Vento II

Climate Controller

User Manual

Code-No. 99-97-3580 GB
Edition: 09/2017

Program Version

The product described in this manual contains software. This manual corresponds to:

- Software version 1.0

It was released in 2017.

Product and Documentation Changes

Big Dutchman reserves the right to change this manual and the product described herein without further notice. In case of doubt, please contact Big Dutchman.

Date of change appears from the back and front page.

IMPORTANT

NOTES CONCERNING THE ALARM SYSTEM

Where climatic control is used in livestock buildings, breakdowns, malfunctions or faulty settings may cause substantial damage and financial losses. It is therefore essential to install a separate, independent alarm system which monitors the house concurrently with the climate controller. According to EU directives 98/58/EU an alarm system must be installed in any house that is mechanically ventilated.

Please note that the product liability clause of Big Dutchman' general terms and conditions of sale and delivery specifies that an alarm system must be installed.

In case of operating error or improper use, ventilation systems can result in production loss or cause loss of lives among animals.

Big Dutchman recommend that ventilation systems should be mounted, operated and serviced only by trained staff and that a separate emergency opening unit and an alarm system be installed as well as maintained and tested at regular intervals, according to Big Dutchman' terms and conditions of sale and delivery.

Qualified personnel must perform installation, service and fault-finding of all electrical equipment in accordance with the applicable national and international standard EN 60204-1 and any other EU standards that are applicable in Europe.

The installation of a power supply isolator is required for each motor and power supply to facilitate voltage-free work on the electrical equipment. Big Dutchman does not supply the power supply isolator.

Note

PRODUCT DESCRIPTION

Vento II is a climate controller for regulation and monitoring the house climate.

Vento II regulates the climate based on up to 64 set ventilation levels. Each level can be adjusted via the matrix which allows for the exact climate adjustment requested by the user.

In houses with batch production, Vento II can also control the climate according to curves for temperature, heat and minimum and maximum ventilation level.

Big Dutchman congratulate you on your new

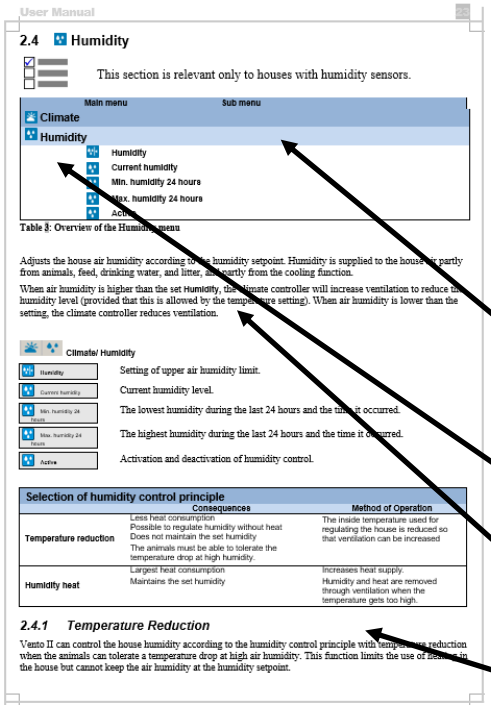
Vento II climate controller

GUIDELINES

This user's manual deals with operating Vento II. The user's manual provides the user with the fundamental knowledge about the functions of the climate controller that is required to ensure optimum use of Vento II.

Some functions are optional and only used in specific set-ups of the house controller. These functions are shown with an optional icon

If a function is not used, e.g. Extra sensor, it is not shown on the climate controller's user menus. The manual can therefore contain sections that are not relevant to the specific set-up of your climate controller. See also *Technical Manual* or, if necessary, contact Big Dutchman service or your dealer.


User Manual

2.4 Humidity

This section is relevant only to houses with humidity sensors.

Main menu	Sub menu
Climate	
Humidity	
	Humidity
	Current humidity
	Min. humidity 24 hours
	Max. humidity 24 hours
	Active

Table 3: Overview of the Humidity menu

Adjusts the house air humidity according to the humidity setpoint. Humidity is supplied to the house partly from animals, feed, drinking water, and litter, and partly from the cooling function.

When air humidity is higher than the set Humidity, the climate controller will increase ventilation to reduce the humidity level (provided that this is allowed by the temperature setting). When air humidity is lower than the setting, the climate controller reduces ventilation.

Climate/ Humidity

Humidity	Setting of upper air humidity limit.
Current humidity	Current humidity level.
Min. humidity 24 hours	The lowest humidity during the last 24 hours and the time it occurred.
Max. humidity 24 hours	The highest humidity during the last 24 hours and the time it occurred.
Active	Activation and deactivation of humidity control.

Selection of humidity control principle	Consequences	Method of Operation
Temperature reduction	Less heat consumption Possible to regulate humidity without heat Does not maintain the set humidity The animals must be able to tolerate the temperature drop at high humidity.	The inside temperature used for regulating the house is reduced so that ventilation can be increased
Humidity heat	Largest heat consumption Maintains the set humidity	Increases heat supply. Humidity and heat are removed through ventilation when the temperature gets too high.

2.4.1 Temperature Reduction

Vento II can control the house humidity according to the humidity control principle with temperature reduction when the animals can tolerate a temperature drop at high air humidity. This function limits the use of heating in the house but cannot keep the air humidity at the humidity setpoint.

This manual's *User Guide* consists of a general introduction, which describes briefly how to operate the house controller.

This is followed by descriptions of Vento II functions, divided into four main sections. Both the main sections and the subsections follow the same order as the functions have in Vento II menus.

Climate

Production

Management

Alarms

Each section is introduced with a **menu outline** in table form. The outline is used to give an overview of the setting options for the different functions as well as to see where in the menus a given setting can be found.

It is written on the left side of the table, if a setting is only available in a few variants or in the case of specific set-ups.

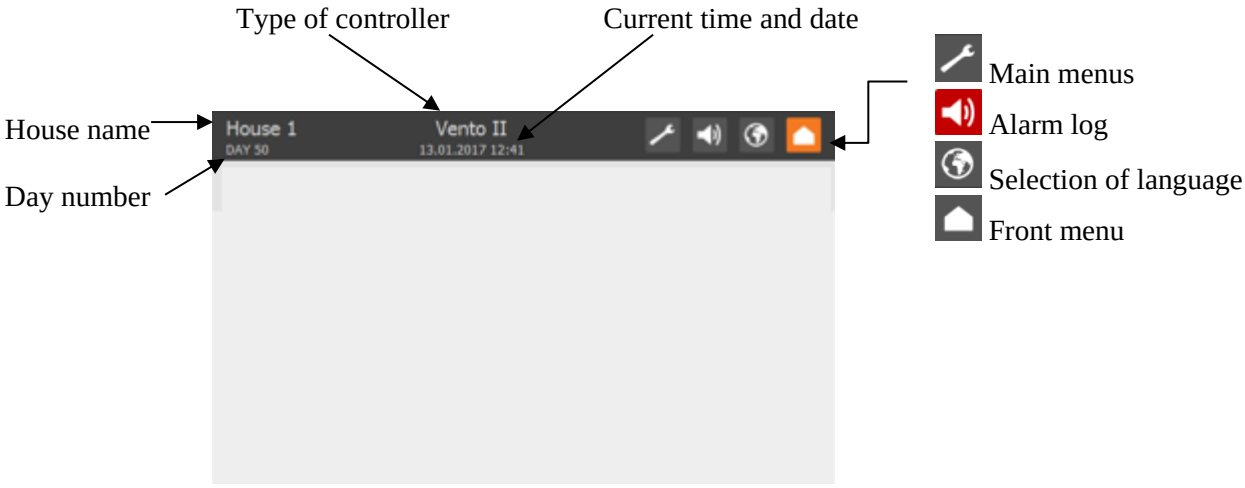
This is followed by a short **general description** of the function and **short descriptions** in list format of the individual parameters.

If more **detailed descriptions** are required, the reader is referred from the short descriptions to the subsequent sections with examples and illustrations.

USER'S GUIDE

1 Operation

Vento II is operated entirely by means of the touch screen.

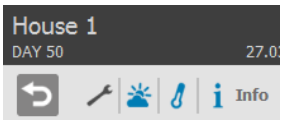


1.1 Main menus

Press to gain access to the main menus.

The main menus provide access to all functions.

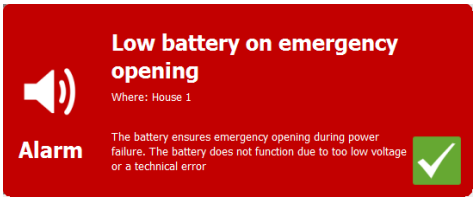
The menus are divided up into the following sub-menus: **Climate**, **Production**, **Management**, **Alarm settings** and **Technical**.

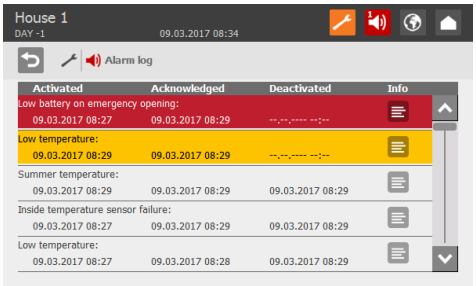


An icon path in the menus indicates the current display.

For example: **Main menu / Climate / Temperature / Info**

1.2 Alarm Log





The icon for alarm log indicates the number of active alarms, as long as an alarm situation has not ended.

The Vento II shows the alarms as a pop-up.

Press to acknowledge the alarm.

Press to open the alarm log.

The alarm log contains information such as:

- When the alarm occurred
- When it was acknowledged
- When it was deactivated (the state of alarm ceased)
- The value that triggered the alarm

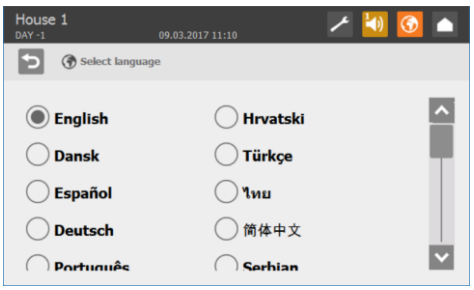
Other active alarms are marked in the list

- Hard alarms are marked in red
- Soft alarms are marked in yellow
- Deactivated alarms are grey.

The alarm relay is only trigged by hard alarms.

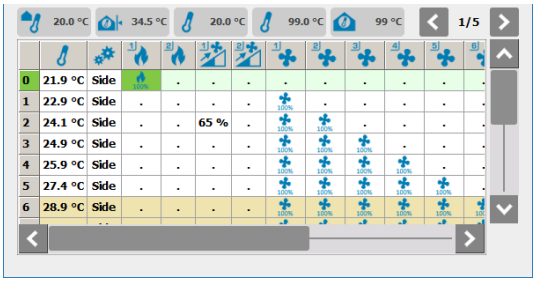
Soft alarms generate a pop-up in the display. See also section 5.

1.3 Selection of Language

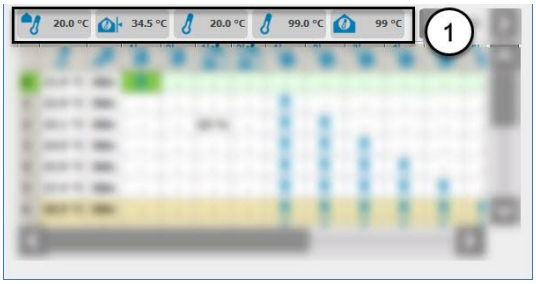


Select Selection of language and highlight the desired language.

1.4 Matrix

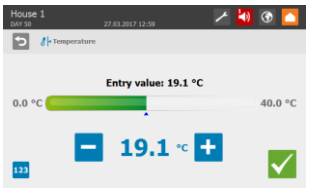


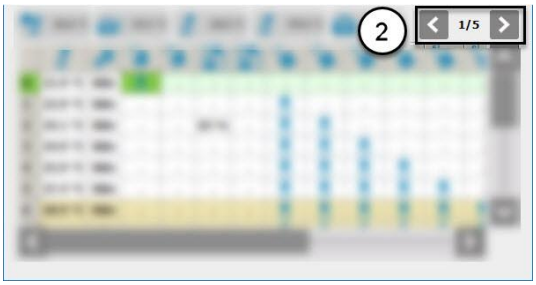
The matrix is the standard front menu of Vento II, it provides you the overview of and access to the climate settings of the controller.



1. Shortcuts

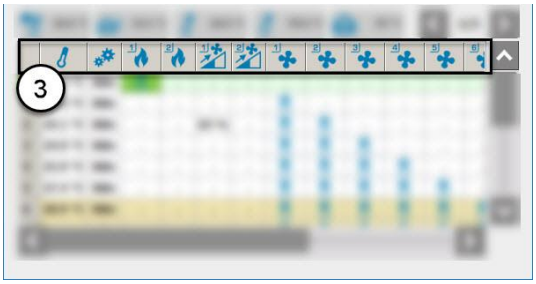
The top row shows user selected shortcuts. The user can select up to five different shortcuts which can be pressed to see the status or change settings.





2. Front views

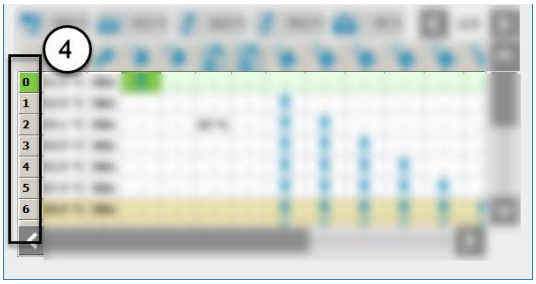
Vento II can display up to five front. The front views can be selected by the user and can be selected to display status or change settings. The functions selected for front view 1, are shown as shortcuts, see above.



3. Functions

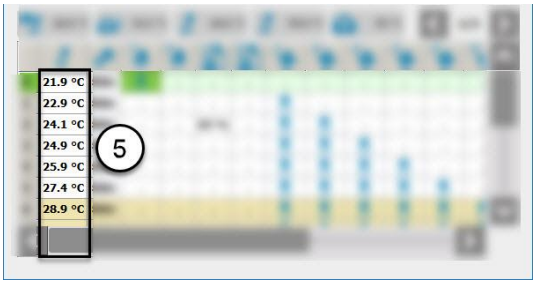
Installed climate functions are shown as column headlines in the matrix. The icon in the line corresponds to the type of function. See section 1.5.

A number in the upper left corner of the icon means that the setting relates to, for example, a specific location, fan or sensor.



4. Levels

This column indicates the different levels controlling the functions of the climate controller. All currently active/used levels are highlighted in green colour. Several functions can be active at different levels at the same time.

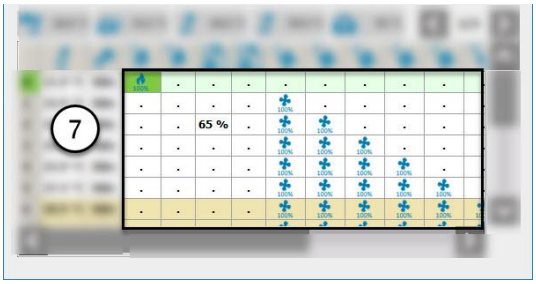


5. Level temperature

The level temperature is the in-house temperature activating the level. The Level temperature is change by changing the difference temperature that is added to the temperature setpoint.

6. Side/Tunnel mode

This column indicates the type of ventilation mode used for the level (side or tunnel). You can only switch between side and tunnel mode when the controller is set up for Combi-Tunnel ventilation.



7. Climate function settings

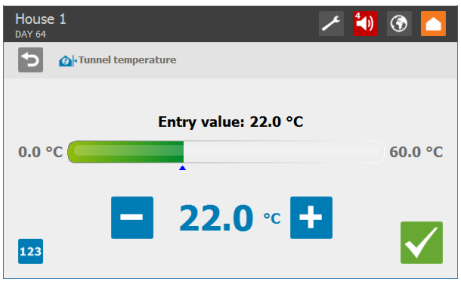
In this area, the settings for each function is shown at all levels.

When a function is active, the cell is dark green. The cell is light green, if the function at the active level is set to OFF.

See section 1.5.2 for making settings via the matrix.

1.5 Changing the Settings

Settings can be changed in different ways, either through the matrix, through front views or via the Technical menu, however, the following general operation methods apply to all:

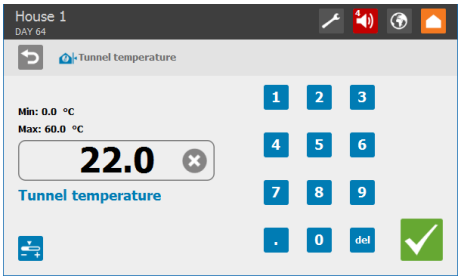


Press − and + to change the current value. A blue mark on the bar displays the change.

Press ✓ to implement the change.

Press ↩ to undo.

Press 123 to be given the option of entering the setting using the numeric keypad.

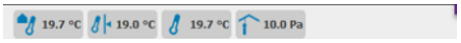


Press ✓ to implement the change.

Press ↩ to undo.

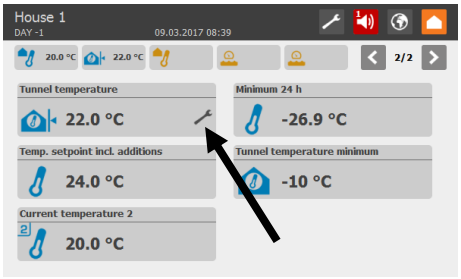
Press for the option to enter the setting using the slider bar.

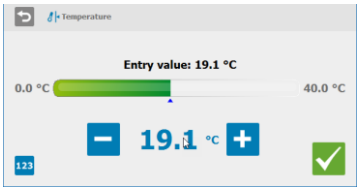
1.5.1 Change Settings through Front Views



Press one of the shortcuts at the top of the screen to gain access to the selected 'menus' or 'settings'.

Press an icon to be able to change the setting in question. See also section 1.5.

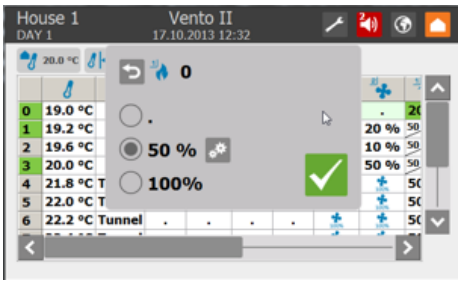




When an icon is greyed out, it means that no data for the function are available – e.g. when a sensor is disconnected.

Press the arrows ‹ 1/3 › to switch between the front views.

1.5.2 Change Settings through the Matrix



Press a cell to change the settings for the chosen function at this exact level.

This icon means that the function is switched off.

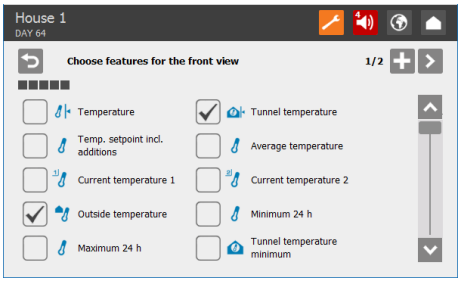
Press this icon to make settings.

1.5.2.1 Explanation to the Icons

Icon	Explanation
	Ventilation mode. Select either Tunnel or Side ventilation, see also section 2.2.
	Level temperature, see also section 2.1.
	Heating. Setting the percentage of the heating system capacity at which the system opens at the current level.
	Stepless outlet. The stepless exhaust unit is variable as the controller can adjust the motor performance and flap opening of the fan.
	Batch curve ventilation. Pre-defined ventilation schedule adapted to the animals' age, See also section 4.4.
450 150	Cycle timer. ON/OFF time in seconds is calculated and shown in the icon. In the example shown, the fan is switch on 25% of the time. This means that the fan is switches off for 450 seconds =7.5 minutes (red number) and switched on for 150 seconds = 2.5 minutes (green number).
	Rotate to next. Switches between all fans with this setting. The percentage applies to all fans with this setting (cycle time for rotate to next). Set the ON time in percent.
	ON/OFF air outlet. The outlet can be switched on and off with the same setting options as the stepless outlet, see also section 2.2.
	Inlet, setting and display of the flap position at the current level, see also section 2.2
	Pressure control, see also section 2.5.
	Pressure sensor.
20 Pa	Setting and display of the pressure setting at the current level.
	Stir fan. A stir fan improves circulation of the air and thus provides a more uniform temperature in the house. Setting and display of the ON time in percent at the current level.
	Cooling
4 %	Percentage of ON time for cooling. Setting and display of the ON time in percent at the current level.
	Cooling function is cycled. Set the ON time in percent at the current level.

100% ⤵	When this level is reached from a level below, the setting from the previous level is used. When the level is reached from a level above, the function is constant on. Setting the ON time in percent at the current level.

1.6 Setting up the Front View



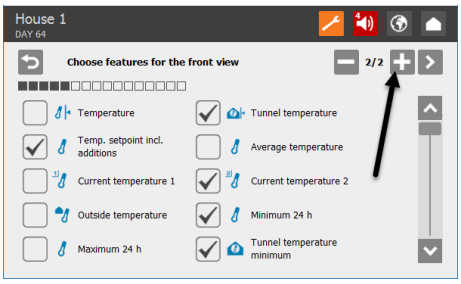
Press and select **Set up front view.**

Setting up the front view is made in three steps.

Step 1. Select functions

Tick the menu items to be displayed on the front view.

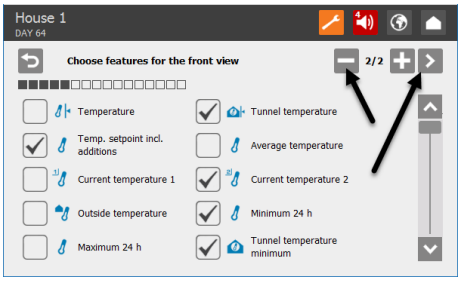
indicates a selected function.



Step 2. Add more pages (optional)

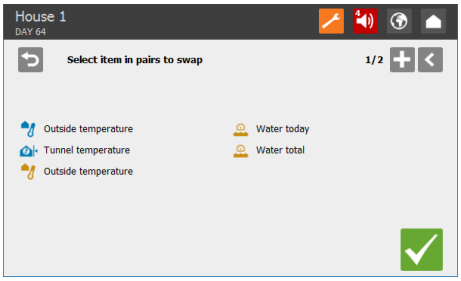
Press on to add more pages to the front view (max. 5 in total).

The same function can also be selected to displays on several pages, if this is required.



Press to proceed to the next step.

Press to go back to the previous page.



Step 3. Adjust the order of the display

Press on a function and then press on another function in order to get the two functions to switch places.

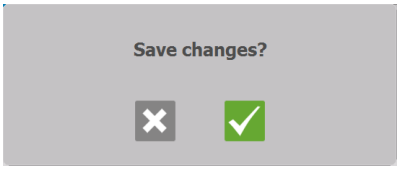
Press to proceed to the next page.

Press to go back to the previous page.

Press to go back to step 1.

Press to save the setup.

It is also possible to change the order of the functions on the pages by pressing on a function and switching pages using and .



Yes/Approve

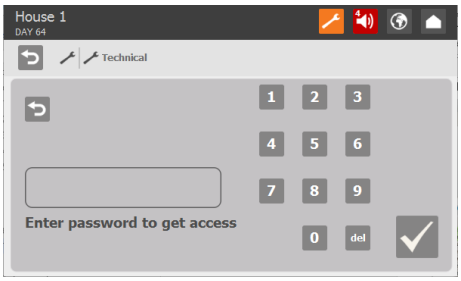
No/Undo

1.7 Password

This section is relevant only to houses where the use of Password is activated.

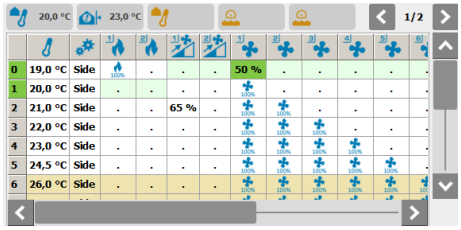
Vento II can be protected against unauthorised operation with the use of passwords. This function can be activated in the menu **Technical/ Installation / Manual installation /Use password**.

In order to have access to changing a setting, you must enter a password that corresponds to the user level which the relevant function is found at (**Daily**, **Advanced** and **Service)**.



Enter four digits.

After entering the password, Vento II can be operated at the corresponding user level until it returns to the front menu after 10 minutes without activity.



Return the climate controller to the front menu after operation. After one minute, it will need the password entered again.

You can change the password for each of the three user levels in the menu **Management/Change password**.

In order to gain access to changing a password, you must first enter the valid password.

User level	Gives access to	Factory-set code
Without log in	Entry of the number of animals.	
Daily	**Daily:** Changing of set values	1111
Advanced	**Daily + advanced:** Change settings through the matrix Changing of batch curves and alarm settings. Place climate controller in manual mode	2222
Service	**Daily + advanced + service**: Changing of settings under Technical menu	3333

Big Dutchman recommends that you change the default passwords and subsequently change the password on a regular basis.

2 Climate

2.1 Temperature

Main menu		Sub menu	
Climate			
Temperature			
Setpoints			
	Temperature		
	Tunnel temperature		
Info			
	Temperature setpoint incl. additions		
	Average temperature		
	Current temperature 1- 4		
	Outside temperature		
	Min./max. temperature		Minimum 24 hours
			Min. 24 h time
			Maximum 24 hours
			Max. 24 h time
			Sensor min./max.
TUNNEL	**Min./max. temperature tunnel**		Tunnel temperature minimum
			Tunnel temperature minimum time
			Tunnel temperature maximum
			Tunnel temperature maximum time
	Min./max. temperature outside		Outside temperature minimum
			Outside temperature minimum time
			Outside temperature maximum
			Outside temperature maximum time

Table 1: Overview of the Temperature menu.

Vento II adjusts the temperature according to the temperature setpoint. The house is heated by the heat produced by the animals and heaters, if any.

2.1.1 Setpoints

Climate / Temperature / Setpoints

Temperature

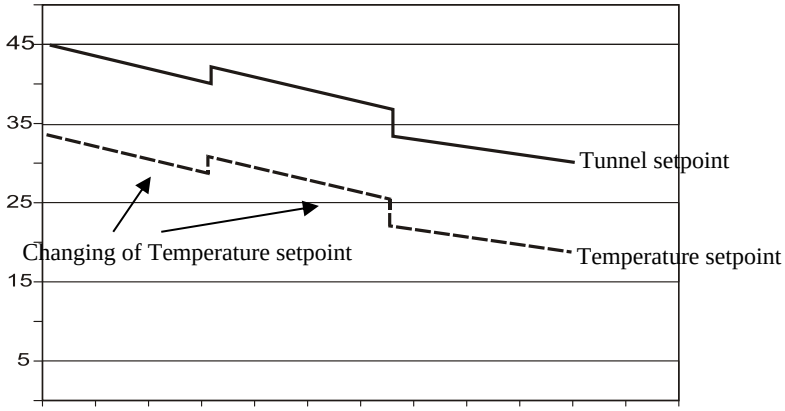
Upper temperature setpoint that activates ventilation.
When Vento II uses side ventilation, the temperature is adjusted according to the setting of **Temperature.**

Tunnel temperature

Upper temperature setpoint that activates ventilation.
When Vento II uses tunnel ventilation, the temperature is adjusted according to the setting of **Tunnel temperature.**

Example 1: Parallel displacement of Tunnel setpoint

Vento II adjusts the Tunnel setpoint according to the change of the Temperature setpoint



*When you change **Temperature setpoint** the Vento II offsets the **Tunnel setpoint** in parallel accordingly.*

When the inside temperature is too high, Vento II increases the ventilation level to supply more fresh air.
When the temperature is too low, the controller reduces the ventilation level to keep the heat in the house and supplies possibly more heat.

2.1.2 Info

Climate / Temperature / Info

Temperature setpoint incl. additions

Display of a corrected temperature value for **Temperature.**

Temp. setpoint incl. additions is the basis for Vento II's calculations of the house's ventilation requirement. However, the controller will adjust the set temperature by a supplement matching the number of degrees set for each ventilation level, and calculate the ventilation requirement from this.

Average temperature

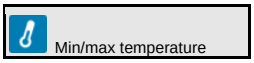
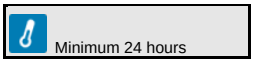
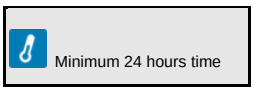
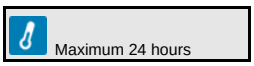
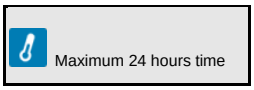
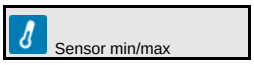
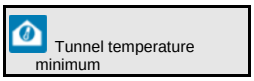
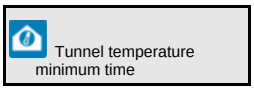
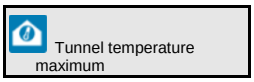
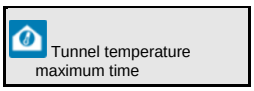
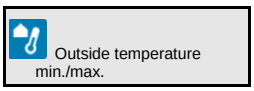
Average temperature during the last 24 hours.

Current temperature 1-4

Measured temperature for each of the connected sensors.

Outside temperature

Current outside temperature.

 Min/max temperature	Lowest/highest temperature during the last 24 hours.
 Minimum 24 hours	Lowest temperature during the last 24 hours.
 Minimum 24 hours time	Lowest temperature during the last 24 hours and the time of occurrence are stated for all temperature measurements.
 Maximum 24 hours	Highest temperature during the last 24 hours.
 Maximum 24 hours time	Highest temperature during the last 24 hours and the time of occurrence are stated for all temperature measurements.
 Sensor min/max	Lowest/highest temperature during the last 24 hours at the individual sensor.
 Sensor min./max. time	Lowest/highest temperature during the last 24 hours at the individual and the time of occurrence are stated for all temperature measurements.
 Tunnel temperature minimum	Lowest tunnel temperature during the last 24 hours.
 Tunnel temperature minimum time	Lowest tunnel temperature during the last 24 hours and the time of occurrence are stated for all temperature measurements.
 Tunnel temperature maximum	Highest tunnel temperature during the last 24 hours.
 Tunnel temperature maximum time	Highest tunnel temperature during the last 24 hours and the time of occurrence are stated for all temperature measurements.
 Outside temperature min./max.	Minimum and maximum outside temperature and the time of occurrence are stated for all temperature measurements.

2.1.2.1 Heaters

Up to 2 heaters can be used. Settings for heating is made through the matrix for each level. Heating is active depending on the ventilation level.

2.2 Ventilation

Main menu	Sub menu
Climate	
Ventilation	
	Minimum level
	Maximum level

Table 2: Overview of the Ventilation menu

The house ventilation consists of air inlets and air outlets. Apart from supplying fresh air to the house, the ventilation must remove any humidity and excess heat.

Depending on which ventilation components the house has, the house controller can switch between different ventilation modes to achieve the optimum air change.

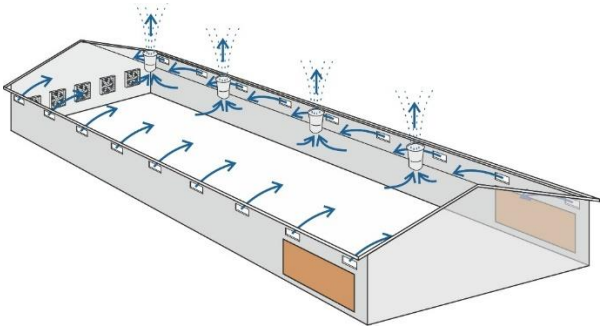
The following ventilation modes can be achieved with the indicated components:

Side	Air intake on the sides of the house, e.g., wall inlets. *Objective:* With Side, a consistent climate is achieved throughout the house and this ventilation method will therefore often be preferred.
Tunnel	Air intake in one gable of the house, for example with gable fans. *Objective: With Tunnel, higher air speed is achieved and thus air change in the house, so that the animals can be cooled even at high outside temperatures.*

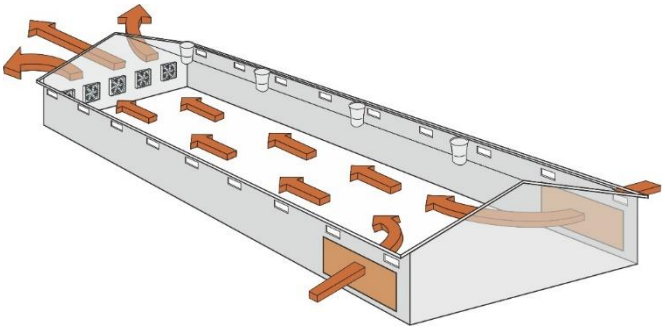
2.2.1 Combi-tunnel

The combi-tunnel function enables you to switch between side and tunnel ventilation. The function is especially useful in climate zones with daily and seasonal temperature shifts. It combines the LPV and Tunnel system to ensure optimum growth conditions for the animals even at very high outside temperatures.

Side ventilation



Tunnel ventilation



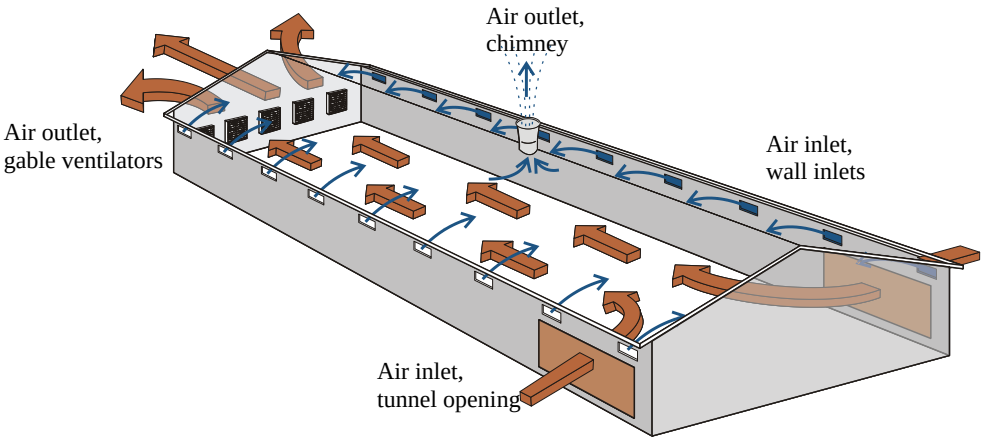


Figure 1: Combi-Tunnel ventilation

Tunnel-ventilation is based on the set tunnel temperature. The mounted air inlets and outlets are used for both side and tunnel ventilation. Selecting either side or tunnel ventilation can be done through the matrix.

In the menu, a maximum and minimum ventilation limit can be set, if these limits are exceeded, a pop-up appears in the display and the ventilation will remain on the current level. Vento II changes the ventilation level based on the settings in the matrix.

When tunnel ventilation is used while the ventilation need is very low (e.g. less than 0.8 m/s), the distribution of air in the house can be ensured by using cycle timers. The controller will switch between the individual fans which will limit the temperature difference along the house.

Climate / Ventilation

Minimum level

In **Min. level**, you must set a limit for the minimum ventilation level, so that Vento II as a minimum supplies the house with an airflow that ensures an acceptable air quality. This function is particularly relevant in periods with cold weather when it is not necessary to ventilate to keep down the inside temperature.

Maximum level

In **Max. level**, you must set a limit for the maximum ventilation level. This function can be relevant to use at very high outside temperatures when ventilation at total capacity of the system would make the inside temperature exceed the required temperature. This function can also prevent e.g. small animals from being exposed to ventilation, which is more powerful than they can tolerate.

2.3 Matrix adjustment

The matrix gives you an overview of the ventilation levels of your controller. Furthermore, you have access to settings on each level.

The size and combination of the matrix depend on the controller connections, such as fans in side or tunnel mode.

During installation, it is decided how many levels the matrix should contain, up to 64 levels can be selected.

Furthermore, the controller can use the ’multiple matrix’, enabling the house to use two independent ventilation settings, see the *Technical Manual* for more information.

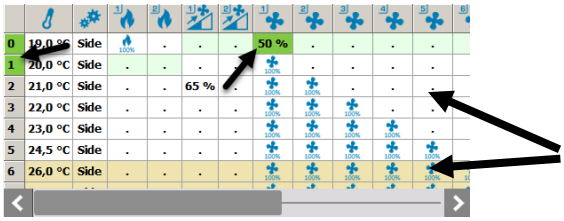
Matrix-structure:

Level	Temperature	Ventilation principle (side or tunnel)*	Heat	Stepless ventilator	Fan group	Inlet	Pressure	Stir fan	Cooling
0									
1									
2									
3									
4									
…									
.. 61									
62									
63									

Each row in the matrix corresponds to one ventilation level, in the columns you make settings for the level. In the column **Temperature**, you set the temperature that enables each ventilation level

You can also select the ventilation mode (**Side** or **Tunnel** ventilation) and make settings for the ventilation speed and cooling or heat, if installed.

* It is only possible to switch between side and tunnel ventilation when the controller is set to Combi-tunnel ventilation.



When a level and a function is active, the cell is green.

The two matrixes are separated by a difference in colour.

2.4 Humidity

This section is relevant only to houses with humidity sensors.

Main menu	Sub menu
Climate	
Humidity	
	Humidity
	Current humidity
	Min. humidity 24 hours
	Max. humidity 24 hours
	Active

Table 3: Overview of the Humidity menu

Adjusts the house air humidity according to the humidity setpoint. Humidity is supplied to the house air partly from animals, feed, drinking water, and litter, and partly from the cooling function.

When air humidity is higher than the set **Humidity**, the climate controller will increase ventilation to reduce the humidity level (provided that this is allowed by the temperature setting). When air humidity is lower than the setting, the climate controller reduces ventilation.

Climate/ Humidity

Humidity	Setting of upper air humidity limit.
Current humidity	Current humidity level.
Min. humidity 24 hours	The lowest humidity during the last 24 hours and the time it occurred.
Max. humidity 24 hours	The highest humidity during the last 24 hours and the time it occurred.
Active	Activation and deactivation of humidity control.

Selection of humidity control principle		
	Consequences	**Method of Operation**
Temperature reduction	Less heat consumption Possible to regulate humidity without heat Does not maintain the set humidity The animals must be able to tolerate the temperature drop at high humidity.	The inside temperature used for regulating the house is reduced so that ventilation can be increased
Humidity heat	Largest heat consumption Maintains the set humidity	Increases heat supply. Humidity and heat are removed through ventilation when the temperature gets too high.

2.4.1 Temperature Reduction

Vento II can control the house humidity according to the humidity control principle with temperature reduction when the animals can tolerate a temperature drop at high air humidity. This function limits the use of heating in the house but cannot keep the air humidity at the humidity setpoint.

2.4.1.1 Temperature Reduction with Heat Supply

When Vento II has been set up to control humidity according to the temperature reduction principle, the climate controller will adjust a too high humidity level by reducing the inside temperature by a few degrees (**Max. temperature reduction**).

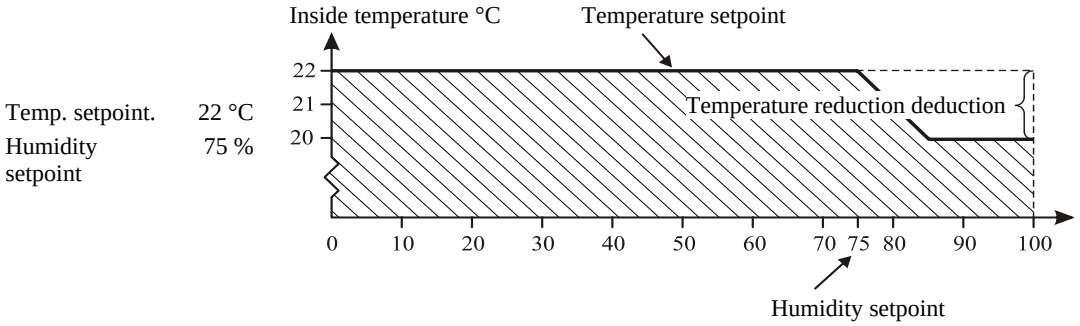
At a lower temperature setting, Vento II will thus increase ventilation and consequently the change of air. When this has made the inside temperature drop, ventilation will decrease to minimum level in order to limit the heat loss from the ventilation. If this is insufficient to maintain the reduced temperature, the climate controller will gradually supply more heat.

2.4.1.2 Temperature Reduction without Heat Supply

When heat supply has been disconnected, Vento II Touch automatically regulates the air humidity according to the temperature reduction principle.

The humidity control process is the same as for heat supply until the point at which ventilation is reduced to minimum level. Without heat supply, the inside temperature could continue to drop below the required temperature.

Example 1: Humidity control with temperature reduction



Vento II will lower the set temperature by 1° C each time the air humidity exceeds the humidity setpoint by 5%.

2.4.2 Humidity Heat

When Vento II has been set to control humidity according to the humidity heat principle, it will reduce a too high humidity level by gradually increasing the heat supply. The increased heat supply will make the inside temperature rise. In order to maintain the temperature, the ventilation system will gradually increase ventilation.
Humidity heating allows you to keep the livestock housing's humidity at the set humidity.

Check the heat consumption at regular intervals when using the principle of humidity heating to regulate the house humidity. Settings for heating and humidity control should be checked to avoid excessive heating costs.

2.5 Pressure control

This section is relevant only to houses with active pressure control.

Main menu
Climate
Pressure
Pressure control stopped
Pressure sensor
Pressure inlet setpoint

Table 4: Overview of the Pressure menu

By means of a pressure sensor, the Vento II can control the pressure level in the house. On the basis of the sensor measurements, Vento II controls the opening of the flaps; this way, it maintains the required pressure level in the house.

The pressure control is only active when one or more fans are running.

Can be adjusted through the matrix, see also section 1.4

Climate/ Pressure

Pressure control stopped	Status
Pressure sensor	The current pressure level in the house.
Pressure inlet setpoint	An indication (percentage) of how much the flaps are to be open to maintain the required pressure. The required pressure is selected through the matrix.

2.6 Cooling

This section is relevant only to houses with cooling systems.

Main menu
Climate
Cooling
Humidity to stop cooling

Table 5: Overview of the Cooling menu

Cooling is used in houses where ventilation alone cannot reduce the inside temperature sufficiently.

Cooling has the advantage over ventilation in that it can bring the inside temperature down below the outside temperature. On the other hand, cooling will also increase the air humidity in the house.

The combination of a high inside temperature and high air humidity can be life-threatening to the animals. As cooling makes the house humidity increase, Vento II automatically disconnects cooling when the house humidity exceeds **Humidity to stop side cooling** (default 75-85%).

Cooling can be adjusted via the matrix, see section 2.3.

Climate/ Cooling

Humidity to stop cooling	The air humidity percentage that makes Vento II stop the cooling function.

2.7 User Offsets

Main menu
Climate
User offsets
Temperature

Table 6: Overview of the User Offsets menu

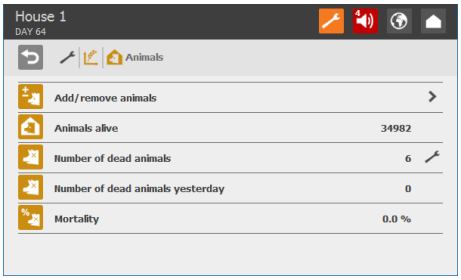
Temperature-offset	Viewing the current user offset to the standard curve values.

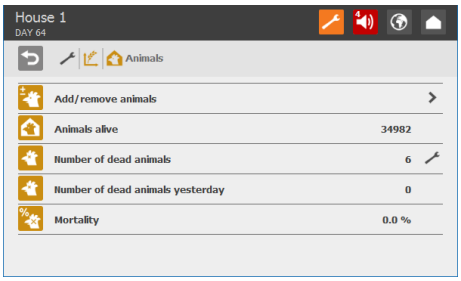
3 Production (pigs or poultry)

Main menu	Sub menu
Production	
Pigs	
	Add/remove animals
	Culled/dead animals
	Add/remove animals
	Stocked animals
	Animals alive
	Number of dead animals
	Number of dead animals yesterday
	Mortality
Poultry	
	Add/remove animals
	Culled/dead animals
	Add/remove animals
	Stocked animals
	Animals alive
	Number of dead animals
	Number of dead animals yesterday
	Mortality

Table 7: Overview of the Production menu

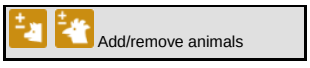
In the **Animals** menu, you set the information about e.g. the number of stocked and moved animals. The figures entered in **Animals** will be included in the calculations of Vento II's production control.





On the basis of the number entered in the **Add/Remove animals** menu, Vento II calculates the number of live animals, total number of dead animals and mortality in the house.

 /  **Production/ Pigs/Poultry**



Enter the number of animals removed from or added to the livestock house. See section 3.1.2.

It is important that these entries are made correctly, as this is crucial for the calculation of key figures.

Stocked animals

Enter total number of animals at batch start. This number does not change during the course of the batch.

If animals are added or removed from the livestock house in the course of a batch, this must be registered in the menu **Add/remove animals** or **Number of dead animals**.

Animals alive

Displays the number of animals alive.

Number of dead animals

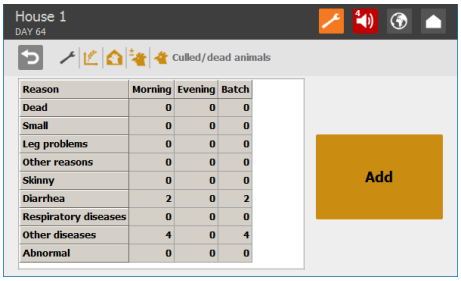
Entering the number of dead animals and displaying the summarised number of dead animals.

The summarised number will be included in Vento II's calculations for the total number of animals in the livestock house (**Animals alive**).

Mortality

Display of calculated mortality.

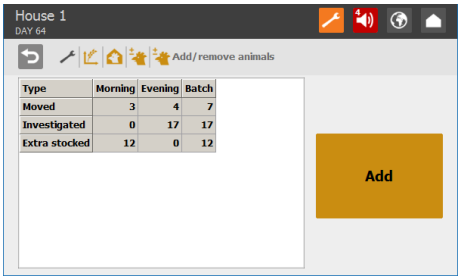
3.1.1 Culled animals



Vento II can register different culling reasons. The causes can be indicated when entering the number of culled animals. Different culling reasons can be selected for pigs and poultry respectively.

The number of culled animals is summed up and included in Vento II's calculations of the total number of animals in the house.

3.1.2 Add/remove animals



On the basis of the numbers entered, Vento II calculates the total numbers of animals for the morning and evening and for the total batch.

Select the type of registration:

- Moved
- Investigated
- Extra stocked

3.1.3 Stocked animals

Enter the total number of animals at batch start.

If, in the course of a batch, animals are added or removed from the house, this must be registered in the menus **Add/ Remove animals** or **Culled animals**.

It is important that the figure is correct as this is essential for the calculation of key figures, such as mortality and feed/animals depend on correct entries.

3.2 Feed consumption

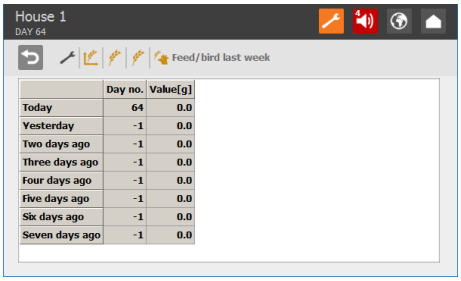
This section is relevant only to houses with feed counter.

Main menu	Sub menu
Production	
Feed consumption	
Today	Feed today
	Feed yesterday
	Feed/animal last week
Total	Feed total
	Feed/animal total
	Feed consumed by dead
	Feed/animal corrected

Table 8: Overview of the Feed consumption menu.

Production/ Feed consumption

Feed today	The feed consumption since midnight.
Feed yesterday	The total feed consumption for the last 24 hours.
Feed/animal last week	Feed consumption per animal last week.
Feed total	The total feed consumption.
Feed/animal total	The total feed consumption per animal.
Feed consumed by dead	Feed consumption by animals now dead.
Feed/animal corrected	Feed consumption corrected considering removed/added animals.



Vento II calculates the consumption of feed continuously and updates the consumption as the feed content in the silo is reduced.

You can read off the feed consumption for the current day as well as the total feed consumption.

The submenus also show calculations for feed consumption per animal.

Water

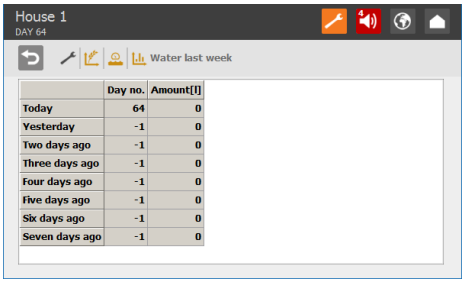
This section is relevant only to houses with water meter.

Main menu	Sub menu
Production	
Water	
	Water today
	Water yesterday
	Water total consumption
	Water last week

Table 9: Overview of the Water menu

Production/ Water

Water today	Total water consumption since midnight.
Water yesterday	Total water consumption during the past 24 hours.
Water total consumption	Total water consumption for the batch.
Water last week	Water consumption recorded per day for the last week.



	Day no.	Amount[l]
Today	64	0
Yesterday	-1	0
Two days ago	-1	0
Three days ago	-1	0
Four days ago	-1	0
Five days ago	-1	0
Six days ago	-1	0
Seven days ago	-1	0

Water consumption

Vento II records the water consumption in litres to provide a complete overview. In order to draw attention to sudden changes, the water consumption is also recorded in per cent.

Under normal conditions, the percentage figures will increase by a few percent per day as the animals increase in age.

3.3 24-hour clock

This section is relevant only to houses with 24-hour clocks.

Main menu	Sub menu
Production	
24-hour clocks	
24-hour clock 1-6	Number of starts Start On/Stop
24-hour clock follow week programme	Active

Table 10: Overview of the 24-hour clock menu.

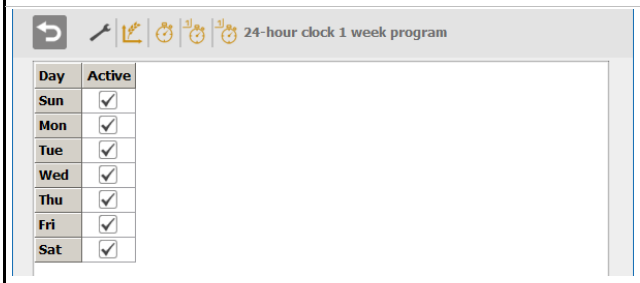
24-hour clock number one can use a week programme.

Production/ 24-hour clock

24-hour clock — Number of starts setpoint, start time and ON time, or stop time.

24-hour clock week programme — Setting of whether the 24-hour clock will be active on the individual weekdays.

Example 2: 24-hour clock with week programme – Tuesday OFF



24-hour clock with week programme
The 24-hour clock can be set to be active or inactive on the individual weekdays.
Vento II retains a program's ON/OFF times from one day number to the next. If an ON time runs past midnight on a day when the 24-hour clock is not active, the function will remain ON until the time has elapsed.

00:00 **Monday** 24:00	00:00 **Tuesday** 24:00	00:00 **Wednesday** 24:00
ON	**ON**	**OFF** **ON**
Start time	ON-time	Start time

It is possible to name the 24-hour clock, for example with the name of the function that it controls, so it can be recognised in the menus.

4 Management

Main menu	Sub menu		
Management			
House data			
	Batch status	Active house Empty house	
	Day number		
	Week number		
	Stocked animals		
	Adjust date and time		
	Week day		
	House name		
	Start batch at day		
Key values			
	Feed/animal total		
	Feed/animal today		
	Feed/animal yesterday		
	Water/animal today		
	Water/animal yesterday		
	Water/feed		
	Water/feed yesterday		
	Mortality		
Trend curves			
	Climate	**Temperature**	
		Tunnel temperature	
		Outside temperature	
		Pressure sensor	
	Production	**Feed 24 hours**	
		Water 24 hours	
		Today	
			Feed/animal
			Water/animal
			Water/feed
			Water today
		Total	
			Feed/animal
			Water total
		Animals	
			Mortality
			Dead animals
			Culled animals
			Moved animals
Batch curves			
	Inside temperature		
	Tunnel temperature		

Main menu	Sub menu
Management	
	Minimum ventilation level
	Maximum ventilation level
	Fan group batch 1
	Fan group batch 2
	Stepless batch 1
	Stepless batch 2
Empty house	
	This house is NOT in batch stop
	Inlet
	Air fan stage level
	Air outlet flap stepless
	Air outlet fan speed stepless
	Heating
Change password	
	Change password Daily
	Change password Advanced
	Change password Service

Table 11: Overview of the Management menu

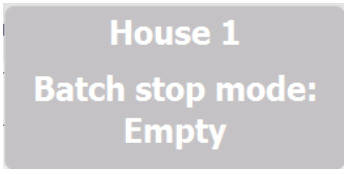
4.1 House data

Batch status	Reading and change of batch status (**Active house**/ **empty house**).
Day number	Setting the day number. The day number adds one for each day that passes after the house has been set at active house.
Week number	Display of the current week number.
Stocked animals	Enter the number of stocked animals.
Adjust date and time	Setting the current time and date.
Day of the week	Display of current day of the week.
House name	Setting the house name.
Start batch at day	Setting of the day on which the batch shall start.

4.1.1 Active House/Empty House

Set batch status to **Active house** the day before stocking the animals so that the climate controller has time to adapt the climate to the animals' requirements. The day number switches to day 0, and the climate controller runs in accordance with the automatic climate setpoints.

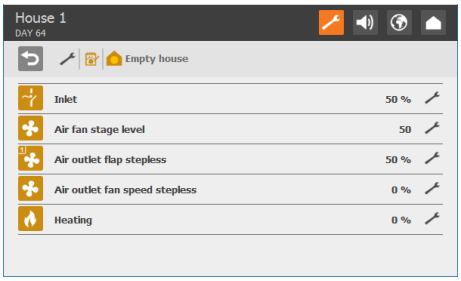
Set batch status to **Empty house** after depopulating the house.



When the house is empty, Vento II will disconnect the regulation of the house climate and control according to the settings for the in-between functions empty house.

In the **Empty house** batch status, Vento II will also reset any changes of curves which you have made during the previous batch course.

When batch status is **Empty house**, (in the menu **Management**/ **Empty house**), the controller will run according to the settings made in the **Empty house** menu.



This function will maintain the air change in the house by allowing ventilation to run at a fixed percentage (50%) of the system capacity. This is to protect the animals in case a house is set at **Empty house** by mistake. You can set heating to maintain heat in the house.

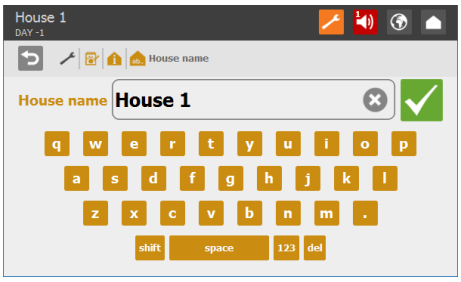
When the batch status is **Empty House,** all alarms will be disabled.

4.1.2 Time

Correct setting of the clock is important, both as regards several control functions and as regards the registration of alarms.

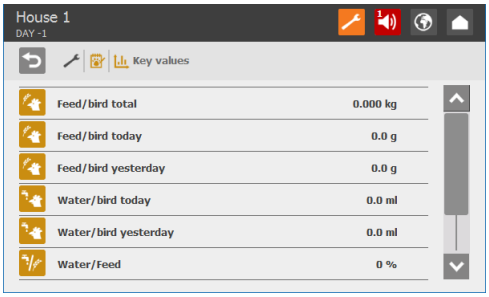
The clock will not stop in the event of a power failure.

4.1.3 House name



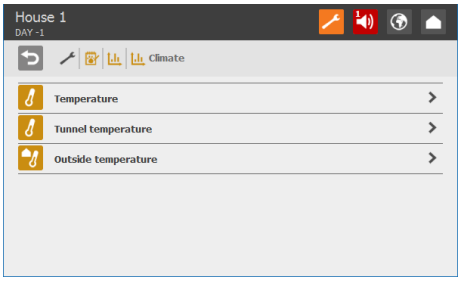
Name the house.

4.2 Key values

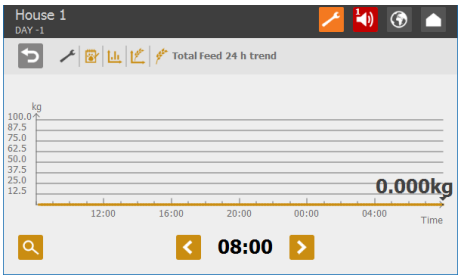


Display of production values.

4.3 Trend curves



Climate trend curves give a picture of how the climate has developed during the last 24 hours.



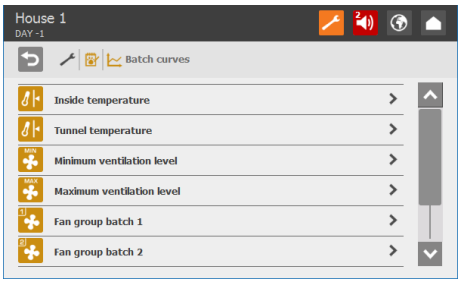
Production trend curves show the development during the last 50 days for a number of key production figures.

The curve shows the value at the turn of a 24-hour period.

4.4 Batch curves

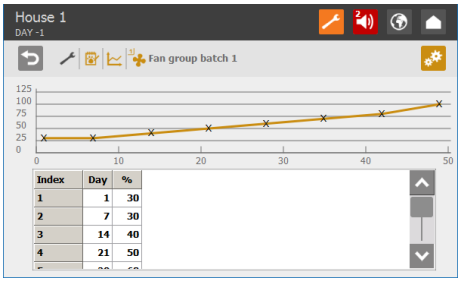
This section is relevant only to houses with batch production.

Together with other information, the curve settings form the basis of Vento II's calculations of climate regulation.



Vento II can automatically adjust settings for temperature, heat, and ventilation.

4.4.1 Setting Curves

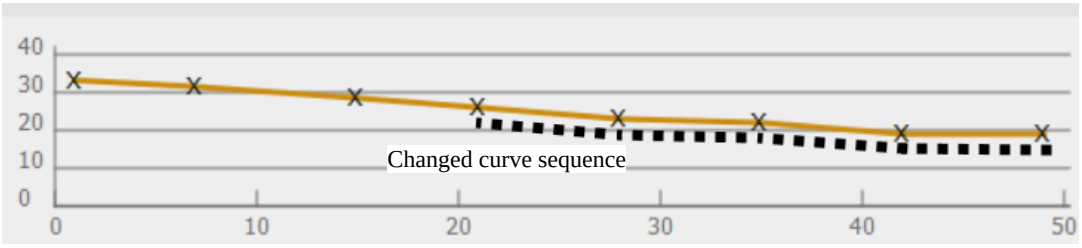


For each curve, set

1) a day number for each of the eight curve points.
2) the required value of the function of each of the eight curve points

4.4.2 Daily Adjustment of Settings

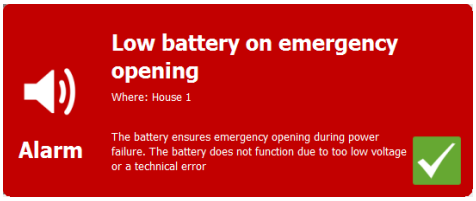
Example 2: Curve for Inside temperature

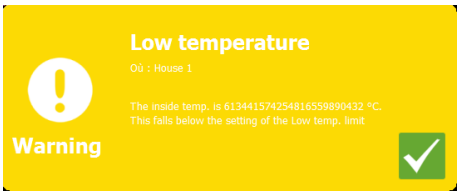


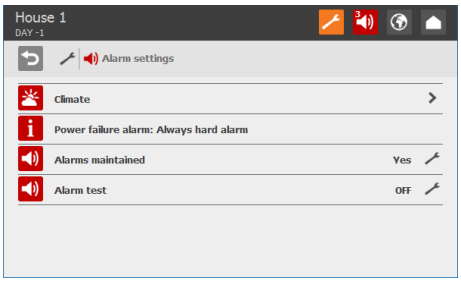
It is generally the case for the curve functions that Vento II automatically displaces the rest of a curve sequence in parallel when you change the associated setting in the course of a batch.

5 Alarms

Alarms only work when the batch state is **Active house**.







When an alarm occurs, Vento II will register the alarm type and the time it occurred.

The information on the type of alarm will appear in a separate alarm window together with a short description of the alarm situation.

There are two types of alarm:

Hard alarm: Red pop-up alarm on Vento II and alarm generation with the connected alarm units, e.g. a horn

Soft alarm: Yellow pop-up alert on Vento II.

In the alarm menu, it is possible to select whether some climate alarms are to be hard or soft.

Switch change

When the house controller is connected to a manual override switch module, a hard or soft alarm can be obtained if the contact position is changed.

It is possible to deactivate pop-up for this function.

Changes of the switch position are logged in the operations log in the **Technical/ Service/ Memory menu**.

The climate controller will also activate an alarm signal, which you can choose to maintain.

The alarm signal will thus continue to sound until you acknowledge the alarm. This also applies even if the situation that triggered the alarm has stopped

Alarms maintained:

YES: The signal continues after the alarm situation has ceased.

NO: The signal stops after the alarm situation has ceased.

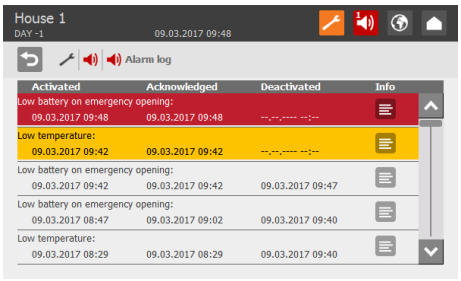
5.1 Stopping an Alarm Signal

The alarm window disappears, and the alarm signal stops when you acknowledge the alarm by pressing on the 'tick' icon.

5.2 Alarm Log

Vento II registers alarms with the information of when they emerged and when they were deactivated. It often happens that several alarms follow each other because one defective function also affects other functions.

For instance, a flap alarm can thus be followed by a temperature alarm as the climate controller cannot adjust the temperature correctly with a defective flap. The completed alarms thus give you the possibility of following an alarm course back in time to detect the error that caused the alarms.



The colours in the alarm log reflect the alarm's status:

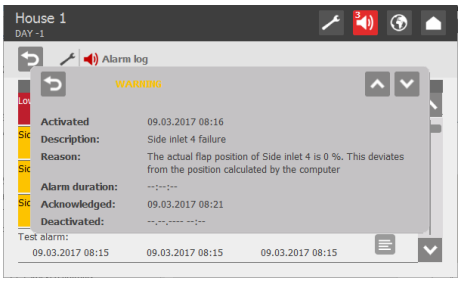
Red: active alarm

Yellow: active alert

Grey: deactivated alarm (alarm state ceased)

Vento II saves up to 20 active and deactivated alarms. When the 21st alarm emerges, the climate controller deletes the oldest alarm from its memory.

The icon for alarm log indicates the number of active alarms, as long as an alarm situation is not deactivated.



Press to open the alarm log and see the general description of the type of alarm and the duration of the alarm situation.

5.3 Alarm Test

Regular alarm tests help to ensure that the alarms actually work when needed. Therefore, you should test the alarms every week.

Alarms

In the menu

Select **Alarm test**, and press ON to start the test.

Check that the alarm lamp is flashing.

Check that the alarm system alarms as intended.

Press to conclude the test.

Vento II contains a number of alarms, which it will activate if a technical error occurs or alarm limits are exceeded. A few of the alarms are always connected, e.g. **Power failure**. The other alarms can be activated / deactivated, and for some of them, you can even set the alarm limits.

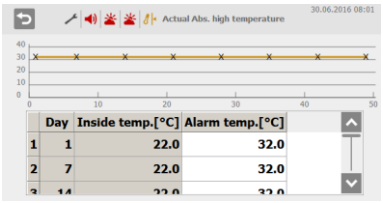
The user is always responsible for ensuring that all alarm settings are correct.

Alarm settings		
Climate		
	Inlet and outlet alarm	**Error inlet 1 - 4** **Error outlet flap 1 on fan 1** **Error outlet flap 2 on fan 1** **Error outlet flap 1 on fan 2** **Error outlet flap 2 on fan 2**
		Emergency inlet **Emergency inlet** g Absolute high temperature Error temperature sensor Power failure: ON
	Temperature alarm	**Hight temperature limit** **Low temperature alarm** **Low temperature limit** **Temperature alarm limit at 20° C/68° F outside temp.** **Temperature alarm limit at 30° C/86° F outside temp.** **Absolute high temperature** **Actual absolute high temperature**
		Sensor errors Error inside temperature sensor: ON Error outside temperature sensor Misplaced outside sensor
		Temp. controlled emergency opening Emergency opening setpoint Temperature setpoint Warning at emergency temp. Warning emergency temp. limit Battery alarm: Always ON Battery voltage limit Power failure: ON Current battery voltage Lowest measured battery voltage
	Humidity sensor	**Absolute high humidity limit**

Alarm settings			
		Error humidity sensor (5%)	
	Pressure sensor	Sensor alarm delay	
		Pressure high alarm	
		Pressure high limit	
		Pressure low alarm	
		Pressure low limit	
	Emergency opening	High temperature	ON/OFF
		Absolute high temp.	ON/OFF
		Absolute high humidity	ON/OFF
		Pressure high alarm	ON/OFF
		Pressure low alarm	ON/OFF
		Power failure	ON/OFF
Power failure alarm: Always hard alarm			
Alarms maintained			
Alarm test			
Installation in progress: Not active for up to two minutes.			

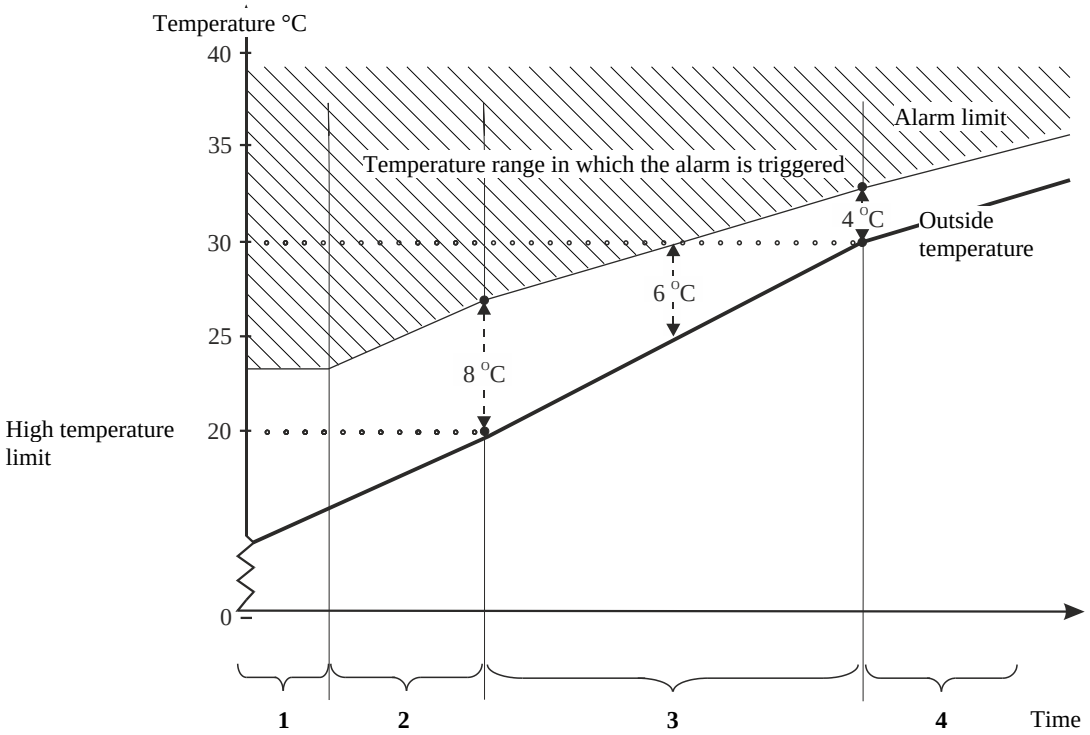
5.4 Alarms for climate

Inlet and outlet alarm	
	The flap alarms are technical alarms. The Vento II controller sends out an alarm if the actual flap position of an inlet or outlet deviates from the setting calculated by the controller.

Temperature	
High temperature limit	The temperature alarm for high temperature is only connected when the batch state is **Active house**. The alarm is set as an excess temperature to **Temperature setpoint**. See also section 2.1.1
Low temperature alarm	Alarm for excessively low temperature in relation to **Temperature setpoint.**
Low temperature limit	The temperature alarm for low temperature is active when batch status is **Active**.
Temperature alarm limit at 20 °C and 30 °C (68 °F and 86 °F) outside temperature	The function has a varying alarm limit that monitors changes in the high outside temperature. When the temperature rises, the alarm limit will also rise. It will thus postpone the time when the high temperature alarm is triggered. Vento II only triggers the alarm if the inside temperature also exceeds the high temperature alarm.
Absolute high temperature	The alarm for absolute high temperature is triggered by an actual temperature, such as 32°C. Vento II triggers the absolute high temperature alarm when the inside temperature exceeds this setpoint.  The absolute high temperature alarm is set as a temperature curve.

	Day	Inside temp.[°C]	Alarm temp.[°C]
1	1	22.0	32.0
2	7	22.0	32.0
3	14	22.0	32.0

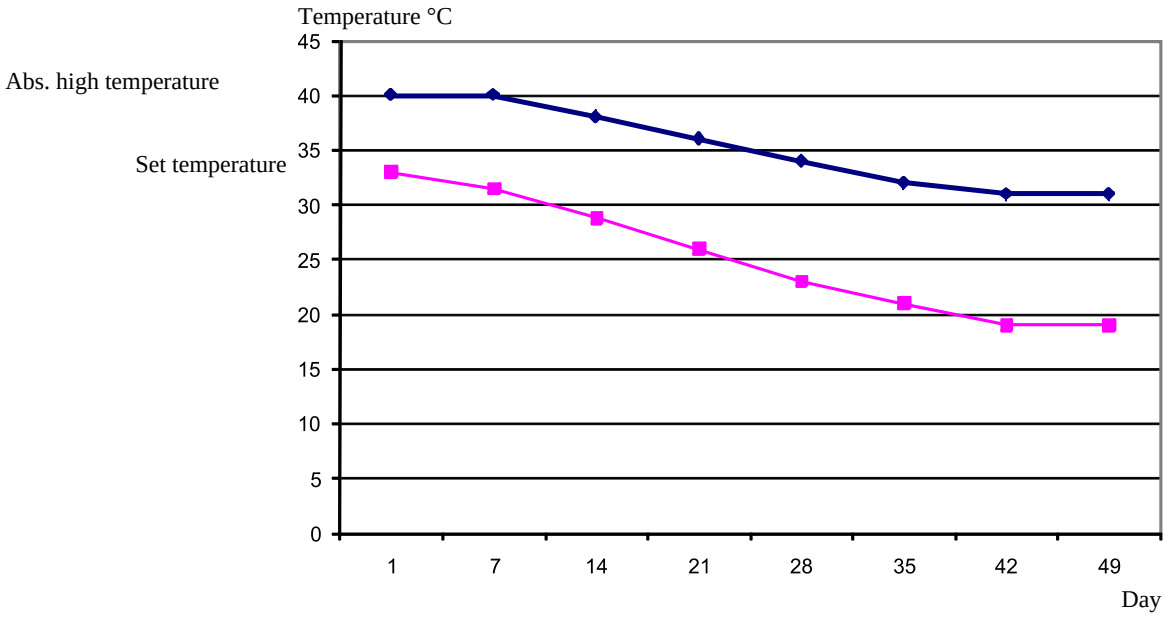
Example 3: Summer temperature at 20°C and 30°C outside



1. *The alarm limit does not fall below the **High temperature limit**.*
2. *Below 20°C outside, the alarm limit is 8°C, staggered in relation to the outside temperature.*
3. *Between 20°C and 30°C outside, there is a gradual transition from 8°C to 4°C.*

   At an outside temperature of 25°C for example, the inside temperature must thus be 6°C higher (above 30°C) for the alarm to be triggered.
4. *Above 30°C outside, the alarm limit is 4°C, staggered in relation to the outside temperature.*

Example 3: Alarm for Absolute high temperature



Alarm for Absolute high temperature is released when the inside temperature exceeds the set value. The value can be set as a curve over a time span of eight day numbers.

Temperature sensor error	
Error inside temperature sensor	The Vento II controller triggers an alarm if the inside temperature sensor is short-circuited or disconnected. Without this sensor, Vento II cannot control the inside temperature, and apart from the alarm, the error will also trigger an emergency control of the ventilation system, which will open 50%. The alarm for an error in an inside temperature sensor is always a hard alarm.
Error outside temperature sensor	Vento II triggers an alarm if the outside temperature sensor is short-circuited or disconnected.
Misplaced outside sensor	The alarm indicates whether the sensor is exposed to solar heating and therefore displays an incorrect outside temperature. Vento II triggers an alarm when the inside temperature measured by the controller is the number of degrees below the outside temperature that the function is set to (e.g. 5°C).

Humidity sensor	
Absolute high humidity limit	The Vento II controller triggers the alarm for absolute high humidity when the humidity exceeds the setpoint. This may be due for example to lack of ventilation or a technical sensor error.
Error humidity sensor	Vento II triggers an alarm when the humidity sensor is disconnected or the air humidity is lower than humidity setpoint. The alarm limit is factory preset at such a low level (5%) that the alarm can only be triggered by actual sensor errors.

Pressure sensor	
Pressure alarms	In the function **Pressure sensor alarm delay** you can postpone the alarm signal so that the alarm is not triggered by transient changes in the pressure level in the house, such as when a door is opened. The Vento II controller triggers an alarm when the pressure in the house falls below or exceeds the setpoints for **High/Low pressure limit**.

5.4.1 Emergency Opening

5.4.1.1 Emergency Opening

The Vento II controller has emergency opening as a standard function regardless of whether an actual emergency opening is installed. As long as there is power, the controller will open the ventilation system 100% in the event of a relevant alarm - even if it is cold outside.

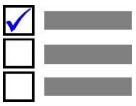
The emergency opening can be triggered by six types of alarms.

Emergency opening	Triggered by	
	High temperature	Always trigger
	Absolute high temperature	Always trigger
	Pressure high alarm	Always trigger
	Pressure low alarm	Always trigger
	Power failure	Always trigger
	Absolute high humidity alarm	Connect or disconnect

Table 12: Triggering of emergency opening

It may be an advantage to disconnect absolute high humidity in houses that are located in areas with very high outside air humidity and in situations when a technical sensor error occurs.

5.4.1.2 Emergency Opening Temperature



This section is only relevant for houses in which an external temperature-controlled emergency opening is installed.

Temperature-controlled emergency opening is only triggered when the inside temperature exceeds the temperature setpoint for emergency opening (**Emergency opening setpoint**). You can read off the setpoint as an actual temperature figure on Vento II´s display. Emergency opening is also triggered in the event of a power failure.

5.4.1.2.1 Emergency Opening Temperature

You can set the temperature at which emergency opening shall occur directly on the emergency opening's adjustment knob. The setpoint can be read off in the display together with the **Temperature setpoint**.

5.4.1.2.2 Warning at Emergency Temperature

The Vento II controller can issue a warning that will flash in the display in the event of the **Emergency opening temperature setpoint** being too high in relation to the **Temperature setpoint** (inside temperature). This is especially relevant at batch production and a falling temperature curve. It is here that you should adjust downwards on an ongoing basis the **Emergency opening temperature setpoint**. However, too high a setting can also be caused by an error.

The warning function can be connected and disconnected. The setpoint here should be the number of degrees by which the **Emergency opening temperature setpoint** must exceed the **Temperature setpoint** for the controller to issue a warning.

5.4.1.2.3 Battery Alarm and Battery Voltage

Temperature-controlled emergency opening has a battery that ensures that the emergency opening will open, despite there being a power failure, if the inside temperature exceeds the **Emergency opening temperature setpoint**.

You can read off the current and the lowest measured voltage on the battery. These readings indicate whether you need to replace the battery or whether there may be a technical fault causing the battery alarm.

Vento II can trigger an alarm if the battery that operates emergency opening is not working.

Be careful not to set the **Battery voltage limit** too low, as this will actually deactivate the alarm.

5.4.2 Power Failure Alarm

The Vento II controller will always generate an alarm and activate emergency opening in the event of power failure.

MAINTENANCE INSTRUCTIONS

Vento II requires no maintenance to function correctly.

You should test the alarm system every week.

Use only original spare parts.

Cleaning

Vento II can be cleaned with a firmly wrung cloth without the use of solvents. Do not expose it to direct water jets or cleaning with a high-pressure cleaner.

As with any other electronic equipment, the service life of the Vento II will be extended if it stays connected all the time, as this will keep it dry and free from condensation.

Removal for recycling/disposal

Bit Dutchman´s products, which are suited for recycling, are marked with a pictogram showing a refuse bin that is crossed out. See the picture.

It will be possible for customers to deliver Big Dutchman products to local collection sites/recycling stations in accordance with local instructions. The recycling station will then arrange for further transport to a certified plant for reuse, recovering and recycling.

EU - Declaration of Conformity

Manufacturer:	**SKOV A/S**
Address:	Hedelund 4, DK-7870 Roslev, Denmark
Telephone:	+45 72 17 55 55

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Product:	Vento II
Type, model:	House controller
EU directives:	2014/35/EU (Low Voltage Directive (LVD))
	2014/30/EU (Electromagnetic Compatibility (EMC))
	2011/65/EU (RoHS Directive)
Standards:	EN 60950-1:2006: EN 60950-1:2006/AC:2011 EN 60950-1:2006/A11:2009 EN 60950-1:2006/A12:2011 EN 60950-1:2006/A1:2010 EN 60950-1:2006/A2:2013
	EN 61000-6-2:2005 + AC:2005: EN 61000-6-4:2007 + A1:2011:
	EN 50581:2012:

We declare as manufacturer

that the products meet the requirements of the listed directives and standards.

Location: Hedelund 4, DK-7870 Roslev

Date: 2017.04.01

Jesper Mogensen

CTO

2017 / 09 • GB

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