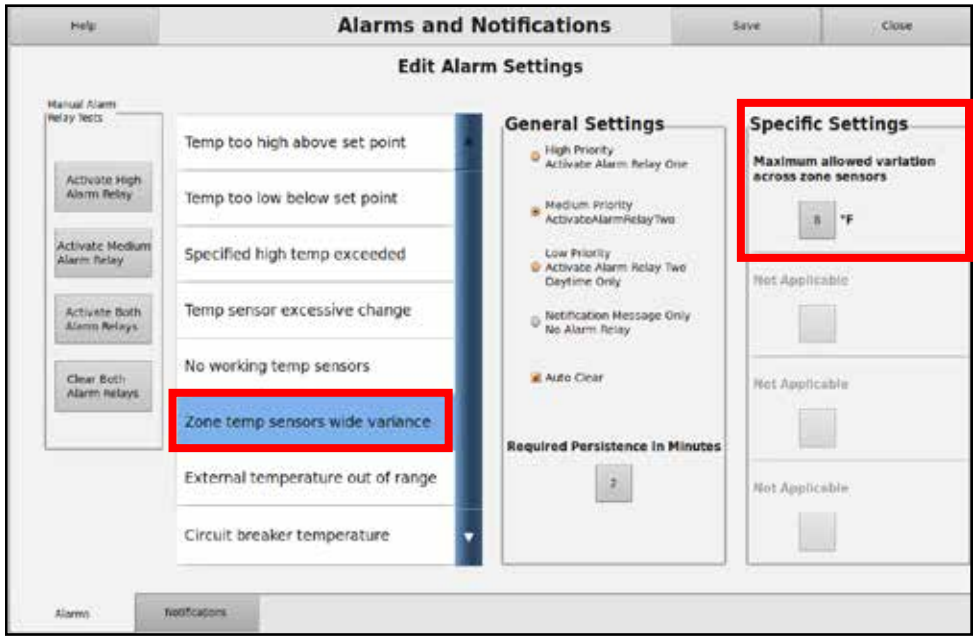


Zone temp sensors wide variance – This alarm activates when a temperature sensor has a reading that are too far from the temperature setpoint. When this alarm activates, the sensor that is out of range is ignored and the temperature setpoint is calculated based on the readings of the remaining good sensors.

Defaults – Low Priority, Auto Clear, Persistence: 0

Settings:

1. **Maximum allowed variation across zone sensors**– default: 20 – Any sensor above or below the Temperature Setpoint by this amount will be ignored and will activate the alarm.



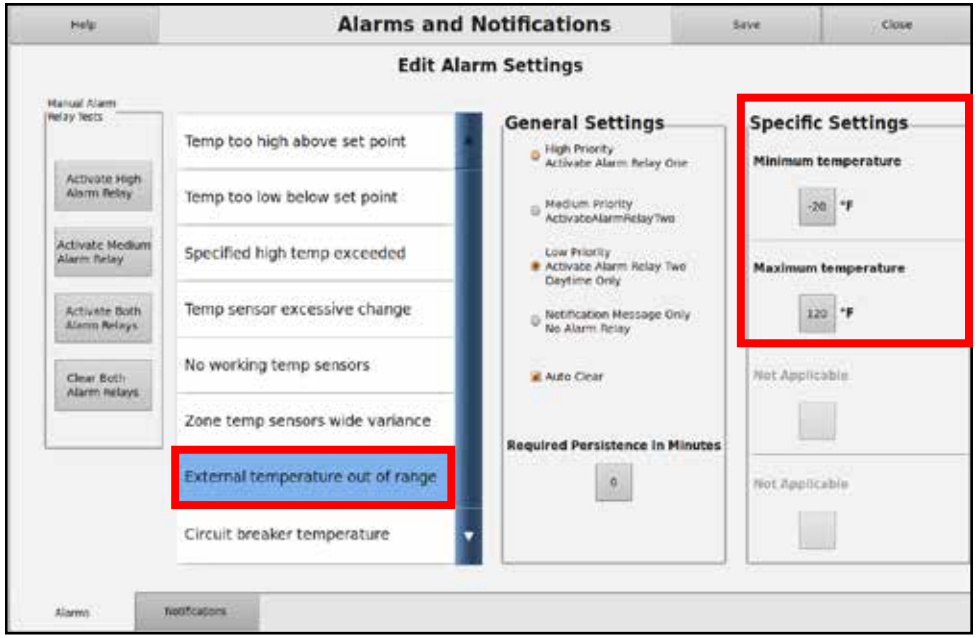
©2018 Valco Companies, Inc.

External temperature out of range – This alarm will activate when the outside temperature sensors in a zone are reading outside the specified range.

Defaults – Low Priority, Auto Clear, Persistence: 0

Settings:

1. **Minimum temperature** – default: -20 – reading below this absolute setting will cause the sensor to be ignored and an alarm activated.
2. **Maximum temperature** – default: 120 – reading above this absolute setting will cause the sensor to be ignored and an alarm activated.

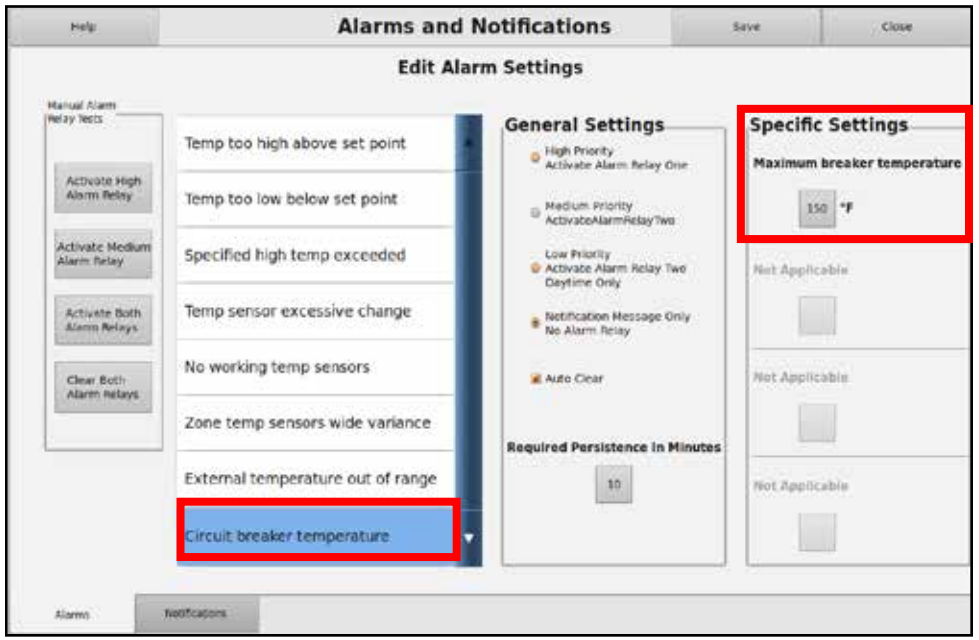


Circuit Breaker temperature – This alarm will activate when the circuit breaker temperature sensor goes above the set temperature reading. This is an absolute value and will not change with the setpoint.

Defaults – Notification only, Auto Clear, Persistence: 10

Settings:

1. **Maximum breaker temperature** – default: 150 - reading above this absolute setting will cause the alarm to activate.



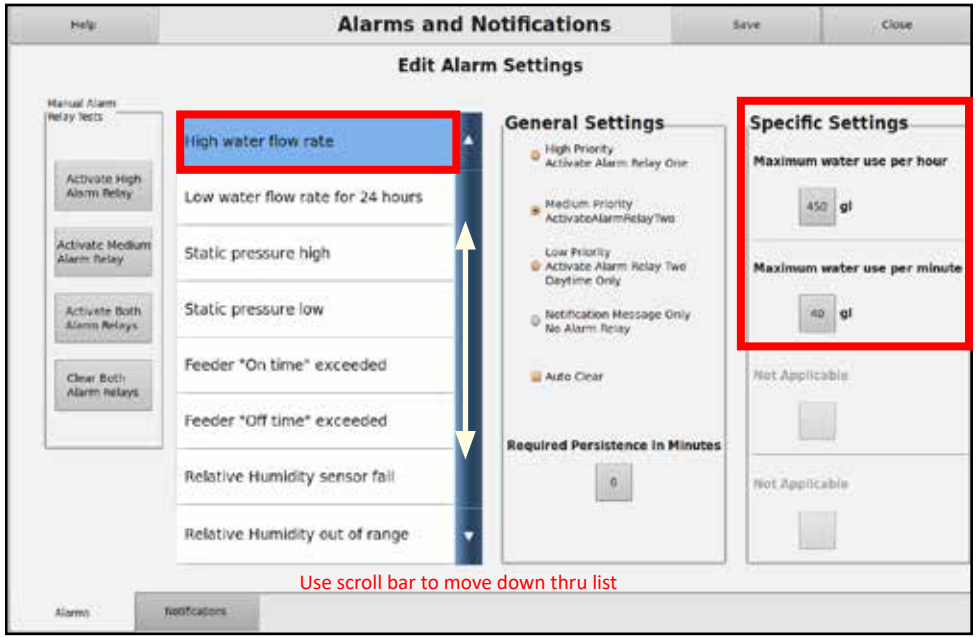
High Water flow rate – This alarm will activate when the water usage goes to high. The two conditions which can cause this alarm are a hourly rate that is too high, or a too much water usage for a minute.

Defaults – Medium Priority, no Auto Clear, Persistence: 0

Settings:

Maximum water use per hour – default: 400 – Water usage above this setting during the hour will activate the alarm. Usually used to indicate over usage by the animals or small leaks causing high usage over a longer period of time.

1. **Maximum water use per minute** – default: 40 – water usage over this value in a minute will activate this alarm. Usually used to indicate a broken water line.

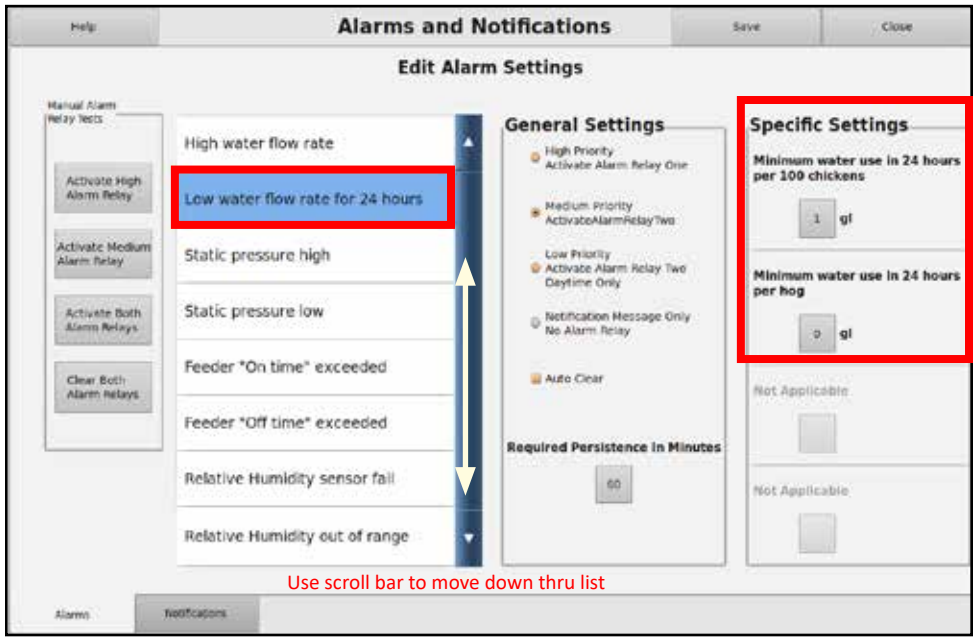


Low water flow rate for 24 hours – This alarm will activate when the water usage goes too low over a 24 hour period. This alarm is based on the amount of water used by 100 animals in a 24 hour period.

Defaults – Medium Priority, no Auto Clear, Persistence: 60

Settings:

1. **Minimum water used in 24 hours per 100 chickens** – default: 1 – Use this setting for birds. The system will use this value and the current bird head count divided by 100 to determine if the water usage is too low and activate an alarm if it is.
2. **Minimum water used in 24 hours per hog** – default: 0 – Use this setting for hogs. The system will use this value and the current hog head count to determine if the water usage is too low and activate an alarm if it is.

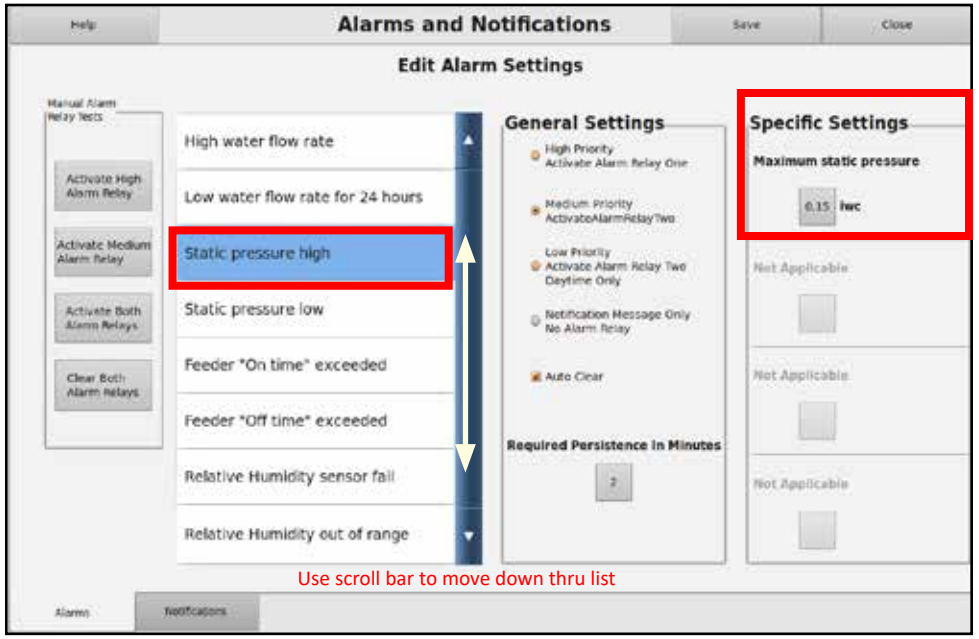


©2018 Valco Companies, Inc.

Static pressure high – This alarm will activate when the static pressure goes above the set value. When this alarm activates, any inlet/curtain currently in use will start to open until the static pressure goes below the setting. If the currently used inlet/curtains opens fully and the static pressure is still high, the system will start to open the other inlets/curtains until the pressure drops.

Defaults – Medium Priority, Auto Clear, Persistence: 0

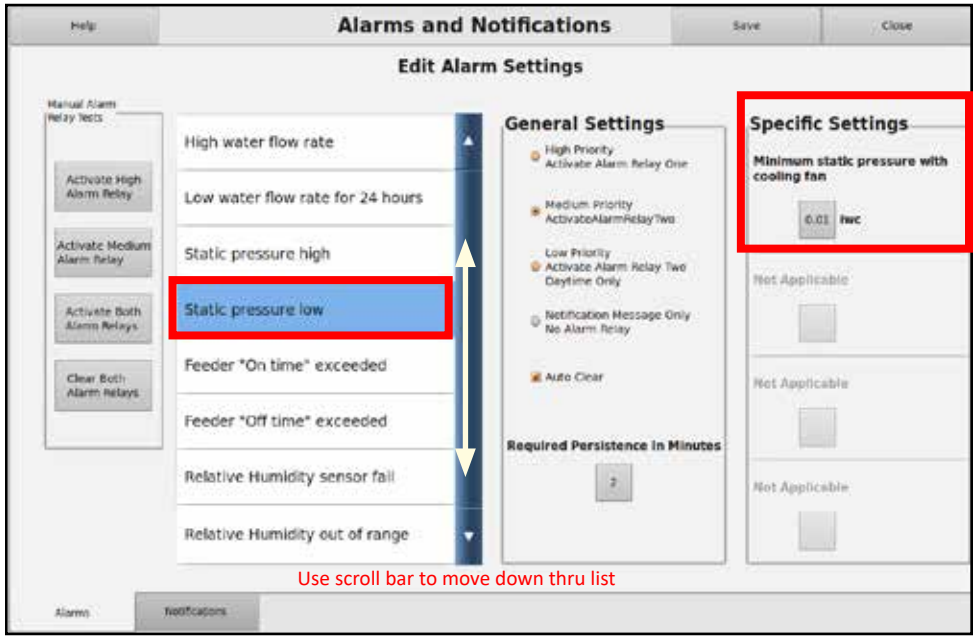
Settings:
Maximum Static Pressure – default: 0.15 – Once the static pressure goes above this setting, the inlet/curtains will start to open and the alarm will activate.



Static pressure low – This alarm will activate when the static pressure goes below the set value when at least one fan, with at least a 4000 CFM rating, is running. If the static pressure is lower than this value, but no fans are running, the alarm will not activate.

Defaults – Medium Priority, Auto Clear, Persistence: 1

Settings:
1. **Minimum Static Pressure with cooling fan** – default: 0.01 – Once the static pressure goes below this setting and a fan is running, the alarm will activate.



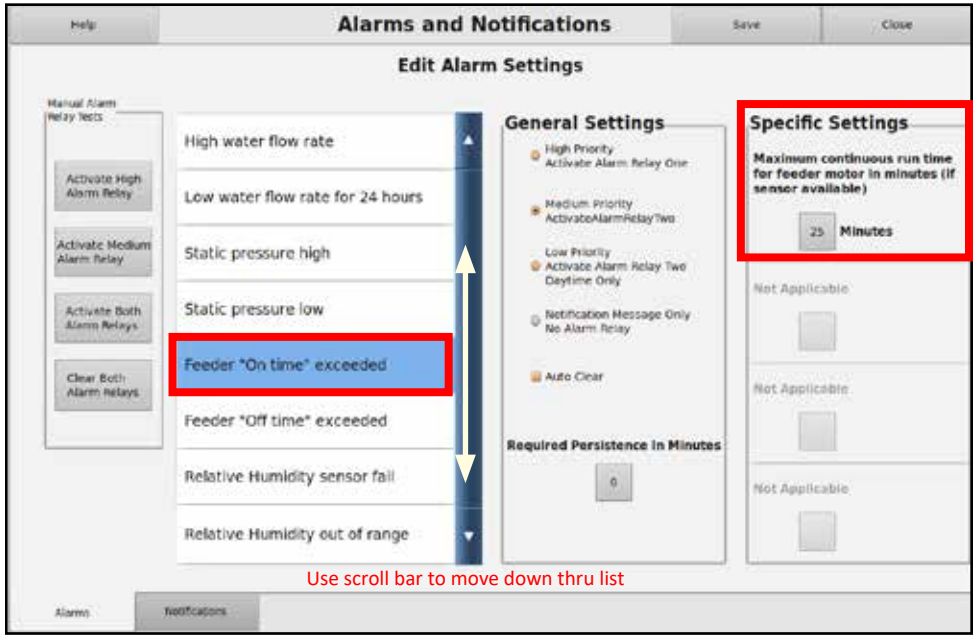
Feeder "On time" exceeded – This alarm will activate when the feeder motors have been running for too long. This is used to be notified for situations like empty bins, or feed that is hung up. This alarm requires a Feed Motor Current Sensor configured in order to work.

Defaults – Medium Priority, no Auto Clear, Persistence: 0

Settings:

1. **Maximum continuous run time for feeder motor in minutes** – default: 25 – number of minutes the motor has to on before the alarm will activate.

This alarm will occur regardless of why the feeder is on. This includes when manually overriding the feed schedules by toggling the relay switch, either with the actual toggle switch on the relay board, or by way of the Switches screen.

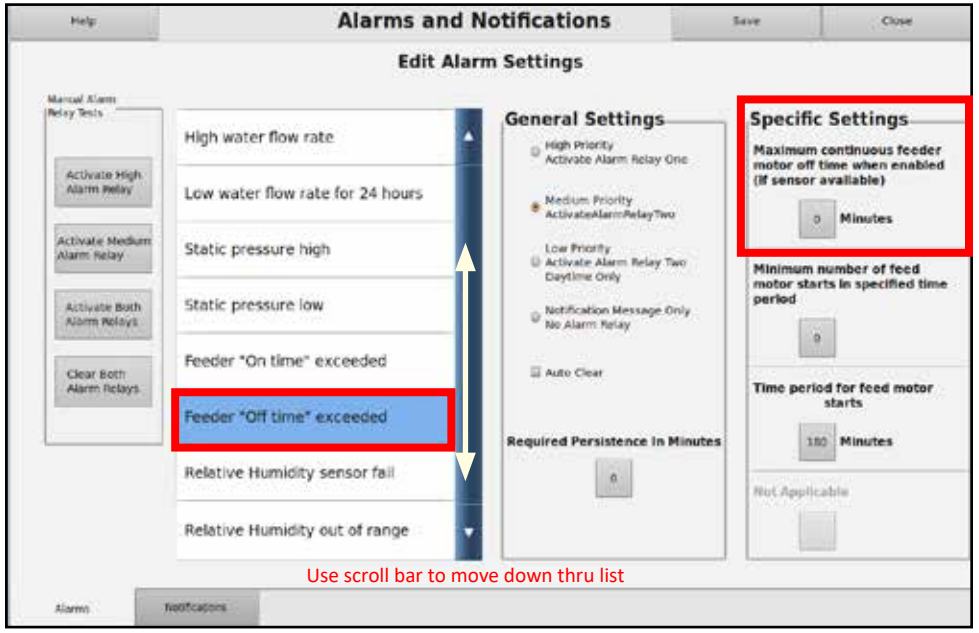


Feeder "Off time" exceeded – this alarm will activate when the feeder motor has been off to long. There are two ways this alarm can activate, if the motor shuts off too soon during a feed schedule, or if the feed system does not start up enough times over a set time period. This alarm requires a Feed Motor Current Sensor configured in order to work.

Defaults – Medium Priority, no Auto Clear, Persistence: 0

Settings:

1. **Maximum continuous feeder motor off time when enabled** - the longest time, in minutes, a motor can be off when the feed schedule says the motor should be running. This is only tracked when the feed schedule says the motor should be on. No tracking is done in between feed schedule run times. This setting is normally used when there are multiple feed schedules a day for short durations, with long periods between schedules, where you want to be notified when the motor fails to start up, or shuts down too quick during a feed schedule.
2. **Minimum number of feed motor starts in specified time period** - default: 3 - the alarm will activate if the motor has not started (increased amps) at least this many times over the time period set in the next setting.
3. **Time period for feed motor starts** - default: 120 minutes - the number of minutes used to track the motor starts. If the motor did not start enough times during this length of time, the alarm will activate.



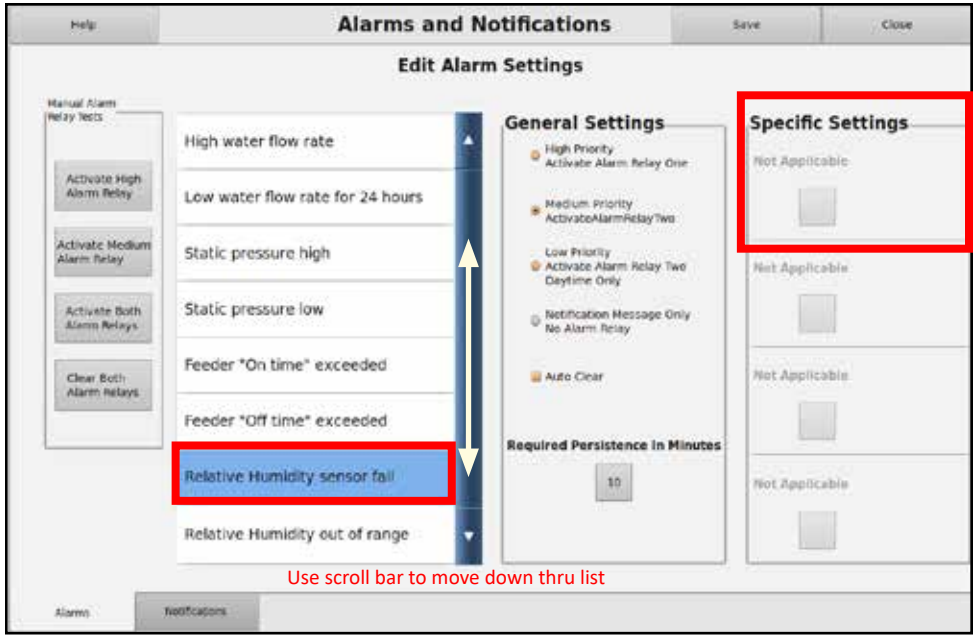
The last two settings are normally used when the feed schedule is set up to leave the relay on for long periods of time, or continuously. They allow notification if the motor fails to start enough times during that period, due to things like bridged feed or stuck motors.

©2018 Valco Companies, Inc.

Relative Humidity sensor fail – This alarm will activate when a valid humidity reading has not been received for more than 24 hours.

Defaults – Medium Priority, no Auto Clear, Persistence: 10

Settings: None

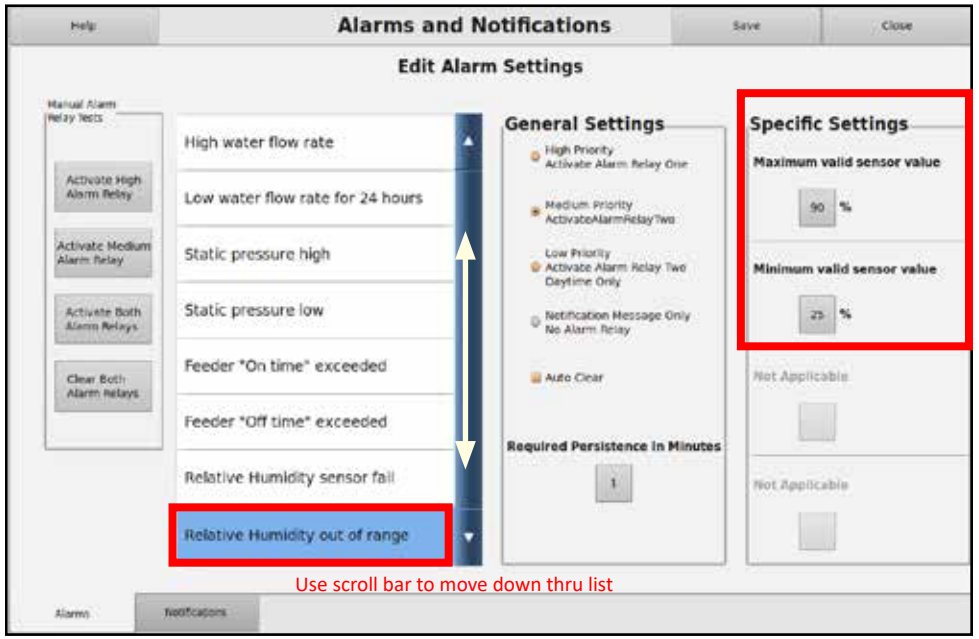


Relative Humidity out of range – This alarm will activate when a humidity sensor falls outside the assigned percentages.

Defaults – High Priority, no Auto Clear, Persistence: 0

Settings:

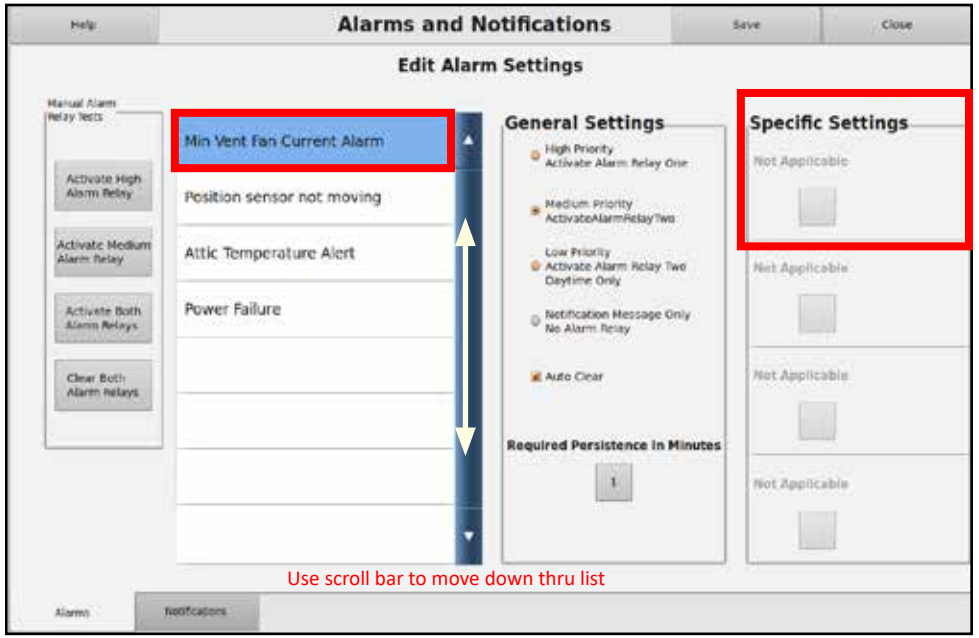
1. **Maximum valid sensor value** – default: 90% – any reading above this value is invalid and will cause an alarm.
2. **Minimum valid sensor value** – default: 10% - any reading below this value is invalid and will cause an alarm.



Min Vent Fan Current Alarm – This alarm will activate when all MinVent Sensor Current Sensors report amp readings below their Minimum Amp settings. If at least one sensor reports a high enough amp reading, this alarm will not activate.

Defaults – Medium Priority, Auto Clear, Persistence: 1

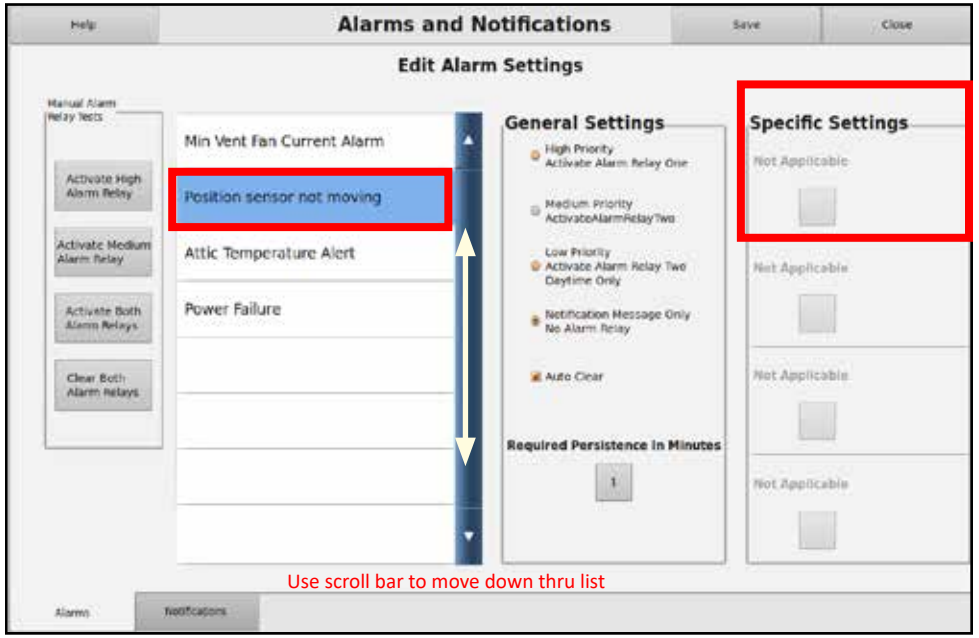
Settings: None.



Position sensor not moving – This alarm will activate when a inlet/curtain is suppose to be moving, but the Position Sensor reading has indicated the same reading has been reported for too long. The length of time is for each inlet/ curtain is determined by the number of seconds set in the Position Detect setting for the inlet/curtain, which can be found in the Port Configuration settings under the Operation - System configuration menu.

Defaults – Medium Priority, Auto Clear, Persistence: 1

Settings: None.



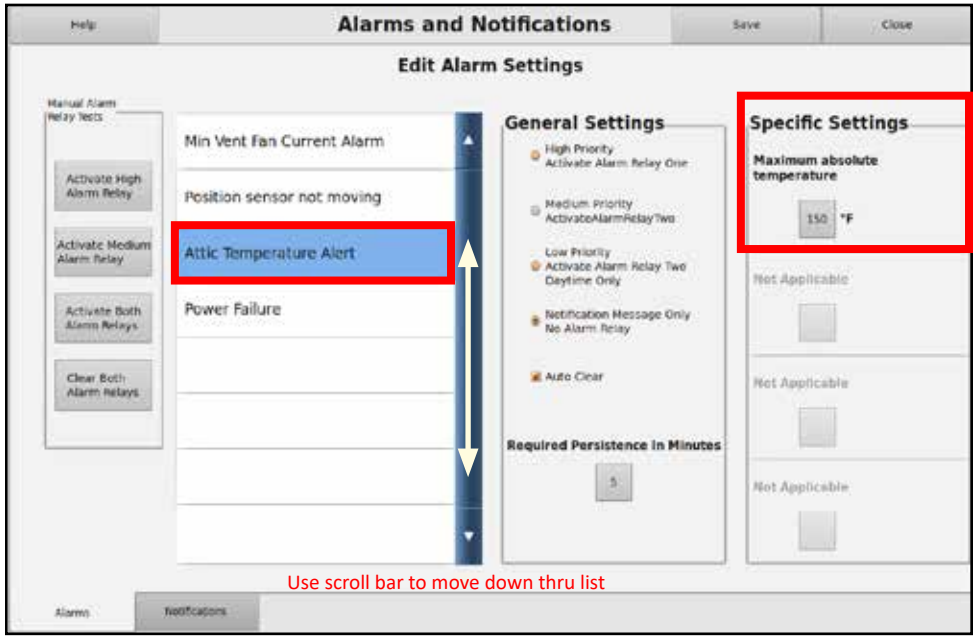
©2018 Valco Companies, Inc.

Attic Temperature Alert - this alarm will activate when the Attic Temperature Sensors report high readings.

Defaults – Notification Message Only, Auto Clear, Persistence: 5

Settings:

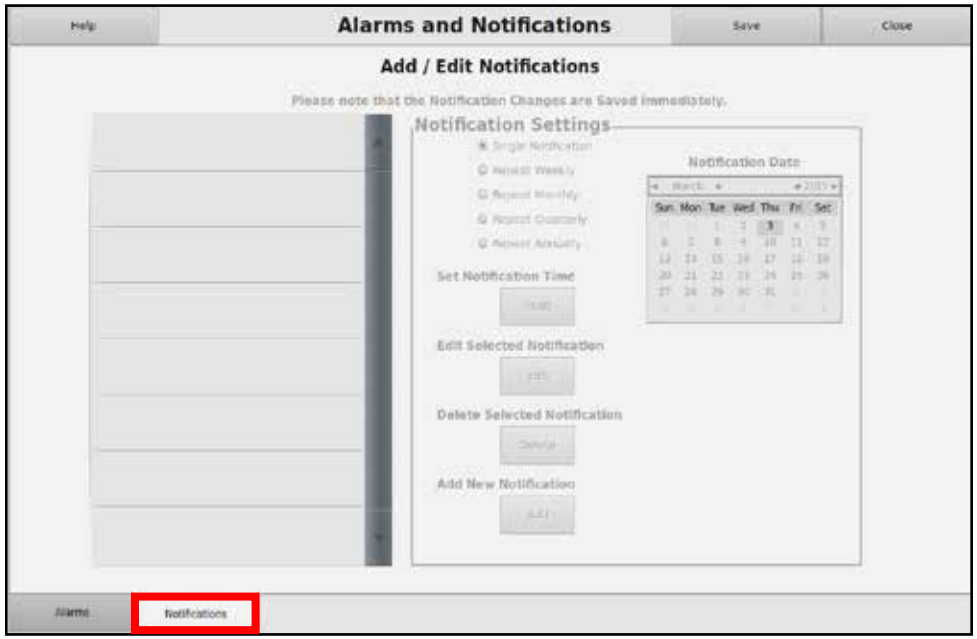
1. **Maximum absolute temperature** – default: 150 – Absolute temperature reading above which the alarm will activate.



Power Failure - this alarm is used to notify someone when the power fails, if the Horizon system is powered by a backup power supply, which will keep the Horizon powered for a while, including the alarm relays, when the building loses power.

This alarm requires a **Power Monitor** device configured and connected to an external relay that is normally closed when power is applied to the device. This alarm will activate when the system notices the relay is open for the amount of time entered in the Persistence field. This allows quicker notification of a power problem, even when the Horizon is still running on the backup power supply.

Notifications tab – *this screen is currently disabled and will be added in a future release.*



When all the changes are made in the Alarms section, press the **Save** button in the upper right corner to save the changes. Press the Close button to return to the **Operation** screen, as shown below.

8.10 OPERATION - SECURITY SETUP

This section provides the step by step procedures to set up the Security for the Horizon.

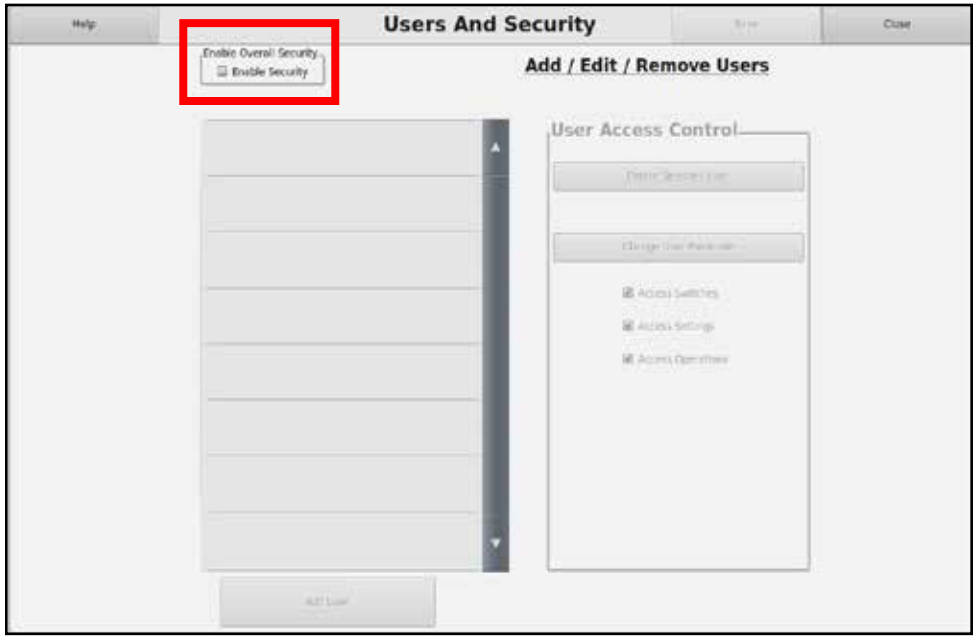
When the Horizon starts up, the **Main Menu** is displayed. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the Operation menu.

On the **Operation** menu, press the Security button to open the User Access screen.

©2018 Valco Companies, Inc.

Security Settings

In order to secure the Horizon from unauthorized access, User Security has to be enabled. To enable security, press the **Enable Security** in the **Enable Overall Security** to check it. To disable security, press the button again to uncheck it.



Once security is enabled, add a user by pressing the **Add User** button. This will open the **Add User** window to allow the entering of a **User ID** and pass code.

To enter a user name, press the **User ID** box and enter the name in the keyboard that pops up.

To enter the user's pass code, press the **User Passcode** box and enter up to 8 digits in the numeric pad that pops up.

The first user should be an administrator who will have full access to all the screens of the Horizon.

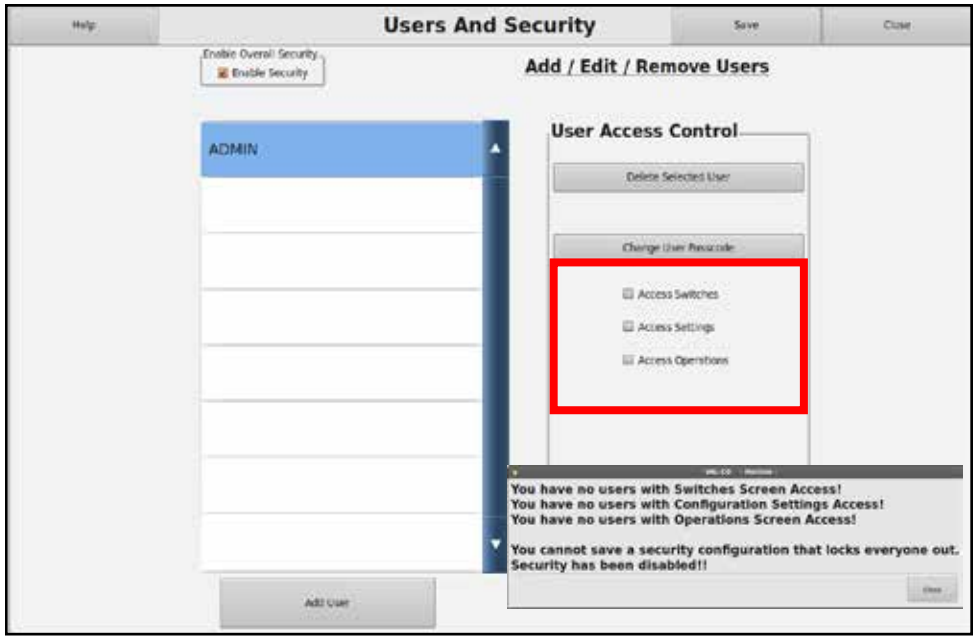
Once the user ID and passcode are entered, select the user and set the type of **User Access Control** the user will have. Press each of the security levels to check and uncheck them. A checked level means the user has access to that level.

There is three levels of access on the Horizon:

1. **Access Switches** – gives the user access to the Switches screen, where the user can turn on and off the devices manually.

2. **Access Settings** – gives the user access to the all the buttons under the **Operation** screen.

3. **Access Operations** – gives the user access to the **Operation** screen. Unless the user is also given the **Access Settings** security level, this level only give the user access to the **Data File Operation** and **Channel Status** buttons.



At least one user has to have access rights to each of the three security levels. The program will not allow the closing of the Security screen until this is done. The example at top right of page shows the popup warning.

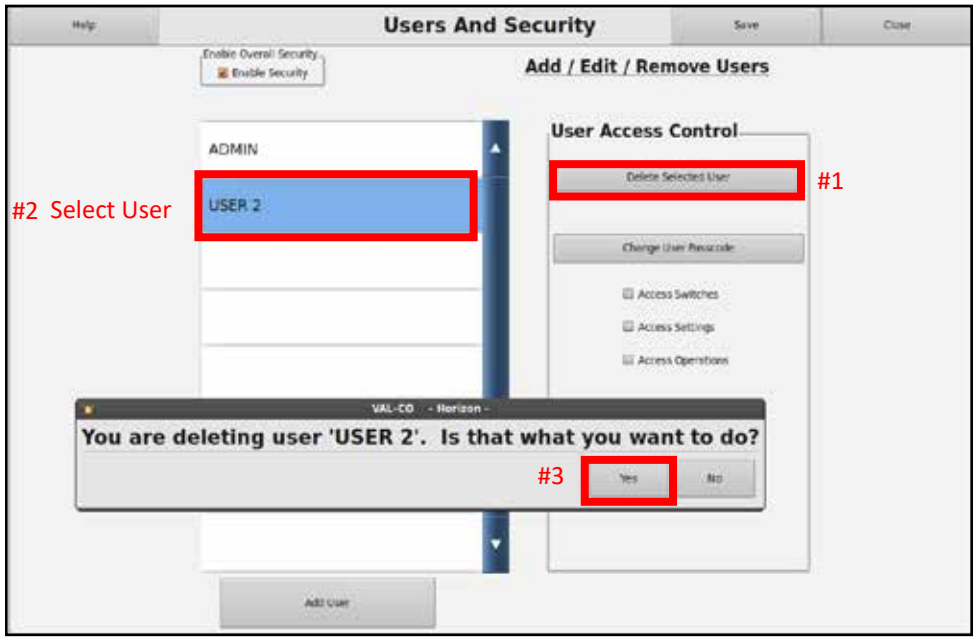
Repeat the above steps for any additional users required.

A popup window will appear if you duplicate user passcodes.

Once all the users have been added, press the Save button to save the changes.

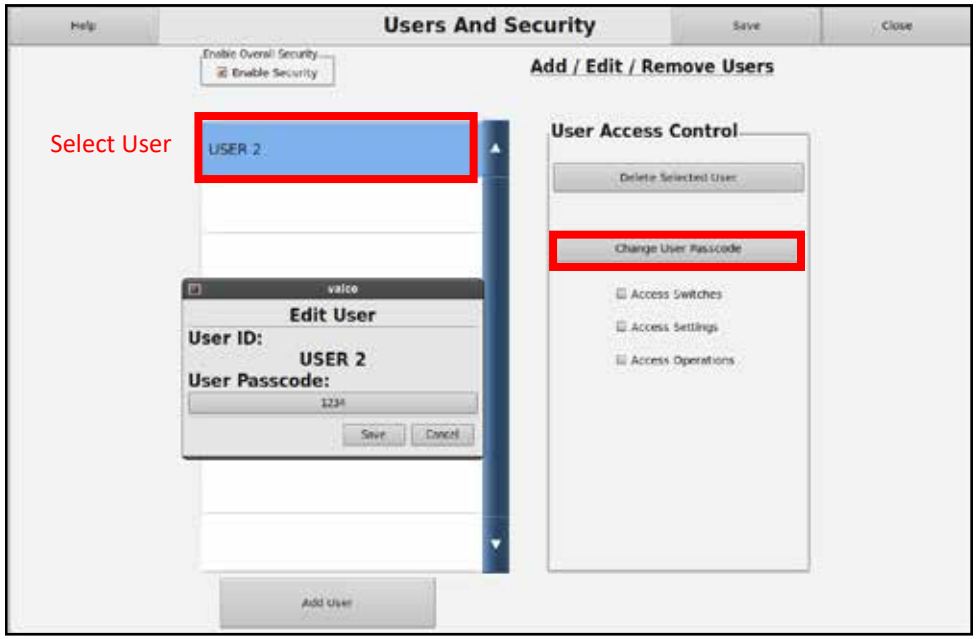
©2018 Valco Companies, Inc.

To delete a saved user, select the user's name in the list and press the **Delete Selected User** button. A confirmation window will appear asking if it is ok to delete the user.



When deleting a user, make sure one of the other users has full access, before saving the changes.

To change the passcode of the user, select the user's name in the list and press the **Change User Passcode** button. An **Edit User** window will open displaying the current passcode for the selected user. Press the **User Passcode** box to change the value.



Once security is enabled, any attempt to access one of the restricted areas will cause the **Pass Code** dialog to appear asking for a user passcode. If the wrong passcode is entered, the program will return to one of the unrestricted screens (Main Menu, House View, and History).

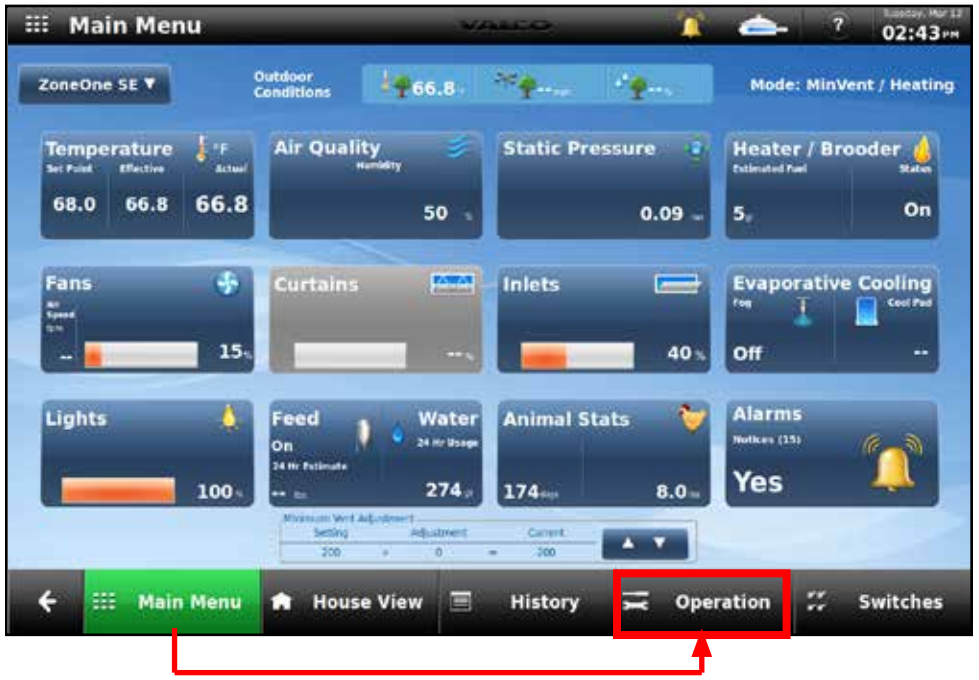
Once a correct passcode is entered, the user can access all security areas he has access to without entering his passcode again unless the user navigates to an unrestricted area, tries to access a restricted area they do not have access to, or 15 minutes has elapsed since the last screen press.

©2018 Valco Companies, Inc.

8.11 OPERATION - DATA FILE OPERATIONS SETUP (FILE TRANSFER AND CHANNEL MONITOR)

OPERATION - DATA FILE OPERATION AND CHANNEL STATUS AND SHUT DOWN BUTTON DO NOT REQUIRE SETUP

Return to the **Main Menu.** Press the **Operation** button on the navigation bar at the bottom of the screen, to open the **Operation** menu.



Besides the Set up buttons on the **Operation** screen, there are two additional buttons.

The **Data File Operation** button opens the **System Data File Manipulation** screen, which allows the backing up of the important configuration settings, as well as exporting of the alarms and history data logs to Comma-Delimited files (csv) for use in other programs, such as MS Excel.

The **Channel Status** button opens a window to display technical information about the Horizon system and system configuration set up. This information is used by a service technician to help find problems within the system.

On the **Operation** menu, press the **Data File Operation** button to open the **System Data File Manipulation** screen.

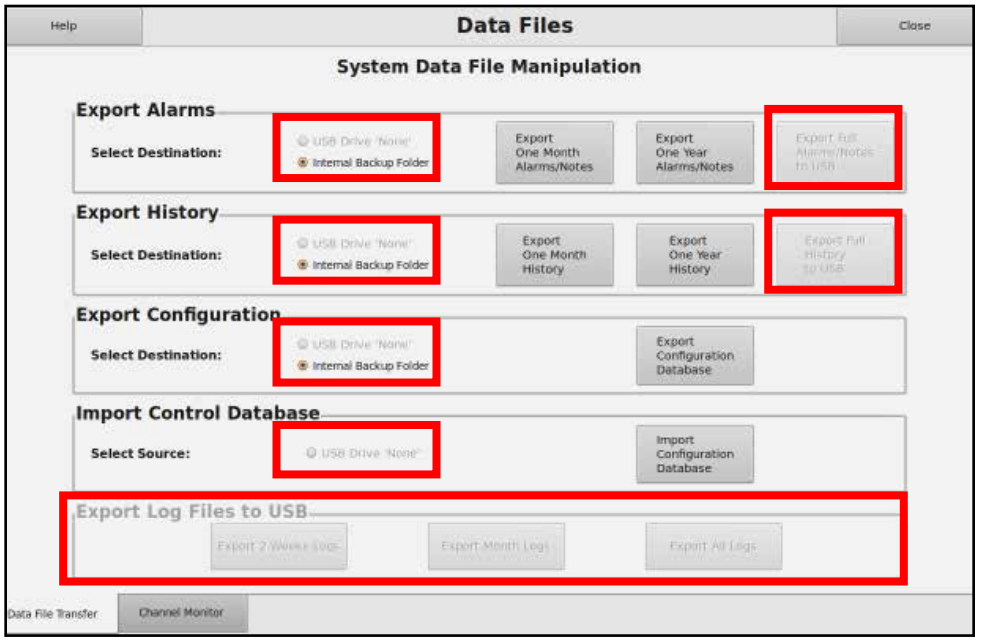
©2018 Valco Companies, Inc.

Data File Operations

The System Data File Manipulation screen provides the ability to backup the important information from the Horizon system and to export the alarms and history so it can be used in other programs.

Each export option allows the information to be exported to either an internal backup directory on the underlying Linux "root" file system, or to a USB thumb drive inserted into the front panel of the Horizon.

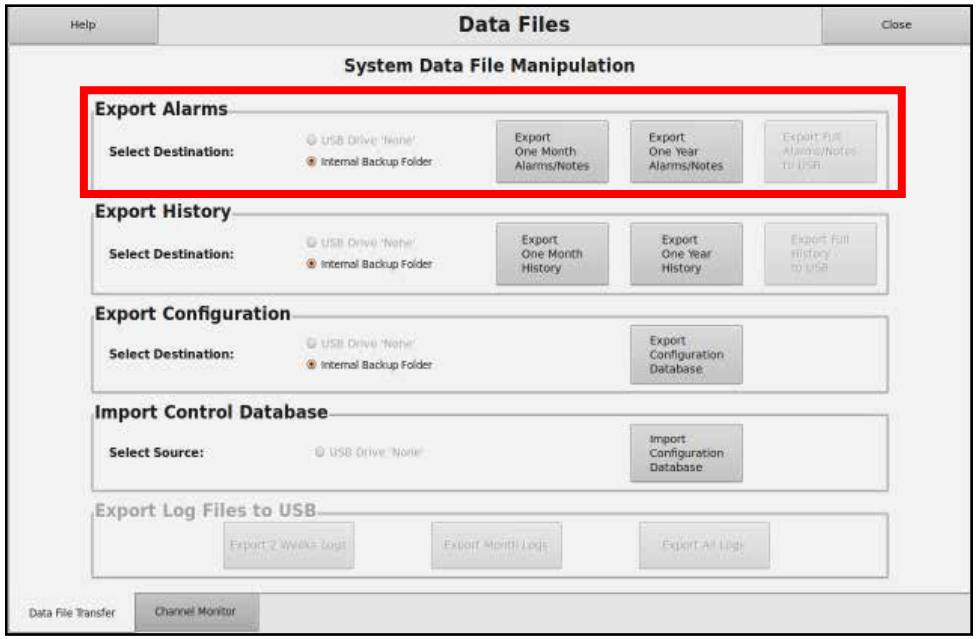
The main backup directory name used by the system is "HorizonData". Within that directory, the exported data is stored in a directory based on the date the backup was created. An example is if the export routine is run on Oct. 1, 2012, the exported files will be located in the directory "HorizonData\20121001"



The exporting of the full alarm and history databases, the exporting of the debug log files, and the importing of the configuration file is only allowed to a USB Drive. These will be enabled when a USB Drive is inserted into the slot on the front panel.

Export Alarms/Notifications – Use this option to export the Alarm and Notification records to the comma-delimited file "HorizonAlarms.csv" in the backup directory. After pressing either "USB Drive ' floppy'", to save to the USB thumb drive, or "Internal Backup Folder", to save to the internal drive, press one of the three buttons in the box to export the information:

1. **Export One Month Alarms/Notes** – this will export the alarms and notification records created in the last month to the file.
2. **Export One Year Alarms/Notes** – this will export the alarms and notification records created in the last year to the file.
3. **Export Complete Alarms/Notes** – this will export the db_Alarm_ Notification.db datebase file to the USB drive.

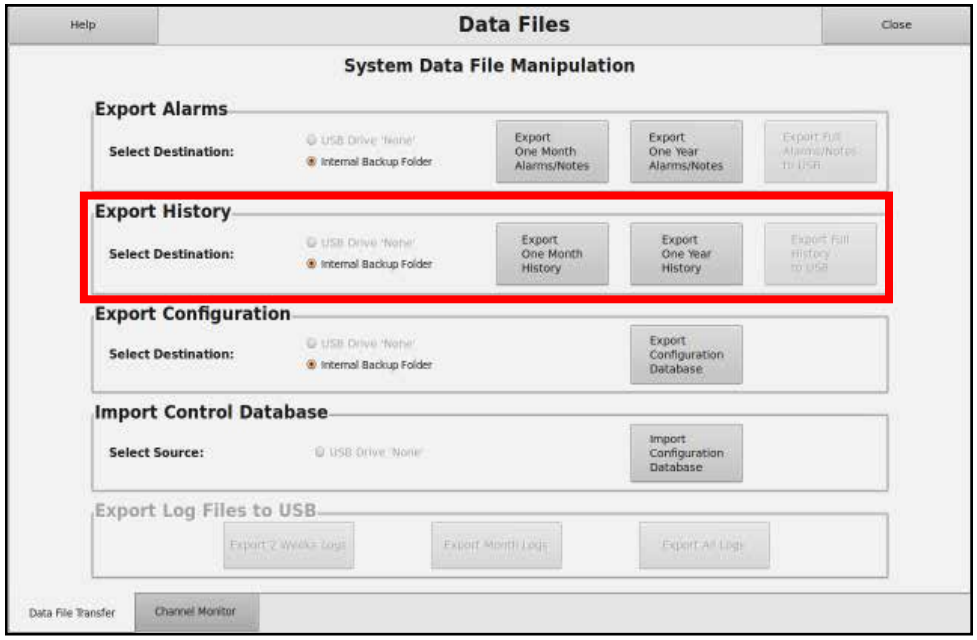


The backup time will depend on the number of records exported and could take up to a few minutes to complete.

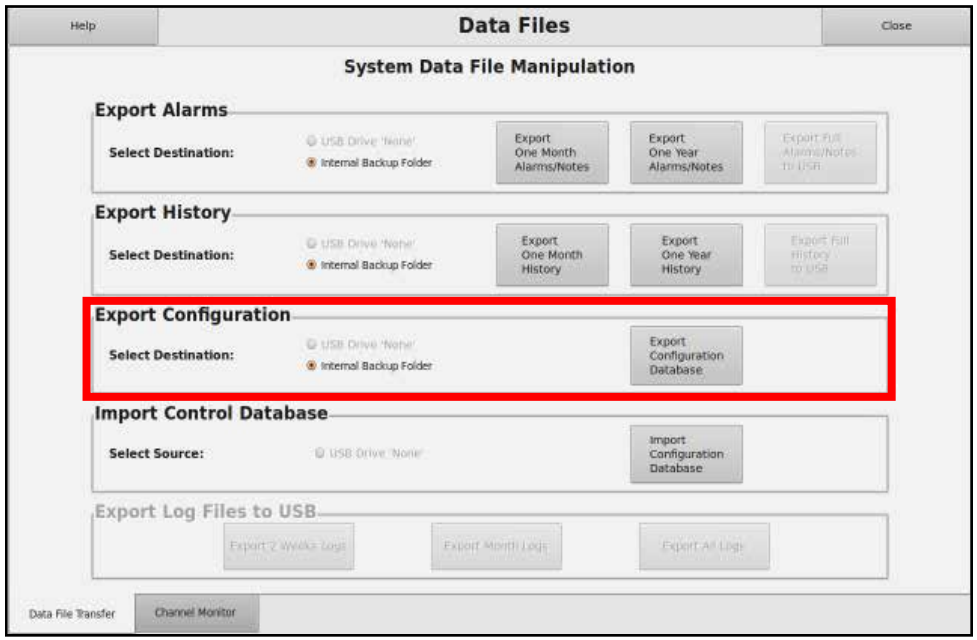
Export History – Use this option to export the History records to the comma-delimited file "HorizonData.csv" in the backup directory. After pressing either "USB Drive ' floppy'", to save to the USB thumb drive, or "Internal Backup Folder", to save to the internal drive, press one of the three buttons in the box to export the information:

1. **Export One Month History** – this will export the records in the Data log which were created in the last month.
2. **Export One Year History** – this will export the records in the Data log which were created in the last year.
3. **Export Full History** –This will export the db_datalog.db database file to the USB drive.

The data logs could potentially be huge, since history data for each device are logged multiple times an hour. The backup time will depend on the number of records exported and could take a while to export, especially if you select to export the complete data log and the system has been running for years.



Export Configuration – Use this option to back up the system configuration. This backup will save all the user information entered in the Operation screen, as well as the hardware set up information, in a database configuration file entitled "HorizonControl.db". After pressing either **"USB Drive ' floppy'"**, to save to the USB thumb drive, or **"Internal Backup Folder"**, to save to the internal drive, press the **Export Configuration Database** button to backup the database. If the backup is saved to a USB drive, a copy of the configuration file will also be saved in the HorizonData directory, with the name db_systemconfig.db. This file can be used to import the configuration back into the same system, or to another system, without additional work.



Note: If for some reason the Horizon system gets corrupted and is unusable, this backup file can be used to recover the settings using the Import Control Database option explained next.

©2018 Valco Companies, Inc.

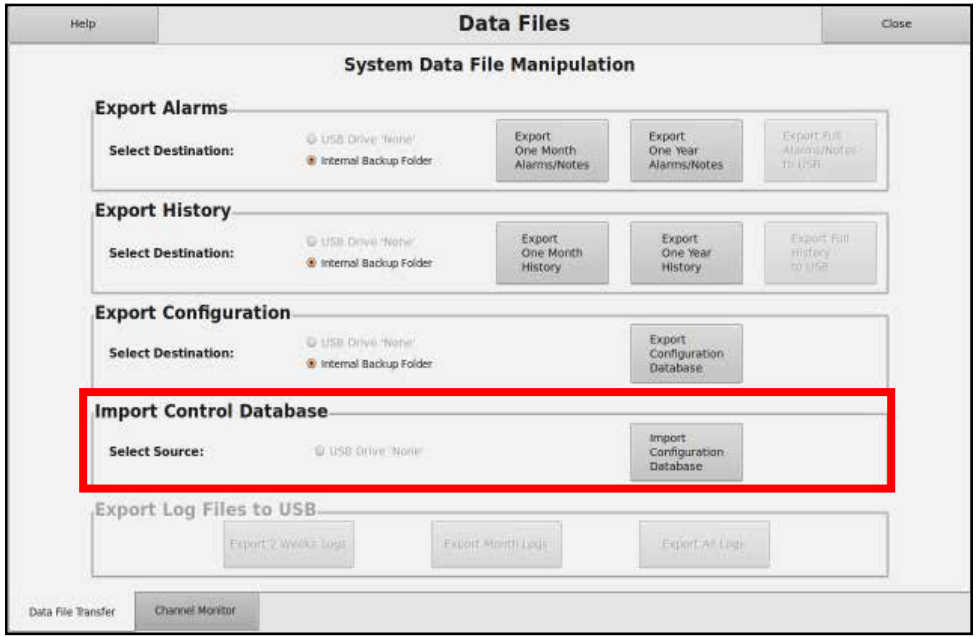
Import Control Database – Use this option to import the system configuration from an exported backup configuration. This import will restore all the user information entered in the Operation screen, as well as the hardware set up information from the imported file.

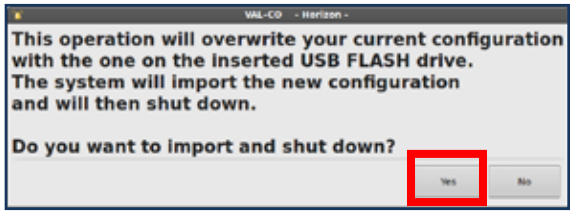
Warning: If you wish to save the old configuration setup, use the Export Configuration feature before importing an older backup configuration setup.

If you wish to import the last exported configuration database, simply put the USB drive into the USB port in the front of the Horizon and press the Import Configuration Database button. This will import the db_systemconfig.db file found in the HorizonData directory of the USB drive, then restart the system using the imported database. Otherwise follow the procedure below to import a different configuration file.

To prevent accidental importing of a configuration, importing a configuration is only available with a USB thumb drive. To import a Horizon Control.db file follow these steps:

1. Copy the Horizon® control DB file, created using the **Export Configuration** feature, to the **HorizonData directory** of the USB thumb drive.
2. Rename the file in the **HorizonData directory** to **db_systemconfig.db**. (all lowercase letters).
3. Insert the USB thumb drive into the USB port on the front panel of the Horizon.
4. Press the **Import Configuration Database** button.
5. Press **Yes** in the message that appears to confirm the import, or **No** to cancel the import and keep using the old setup.
6. Once the importing is done, the program will restart the program and initialize the imported configuration.
7. If the import was successful, when you restart the program a message should appear explaining this is the first restart of an imported configuration. At this time, you should review all the configuration settings to verify they are correct.





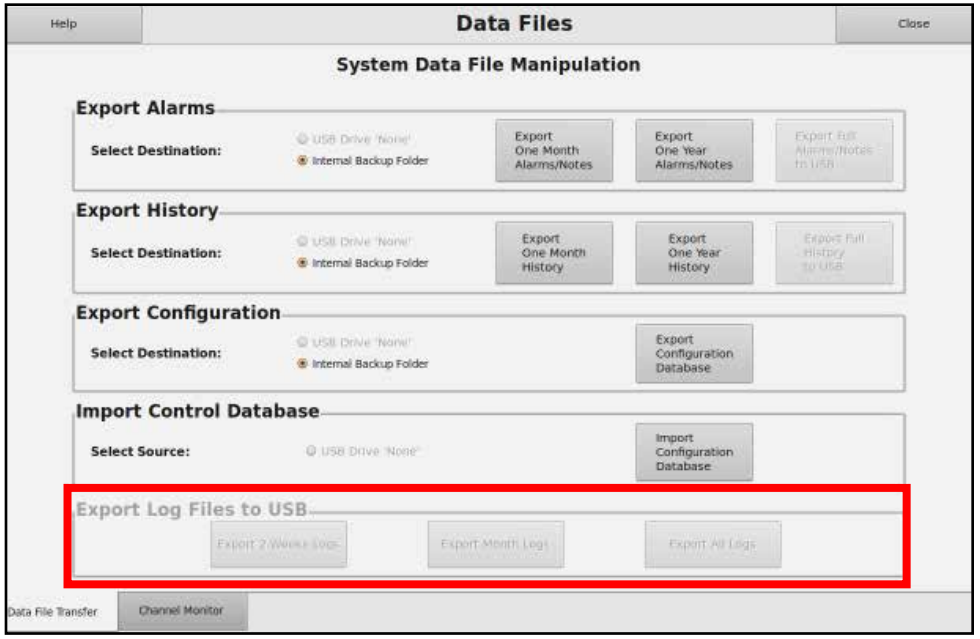
Warning: there is no going back once you press the Yes button to start the importing.

Export Log Files to USB– Use this option to export the Debug log files to the USB drive. These log files are used by Service to help determine what is causing problems. These only need to be exported when recommended by Service personal. The three boxes in this section will be enabled when a USB drive is inserted into the slot in the front panel of the Horizon. Press one of the buttons to export the files:

1. **Export Two Weeks Logs** – this will export the last two weeks of debug log files (two files) to the USB drive.

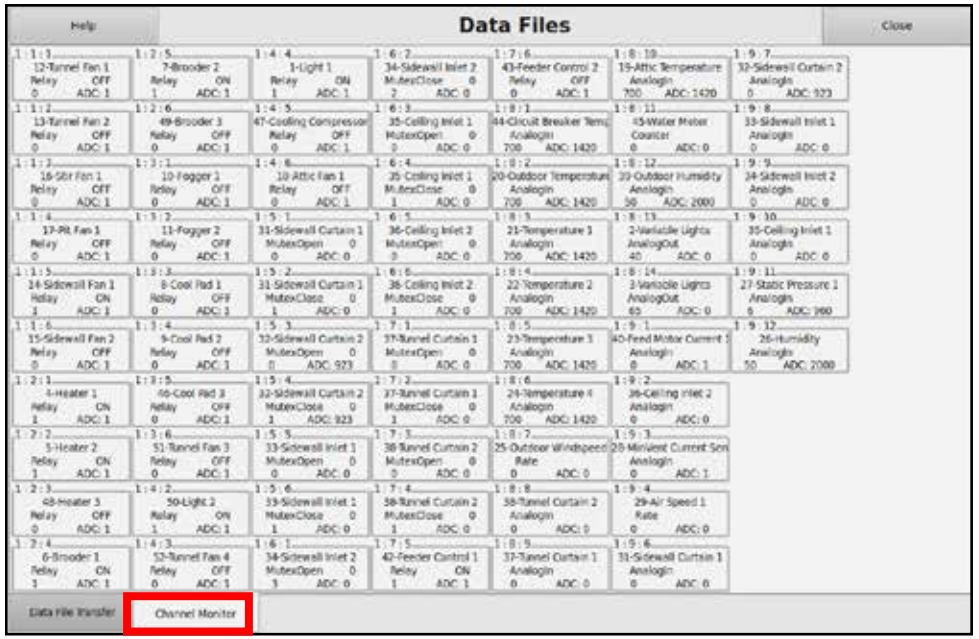
2. **Export One Month Logs** – this will export one month's worth of debug log files (4 files) to the USB drive.

3. **Export All Logs** – this will export all the debug log files (up to 15 files) to the USB drive.



The exported debug log files are compressed into a tar file before exporting to the USB drive, but depending on the debug level set in the Global settings, these debug log files could still be very large. Only change the debug levels and export these logs when recommended by the Service personnel.

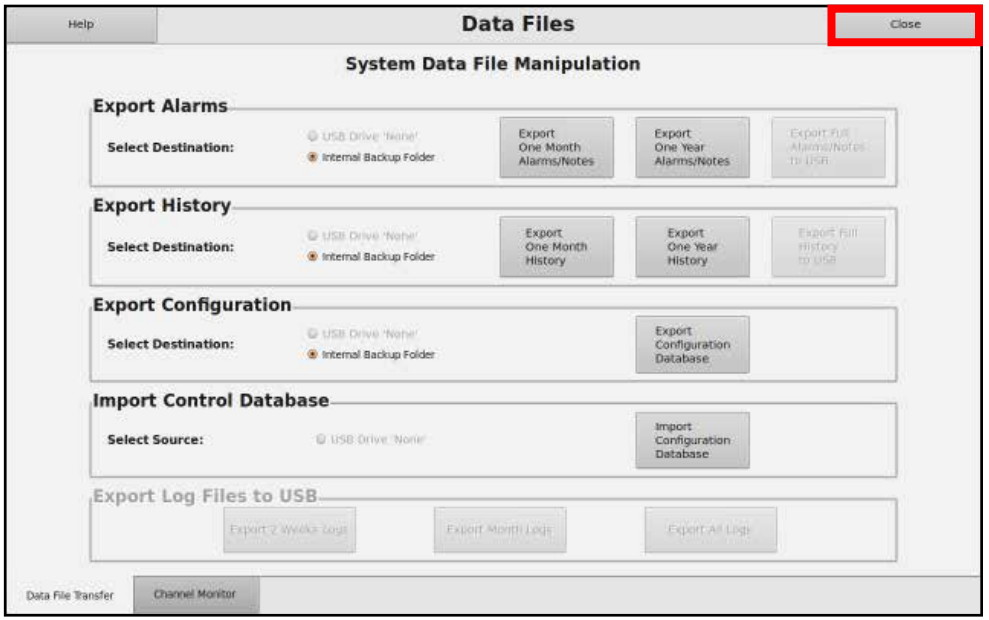
The **Channel Monitor** tab allows you to view the current readings of all the devices configured on the system. This screen monitors the input and output readings and can be used to see what the current readings of the devices are and help pinpoint problems with the connections for those devices.



Each box represents a device configured on the system, in the order they appear on the IO boards. The three-digit number at the top of each box indicates which relay/input connection the device is assigned to (Example: 1:4:5, means ECM #1, board slot #4, Relay #5). Each box also displays the assigned name of the device as well as the type of device it is (MutexOpen/MutexClose = Inlet/curtain, Relay = Output relay, Analogin = Sensor input, AnalogOUt= Variable lights output). The bottom two numbers display the current calculated value from the IO board, as well as the actual ADC reading from the board which is used for the calculated value.

©2018 Valco Companies, Inc.

When you have completed exporting or importing files, press the **Close** button in the upper right hand corner to return to the operation screen.



8.12 OPERATION - CHANNEL STATUS

Return to the **Main Menu**. Press the **Operation** button on the navigation bar at the bottom of the screen, to open the Operation menu.

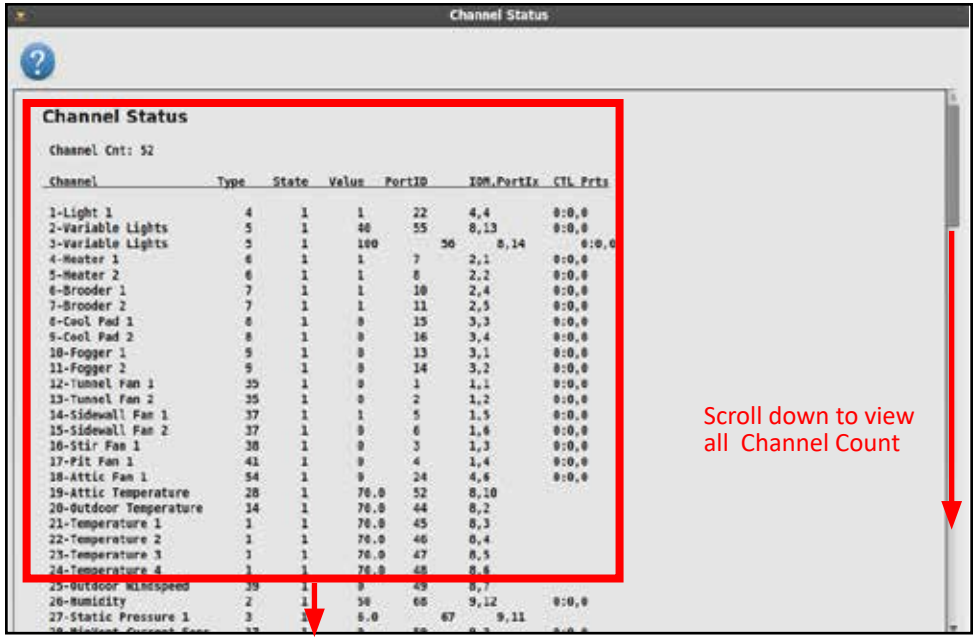
On the **Operation** menu, press the **Channel Status** button to open the Channel Status window.

©2018 Valco Companies, Inc.

Channel Status

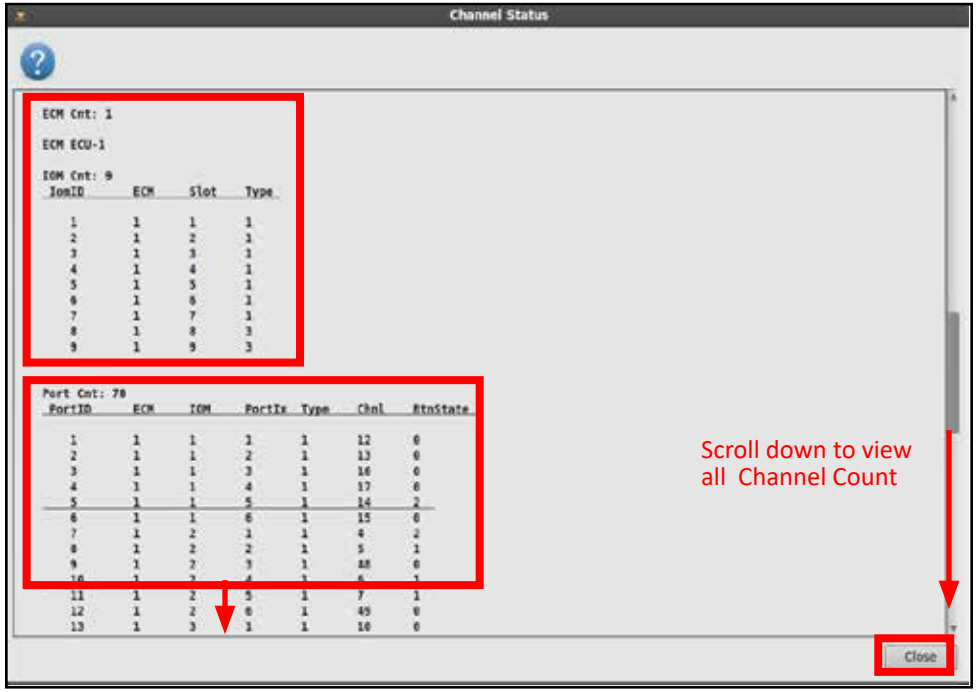
The **Channel Status** window displays technical information about the system and the devices configured on the system. This allows a technician a quick overview of the system and its configured devices.

The first part of the window shows the devices that are configured on the system, as well as which I/O boards/ports they are installed on.



The second section of the window shows the technical information on what type of hardware is connected to the system. It shows the number of Input / Output boxes attached to the system and whether the boards in those boxes are input boards or output boards. This can be used by a service technician to debug problems with the hardware.

The last section of the window shows the technical information on the input/output ports being used on the system. A service technician can use this information to determine which ports are being used and how.

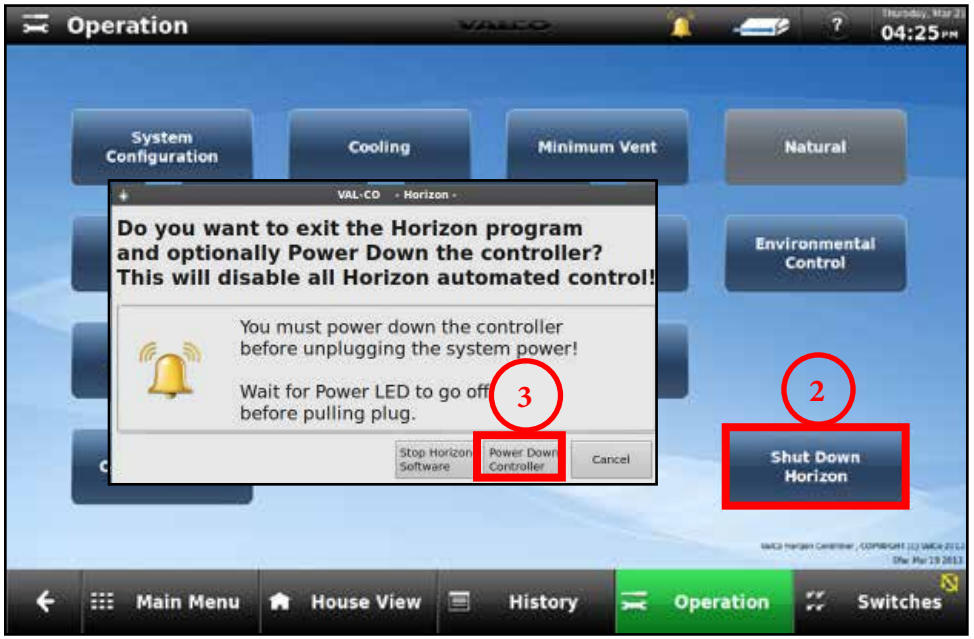


Press the **Close** button in the lower right corner to close the window and return to the Operation screen.

8.13 OPERATION - SHUT DOWN HORIZON CONTROLLER

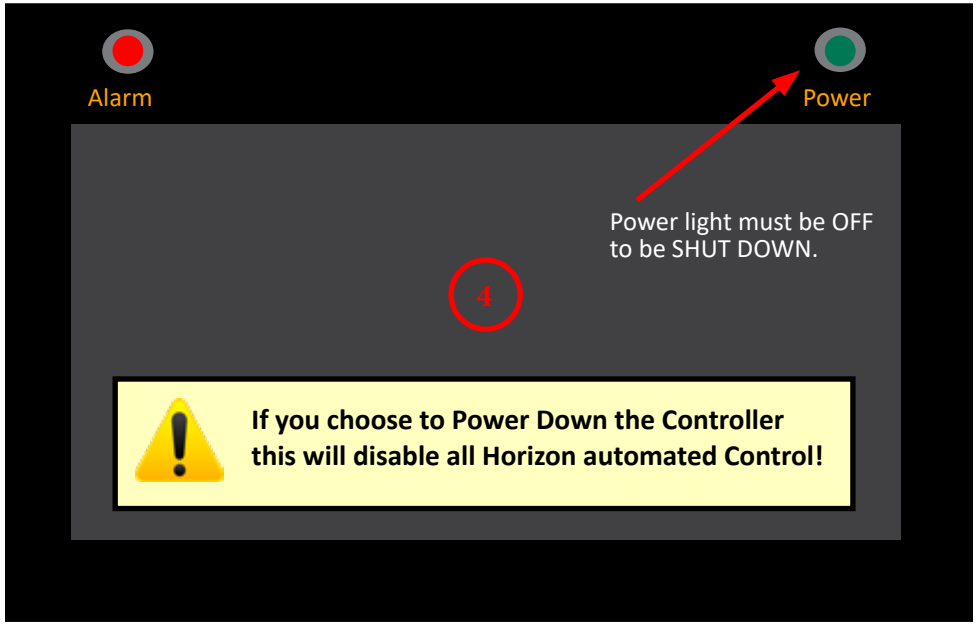
To shut down the Horizon controller for servicing,

1. Return to the **Main Menu** and press the **Operation** button on the bottom navigation bar.
2. Press the **Shut Down Horizon** button.
3. A window will appear, asking if you want to exit the Horizon program and optionally Power Down the controller? There are (3) three buttons options, choose **Power Down Controller.**



4. The screen will go black then flash through operating system shut down windows. **The Horizon system is not fully shut down until the geen Power light is off.** To restart the controller, turn Breakers ON. (If using power cord, unplug after shut down and plug back into power to start up controller.)

Be sure to shut Breakers OFF to controller and expansion box(s). Beware of High Voltage. The output device power will still be present unless you shut OFF the corresponding output device breaker.



©2018 Valco Companies, Inc.

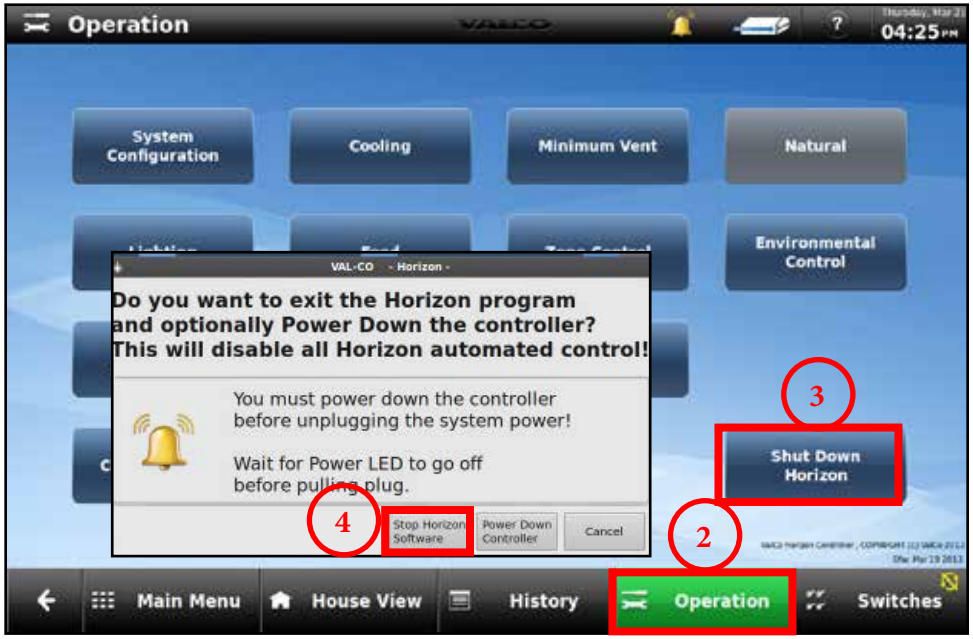
8.14 OPERATION - UPDATING CONTROL WITH NEW SOFTWARE

To use the **HorizonUpdater** program, a **USB mouse will be helpful but is not required.** It can be used in place of the touchscreen and should be plugged into one of the USB ports INSIDE the controller box on the mother board. *This will keep the USB port on the front of the unit free for the USB stick containing the software update.*

Perform the following steps to prepare the Horizon for the new software update.

1. From your computer, copy the "**valco.tar.gz**" file (that was sent to you from VAL-CO) to the USB stick. We recommend using a new or "dedicated" USB stick to eliminate the existence of any corrupt files that may be transferred to the Horizon controller.

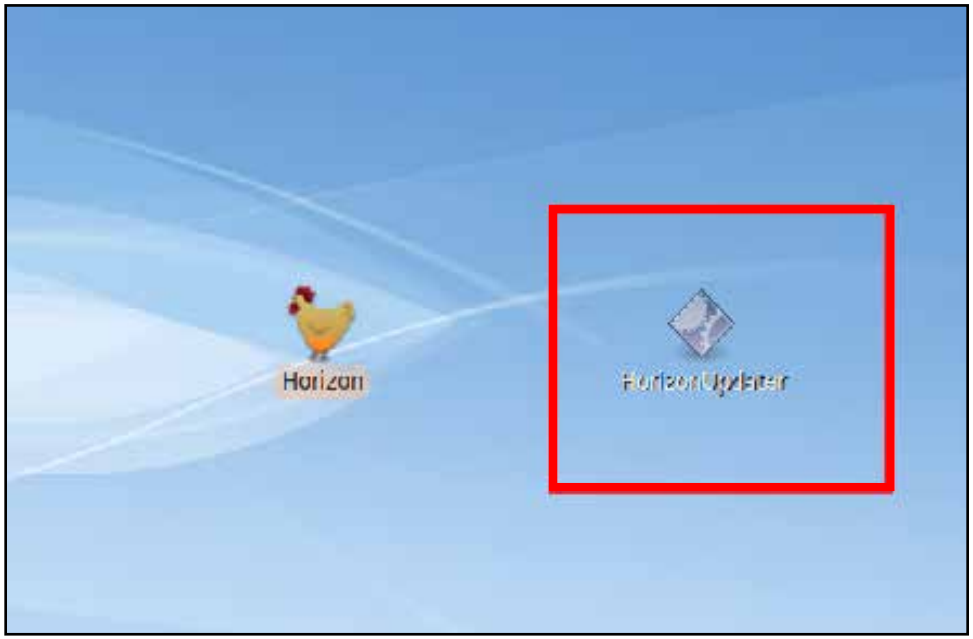
2. At the Horizon controller touchscreen, press the Operation button on the bottom navigator bar. (Shown already open to Operation screen in image to the right.)



3. Press the **Shut Down Horizon** button.

4. A window will appear asking if you want to "exit the Horizon program and optionally Power Down the controller?" There are (3) three options, **click/press Stop Horizon Software.**

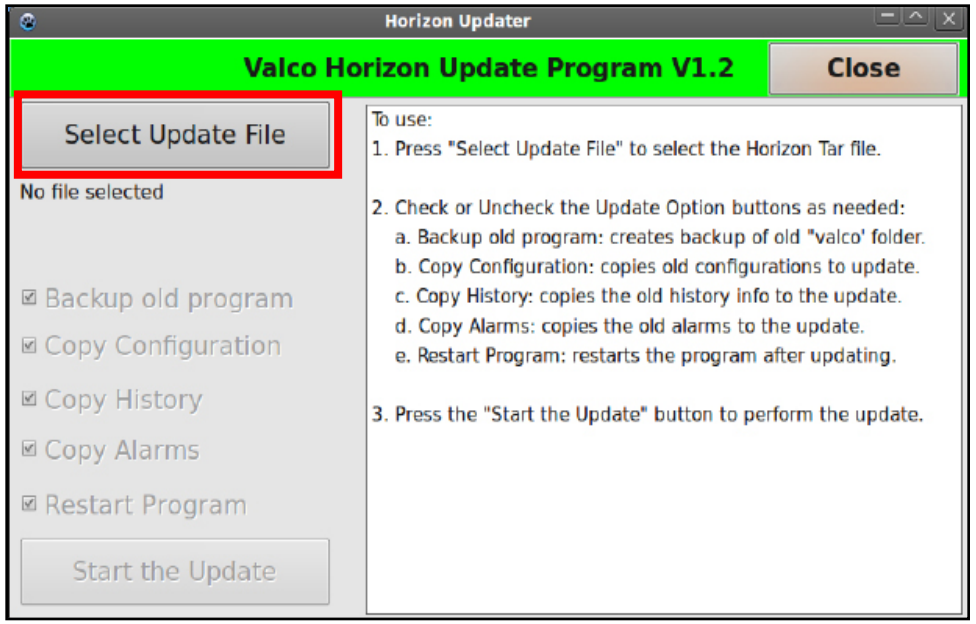
The screen shown to the right will pop up after stopping the Horizon software. Using the HorizonUpdater program is the simplest way to update.



Once the program is started, follow these steps to update the Horizon Software:

1. Shut down the Horizon program as explained on the previous page.
2. Insert the USB stick which contains the Update Tar file into the USB slot on the front panel of the Horizon. Close any windows that open immediately after the USB stick is inserted.
3. Start the **HorizonUpdater** program by double pressing/clicking the **HorizonUpdater** icon on the screen. The "Valco Horizon Update Program" window will open (shown below).

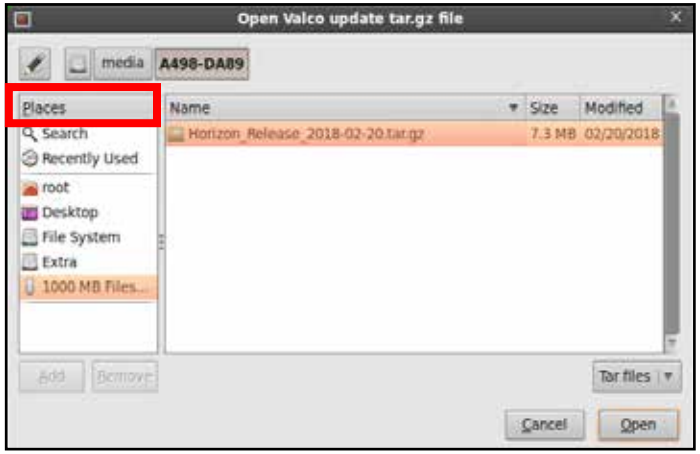
4. Press the **Select Update File** to open a File Explorer window. (see image to the right)



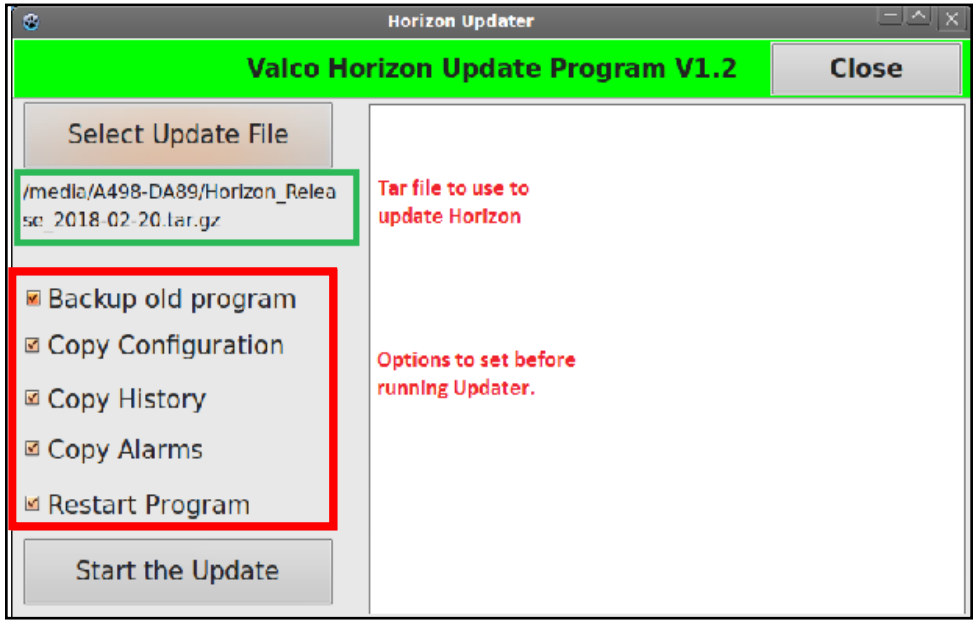
5. As shown below, the File Explorer window will display files found on the USB stick. If not, you can navigate to it in the **Places** section.

6. If more than one tar file is present on the USB stick, select the correct one and press/click the **Open** button. The Updater will now display the tar file it will use to update the Horizon. If the correct file is not shown, press the **Select Update File** button again and select the correct file.

   (Dates shown in the file description should match the desired update version.)



7. There are 5 options available when running the Updater: (image at right)



   a) **Backup Old Program** – This will rename the old VAL-CO folder with the date the backup was made (highly recommended). This backup can be used in the future to return the Horizon to the previous software version. Only **UNCHECK** this if you wish to completely erase all traces of the original programming.

   b) **Copy Configuration** – This will copy the current Horizon setup to the new update (recommended). Only **UNCHECK** this if you wish to **ERASE ALL** current configuration information and start over from a factory setting in your new update.

   c) **Copy History** – This will copy the History database to the new update (recommended). Only uncheck this if you do not want the old history to appear in the new update.

   d) **Copy Alarms** – This will copy the alarm database to the new update (recommended). Only uncheck to remove old alarms from the new update.

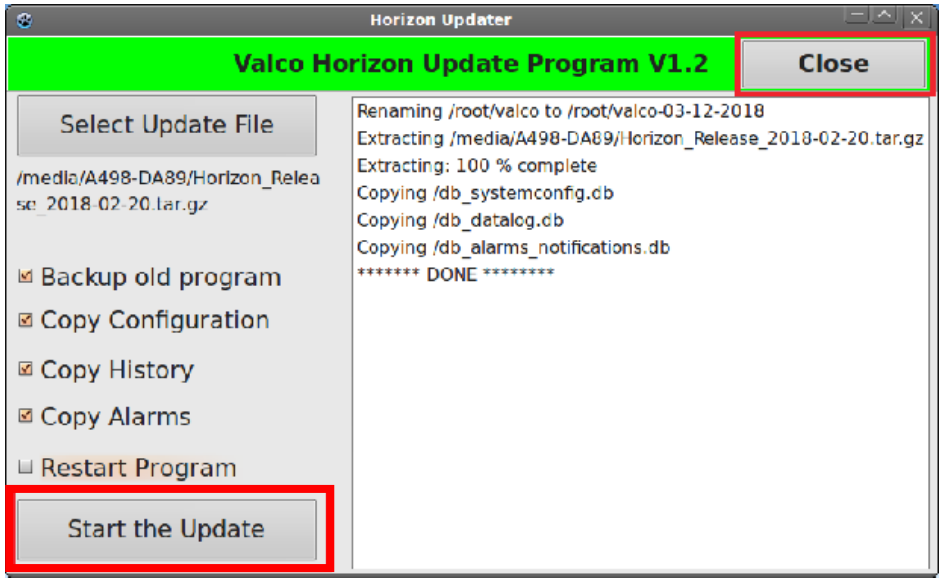
   e) **Restart Program** – This will automatically restart the new updated Horizon program and taking you to the Main Menu Screen when the updating is finished. Only uncheck this if you have additional tasks to perform before starting the new update.

©2018 Valco Companies, Inc.

8. When ready, press the **Start the Update** button to proceed with the updating of the software.

9. If the **Restart Program** option (7e) was selected, the Horizon program will restart and the **HorizonUpdater** program will close automatically.

10. If the **Restart Program** option (7e) was not selected, press the **Close** button to close the **HorizonUpdater** program. When ready, press the Chicken icon on the desktop to start the new updated Horizon program.



Directions for updating the Horizon manually are on the next page.

Updating the Horizon manually

To Update the Horizon® controller software a USB keyboard and mouse are required.

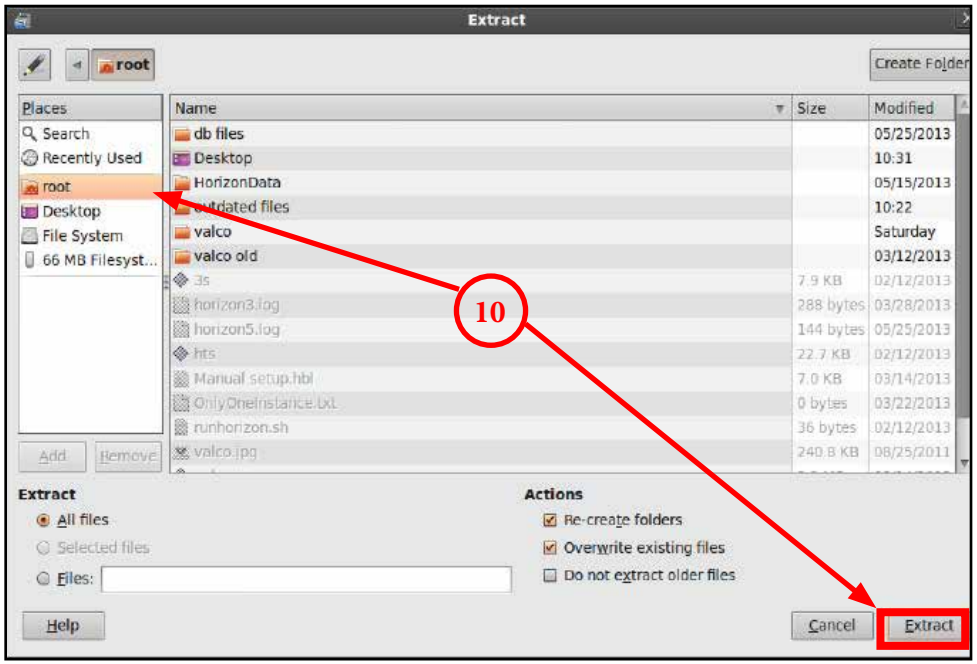
They should be plugged into one of the USB ports INSIDE the controller box on the mother board. *This will keep the USB port on the front of the unit free for the USB stick containing the software update.*

1. Return to the Main Menu and press the Operation button on the bottom navigation bar. *(Shown already open to Operation screen.)*
2. Press the **Shut Down Horizon** button, *shown on screen to right.*
3. A window will appear, asking if you want to exit the Horizon program and optionally Power Down the controller? There are (3) three buttons options, choose Stop Horizon Software.
4. Copy the "valco.tar.gz" file to the root folder of the USB stick. (This is the new update VAL-CO gave the customer for the Horizon.)

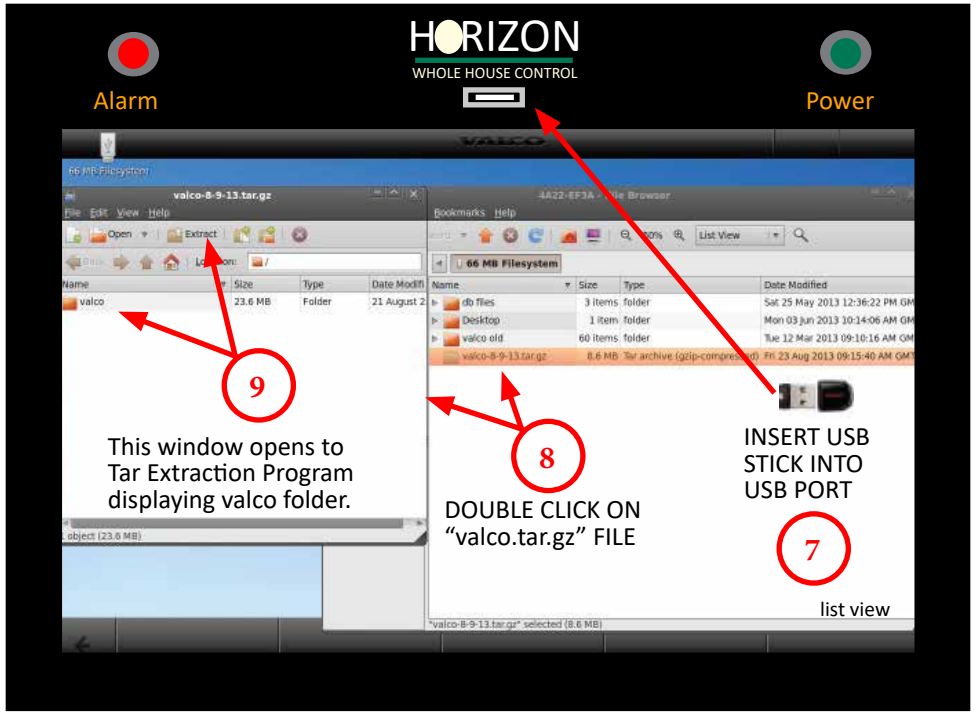
5. Open the File Browser
    a. Move the mouse to the upper left corner of the screen so the System menu appears (may already be visible).
    b. Click "Places", then select "Home Folder".
    c. This should open the browser to the "root" folder as shown in screen to the right.
6. Right click the Valco folder and change the name to "valco old" or "Valco (date)".
    a. Note: This folder can be used to return the system to its previous state, simply delete any folder named "valco" in the root directory and rename "valco old" to "valco".

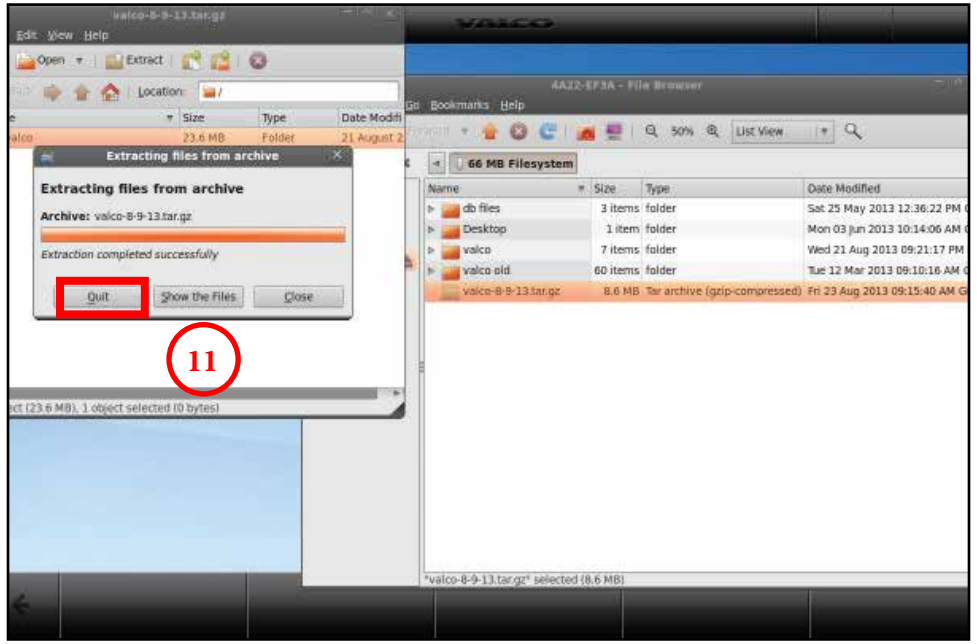
©2018 Valco Companies, Inc.

7. Insert the USB stick with the update into the USB port on the front of the Horizon.
    a. A new File Browser window should open displaying the files on the USB stick.
    b. If a new browser window doesn't open, select the USB stick in the currently open File
8. Double click the "valco.tar.gz" file, which is on the USB stick.
    a. This will open the Tar extraction program displaying a valco folder, as shown to right.
9. Select the "valco" folder in the Extraction program and press the Extract button.
    a. This will open a selection window as shown below
10. Select "root" on the left side of the window and click the Extract button in the lower right corner.

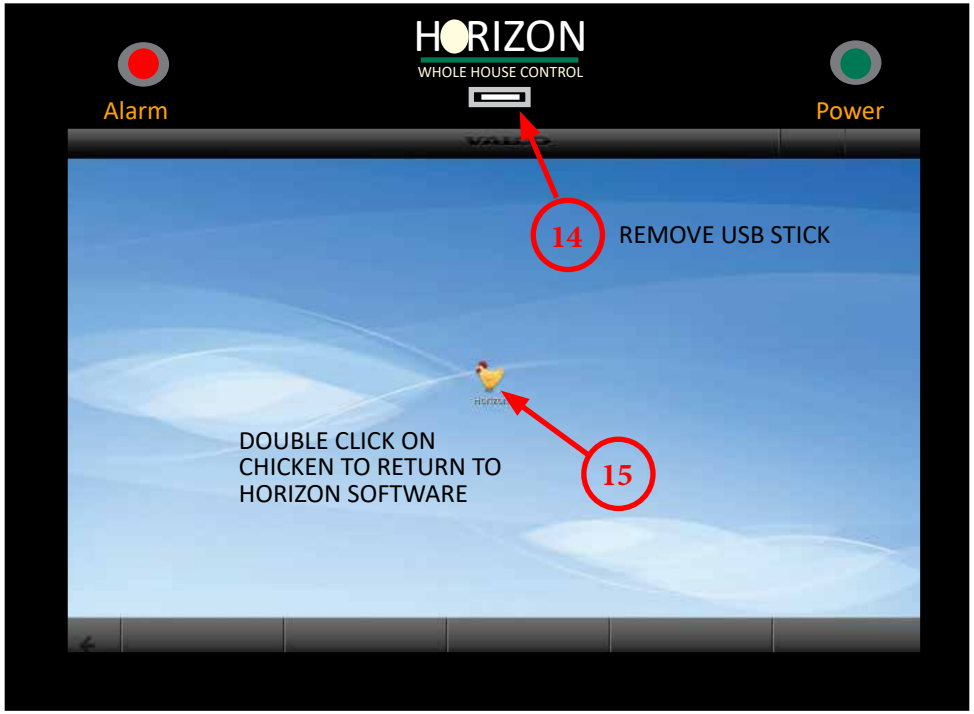


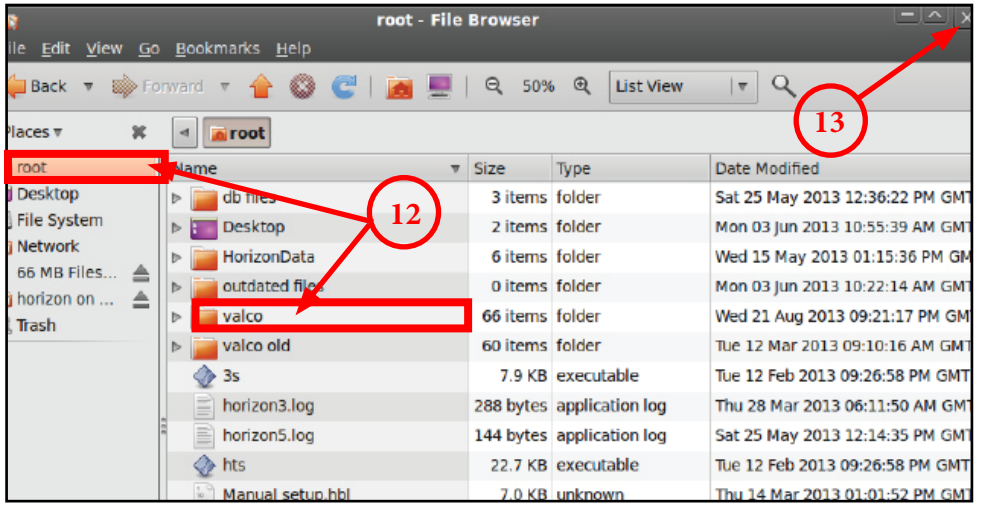
11. When the extraction is done, press the "Quit" button to close the Tar Extraction program, as shown to the right. *Continued on next page.*



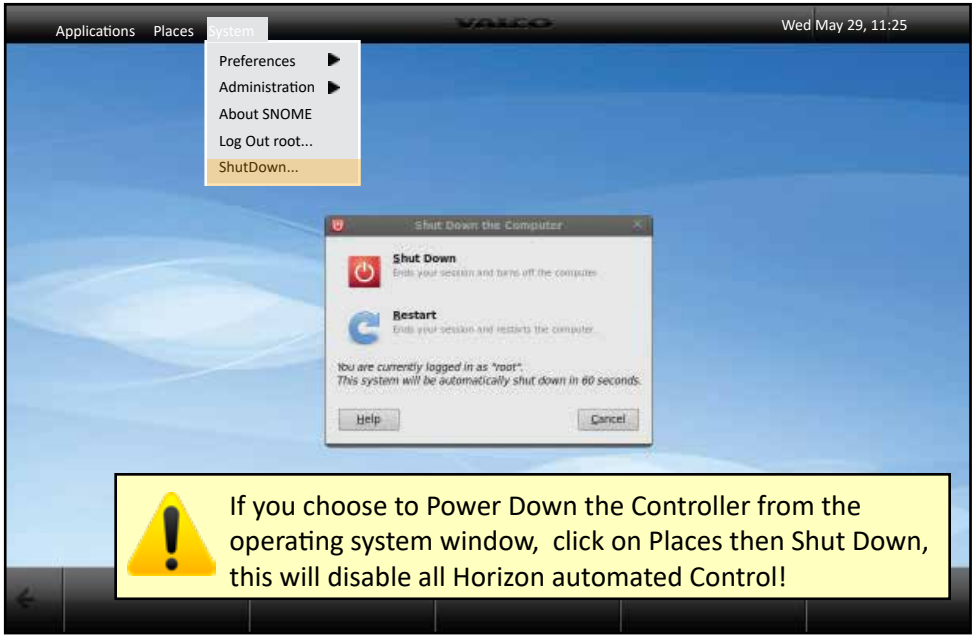


12. If everything worked correctly, the “root” folder should now contain a new “valco” folder.
13. Close window.
14. Remove the USB stick from the front of the unit, and the keyboard and mouse from inside the unit.
15. Double press the Chicken icon on the Desktop to restart the Horizon program.





If you are in the operating systems software and should need to shut down, click on System in the top navigation bar and a drop down menu appears, as shown below. Click on Shut Down and the Shut Down the Computer window will appear. Choose Shut Down.

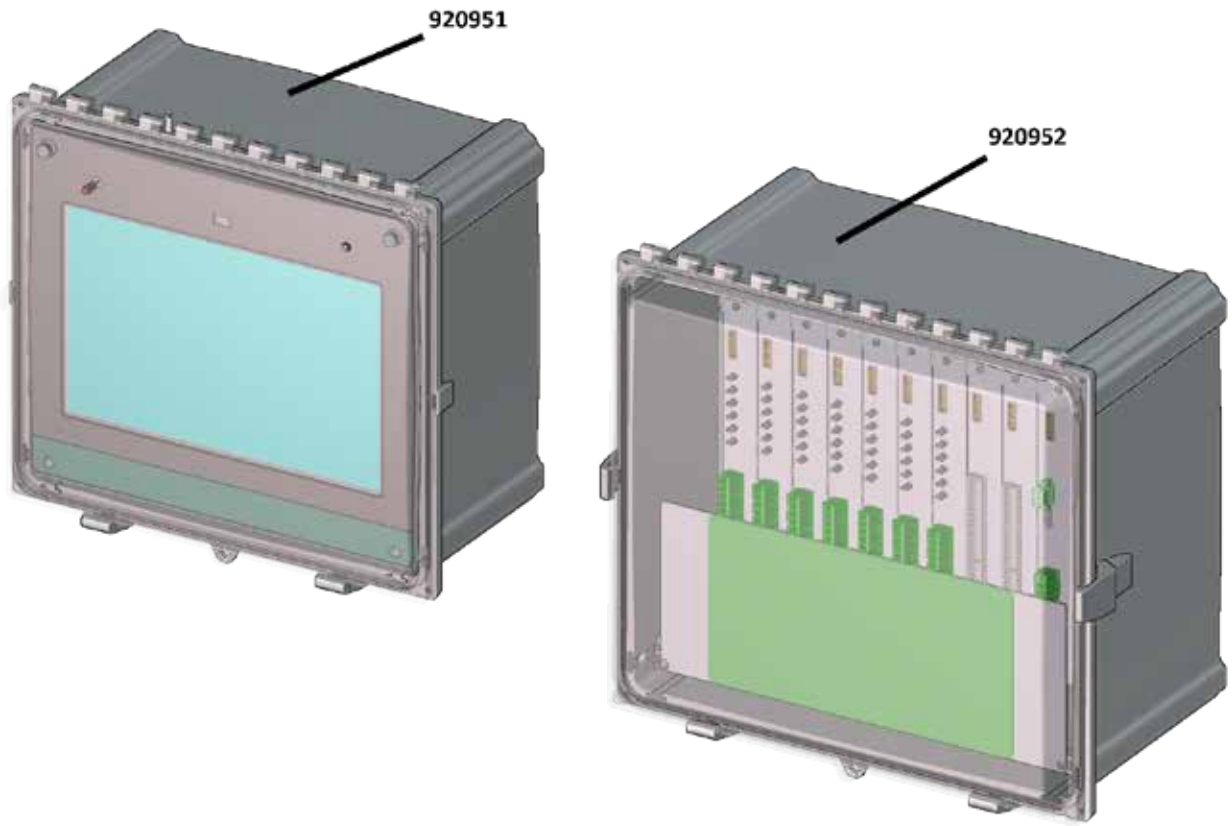


©2018 Valco Companies, Inc.

Intentionally left blank.

CHAPTER 9 - Explosed View and Parts Lists

9.1 920950 PARTS LIST

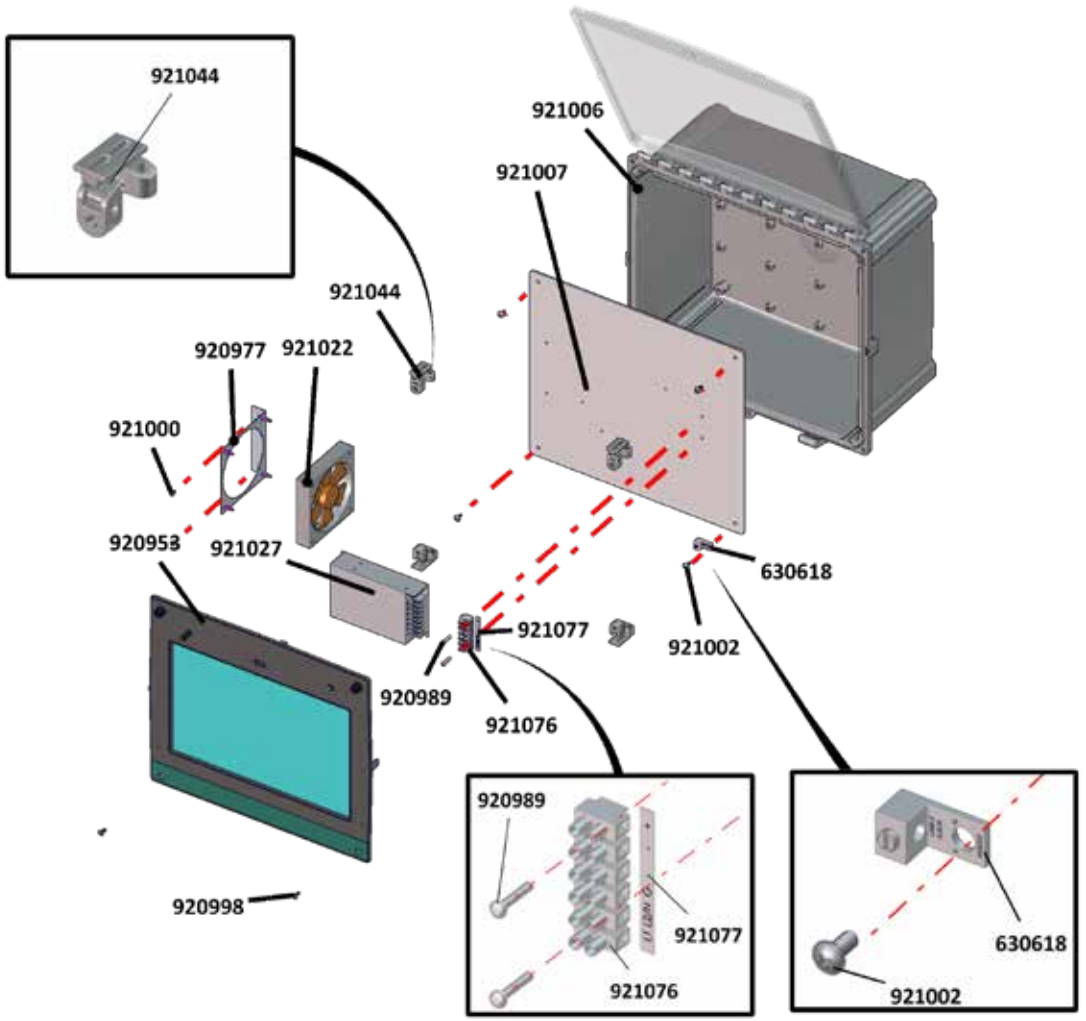


PART #	DESCRIPTION	QTY
920951	DISPLAY MAIN ASSEMBLY	1
920952	IO UNIT MAIN ASSEMBLY	1

©2018 Valco Companies, Inc.

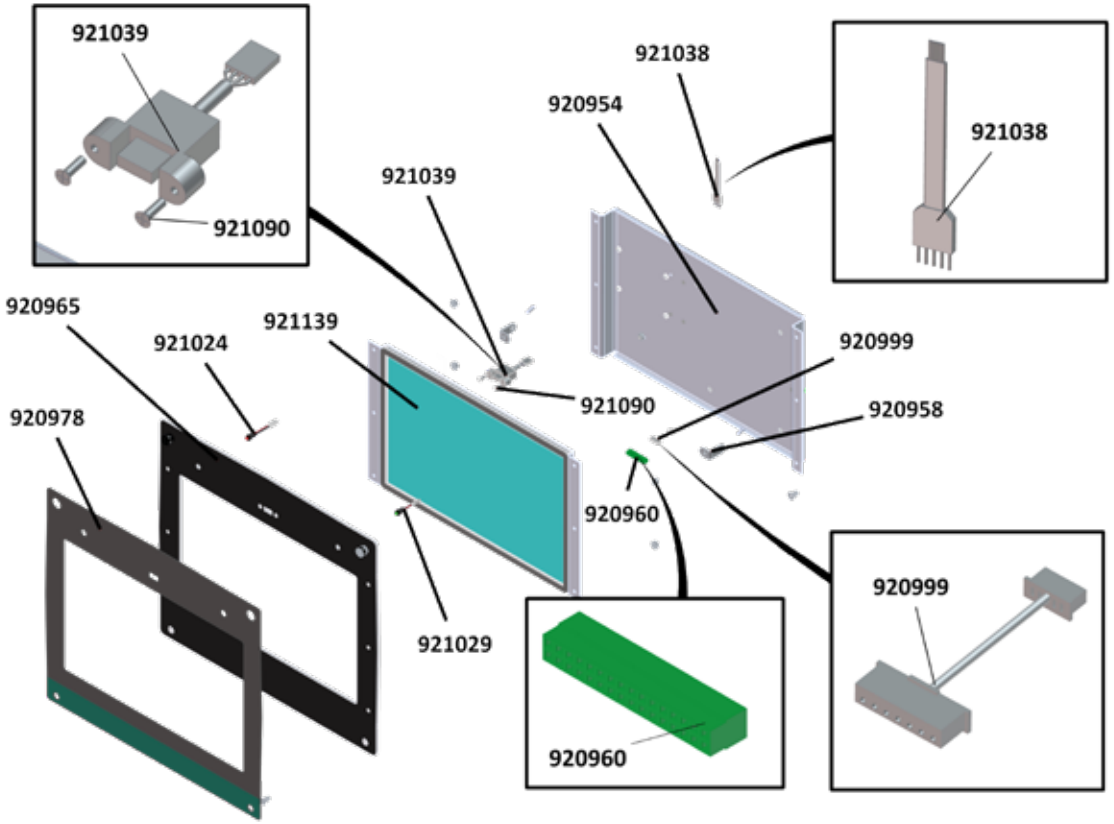
9.2 920951 PARTS LIST AND EXPLODED DRAWING

PART #	DESCRIPTION	QTY
920951 DISPLAY MAIN ASSEMBLY		
921022	120MM CASE FAN	1
921027	POWER SUPPLY 12VDC 100W	1



9.3 DISPLAY PARTS LIST AND EXPLODED DRAWING

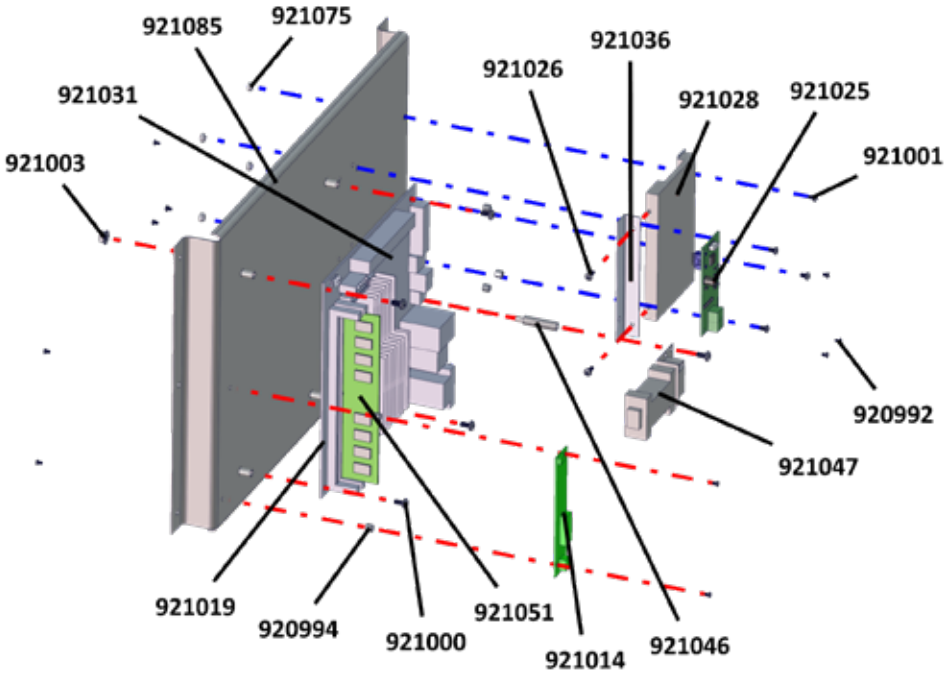
PART#	DESCRIPTION	QTY
920953 DISPLAY ASSEMBLY		
920960	LVDS CABLE ASSEMBLY	1
920999	INVERTER CABLE ASSEMBLY	1
921038	TOUCH SCREEN CABLE ASSEMBLY	1
921039	USB HEADER CABLE	1
921139	LCD, TOUCHSCREEN ASSEMBLY	1



©2018 Valco Companies, Inc.

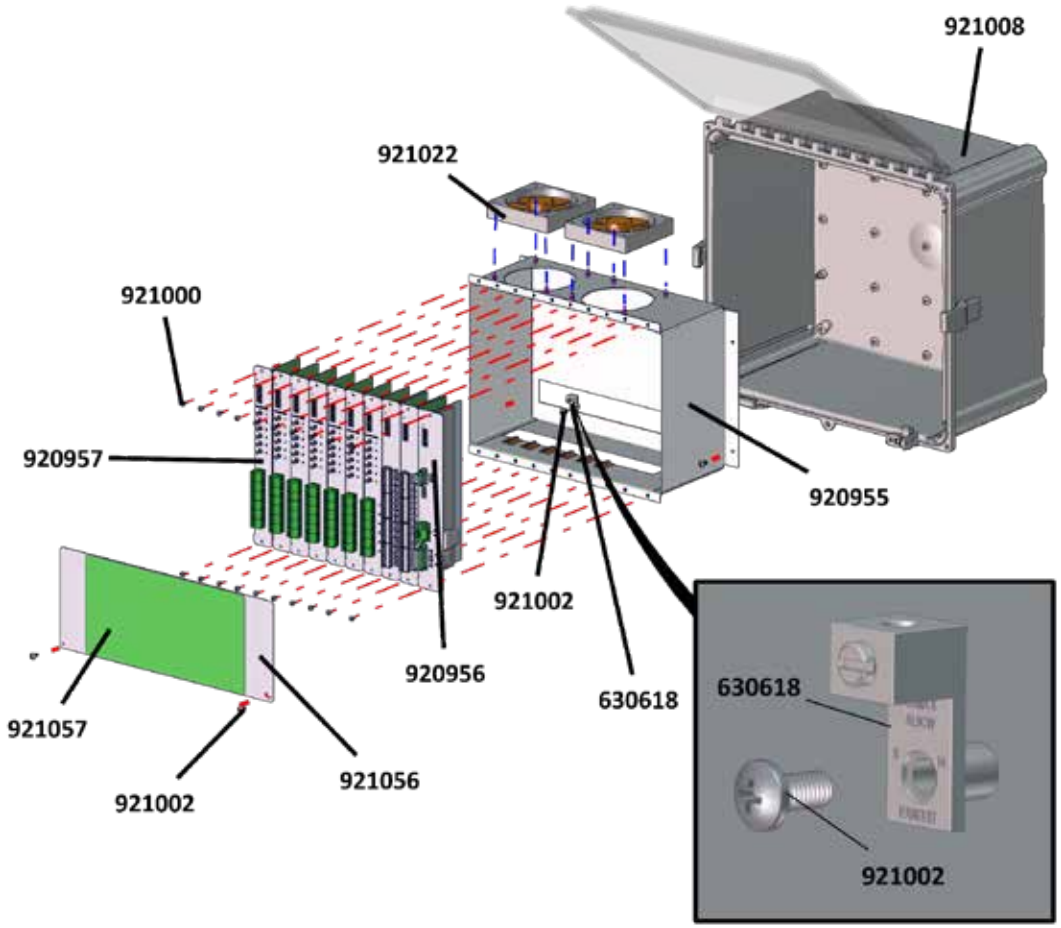
9.4 DISPLAY PARTS LIST AND EXPLODED DRAWING

PART#	DESCRIPTION	QTY
DISPLAY CONTROL ASSEMBLY		
921014	INVERTER BOARD	1
921019	MOTHER BOARD ASSEMBLY	1
921025	TOUCH SCREEN CONTROL (PART OF 921015)	1
921047	CONVERTER, RS232 TO RS485	1
921140R	SSD SOFTWARE LOADED (not shown)	1



9.5 920952 PARTS LIST AND EXPLODED DRAWING

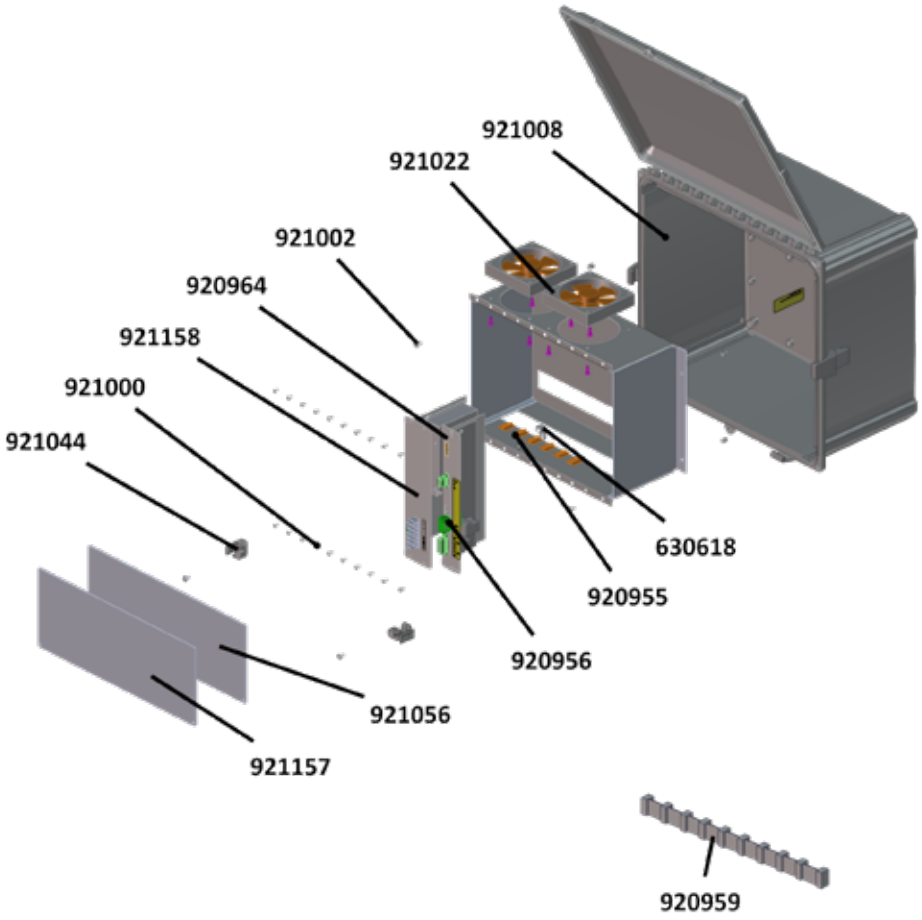
PART #	DESCRIPTION	QTY
920952 IO UNIT MAIN ASSEMBLY		
630618	GROUND LUG - #14-2 ALUMINUM	1
920955	IO MODULE CHASSIS ASSEMBLY	1
920956	ECM MODULE ASSEMBLY	1
920957	RELAY IOM ASSEMBLY	7
920959	CABLE ASSEMBLY RIBBON	1
920962	GP IOM ASSEMBLY	2
921008	ENCLOSURE 18X16	1
921022	120MM CASE FAN	2



©2018 Valco Companies, Inc.

9.6 921157 PARTS LIST AND EXPLODED DRAWING

PART #	DESCRIPTION	QTY
921157 IO EXPANSION UNIT MAIN ASSEMBLY		
920956	ECM MODULE ASSEMBLY	1
920959	CABLE ASSEMBLY RIBBON	1
921158	POWER SUPPLY ASSEMBLY	1



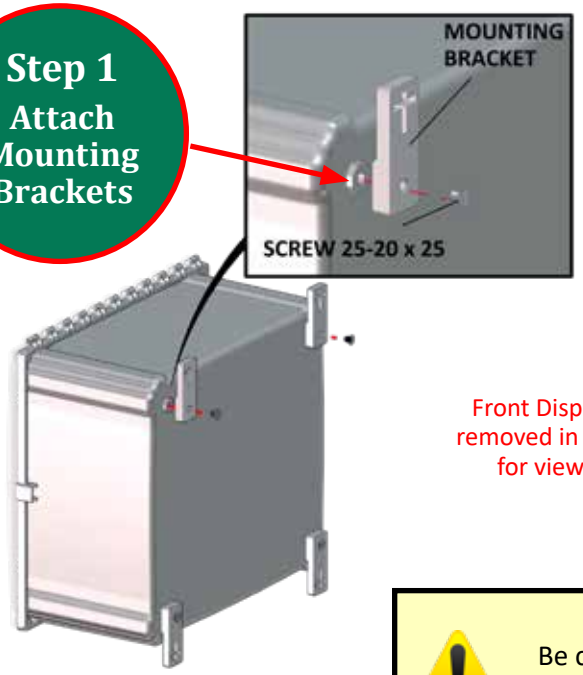
CHAPTER 10 - Quick Guide Installation and Operation

10.1 INSTALLATION OF ENCLOSURES

IMPORTANT!

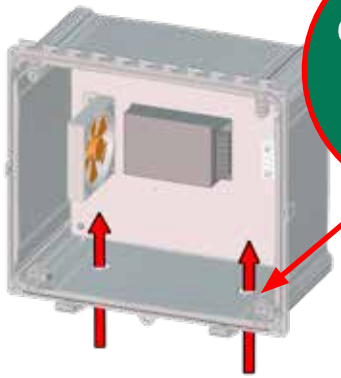
Control should be mounted in a room separated from the animals in a protected, clean environment.

Step 1
Attach Mounting Brackets

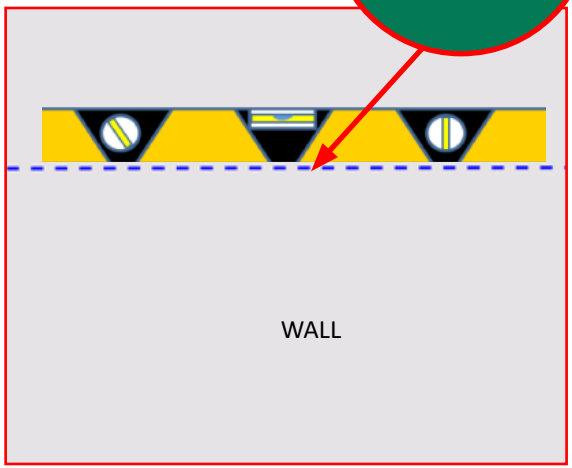


Step 2
Cut holes in bottom of enclosures for wiring

Front Display Board is removed in this example for viewing holes



Step 3
Draw level line on wall

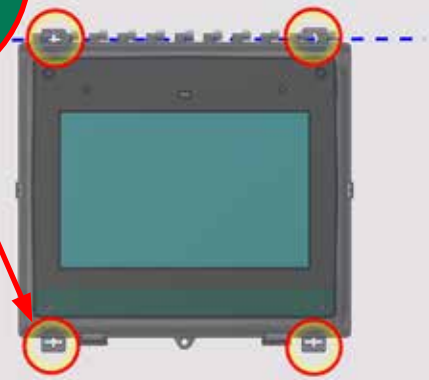


WARNING!

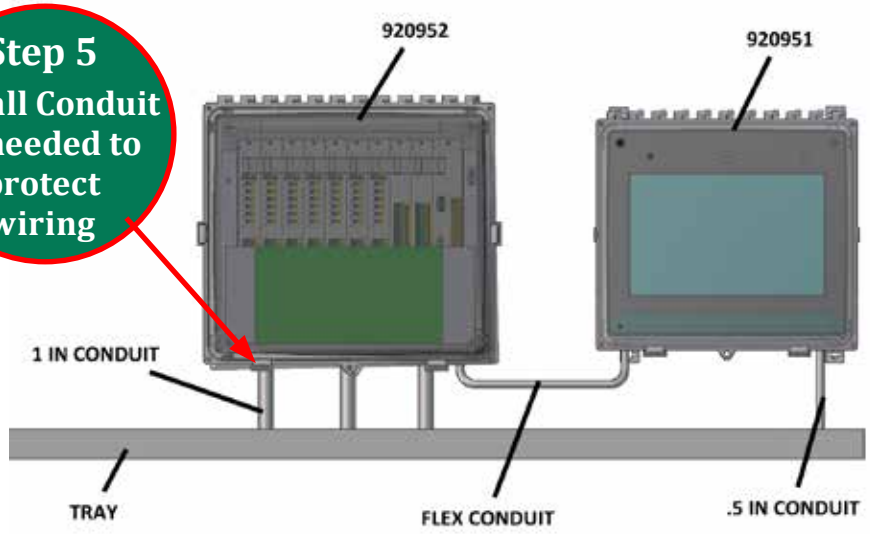
Be careful not to drill into boards or other equipment within the enclosure. Care should be given when working with electronic boards regarding static and dust.

Step 4
Mark & drill (4) holes

The same procedures are used for all three type of enclosures.



Step 5
Install Conduit as needed to protect wiring

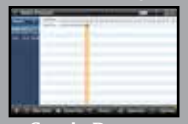


©2018 Valco Companies, Inc.

INPUTS

Temperature

Air Quality


Static Pressure

CONDITION BASED OUTPUTS

Fans

Heater/Brooder

Cooling

Curtains

Inlets

SCHEDULE BASED OUTPUTS

Lights

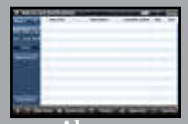
Feed

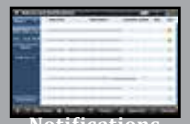
Water

ANIMAL STATISTICS

Animal Stats

ALARMS & NOTIFICATIONS


Alarms


Notifications

STANDARD USER INTERFACE

MAY VIEW ALL SCREENS /UNABLE TO CONFIGURE CONTROL OR CHANGE SETTINGS

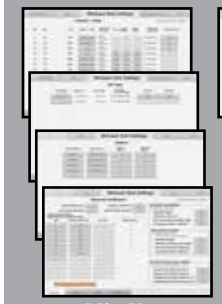
ALL USER INTERFACE

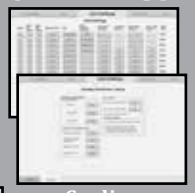
BOTTOM NAVIGATION BAR

ADVANCED USER INTERFACE

MAY VIEW ALL SCREENS /CONFIGURE CONTROL & CHANGE SETTINGS WITH THE SCREENS BELOW

ENVIRONMENT CONTROL


Min Vent


Cooling

Environment

SCHEDULE CONTROL

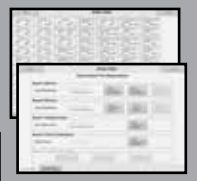
Feed

Lighting

Security

ADMINISTRATIVE CONTROL

Setup Wizard


Data File

IOM /Device Configuration

Alarm / Notification

Step 1
Opening Screen

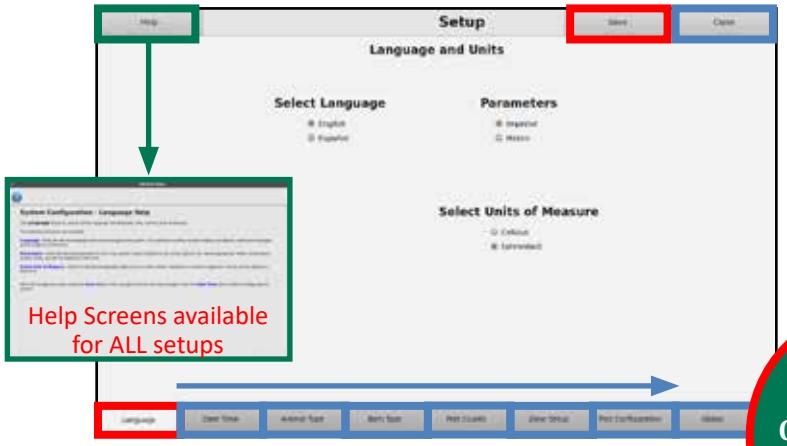
The VAL-CO® Screen display for only a few seconds.

The Main Menu Initial Startup Screen.
Once setups are completed the Main Menu will fill with devices and readings.

Step 2
Main Menu Select Operation to setup

Step 3
Operation Screen Select System Configuration

The Operation Screen contains all the buttons for setup. Each button will require setup. It is recommended that you begin with the System Configuration Button.



Step 4
System Configuration Use Tabs to setup each

Setup ALL required fields in ALL Tabs on the Bottom Navigation Bar before you proceed! After setups are complete, save and close the window using the tabs on the top right hand corner which will return you to the Operation Screen

©2018 Valco Companies, Inc.

Step 5
Operation Screen Select BUTTON for Setups

After you have completed the System Configuration Setups you can move through the rows of Buttons highlighted below to perform the setups for each Button, as you did for the System Configuration. Be sure to complete each tabbed screen.

Step 6
Select House View

Once all the Setups are completed you may now move through the Main Menu Bottom Navigation Bar for viewing the information accumulating for each zone. The House view gives you a snapshot overview of all the devices and readings.

Step 7
Select History

The History screen gives you the histories for each device or sensor reading in both list and graph formats by the day, month or year.

Step 8
Select Switches

The Switches screen allows you view or override the settings to manually switch a device to on, off or switch to auto. (On is yellow, off is orange and auto is green.)

There are several screens that provide an overview of one or more device status. The Buttons on the Main Menu display the device name, icon, and current readings by zone, Press the Zone button to select the zone you wish to view for a current device status overview. The icons display animal type/days/approximate weight, devices/ sensors status on, off, percentage open/closed, temperatures, humidity, etc.
This provides a complete current view of your buildings operation.

Step 9
Back to the Main Menu

©2018 Valco Companies, Inc.

Intentionally left blank

CHAPTER 11 - Customer Service

11.1 TROUBLESHOOTING

The Troubleshooting Flowchart is available on the VAL-CO website (http://www.val-co.com/). Click on the Resources tab, then click on manuals. The flowchart may be downloaded and printed in either a legal (8.5 X 11) size or in a tabloid (11 X 17) size format. You may choose the size through your printer advanced settings.

©2018 Valco Companies, Inc.

11.2 RESETTING CONTROL TO “NEW STATE”

It is possible to clear out the system and start completely over with the Horizon system. But keep in mind that doing this will clear out everything and return the system to a factory state. All the old settings, as well as the history and alarm records, will be lost and unrecoverable.

Before starting, it is best to use the Data File Operation feature to back up all the information before proceeding. This will make it possible to return to a working state, if something goes wrong. See section 8.11 (page 8-86) on the steps needed to back up all the data files.

1. Press the Operation button at the bottom of the screen.
2. Press the System Configuration button.
3. Press the Barn Type tab.
4. Press the Close button to close the Caution pop up window.
5. Press the Delete All Database Configuration button at the top of the screen.
6. Read and understand the three warnings that will display as you proceed. If you wish to proceed with the resetting of the controller, press the “Yes” button on the three popup windows as they appear. To cancel, press the “No” button on one of these popups.
7. When you press the “Yes” button on the last of the three popups, the system will clear out all the old database (settings, history and alarms) and will shut down to the Linux desktop.
8. Press the chicken Icon twice to restart the Horizon program.
9. The Horizon program will start up with all the old settings removed.
10. Press the Operation button and return to Chapter 8 – Control Setup on page 184 to start setting up the Horizon again.

DEALER NAME:_____ PHONE_____

Street / PO Box _____

City _____

State / Province _____

Zip / Postal _____

Phone _____

Fax _____

E-mail _____

Web site _____

Customer Service
210 E. Main Street
P. O. Box 117
Coldwater, OH 45828
800.998.2526

North America:
Phone: 800.99VALCO (800.998.2526)
Fax: 419.678.2200
Email: sales@val-co.com

International:
Phone: (+1) 419.678.8731
Fax: (+1) 419.678.2200
Email: intl.sales@val-co.com

NOTES:

CONTROLLER Software copyright 2013 VAL-CO®. The VAL-CO® logo is a registered trademark of VAL-CO®. The Horizon® is a trademark name of this VAL-CO® control. All rights reserved. Printed in the USA

©2018 Valco Companies, Inc.