

## Chore-Tronics® 2 D1.x Program Features

### New Light Clock and Light Clock Curve Formats

There are two major changes to the Light Clock and Light Clock Curve:

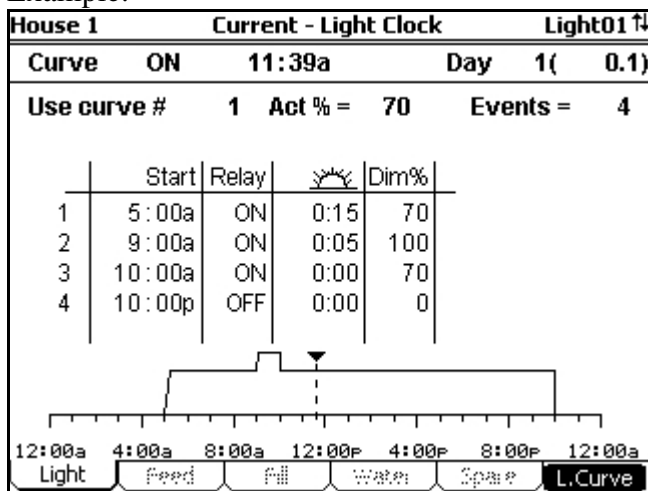
- 1.) New format for setting up lighting programs (both the Light Clock and the Light Clock Curve)
- 2.) Increased the maximum number of available Light Clocks (and Light Clock Curves) to 4

The new Light Clock format is as follows:

- 1.) 8 On/Off Events have been replaced with a maximum of 24 Events
- 2.) Each event the user chooses whether the relay (if used) assigned to the clock turns on or off, what the dimmer (if used) level setting should be at the time of the event and how long it should take to get to that dimmer setting (sunrise/sunset time)
- 3.) The format of the Light Clock Curves is the same as the Light Clocks. Bend points are still changed by using the Index keys.

The new format and the additional light clock curves allow for light level spiking events to be programmed and for the use of independent clocks to control different light types (incandescent and fluorescent for example) within the house.

Example:



In the above example, the lights will turn on at 5:00a and will take 15 minutes to go from 0 percent light to 70 percent light. At 9:00a the lights will take 5 minutes to “spike” up to 100 percent. At 10:00a the light spike is removed immediately (no sunset time) and the lights return to 70 percent. At 10:00p the lights are immediately turned off.

## Variable Speed Output

House 1		Outputs and Temps	
On	Off	Output	Timer
80.0	74.0	<b>Tunnel</b>	<b>ALLOWED</b>
79.0		<b>Max var speed</b>	
78.0	VAR	Tunnel Fan 4	---
77.0	VAR	Tunnel Fan 3	---
76.0	VAR	Tunnel Fan 2	---
75.0	VAR	Tunnel Fan 1	---
74.0	VAR	Exhaust Fan 2	---
74.0	VAR	Exhaust Fan 1	---
73.0		<b>Min var speed</b>	<b>MIN VENT</b>
72.0		<b>Set Temperature</b>	<b>Tavg: 79.5</b>
House		Egg Room	

The variable speed feature allows one fan output to be a variable speed output. The variable speed fan will turn on at the Min var speed temperature. The fan will continue to increase speed, reaching its maximum speed at the next fan's ON temperature. At that temperature the next fan will turn on and the variable speed will return to its minimum speed. It will continue this process until the Max var speed temperature is reached. At and above this temperature the variable speed fan will continue to operate. The variable speed fan can be run in Power mode or Power and Tunnel modes.

Exhaust and Tunnel Fans that have a VAR in the OFF column are fans that are being used in the variable speed feature.

Current speed and temperature of the variable speed fan can be found in Screen #2.

If 36" or larger fans are being used as the variable speed fan, then a frequency drive must be used to control the fan. The fan must a 3 phase motor (even if on a single phase farm) in order to be controlled by the frequency drive.

**CAUTION! If a variable speed fan is being controlled by a frequency drive on a single phase farm, that fan can not be on a back up control!**

New Term Definitions:

Min var speed- This is the temperature that the variable speed fan will turn on at its minimum speed. Below this temperature the fan will be off or cycling on the Minimum Ventilation Timer

Max var speed-This is the temperature that the variable speed fan will be go to its maximum speed and stay at maximum speed as the temperature continues to rise.

Example:

In the above example, when the temperature is below 73.0 degrees, the variable speed fan will cycle on the Min. Vent Timer. At 73.0 degrees the variable speed fan will turn on and run at its minimum speed. At 73.9 degrees the fan will be close to full speed and at 74.0 degrees the Exhaust Fans will turn on and the variable speed fan will go back to minimum speed. This process will repeat until the temperature reaches 79.0 degrees. At that temperature the variable speed fan will continue to run at maximum speed. The process will work in the opposite direction as the temperature cools in the house.

Min Cycle Feature

House 1		Outputs and Temps	
On	Off	Output	Timer
<b>82.0</b>		<b>Max var speed</b>	
80.0		Stir Fan 1	---
79.5	VAR	Exhaust Fan 5	---
79.5	VAR	Exhaust Fan 4	MIN CYCL
79.5	VAR	Exhaust Fan 3	MIN CYCL
<b>79.0</b>	<b>78.0</b>	<b>Second SP</b>	
77.5	VAR	Exhaust Fan 2	MIN VENT
77.5	VAR	Exhaust Fan 1	MIN VENT
<b>76.5</b>		<b>Min var speed</b>	---
<b>76.0</b>		<b>Set Temperature</b>	<b>Tavg: 74.1</b>
75.0		Heat Zone 1	
75.0		Heat Zone 2	

The Min Cycle (Alternate Minimum Ventilation fans) allows the fan(s) assigned to the Min Vent Timer to alternate with the fans assigned to the Min Cycle. In the above example, Exhaust Fans 1 and 2 will run on the Min Vent timer first. At the next ON time of the Min Vent Timer the fans assigned Exhaust Fans 3 and 4 (the fans assigned to the Min Cycl) will run. The feature will stop when the fans assigned to the Min Vent Timer turn on due to temperature.

## Airspeed Alarm in Tunnel Mode

House 1		Alarm Settings	
<b>Power Mode</b>			
Max Relative to Set Temp		10.0	( 72.0)
Min Relative to Set Temp		-10.0	( 52.0)
Sensors Monitored		123	-----
<b>Static Pressure</b>			
High static pressure alarm			.13
Low static pressure alarm			.02
<b>Airspeed</b>			
Min airspeed in Tunnel			120
Min airspeed at full Tunnel			500

Overview      Settings      History

Min airspeed in Tunnel Alarm-This setting is for the minimum desired airspeed in Tunnel mode. The alarm will activate if the airspeed ever drops below this the entered level for more than 5 minutes. This alarm is not dependent on the number of tunnel fans on.

Min airspeed at full Tunnel Alarm-This setting is for the minimum desired airspeed when all Tunnel fans are running. If when all Tunnel fans are operating (in Tunnel mode) and the airspeed stays below this level for 5 minutes, an alarm will be given.

## Airspeed Control in Tunnel Mode

House 1 Setup - Output Ventilation Controls	
<b>Power Mode:</b>	
Alternate Min. Vent. Fans	YES
Stir On Delay Time (sec)	60
<b>Tunnel Mode:</b>	
Airspeed control in tunnel	YES
Start turning on Fans Below	201
Start turning off Fans Above	291
<b>Var. Speed</b>	
Var. Speed Min	60
Var. Speed Max	100
Fan startup time (sec)	0
Input	Outp. Vent
Curtain	Other
Calibrate	

Screen 14 Output Ventilation Tab

Minimum Airspeed in Tunnel Mode is used to maintain a minimum airspeed while in Tunnel mode. After making the transition from Power to Tunnel mode, the control will turn on enough fans until the airspeed reaches the speed entered in the *Start turning on Fans Below* line in Screen 14 above. When coming out of full tunnel, the control will continue to allow fans to turn off by temperature until the airspeed reaches the airspeed entered in the *Start turning off Fans Above* line.

Example: Using the settings above, when the control completes the transition to Tunnel Mode, the control will check to the airspeed to make sure it is at or above the *Start turning on Fans Below* setting. It will turn on fans until the minimum airspeed is reached. As the house cools and the control starts to turn fans off, the control will stop allowing fans to turn off once the airspeed drops below the *Start turning off Fans Above*. It will maintain that airspeed until the control reaches the Tunnel Off temperature.

## RH Influence on Minimum Ventilation

House 1 Setup - Input Controls	
Second static pressure	NO
<b>Low Stat Pres Alarm</b>	
In power mode	YES
In tunnel mode	YES
<b>RH Influences:</b>	
Influence on min ventilation	YES
High Control Limit	70
Low Control Limit	65
Amount of influence (sec)	5
Maximum influence (sec)	240
Actual influence (sec)	0
<input type="button" value="Input"/> <input type="button" value="Outp.Vent"/> <input type="button" value="Curtain"/> <input type="button" value="Other"/> <input type="button" value="Calibrate"/>	

Screen 14-Input tab: RH Influence Settings

House 1 Current Settings					
<b>Set Temperature</b>	<b>76.0</b>		<b>Day 21</b>		
Current Vent. Time	150 ( 30)	Current Stir On	0		
Timer Settings(sec)	On	Off	Tot	Max	Status
Min Ventilation	30	270	5:00	240	OFF
Timer 1	60	240	5:00		NA
Timer 2	90	210	5:00		NA
Stir On	60				NA

Screen 3: Current Vent Time using RH influence

Current Vent time without RH influence.

Actual amount of current vent time with RH influence and/or temperature timer ramping.

This feature allows the control to add or subtract minimum ventilation time based on the humidity in the house. The settings in Screen 14 for this feature are as follows:

**High Control Limit-**If the RH in the house is above this setting than the control will add an increment of on time to the minimum ventilation timer up to the maximum amount of influence allowed or the maximum possible amount of ventilation on time that is set in Screen 3.

**Low Control Limit-**If the RH in the house is below this setting than the control will subtract an increment of on time to the minimum ventilation timer down to the minimum setting is Screen 3.

Note: If the RH is between the High and Low Control limit, then the control will neither add or subtract on time to the minimum ventilation timer. The RH is check 30 seconds prior to an ON time cycle of the minimum ventilation timer.

Amount of Influence (Increment Time)-The amount of time (in seconds) the control will add (or subtract) to the on time of the minimum ventilation timer if the RH reading is above (or below) the control limits.

Maximum Influence-The maximum amount of influence time the RH can be allowed to add. For example, If the maximum influence is set to 100 seconds, then the maximum amount of time the RH influence function can add to the minimum ventilation timer is 100 seconds.

Actual Influence- The actual amount of influence time the RH function is adding to the minimum ventilation timer. The control may not always add the full amount of time if the amount of influence would add up to be more than the maximum allowed in Screen 3.

Stir ON Timer Delay

House 1 Setup - Output Ventilation Controls			
<b>Power Mode:</b>			
Alternate Min. Vent. Fans			NO
Stir On Delay Time (sec)			60
<b>Tunnel Mode:</b>			
Airspeed control in tunnel			NO
Minimum # of tunnel fans on			4
<b>Cool Pad Settings:</b>			
Water pre fill time	(sec)		8
Water incr/decr time	(sec)		5
Time to wet dry Pad	(sec)		90
Actual water on time	(sec)		-
Input	Outp.Vent	Curtain	Other Calibrate

The fans assigned to the Stir ON timer can now be delayed from turning on at the end of the minimum ventilation timer on time cycle.

Raise SP High Control Limit above .15

House 1 Setup - Input Controls	
<b>Static Pressure:</b>	
Current SP Safety Limit:	.25
Fixed inlet anticipation	NO
Tun inlet SP assist in power	YES
No Heat Zones while Tun assist	YES
Second static pressure	YES
Select Sensor	123-----
<b>Low Stat Pres Alarm</b>	
In power mode	YES
In tunnel mode	YES
<b>RH Influences:</b>	
Input	Outp.Vent
Curtain	Other
Calibrate	

The SP safety limit can now be set by the user (default is .20). When the limit is raised above .20 (maximum .27) the High Control limit can be set higher than .15. Maximum allowed High Control setting is now .22.

No Heat Zones While in Tunnel Assist

If desired the heat zones can be blocked from turning on while the control is in tunnel inlet assist. The heat zones will be allowed to operate as normal once the control leaves tunnel inlet assist.

Minimum Cool/Cool Pad Temperature

House 1 Setup - Output Ventilation Controls			
Water pre fill time	(sec)		8
Water incr/decr time	(sec)		5
Time to wet dry Pad	(sec)		90
Actual water on time	(sec)		-
Max. water on allowed	(sec)		300
Repetition rate	(mm:ss)		5:00
Temp check every	4	repetition rates	
Extra aggressive if	5.0	deg above	
Extra aggressive if	5.0	deg below	
Flush Cool Pad at	--:--	for	--:--
Cool Pad disabled above RH			100
Allow Cool Pad from	12:00a	to	12:00a
Do not allow Coolpad to go below			80.0
Input	Outp.Vent	Curtain	Other
Calibrate			

The Cool and Cool Pad outputs can have a minimum temperature setting. If the cool or Cool Pad outputs reach this minimum temperature due to the set temperature changing

the outputs will not go below this minimum temperature even though the set temperature may continue to lower due to the set temperature curve.

The Cool Pad can now also be used in Power, Natural, or Tunnel modes.

Display Total Time of ON/OFF Timers

House 1		Current Settings			
Set Temperature	62.0	Day		22	
Current Vent. Time	- ( - )	Current Stir On		0	
Timer Settings(sec)	On	Off	Tot	Max	Status
Min Ventilation	30	270	5:00	240	-
Timer 1	60	240	5:00		NA
Timer 2	90	210	5:00		NA
Stir On	60				NA

The total cycle time of the Minimum Ventilation, Timer 1 and Timer 2 timers is shown under the ***Tot*** column in Screen 3.

Daily Feed and Water per X birds

The Daily and Cumulative feed and water per X (1, 100, or 1000) birds is now displayed in the Management Screen.

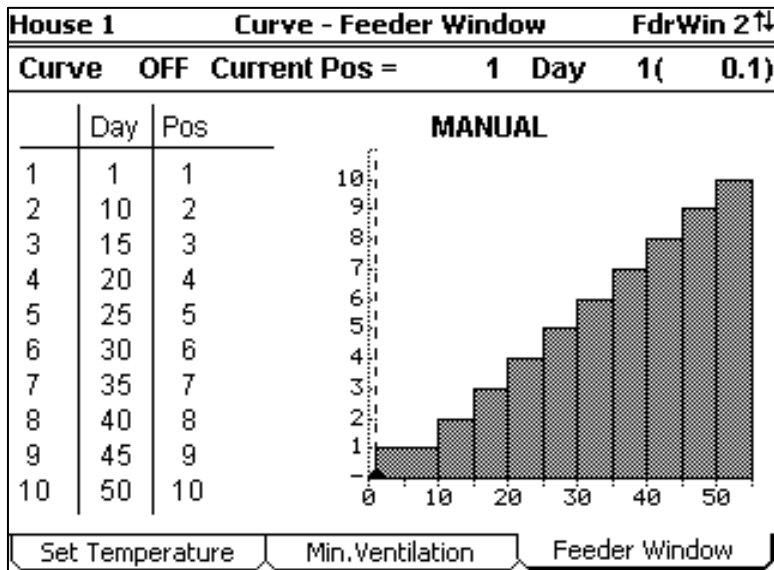
Add Mode to Max/Min Temp History (mode sensors only)

House 1 History - Mode Temperature					
Day	Max Temp	Min Temp			
22	75.5	3:05p	PT	73.9	3:05p P
21	75.0	12:02p	P	72.6	12:31p P
20	0.0	12:00a		0.0	12:00a
19	0.0	12:00a		0.0	12:00a
18	0.0	12:00a		0.0	12:00a
17	0.0	12:00a		0.0	12:00a
16	0.0	12:00a		0.0	12:00a
15	0.0	12:00a		0.0	12:00a
14	0.0	12:00a		0.0	12:00a
13	0.0	12:00a		0.0	12:00a
12	0.0	12:00a		0.0	12:00a
11	0.0	12:00a		0.0	12:00a

Temp    RH    Run Time    Sensors    Reset

The Mode Temperature History screen will now indicate in which mode the maximum or minimum temperature occurred.

Addition of Feeder Window Ramp #2



There are now two separate Feeder Window Ramps available. Each one is independent of the other one.

### Lock in Tunnel Feature

A third choice has been added to the Tunnel Allowed/Not Allowed field. Lock in Tunnel can be chosen when it is desired to have the control enter Tunnel Mode and stay in Tunnel Mode until it is manually returned to Power or Natural Mode.

House 1		Outputs and Temps	
On	Off	Output	Timer
85.0		Tunnel Fan 12	---
84.0		Tunnel Fan 11	---
83.0		Tunnel Fan 10	---
82.0		Tunnel Fan 9	---
80.0		Tunnel Fan 8	---
<b>78.0</b>	<b>74.0</b>	<b>Tunnel</b>	<b>LOCK IN TUN</b>
75.0		Tunnel Fan 7	---
74.0		Tunnel Fan 6	---
73.0		Tunnel Fan 5	---
69.0		Tunnel Fan 4	---
68.0		Tunnel Fan 3	---
<b>67.5</b>	<b>66.5</b>	<b>Second SP</b>	

### Inlet Behavior Change in Power to Natural Mode Transition

The inlet will now stay open until Main Curtain 1 and Main Curtain 2 (if used) has reached their first open movement.