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The Incubator Company

Hatch Window, HatchSense and the Hatcher

Presented by Phillip Perry

Consultant/Technical Advisor for JAMESWAY INCUBATOR COMPANY

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The Hatching Process

The “Hatch Window” is the time used to describe from when hatchlings begin to hatch until the last finish.

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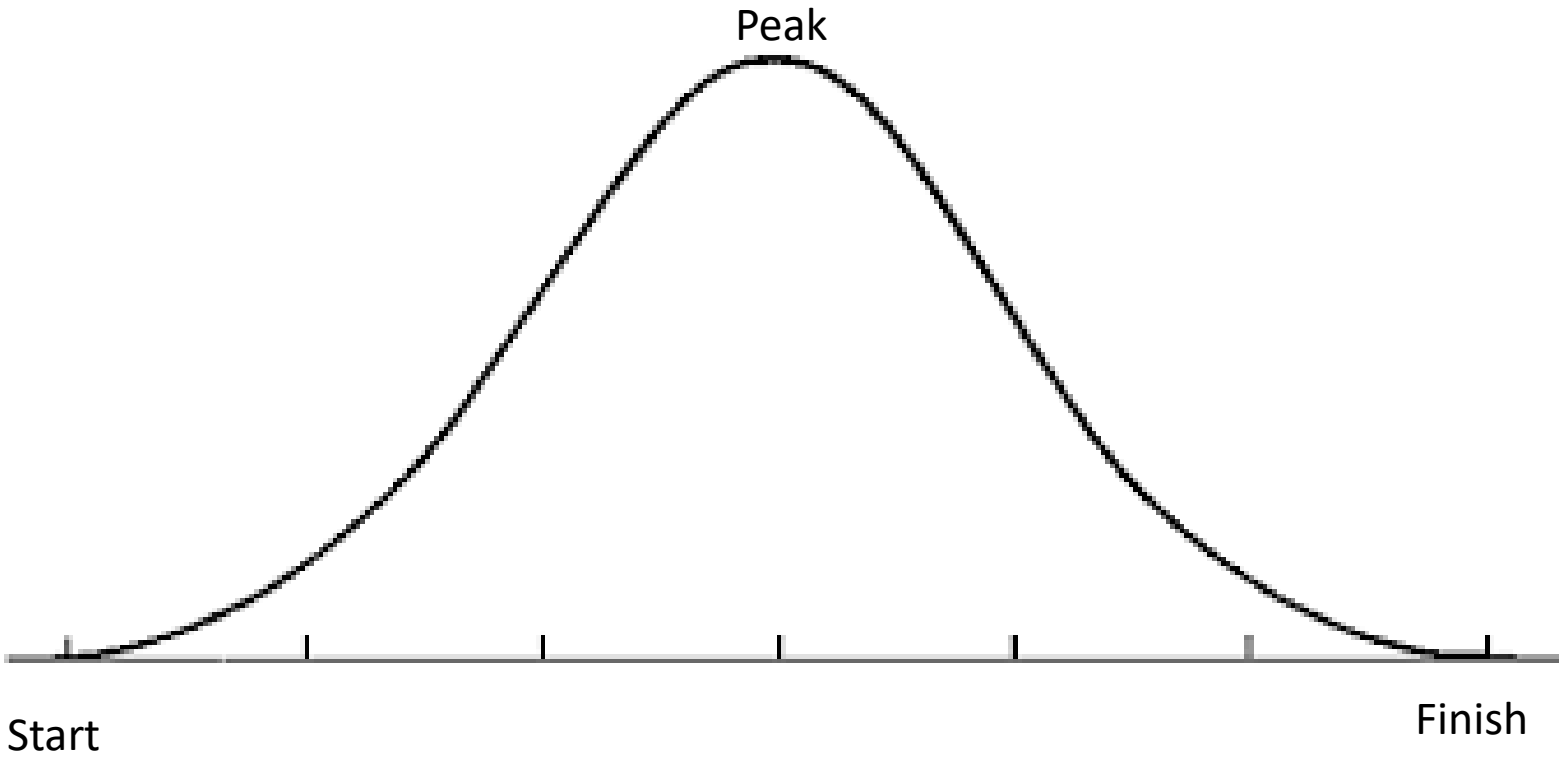
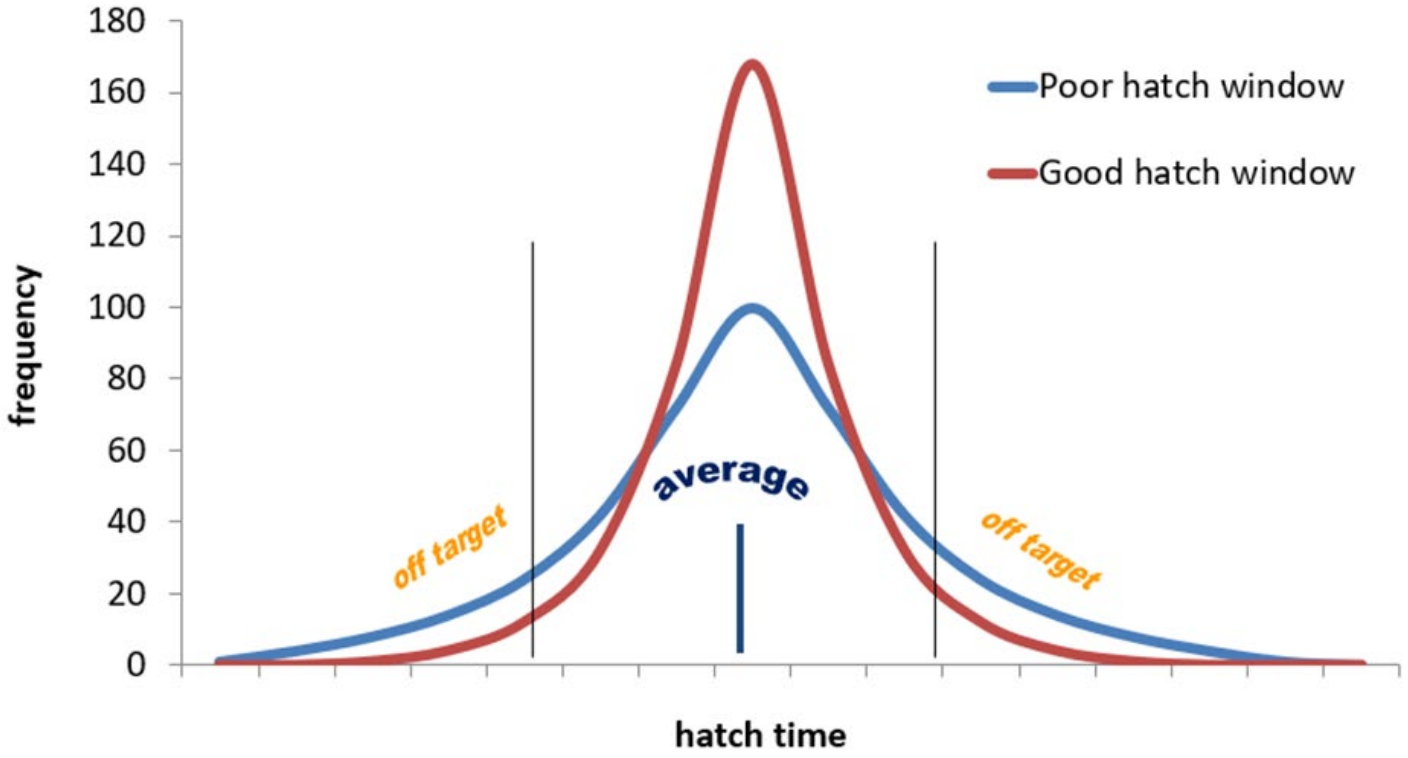
The Hatching Process

Single-Stage Humidity Bell Curve



A narrow hatch window will reduce the number of ‘fringe chicks’ that hatch either too early or too late as compared to the average hatch time.



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Potential Causes of Hatch Window Variations

- Egg Size
- Egg Age
- Breeder Age
- Fertility
- Pre-Warming
- Location of Eggs in the Setter
- Transfer

The HatchSense System reduces the number of “fringe hatchlings”

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The HatchSense system allows the hatcher controls to watch for movement and humidity changes inside the baskets.

Once these changes are detected the program adjusts the environment to decrease the hatch window.

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Operating Hatch Sense

Turn off the fan switch and connect HatchSense module to communication outlet.

Attach Module hangers to middle rib of hatch basket.

Check that the power light on HatchSense module is on.

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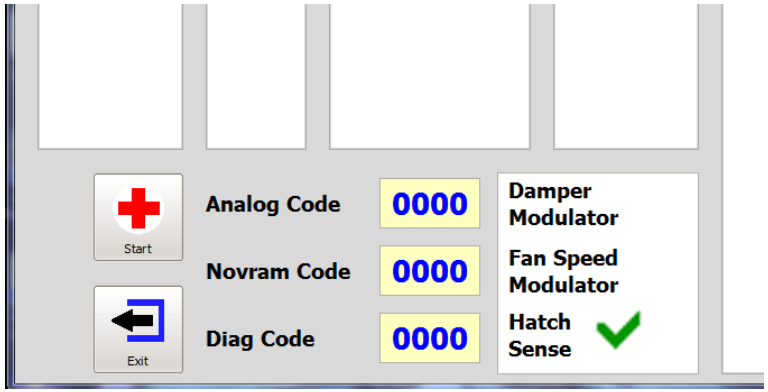
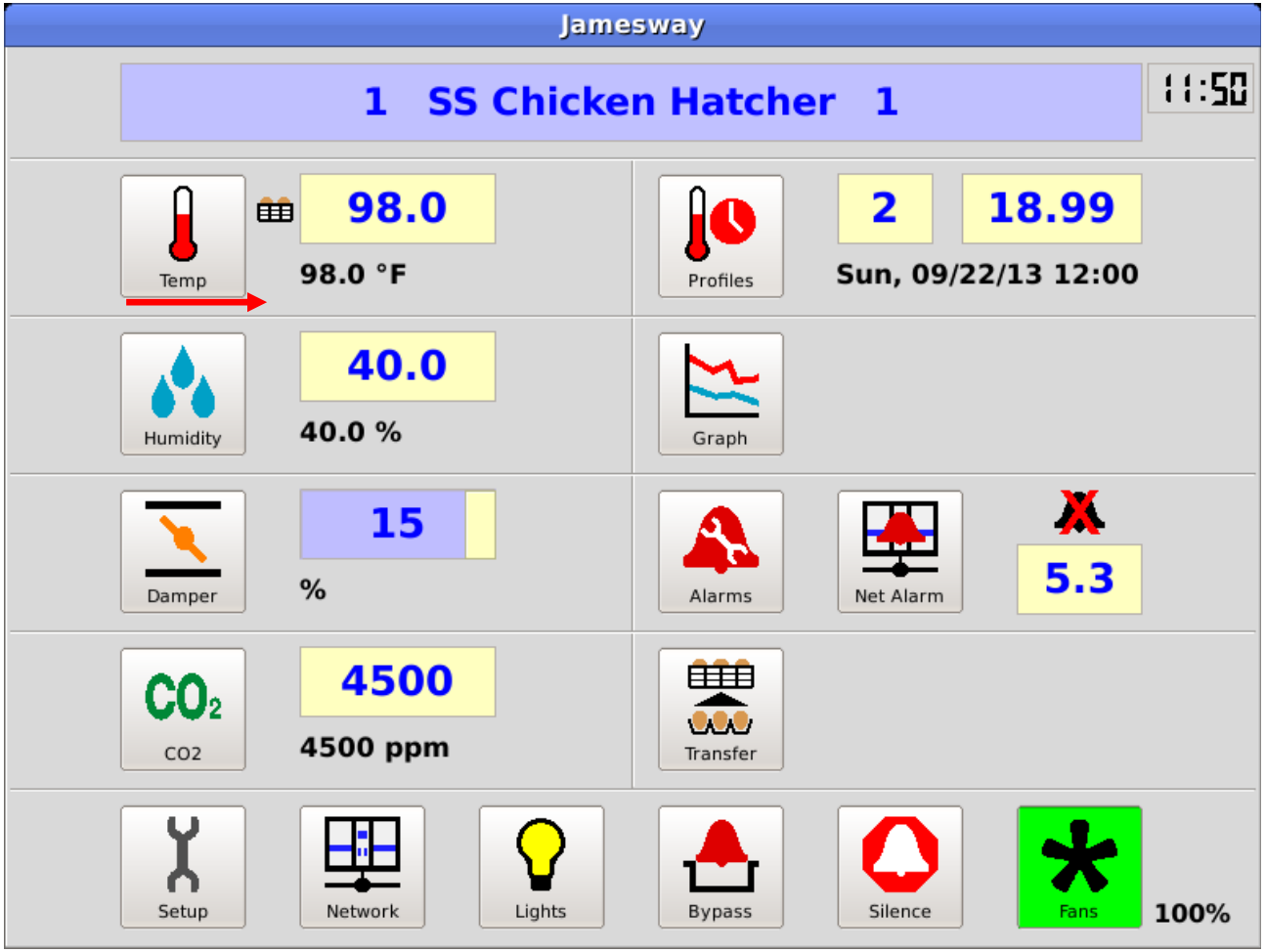


In the Setup screen choose the Diagnostics function.

Verify that green check mark is shown beside "HatchSense".


Jamesway
1 SS Chicken Hatcher 1
11:50
Temp
98.0
98.0 °F
Profiles
2
18.99
Sun, 09/22/13 12:00
Humidity
40.0
40.0 %
Graph
Damper
15
%
Alarms
Net Alarm
5.3
CO2
4500
4500 ppm
Transfer
Setup
Network
Lights
Bypass
Silence
Fans
100%

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At day 19.16 (19D 4H) for chickens and day 25.33 (25D 8H) for turkeys, the HatchSense module activates the white LED lights on rear side of module, continuously cycling on for 30 minutes, then off for 30 minutes.

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Throughout this time the motion detectors are active, scanning for motion inside the baskets.

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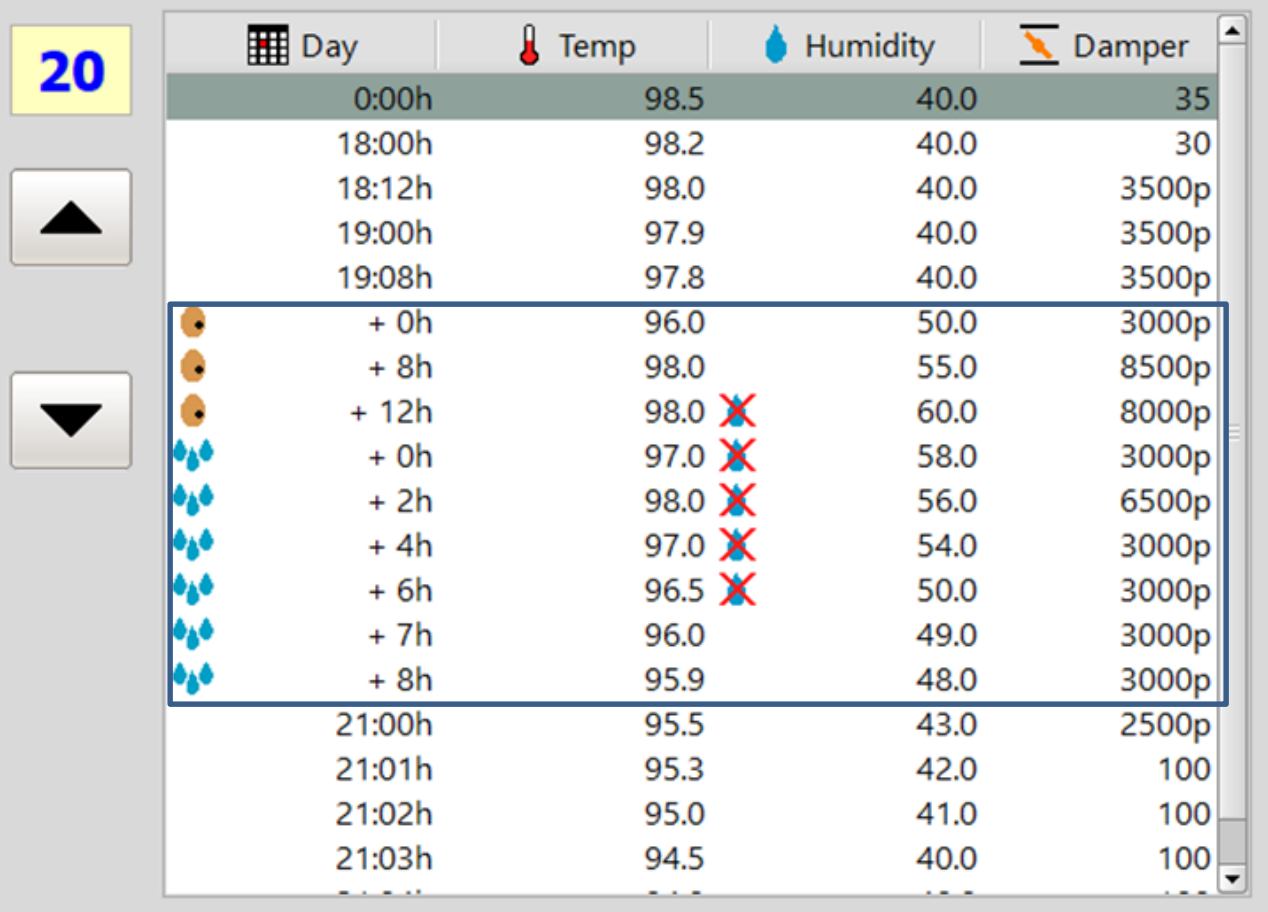
The HatchSense profile contains a special block of setpoint steps that will be triggered when certain conditions are met.



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Turkey Profile

Day	Temp	Humidity	Damper
0:00h	98.5	60.0	30
24:00h	98.0	60.0	35
24:04h	97.9	60.0	35
24:16h	97.8	60.0	35
24:20h	97.7	60.0	35
25:00h	97.6	60.0	3500p
25:08h	97.5	60.0	3500p
+ 0h	96.0	50.0	3000p
+ 8h	98.0	55.0	7500p
+ 12h	98.0	60.0	7500p
+ 0h	97.0	58.0	3000p
+ 2h	98.0	56.0	5500p
+ 4h	97.0	56.0	3000p
+ 6h	96.5	54.0	3000p
+ 7h	96.0	54.0	3000p
+ 8h	95.5	52.0	3000p
27:08h	95.0	48.0	100

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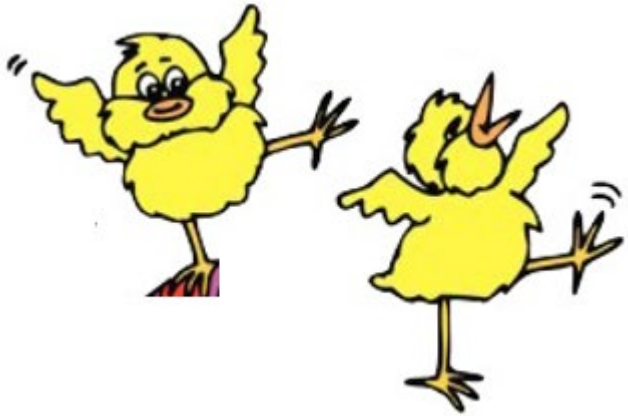
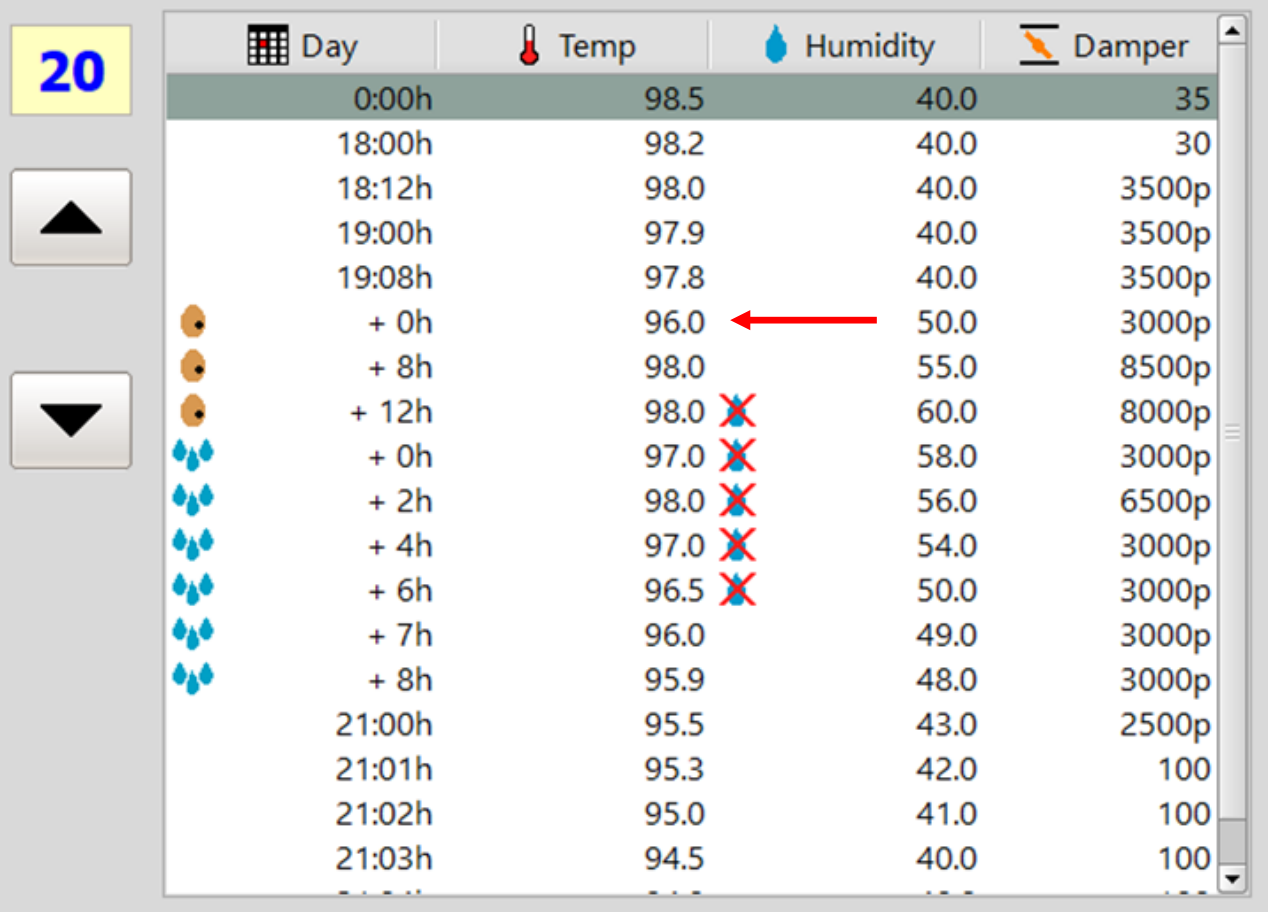
When motion inside at least two baskets is detected the profile will advance to first internal pip step in the profile marked as +0h



During this first step, temperature in the profile is reduced significantly and slows down early hatching.



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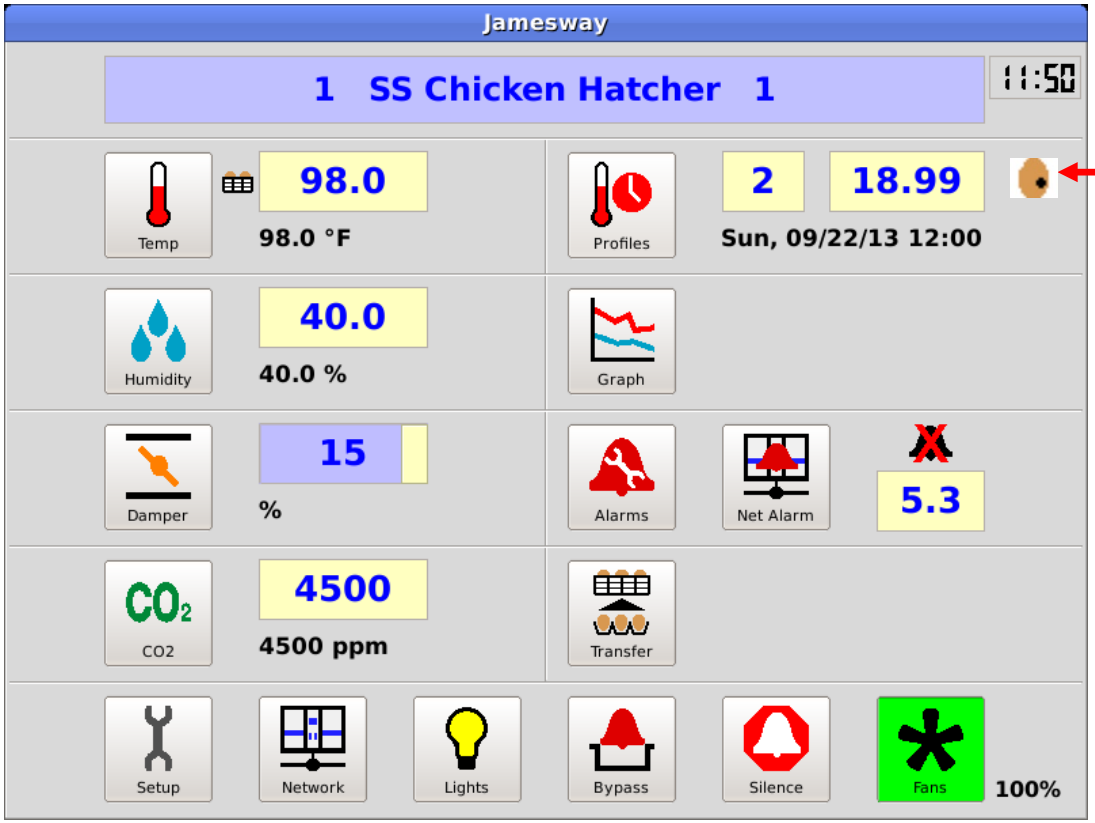
Jamesway
1 SS Chicken Hatcher 1
11:50
Temp
98.0
98.0 °F
Profiles
2
18.99
Sun, 09/22/13 12:00
Humidity
40.0
40.0 %
Graph
Damper
15
%
Alarms
Net Alarm
5.3
CO2
4500
4500 ppm
Transfer
Setup
Network
Lights
Bypass
Silence
Fans
100%

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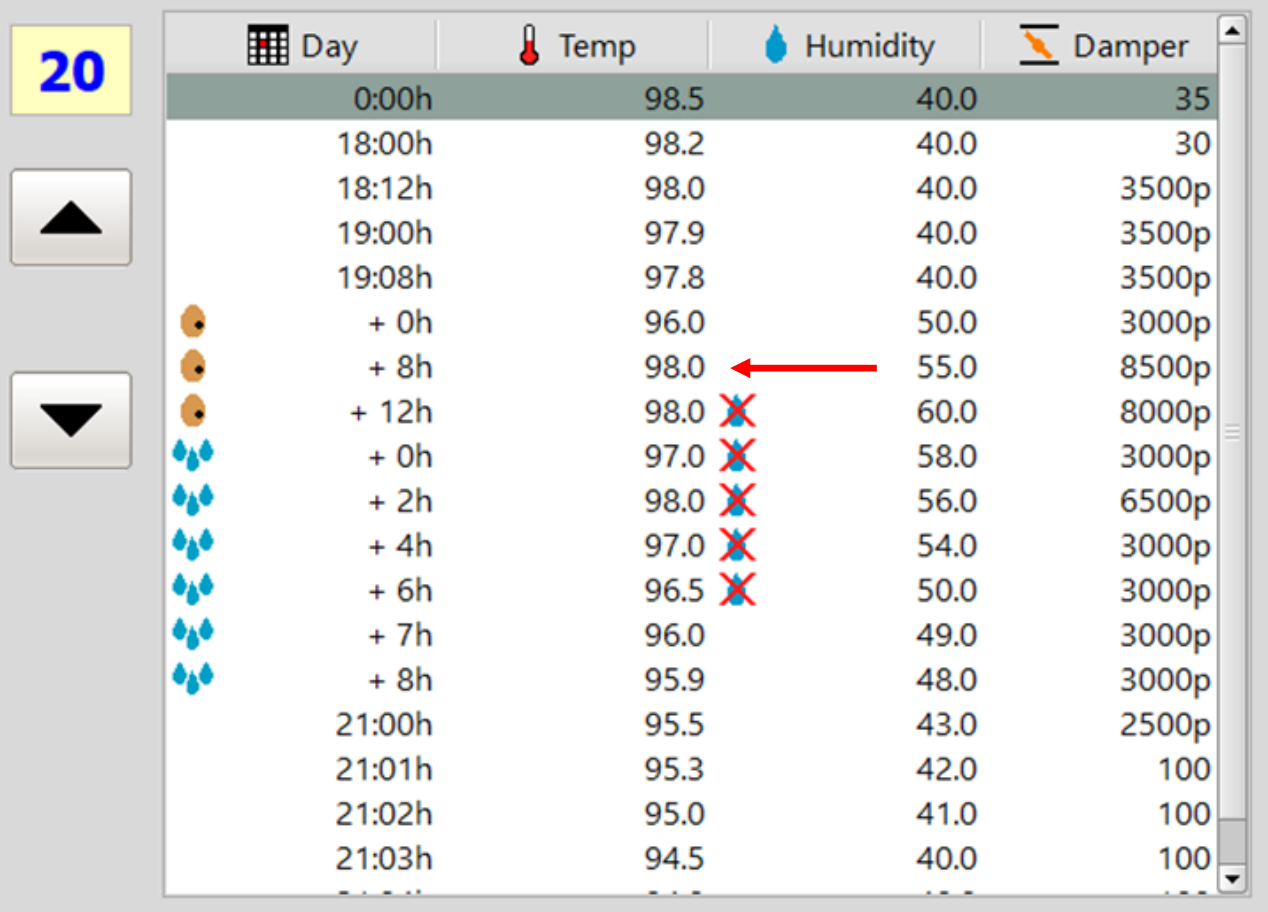
At the end of 8 hours the 2nd pip step raises temperature to 98.0F and CO2 to 8500 ppm to stimulate hatching.



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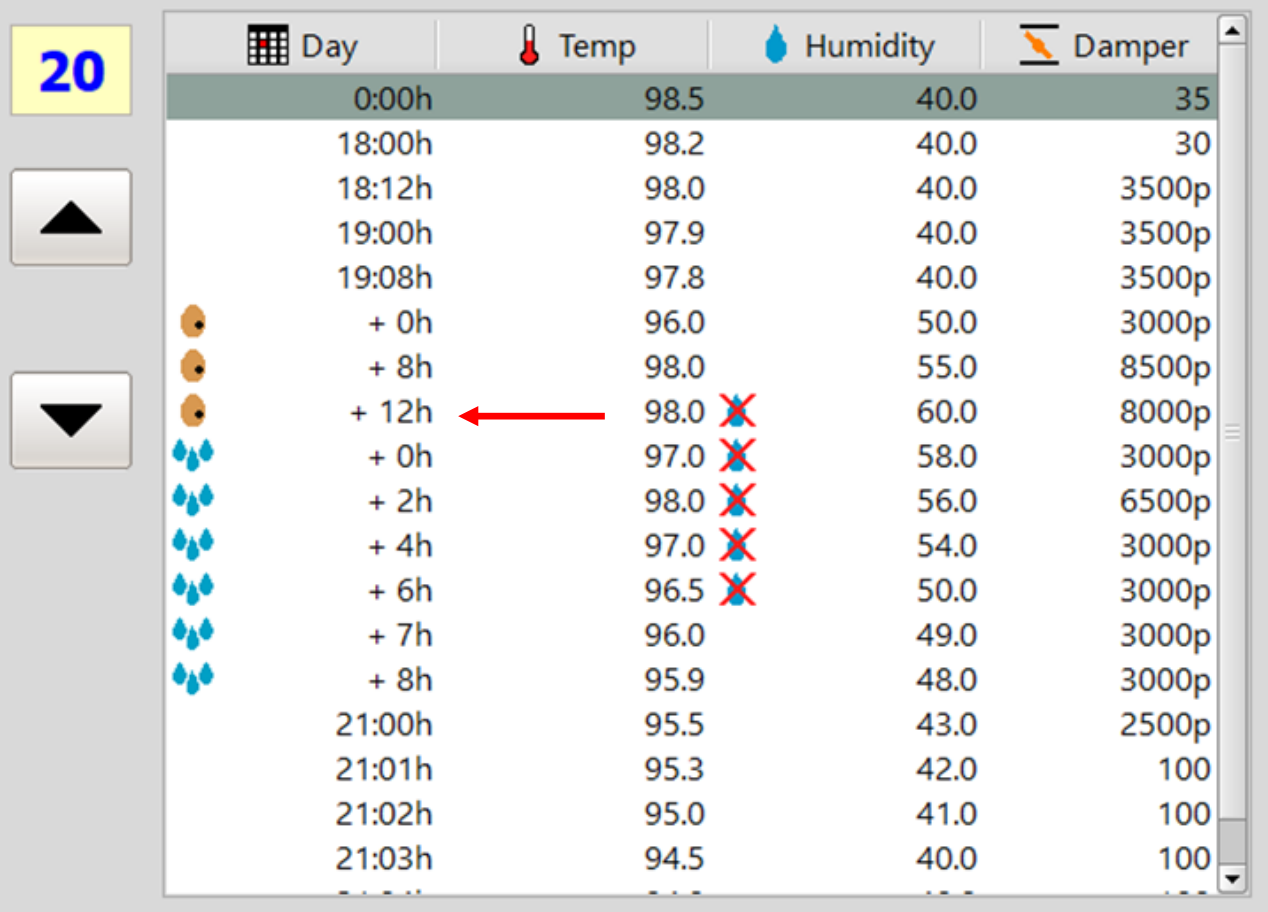
Once the third pip step becomes active, the machine will monitor for humidity peak.



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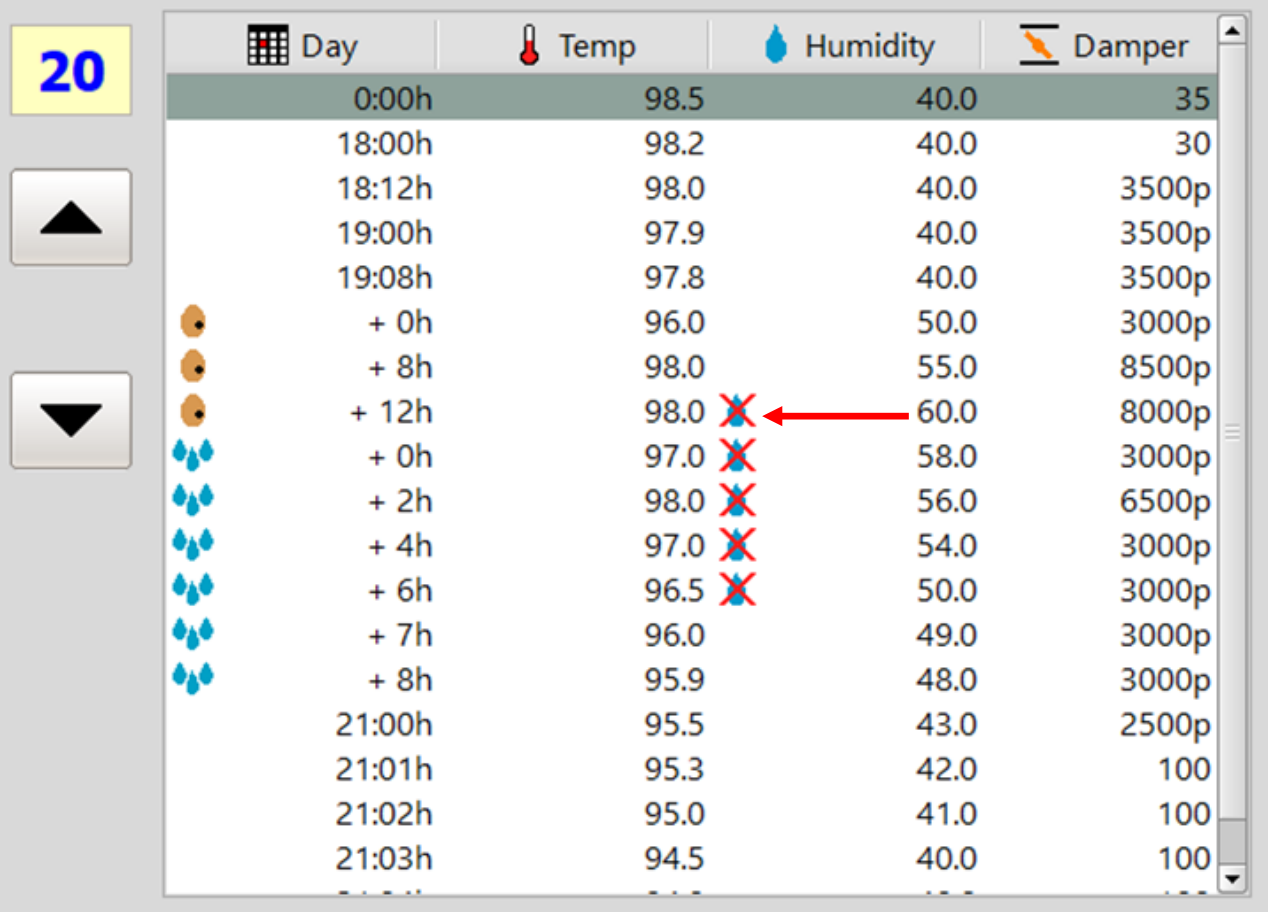

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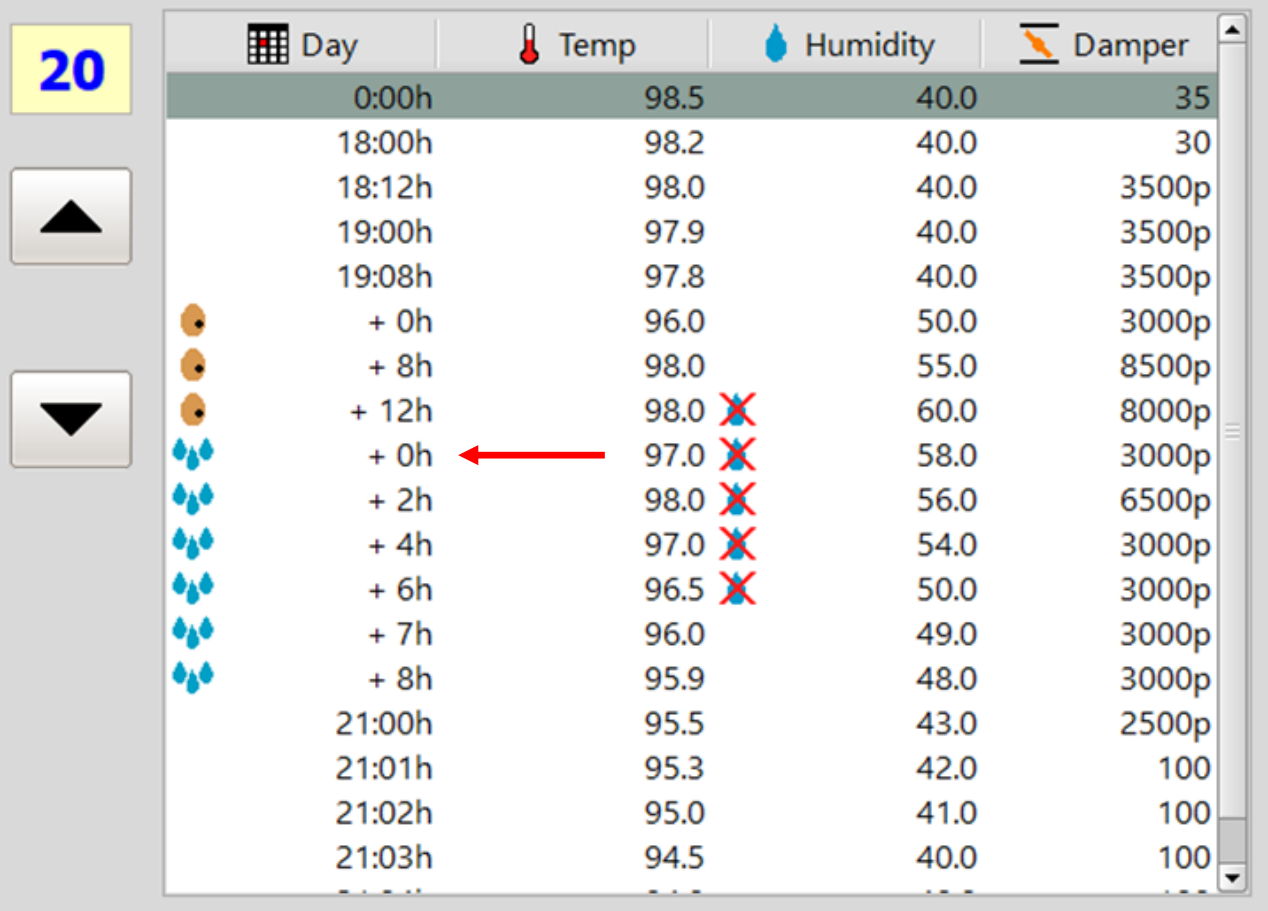
When the humidity peak is detected, the profile will advance to the first humidity step marked as +0h.



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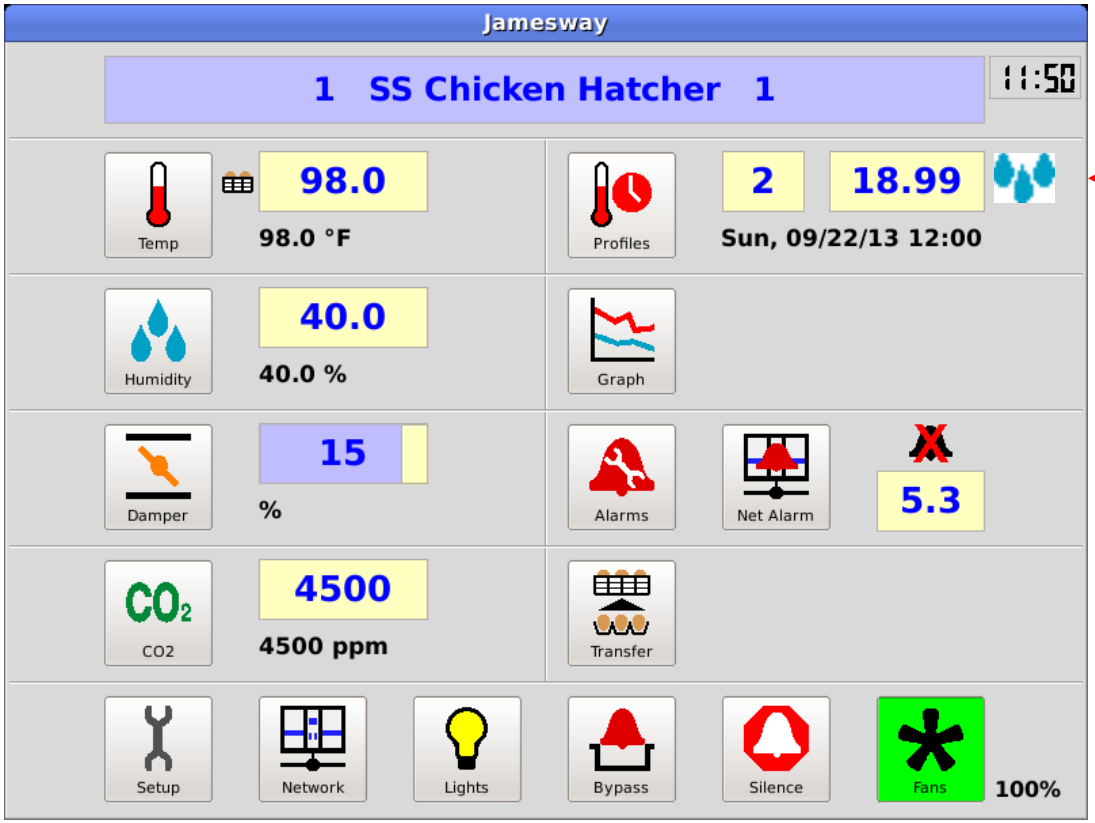
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Temp
98.0
98.0 °F
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Alarms
Net Alarm
5.3
CO2
4500
4500 ppm
Transfer
Setup
Network
Lights
Bypass
Silence
Fans
100%

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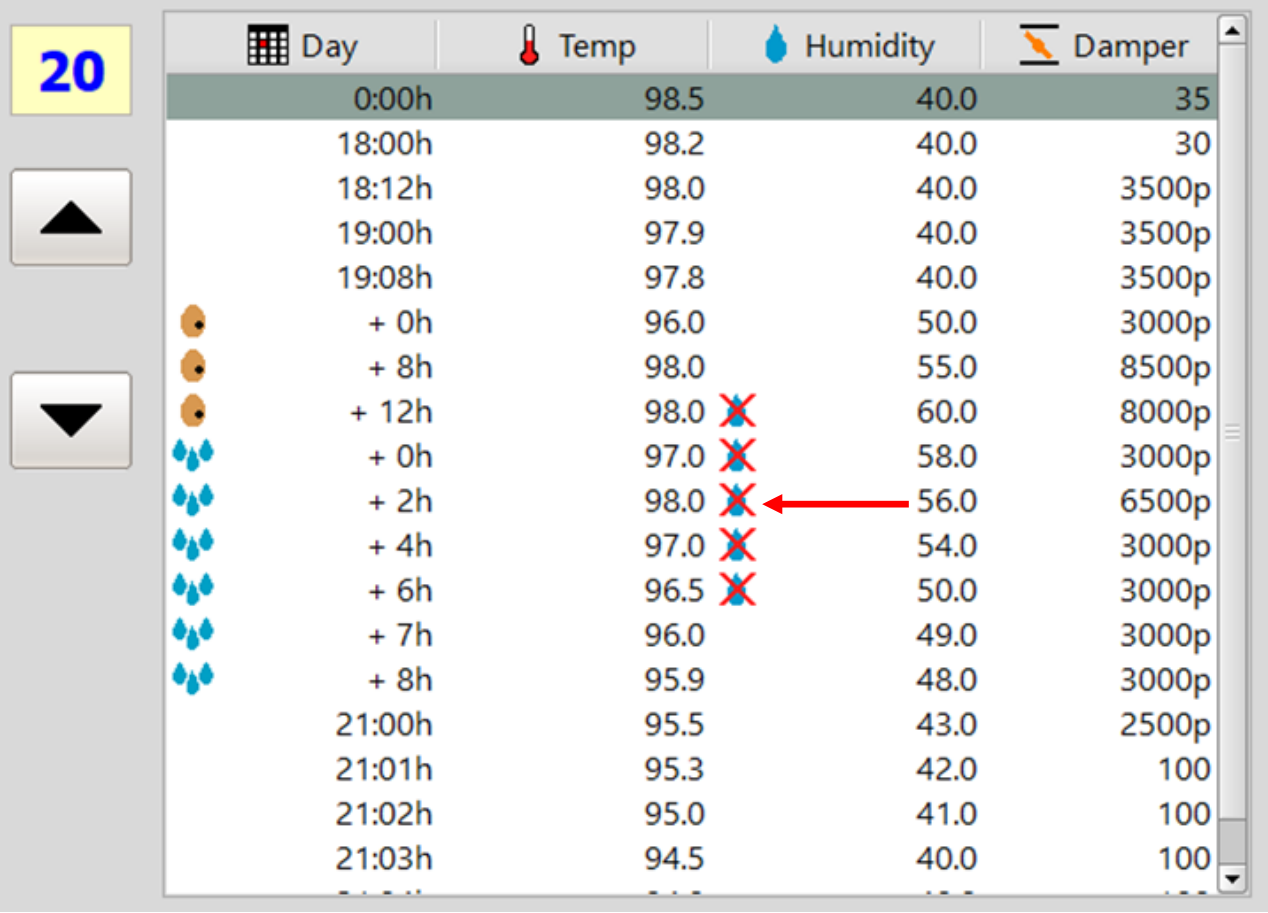
After 2 hours the profile will advance to the 2nd humidity step marked as +2h.



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So what happens if no movement or humidity peak are detected?

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Pip timeout sets the day-in-cycle when the profile advances to the pip phase even if chick motion has not yet been detected.

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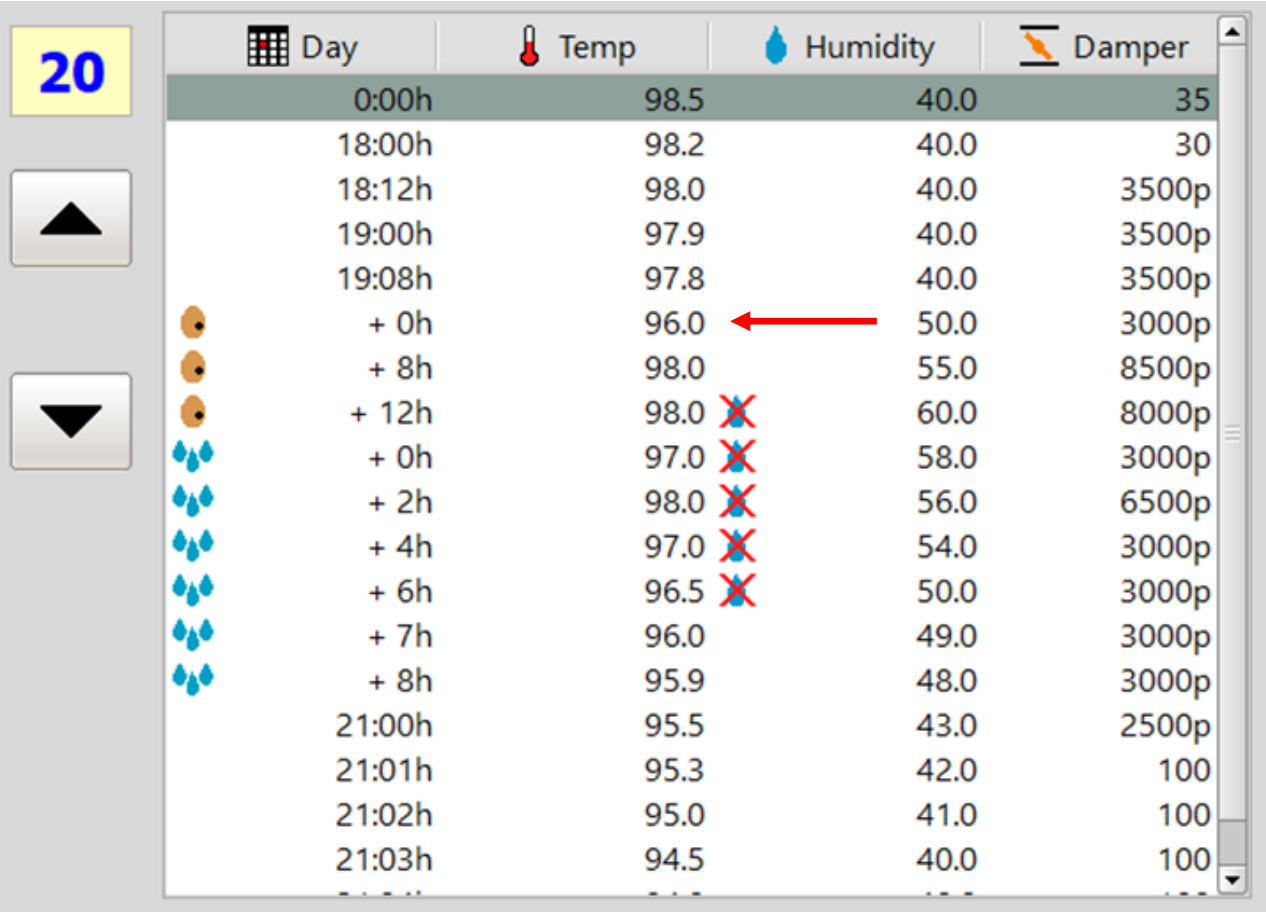
Advancing by timeout to first pip step.



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Humidity timeout sets the day-in-cycle when the profile advances to the peak phase even if no humidity peak has occurred

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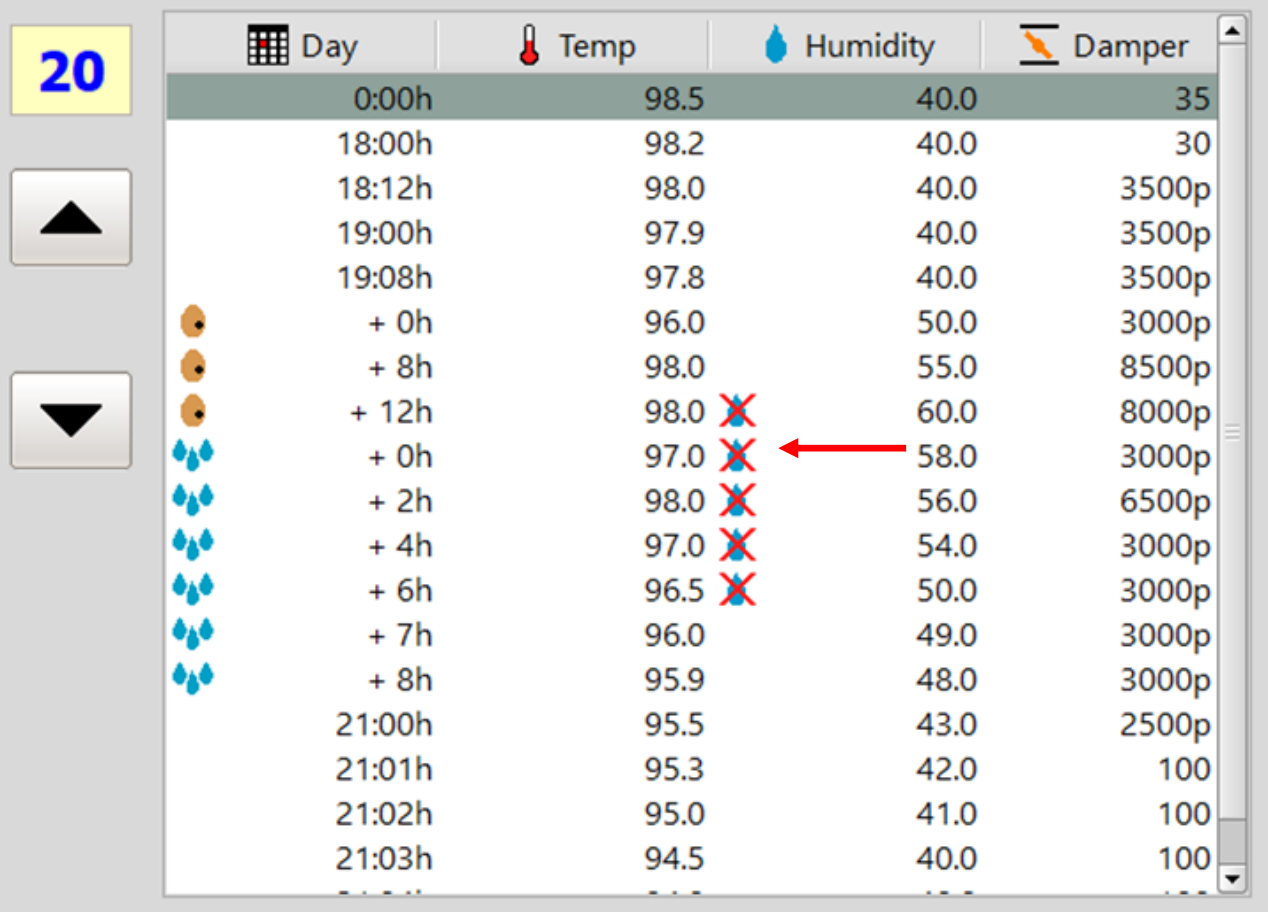
Advancing by timeout to first peak step.



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The peak settings determine the humidity changes that need to take place before profile advances to humidity peak phase.

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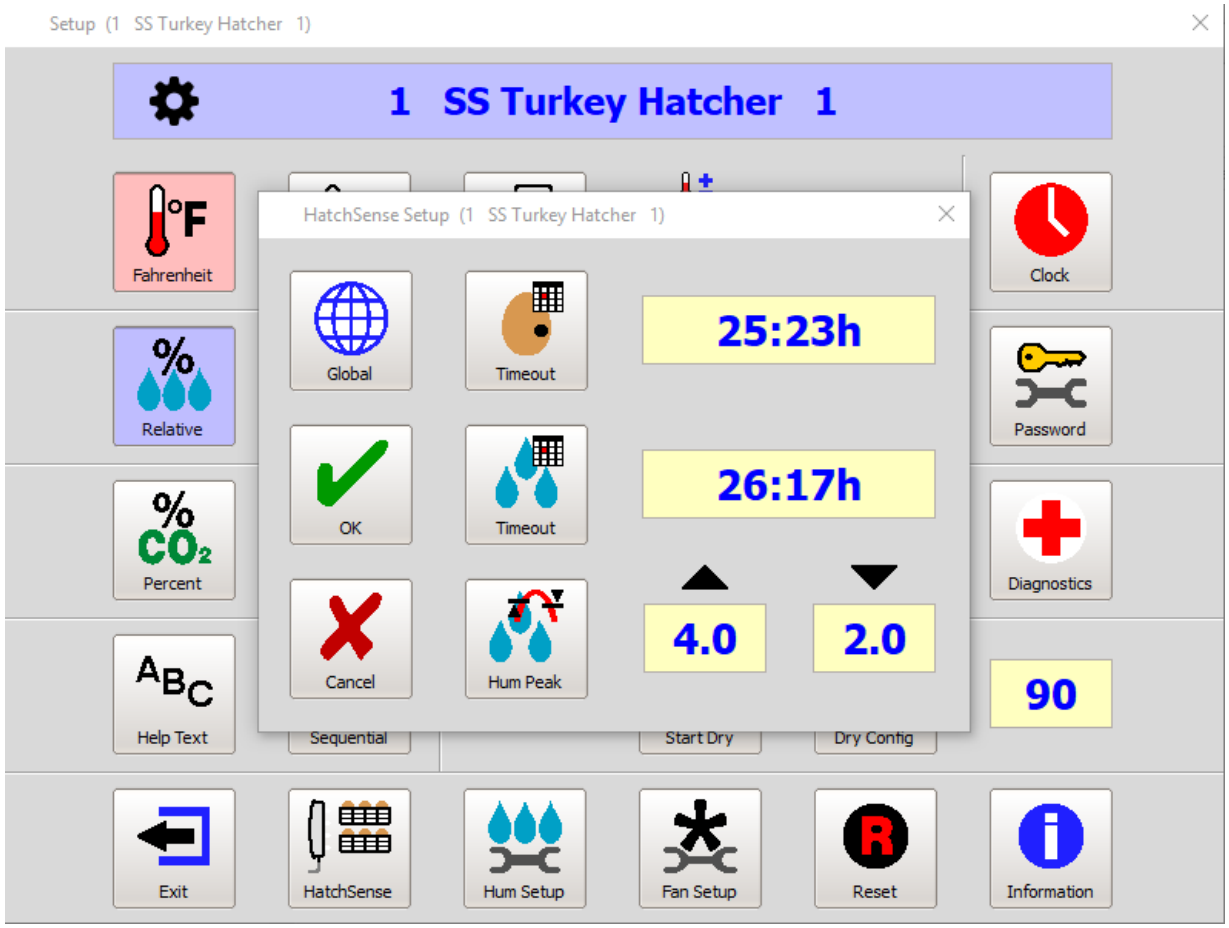
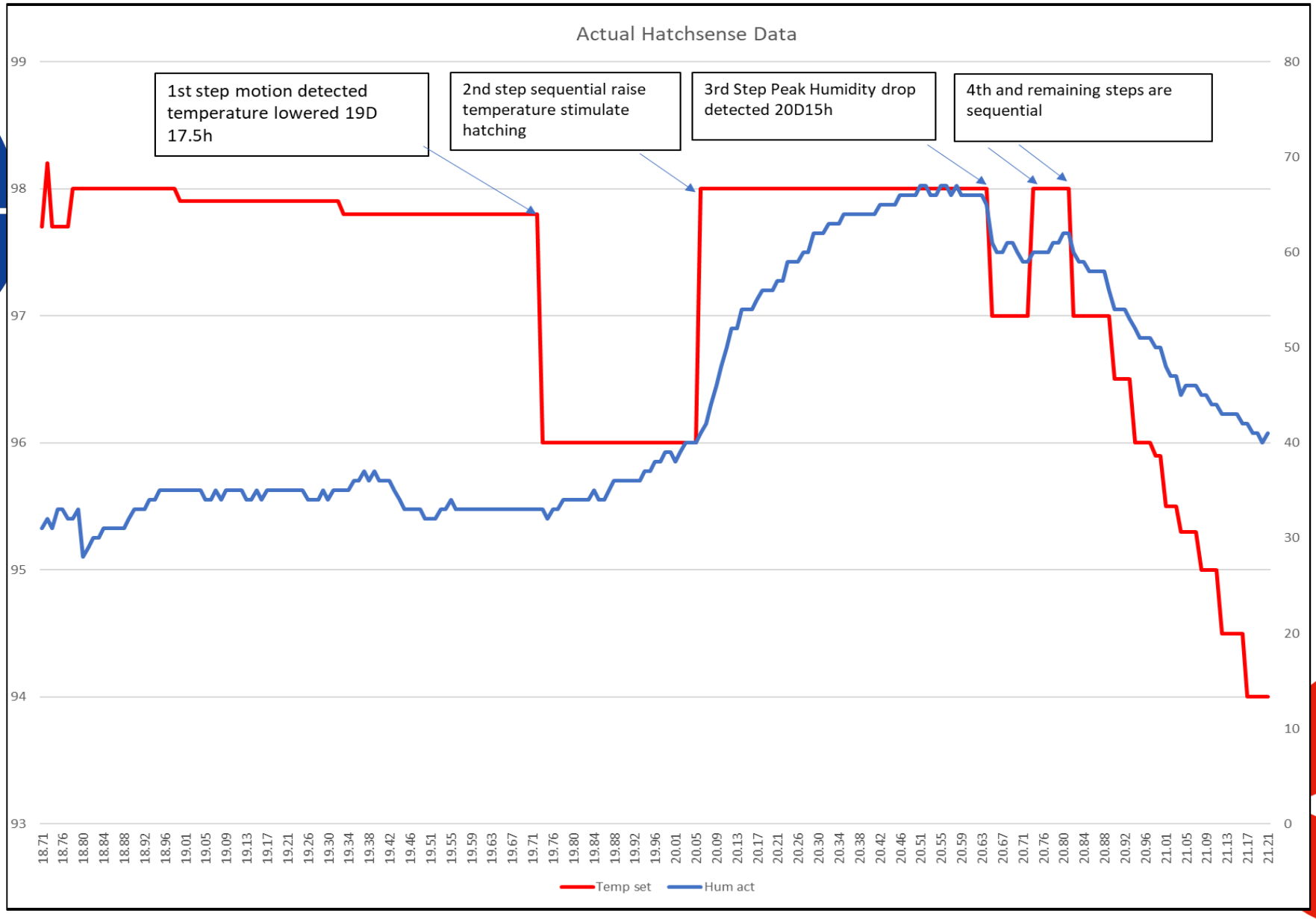
Turkey HatchSense Setup




Actual Hatchsense Data
1st step motion detected temperature lowered 19D 17.5h
2nd step sequential raise temperature stimulate hatching
3rd Step Peak Humidity drop detected 20D15h
4th and remaining steps are sequential
99
98
97
96
95
94
93
80
70
60
50
40
30
20
10
0
18.71
18.76
18.80
18.84
18.88
18.92
18.96
19.01
19.05
19.09
19.13
19.17
19.21
19.26
19.30
19.34
19.38
19.42
19.46
19.51
19.55
19.59
19.63
19.67
19.71
19.76
19.80
19.84
19.88
19.92
19.96
20.01
20.05
20.09
20.13
20.17
20.21
20.26
20.30
20.34
20.38
20.42
20.46
20.51
20.55
20.59
20.63
20.67
20.71
20.76
20.80
20.84
20.88
20.92
20.96
21.01
21.05
21.09
21.13
21.17
21.21
Temp set
Hum act

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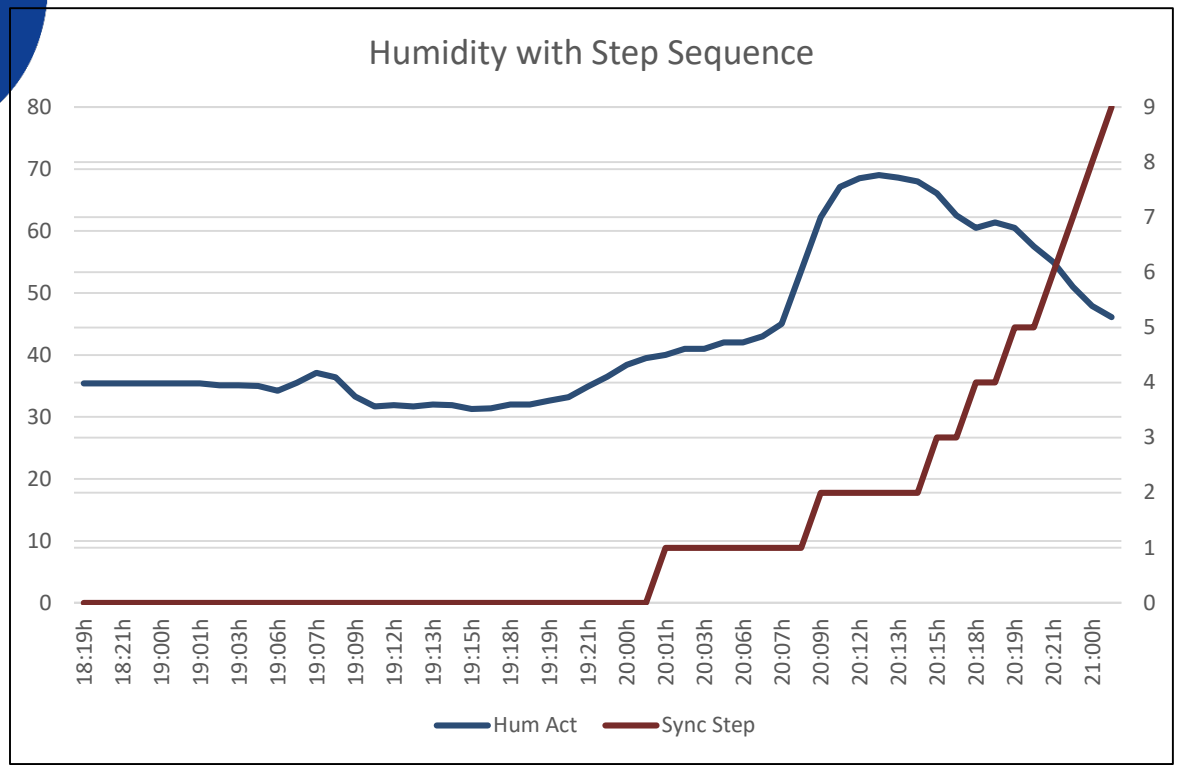

Day	Step	Temp
0:00h		98.5
18:00h		98.2
18:12h		98.0
19:00h		97.9
19:08h	1	97.8
+ 0h	2	96.0
+ 8h	3	98.0
+ 12h	4	98.0
+ 0h	4	97.0
+ 2h	6	98.0
+ 4h	7	97.0
+ 6h	8	96.5
+ 7h	9	96.0
+ 8h		95.9
21:00h		95.5
21:01h		95.3
21:02h		95.0
21:03h		94.5

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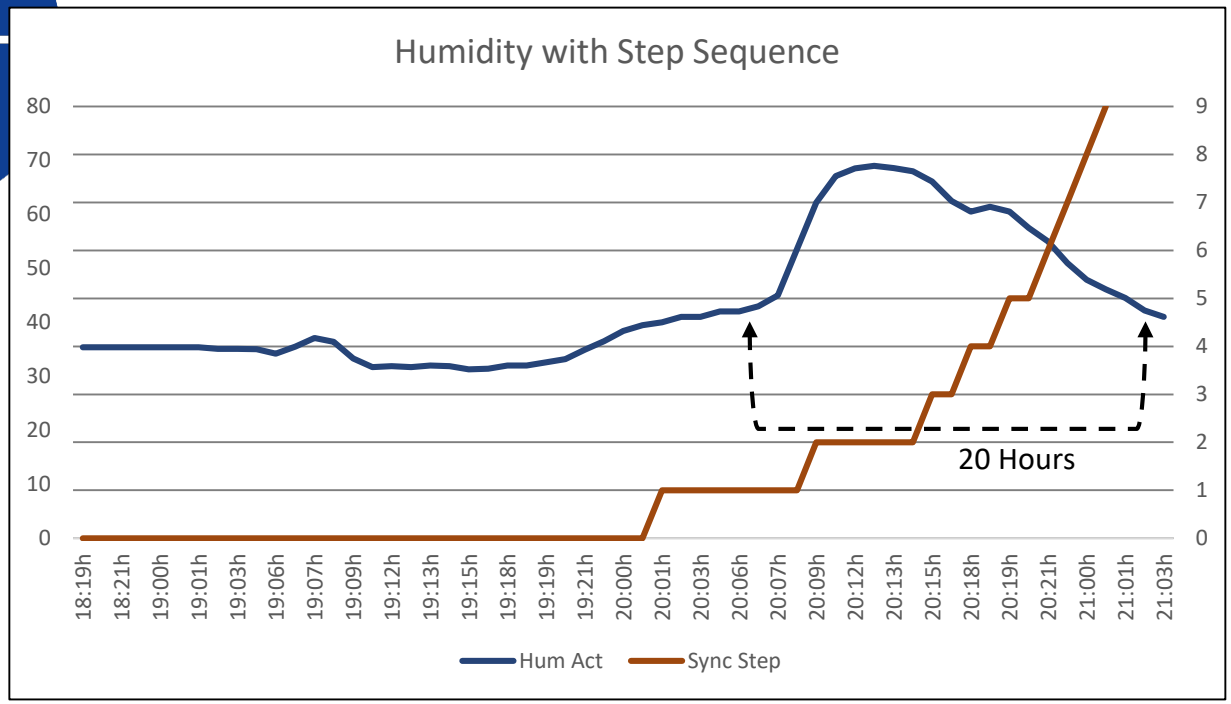

Day	Temp	
0:00h		98.5
18:00h		98.2
18:12h		98.0
19:00h		97.9
19:08h	Step	97.8
+ 0h	1	96.0
+ 8h	2	98.0
+ 12h	3	98.0
+ 0h	4	97.0
+ 2h	4	98.0
+ 4h	6	97.0
+ 6h	7	96.5
+ 7h	8	96.0
+ 8h	9	95.9
21:00h		95.5
21:01h		95.3
21:02h		95.0
21:03h		94.5

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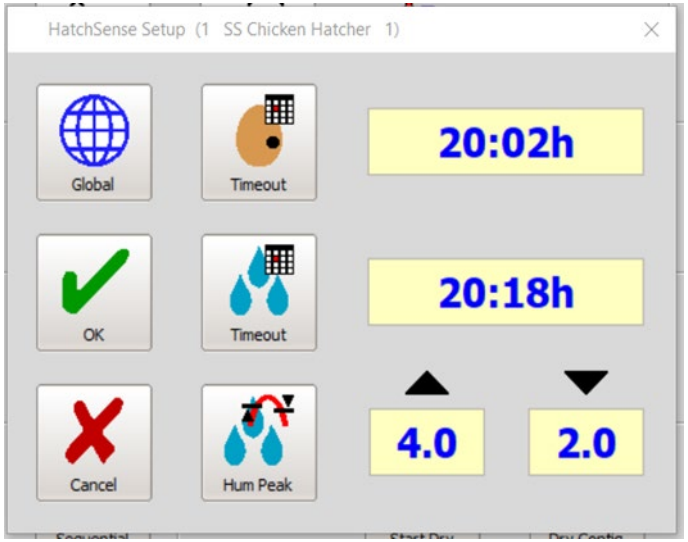
With machine update 4.20 and greater, the HatchSense profile can be operated without a motion sensor module and will operate on timeout.



The humidity peak phase runs normally as this part does not need a motion sensor module.

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Utilising any and all possible resources to control and reduce hatch window should be taken into consideration for every successful hatchery including the Jamesway HatchSense System.

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Questions??
Thank you