Viper Touch Basic

Climate Controller

User Manual

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Big Dutchman

Software version 7.6

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

Product:	Viper Touch series
Type, model:	House controller

EU directives:	2011/65/EU	RoHS directive
	2014/30/EU	Electromagnetic Compatibility (EMC)
	2014/35/EU	Low Voltage Directive (LVD)

Standards:	EN 63000:2018
	EN 61000-6-2:2019
	EN 61000-6-4:2019
	EN 62368-1:2019

We declare as manufacturer that the products meet the requirements of the listed directives and standards.

Location: Hedelund 4, DK 7870 Roslev

Date: 2021.04.09

Tommy Bak

CTO

Product and Documentation Changes

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

The date of change appears from the front and back pages.

IMPORTANT!

Notes concerning alarm systems

Breakdowns, malfunctions or faulty settings may cause substantial damage and financial losses when regulating and controlling the climate in a livestock house. It is therefore essential to install a separate, independent alarm system that monitors the house climate concurrently with the climate and production controller. According to EU-directive No. 98/58/EU, an alarm system must be installed in all mechanically ventilated houses.

We would like to draw your attention to the fact that the product liability clause of general terms and conditions of sale and delivery specifies that an alarm system must be installed.

In case of an operating error or inappropriate use, ventilation systems can result in production losses or cause loss of lives among livestock.

We 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 terms and conditions of sale and delivery.

Installation, servicing and troubleshooting of all electrical equipment must be carried out by qualified personnel in compliance 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. The power supply isolator is not included.

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1 Guidelines

This user manual deals with the daily operation of the house controller. The manual provides the fundamental knowledge about the functions of the controller that is required to ensure optimum use of it.

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

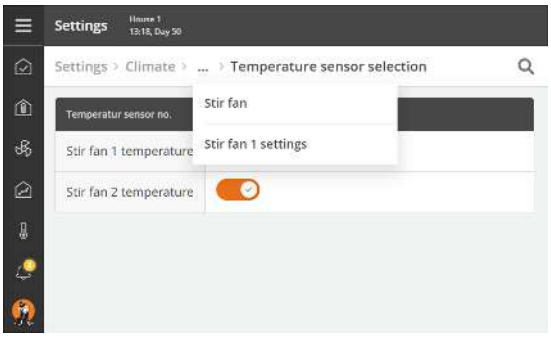
If a function is not used, e.g. **24-hour clock**, it is not shown in the user menus of the controller. The manual may therefore contain sections that are not relevant to the specific setup of your controller. See also the *Technical Manual* or, if necessary, contact service or your dealer.

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

This is followed by descriptions of the controller functions.

10" and 7" controller display

The displays shown in this manual are from a 10" controller display where the menu overview is shown to the left in the display. If you use a controller with a 7” display, the menus are shown in the middle of the display.



Using a 7” display you can press the menu headlines at the top of the display to go back step-by-step in the menus.

If more steps are available that what can be shown, you can press the 3 dots and select a menu from the appearing list.

2 Product description

Viper Touch is a series of one-house controllers specifically designed for poultry houses. The controller series includes several variants. Each of them meets the different requirements for climate and production control in connection with the production forms and geographical climatic conditions.

The controller is operated via a large touch display with graphical views of the ventilation status, icons and curves, among other things. Front views may be adapted in accordance with the user requirements so that the most frequently used working procedures are easily accessible. In addition, a wide range of functions such as 24-hour clock, light, water meter, and extra sensor are named by the user, so the functions are easier to recognise in menus and alarms.

The climate and production controller has two LAN ports for connection to BigFarmNet Manager and two USB ports.

The controller is available in the following production variants:

- Broiler
- Breeder
- Layer

The production variants can be combined with different climate controllers:

Basic with production control and climate control based on the principle Basic-Step. With Basic-Step, the climate is regulated on the basis of P-band regulation. This type of climate regulation is very flexible for you as a user if you want to be able to influence the setting and adjustment of several climate functions on a daily basis; however, this also means that you will have to adjust the climate settings on a daily basis. However, this also means that you will have to adjust the climate settings on a daily basis. Temperature and minimum ventilation curves have been entered. No humidity control is available in Basic-Step.

Flex with production control and climate control based on the principle Flex-Step. With Flex-Step, it is possible to set the climate regulation precisely as the user requires. The climate controller regulates the climate based on up to 63 set ventilation levels, for which the user has determined the settings. When the ventilation levels are adjusted, it is not necessary to change them during the daily work. In Flex-Step, the climate controller controls the climate according to curves for temperature, heat and minimum and maximum ventilation level. There is no MultiStep® in Flex-Step.

Profi with production control and climate control can regulate and monitor the climate and provides complete two-zone control to regulate temperature, humidity, ventilation, cooling, humidification and CO2 ventilation in two separate zones.

3 Operating instructions

3.1 Operation

The climate and production controller is operated entirely by means of the touch display.

The view in the display is called a page. You can scroll both up/down and right/left to see the entire page.

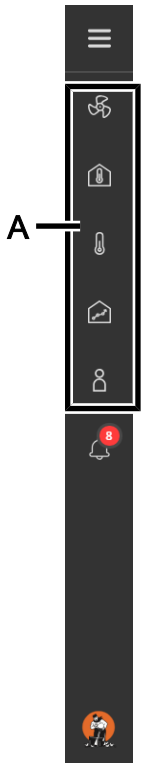
A	Pages with selected key values and settings.
B	The selected house name, time and possibly week and day number.
C	The icon and name of the page.
D	Survey of all pages, access to settings and language selection.
E	Shortcuts to pages. A maximum of 5 shortcuts can be shown here. The selected shortcut is highlighted.
F	Activity log. Activities comprise operation, events and alarms.
G	Settings with direct adjustment access.
H	Information on how the controller is currently working.
I	The 3 dots indicate that pressing the card will display additional information.
J	An inactive function has grayed-out text and icon.

3.2 Daily use

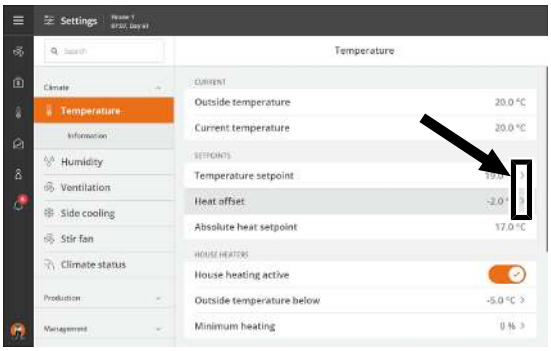
The controller is operated via created pages giving access to settings and information.

We recommend that you create pages with the content you need for daily operation. The pages provide information about and status of the operation. Furthermore, the content of the pages works as shortcuts to the settings menu for quick and easy access to changing settings. See also the sections Creating pages [▶ 16] and Pages [▶ 13].

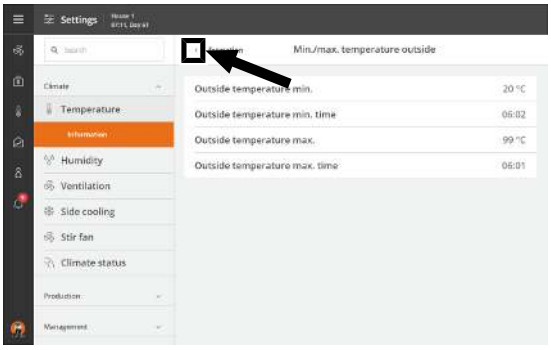
5 of these pages can be shown as shortcuts to the left in the controller display:



A Press the shortcuts to switch between the pages.



If a menu has sub-menus it is shown by an arrow pointing right ›. Press the line to open sub-menus.



You can take a step back in menus by pressing the button with the arrow pointing left ‹ in the left corner.

In all menus and settings, changes can be canceled by pressing **Cancel** or confirmed by pressing **Confirm**.

3.3 Activity log

The controller registers operation, events and alarms with the information of when they took place 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 be followed by a temperature alarm as the controller cannot adjust the temperature correctly with a defective flap. Thus, the previous alarms give you the possibility of following an alarm course back in time to detect the error that caused the alarms.

The activity log contains information about alarms such as:

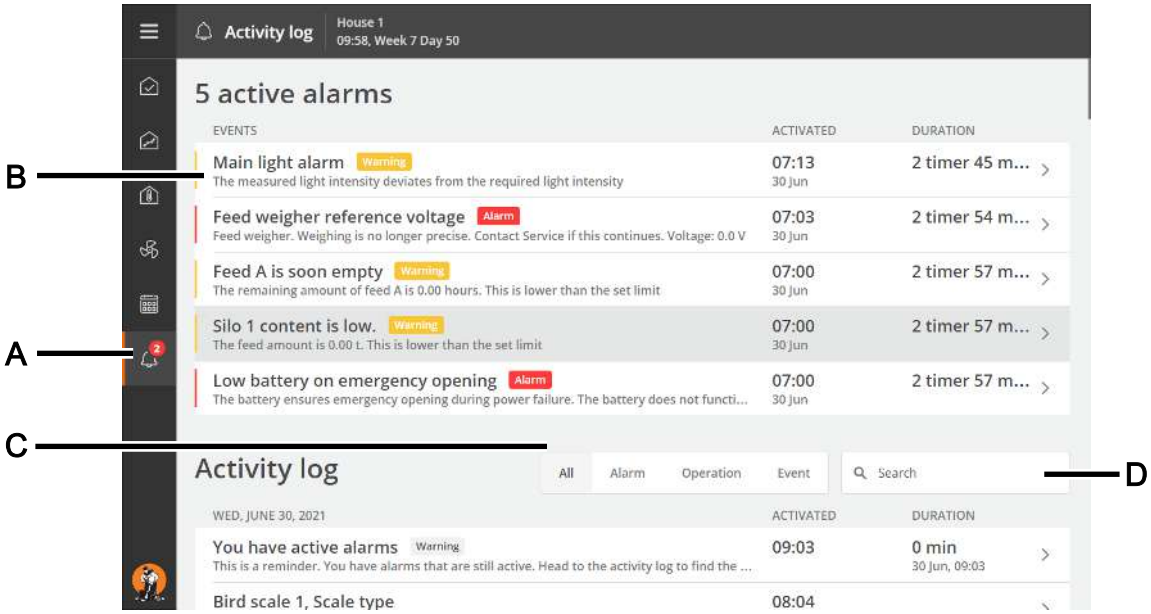
- When the alarm occurred.
- When the alarm ended.
- The value that triggered the alarm.

Other active alarms are marked on the list.

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

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

Furthermore, it is displayed when a value/setting was changed and when.



A Press the icon for the Activity log to open it.

B Press the line of an activity to see the details, such as when an alarm was activated and when the alarm was acknowledged.

Press Close to close the details window again.

C Select between different views of the various types of activities:

All: shows all types

Alarm: shows only alarms

Operation: shows operation of the controller

Event: shows, for example, reset of the controller

D Use the search field to search in the Activity log. Enter at least 3 characters to search.

3.4 Pages

A page is a user-defined display of selected values, graphs and settings. Pages therefore provide quick access to reading and operation.

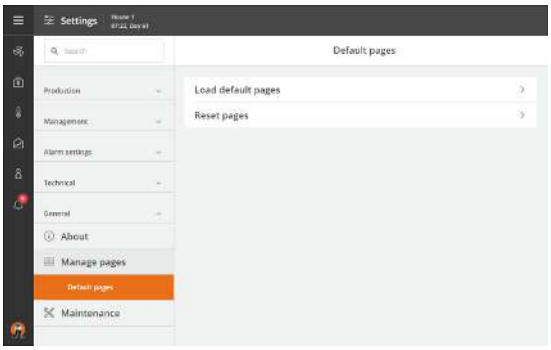
We recommend that you create a number of pages to show exactly the functions and values used in the individual house and that cover the needs of the daily user.

3.4.1 Selecting default pages

The climate and production controller comes with a number of default pages that vary according to the ventilation system and animal type.

In order to simplify the set-up of controller, you can use default pages.

Remember to adjust the settings to the current conditions.



Press the **Overview** and select **Settings**.

Then select **General | Manage pages | Default pages | Load default pages**.

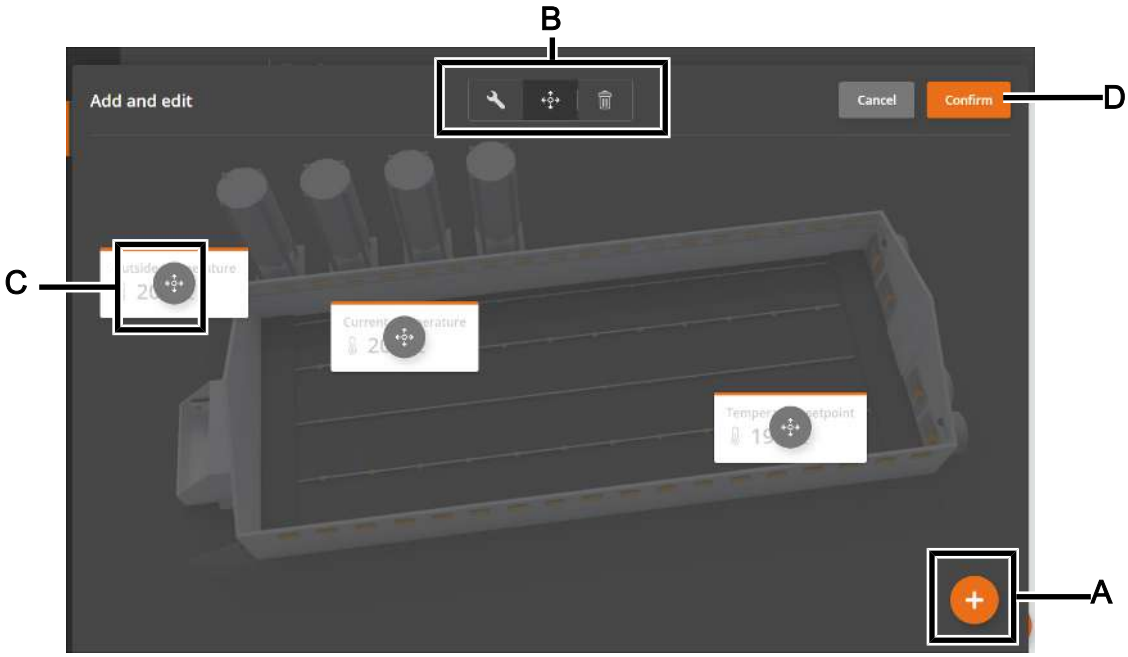
Select the collection of pages you want.

3.4.2 Page types

3.4.2.1 House view

This view provides a graphic overview of the house with selected values and settings.

First select the angle of the house illustration. The illustration is shown in the small picture to the right. Then select to hide or display the house, the chimneys and the silos. Finally, save the layout by pressing **Confirm**.



A Add key values.

B Select one of the tools to edit, move or delete the key value.

C When a tool is selected, the icon of the key value reflects the selected tool.

D Finish the setup by pressing **Confirm**.

3.4.2.2 Program overview

This page makes it possible to see various types of programs on the same page. The graphic view makes it easy to gain an overview of how the programs have been setup in relation to each other.

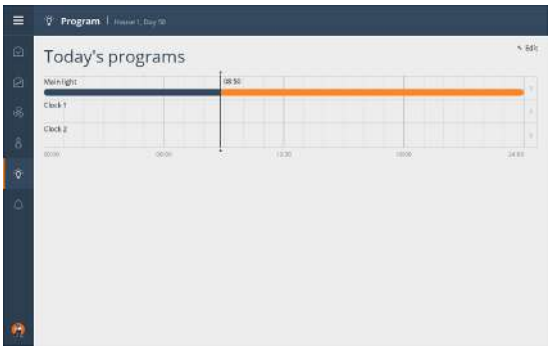
A List of all the programs shown on the page.

B Press on the X to remove a program from the page.

C Press the plus sign to add a program.

D The order of the programs can be changed by pressing and holding a program while dragging it up or down.

E Save the page by pressing **Confirm**.



A program can be edited directly from the program overview by pressing the line with the program.

3.4.3 Creating pages

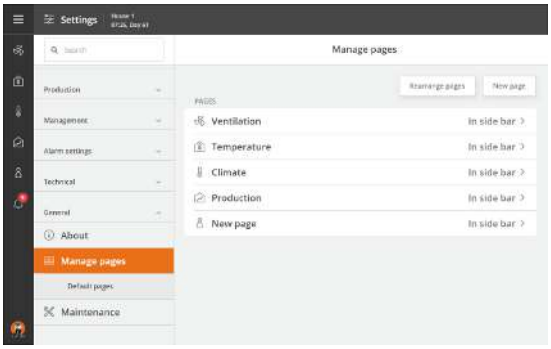
We recommend that you create a number of pages to show exactly the functions and values used in the individual house and that cover the needs of the daily user.

The pages work as shortcuts to the key values and settings and therefore gives you quick access to reading values and changing the settings.

The contents of the pages is combined by 2 types of cards with different layout.

Top card: Display of, for example, curves, house view, program overview or daily view at the top of the page. Key values below the top card.

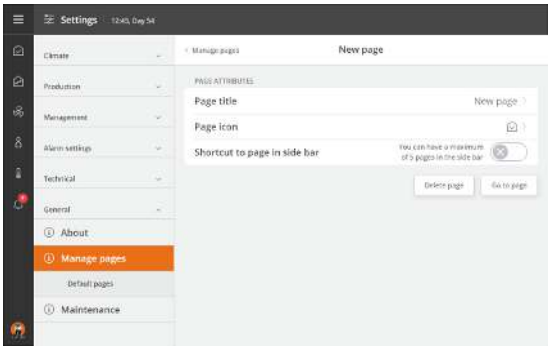
Cards: Key values in columns with headings.



Press the **Overview** and select **Settings**.

Select **General** and **Manage pages**.

Press **New page**.

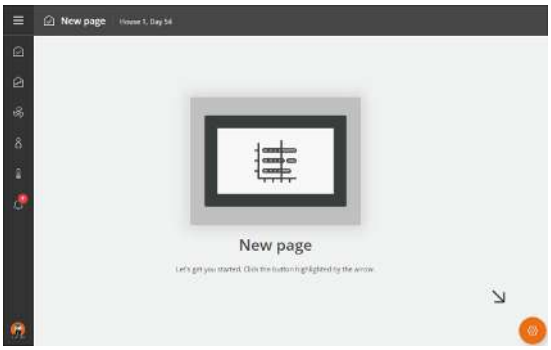


Name the page.

Select a suitable icon for the page content to easily recognize it.

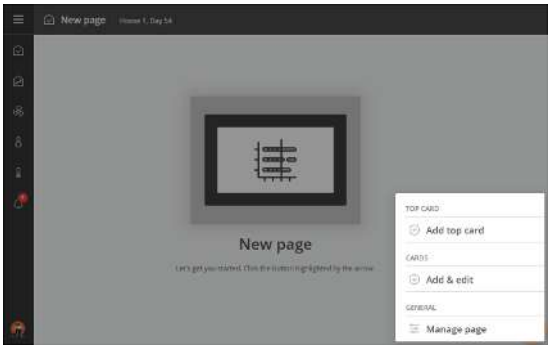
Select if a shortcut for the page should be shown in the display. A maximum of 5 shortcuts can be shown here. Pages without shortcuts are shown when you press the **Overview**.

Press **Go to page** to be able to select the content on the page.



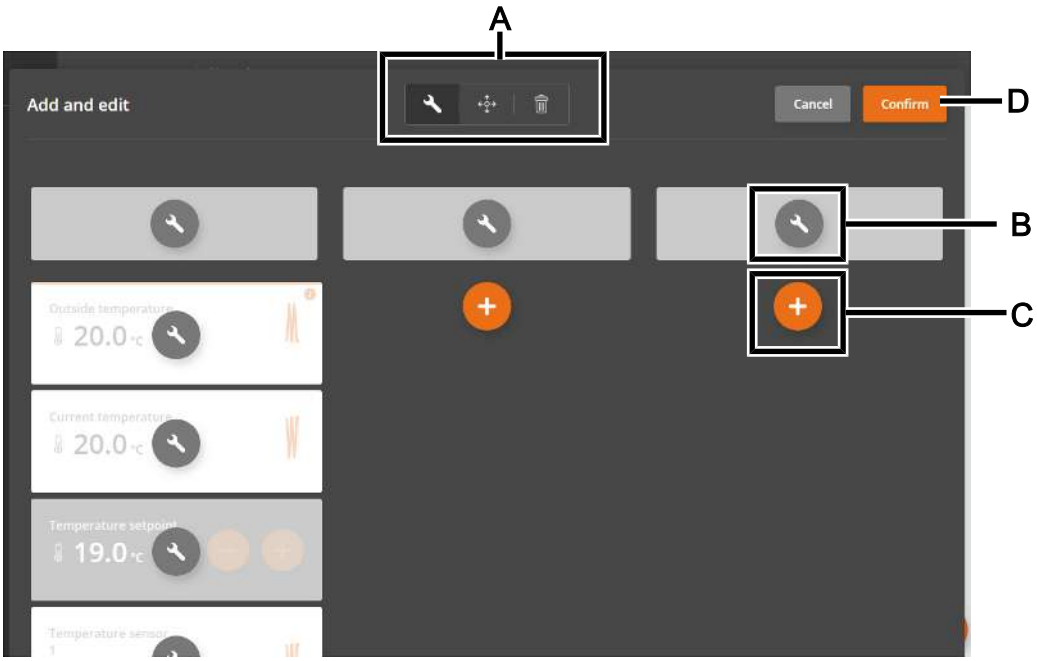
The new page is displayed.

Press the gear wheel icon in the bottom right corner.



Select the content you want on the page (views in top cards and/or key values in cards).

To layout the columns as you want or to group cards, you can also insert **Empty cards**.



A Press the one of the tools to edit headlines or card content, to move or delete the cards.

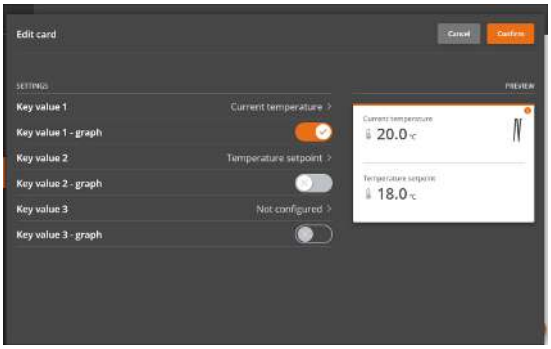
- Edit
- Move
- Delete

B When a tool is selected, the icons on the cards change to reflect the tool.

C Add more cards.

D Finish the setup by pressing **Confirm**.

When editing cards, several cards can be joined together, for example you can join **Temperature** with **Temperature setpoint.**



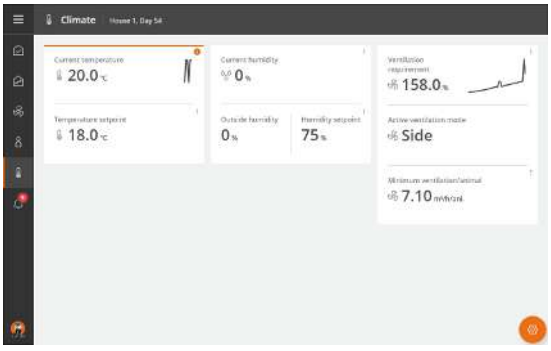
First select the editing tool and click on the key value you want to add setpoints to.

Select **Key value 2** and select the key value to be displayed.

Select **Key value 3**, if required and select the key value to be displayed.

If the values are also displayed as graphs, the graphs can also be shown in the card.

To the right in the menu a preview of the card is shown.



You can add up to two key values to a status view. For example, you can join:

Temperature + **Temperature setpoint**

Humidity + **Humidity setpoint**

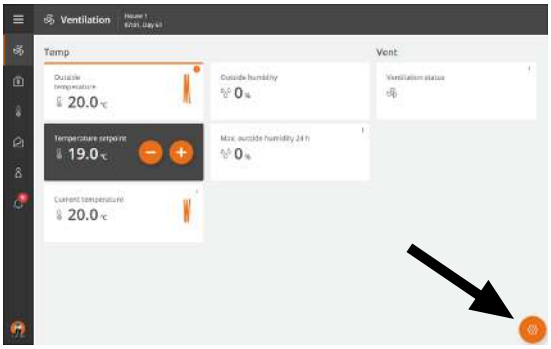
Ventilation + **Minimum ventilation/animal**

Heating + **Heat offset**

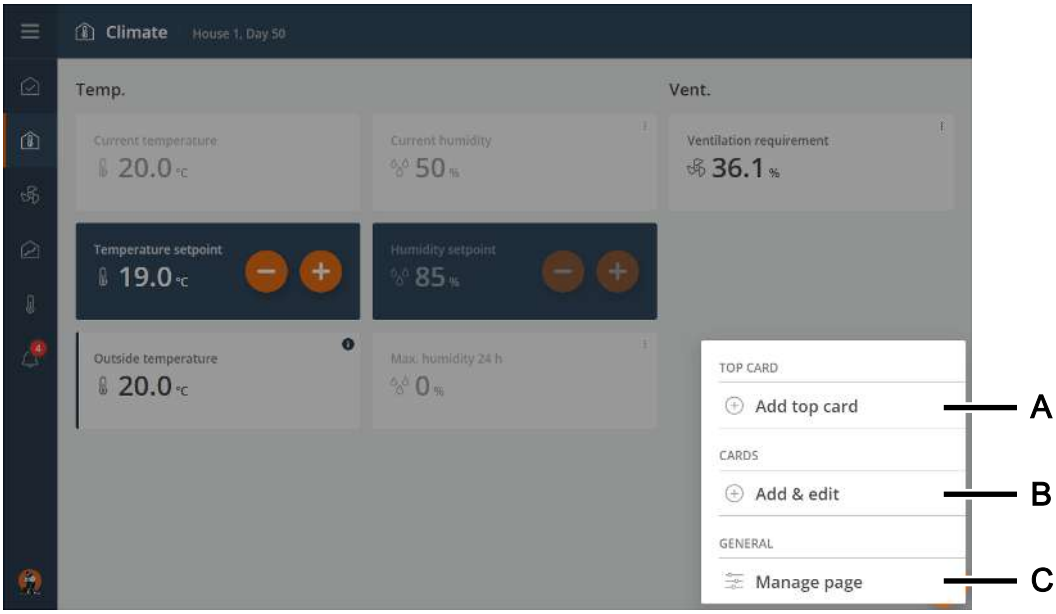
Feed consumption + **Add feed**

Provided that the functions are supported by the controller.

3.4.4 Edit pages



All pages can be edited by pressing the gear wheel in the bottom right corner.



A Select a top card for the page.

B Select the page content (cards).

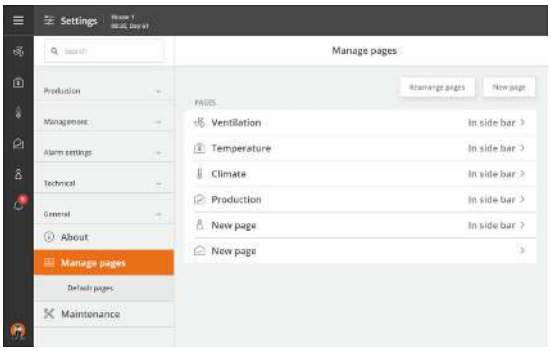
C Open the menu **Manage pages**, see also Creating pages [▶ 16].

3.5 Settings

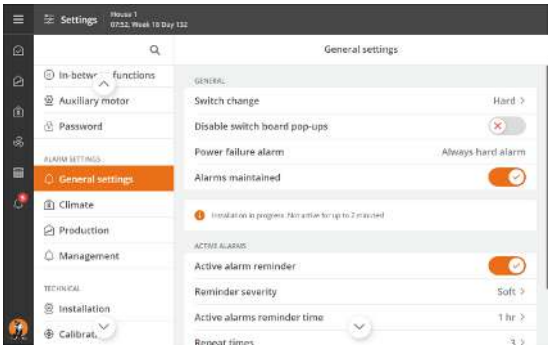
The settings menu is opened by pressing **Overview** and then **Settings** .

The menu is divided into the following sub-menus: **Climate, Production, Management, Alarm settings, Technical** and **General**.

The display will show the menu that was last opened.

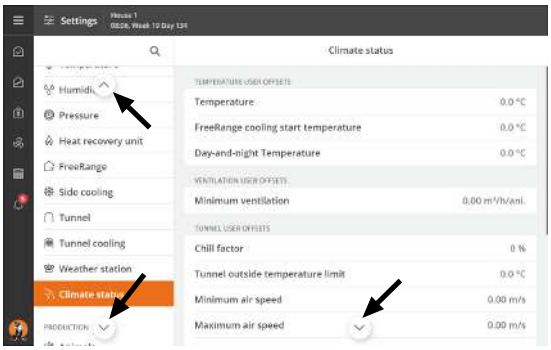


The menu opens to the left and settings are made to the right.



Activating/deactivating functions

Functions can be activated and deactivated by means of the toggle button.

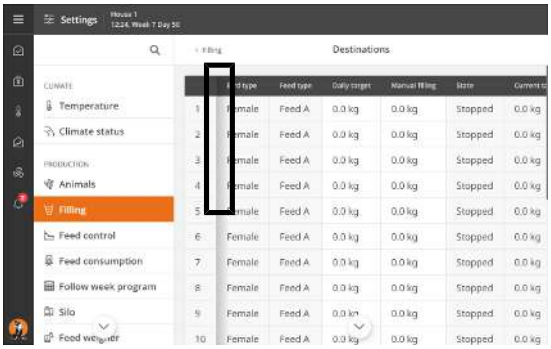


Scroll up/down

If the page or menu is higher than the display, you can scroll up/down.

The possibility to scroll is shown by the arrows in the display.

You can scroll by pressing the arrows or letting your finger slide across the display.



Scroll right/left

If the page or menu is wider than the display, you can scroll right/left.

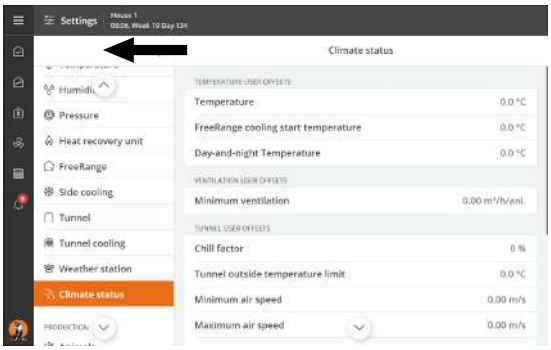
The option of scrolling right/left can be seen by the shadow in the first column in the menu.

You can scroll by letting your finger slide across the display.

3.6 Search in menus

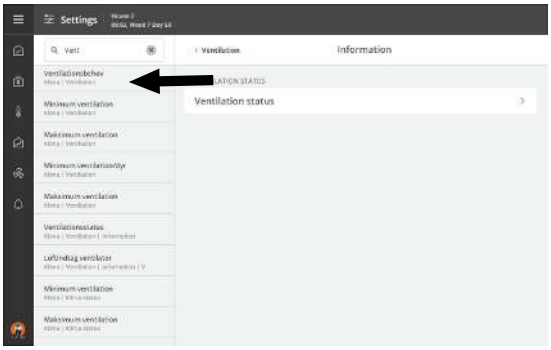
It is easy to search for the individual functions of the controller.

Open the page **Settings** by pressing .



Use the search field to the left to search in menus.

Enter at least 3 characters to search.



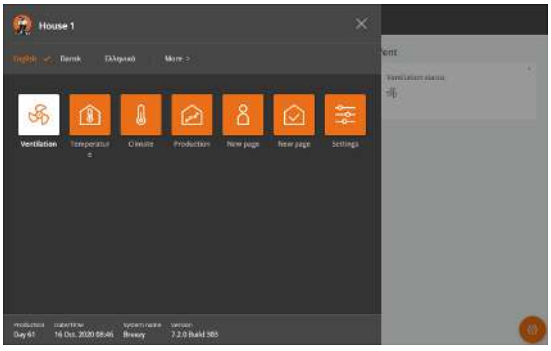
The result is shown under the search field to the left on the screen. The path for the individual menus is also shown, for example: **Climate | Ventilation | Information**.

Press a search result to go directly to that menu.

Press the X in search field to remove the search results again.

3.7 Selection of language

Press **Overview** to open the menu.



The selected language is shown with a tick mark.

If the requested language is not shown, press **More**.

Select the language from the list. Press **Confirm**.

Note that names of functions (such as 24-hour clocks, water meters), pages and programs that can be named by the user are not translated.

They have English names from the factory.

3.8 Password

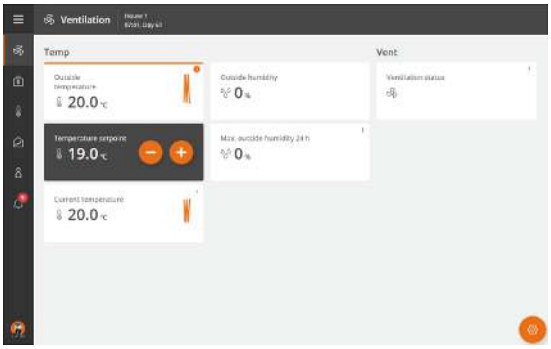
This section is only relevant to houses where the Password function is activated.

The controller can be protected against unauthorized operation with the use of passwords. This function can be activated in the menu | **Management | Use password**.

In order to gain access to changing a setting, you must enter a password that corresponds to the user level where the relevant function is located (Daily, Advanced and Service).

Enter the code.

After entering the password, the controller can be operated at the corresponding user level. After 10 minutes without operation, the user is automatically logged off.



Select a page after operation. After 1 minute, the controller will need the password entered again.

Activate the function **Use password for technical menu only** to make the controller require the **Service** password only when the user wants to change settings in the menus **Installation**, **Calibration** and **Service**.

You can change the password for each of the three user levels in the menu | **Management | 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
Daily view (without login)	Entering the number of animals Fine-tuning of temperature, humidity and air quality	
Daily	Daily: Changing of set values	1111
Advanced	Daily + advanced: Changing of curves and alarm settings Set the house controller in manual mode	2222
Service	Daily + advanced + service: Changing of settings under Technical menu	3333

Limitation of access to operation of the house controller

We recommend that you change the default passwords and subsequently change the password on a regular basis.

4 Climate

4.1 Basic

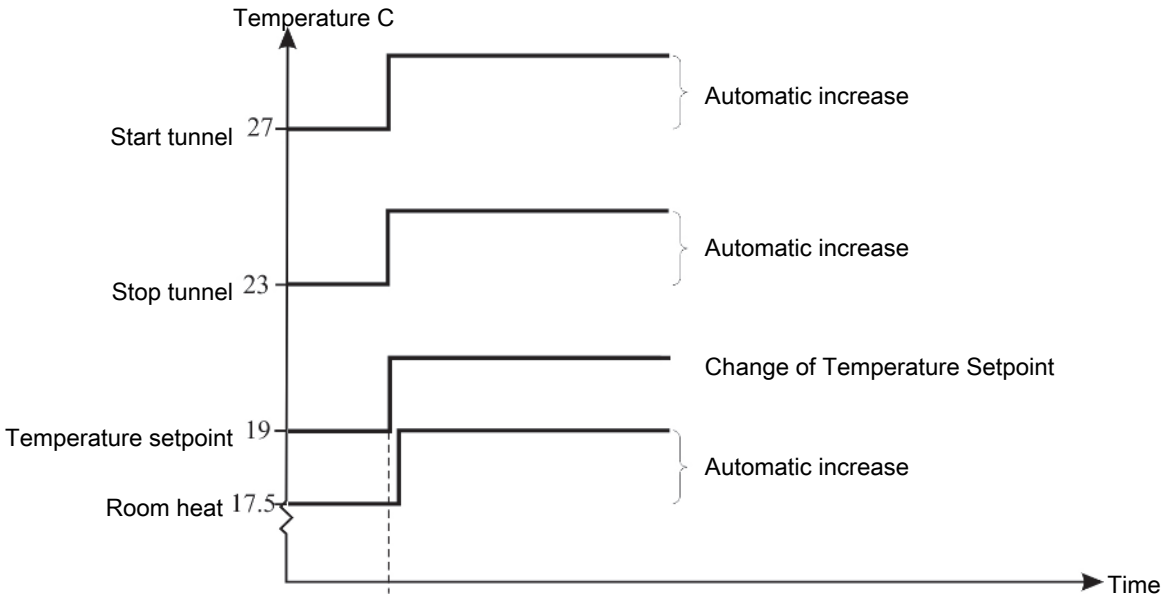
| Climate | Basic

Basic	Required temperature	Target temperature (temperature setpoint)
	Side mode	Side fans
		Side cooling
	Room heat control	Room heat temperature
		Room heat control
	Stand-alone heat control	Stand-alone heat
	Tunnel	Start tunnel temperature
		Stop tunnel temperature
		Tunnel control
	Timer	

The **Basic** menu gives you access to setting of each side and tunnel fan and each house and stand-alone heater by means of matrix menus.

The menu item **Target temperature** corresponds to **Temperature setpoint** in the **Temperature** menu. The settings of **House heater, Start Tunnel temperature, Stop Tunnel temperature** and **Tunnel control** depend on the **Target temperature**.

Thus, if you change **Target temp**. by 2 °C, the climate controller will automatically change these settings by a corresponding number of degrees.



Example of dependent temperature settings.

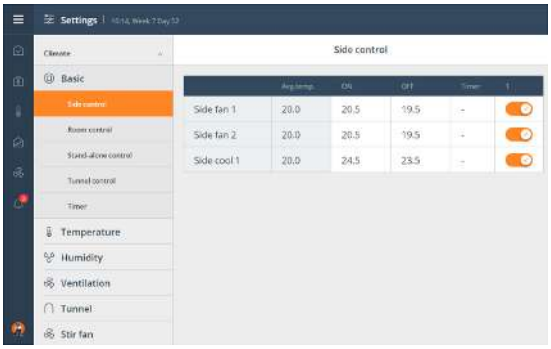
If you want to increase the **Target temperature** without increasing the dependent temperature settings, you must - after having adjusted the **Target temperature** - reduce the settings by the corresponding number of degrees.

4.1.1 Control matrix

Temp	Current temperature If more than one temperature sensors are installed, the value is shown as an average.

For each fan/heater you can specify the following:

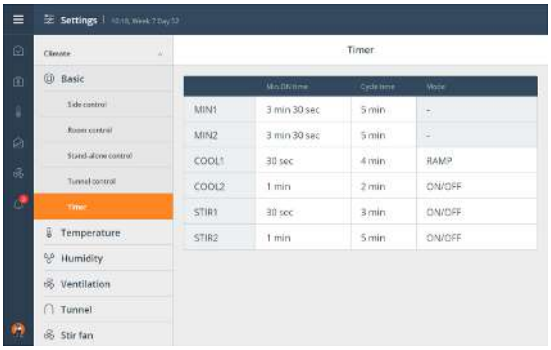
Temp	Current temperature If more than one temperature sensors are installed, the value is shown as an average.
ON	Temperature setpoint that activates fan or heater.
OFF	Temperature setpoint that stops fan or heater.
Timer	Select type of timer function for fan or heater.
1 – 8	Select according to which temperature sensors the individual fan or heater is to be controlled.



In **Side control** you can also set **Side cooling** (**S.cool**).

In **Tunnel control** you can also set **Tunnel cooling** (**T.cool**).

4.1.2 Select and set timer function



For each timer, you must indicate an Min. ON-time and a Cycle time and in which mode (**ON/OFF, Ramp**) the timer is to run.

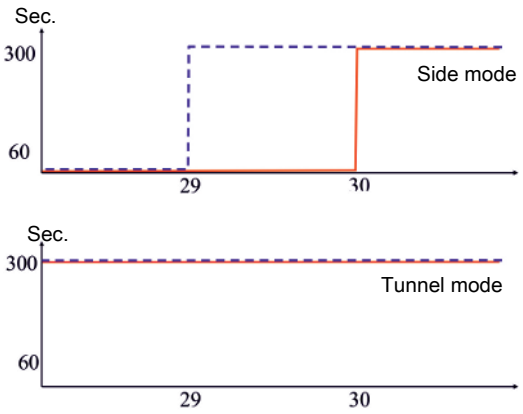
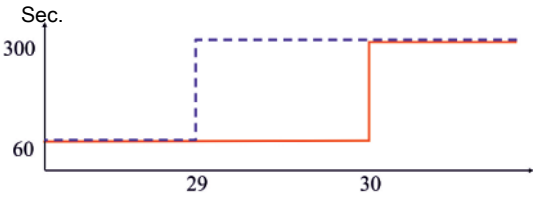
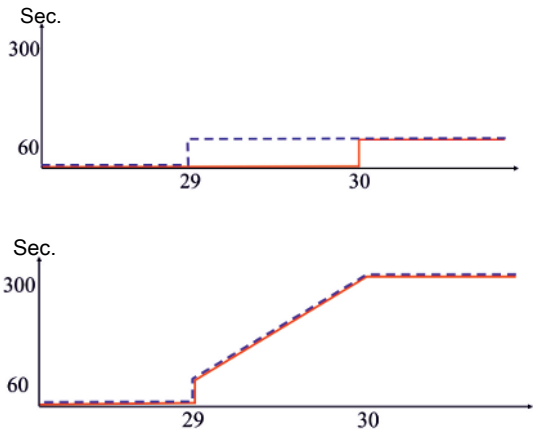
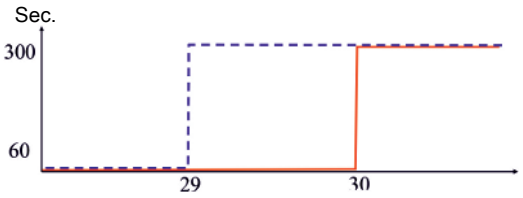
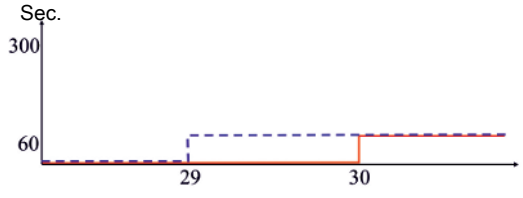
In each control matrix, you can choose between five timer functions (see the table).

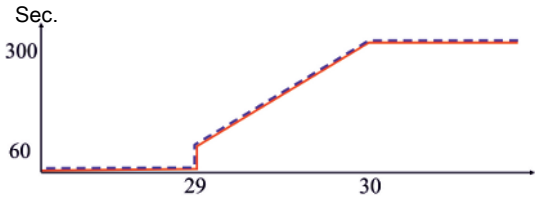
The graphs in the table corresponds to these settings:

ON-time	60 sec.
Cycle time	300 sec.
ON temperature	30 °C
OFF temperature	29 °C

The temperature decreases

The temperature increases

Name	Number	At	Type	
(blank line)	1	Side ventilation Tunnel vent. Side cooling Tunnel cooling Heating	Always ON	
Minimum timer	2	Side ventilation Tunnel vent.	ON/OFF	
Cooling timer	2	Side cooling Tunnel cooling	ON/OFF Ramp	
Tunnel ON	1	Side ventilation Tunnel vent. Side cooling Tunnel cooling House heaters Stand-alone heaters	ON/OFF	
Stir fan timer	2	Side ventilation Tunnel vent.	ON/OFF Ramp	

Name	Number	At	Type	
				

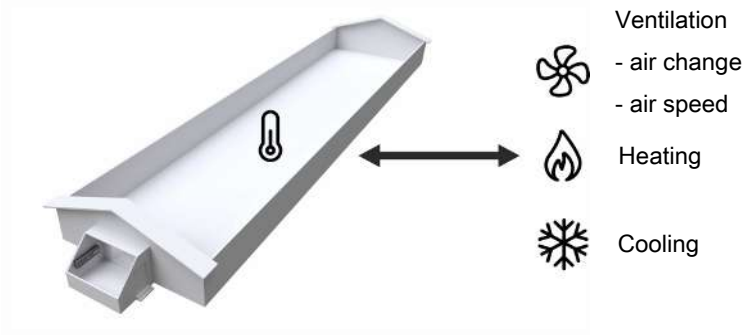
Setting options for timer functions.

The house can be split in up to three grow zones. The house controller will then activate the grow zones according to the size and age of the animals. See the *Technical Manual* for more information.

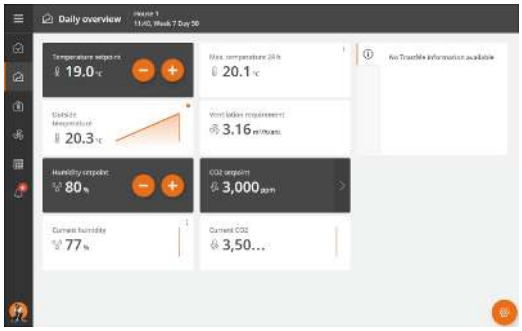
4.2 Temperature

The climate controller adjusts the inside temperature according to the **Temperature setpoint**.

When the inside temperature is too high, the controller 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; the heating level is increased if needed.



The most important temperature values can be seen and adjusted on the page types Climate and House view.



The following sections describe the functions and setting options available in the temperature menu.

It is possible to search for functions via the search function in the Settings menu. See section Search in menus [▶ 20].

Humidity to stop side cooling	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, the controller automatically disconnects cooling when the house humidity exceeds **Humidity to stop side cooling** (normally 75-85%).

4.2.1 Temperature menu

| Climate | Temperature

Setpoints	Temperature setpoint
	Humidity to stop side cooling
	Humidity to stop tunnel cooling

Info	Inside temperature	
	Outside temperature	
	Temperature sensors	
	Min. /max. temperature	Max. 24 hours
		Max. 24 h time
		Min. 24 hours
		Min. 24 h time
	Min./max. temperature outside	Outside temperature min.
		Outside temperature min. time
		Outside temperature max.
		Outside temperature max. time

4.3 Humidity

This section is relevant only to houses with a humidity sensor.

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

Climate | Humidity	
Humidity	Display of current humidity level.
Outside humidity	View of the current outside humidity.
Humidity setpoint	Setting the upper air humidity limit.
Min. humidity 24 h	The lowest humidity during the last 24 hours and the time it occurred.
Max. humidity 24 h	The highest humidity during the last 24 hours and the time it occurred.
Min. outside humidity 24 h	The lowest outside humidity during the last 24 hours and the time it occurred.
Max. outside humidity 24 h	The highest outside humidity during the last 24 hours and the time it occurred.
Humidity sensor	View of the humidity of the individual humidity sensor.

4.3.1 Humidity menu

 **| Climate | Humidity**

Status	Humidity	
	Outside humidity	
Setpoints	Humidity setpoint	
Information	Information	Min. humidity 24 h
		Max. humidity 24 h
		Min. outside humidity 24 h
		Max. outside humidity 24 h
		Humidity sensor

4.4 CO2

This section is relevant only to houses with a CO_2sensor.

Using a CO_2 sensor, the current CO_2 level in the livestock house can be monitored and used as an indicator of the air quality.

Climate | CO2	
CO2	Current CO_2-level.

4.4.1 CO2 menu

| Climate | CO2

CO2	CO2	

4.5 NH3

This section is relevant only to houses with a NH_3sensor.

Using an NH_3 sensor, the current NH_3 level (ammonia) in the livestock house can be monitored and used as an indicator of air quality.

Climate | NH3	
NH3	Display of current NH_3 level.

4.5.1 NH3 menu

| Climate | NH3

NH3	NH3	

4.6 Pressure

This section is relevant only to houses with pressure control.

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

The following sections describe the functions and setting options available in the pressure menu.

It is possible to search for functions via the search function in the Settings menu. See section Search in menus [▶ 20].

Climate | Pressure	
Pressure	Display of the current pressure level in the house.
Pressure setpoint	Setting of the pressure level.
Active in side mode	Connection and disconnection of pressure control at side ventilation.
Active in tunnel mode	Connection and disconnection of pressure control at tunnel ventilation.

Pressure inlet requirement	Percentage indication of how much the flaps must be open to maintain **Pressure setpoint**.

4.6.1 Pressure menu for negative pressure

 **| Climate | Pressure**

Status	Pressure
Setpoints	Pressure setpoint
Settings	Active in side mode
	Active in tunnel mode
Information	Pressure control stopped
	Pressure inlet requirement

4.7 Ventilation

4.7.1 Ventilation settings

Reduced minimum ventilation

In houses where a high minimum ventilation is required to avoid high CO2 and ammonia levels, it may be relevant to use the **Reduced minimum ventilation function**. This function allows the minimum ventilation to follow the outside temperature.

Climate | Ventilation | Minimum ventilation settings | Reduced minimum ventilation

Start at outside temperature	Setting the outside temperature that will activate a reduction of the minimum ventilation.
Maximum reduction at outside temperature	Setting the outside temperature where the minimum ventilation is not further reduced.
Reduce minimum ventilation to	Setting the minimum ventilation in per cent.

This function is an alternative to reducing the minimum ventilation via a CO2 sensor. However, if CO2 minimum ventilation is also used, it will take precedence as long as the CO2 level determines the ventilation requirement.

Also see the Technical Manual.

4.7.2 Ventilation status

The ventilation of the house consists of an air inlet and an outlets. Apart from supplying fresh air to the the house, ventilation is to remove humidity and excess heat, if any.

The controller continuously adjusts the ventilation according to a calculation of the ventilation requirement. Thus, the controller will increase or limit ventilation according to whether the inside temperature and air humidity are too high or too low.

Climate | Ventilation | Info

Ventilation status	Status of air inlet and air outlet.

Shutter position

The flap position is a percentage indication of how much the flaps of both air inlet and air outlet are open. If you are in doubt about the actual ventilation output, you can compare the reading of the Ventilation status in the ventilation menu with the output that you can actually observe in the the house. The percentage indications are relevant particularly in connection with troubleshooting.

4.7.3 Ventilation menu

| Climate | Ventilation

	Reduced minimum ventilation	Start at outside temperature
		Max. reduction at this temperature
		Reduce minimum ventilation to
Info	Ventilation status	Side inlet
		Side fans
	Tunnel status	Tunnel inlet
		Tunnel fan status

4.8 Tunnel

This section is relevant only to houses with tunnel ventilation.

Tunnel ventilation is used at high temperatures. The air is let in through a tunnel opening at one end of the livestock house, and the air is exhausted through a number of wall fans at the other end of the house. This makes the air move quickly in a lengthwise direction in the the house and the air therefore feels cooler.

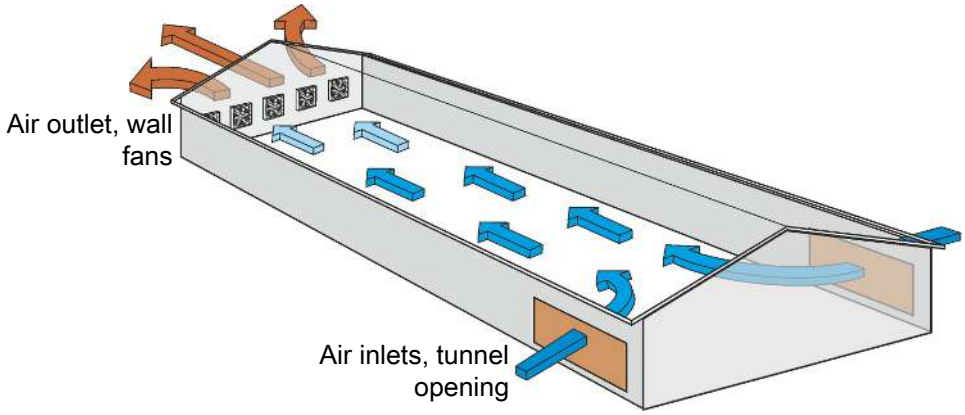


Figure 1: Tunnel ventilation principle

**Climate	Tunnel**	
Minimum air speed	Setting of lowest air speed acceptable in tunnel mode. If the speed is too low, the temperature difference between the two ends of the house will be too high. Therefore, you must set a lower limit for the air speed in tunnel mode
Tunnel status	Menu for status of air inlet and exhaust steps.

4.8.1 Tunnel menu

| Climate | Tunnel

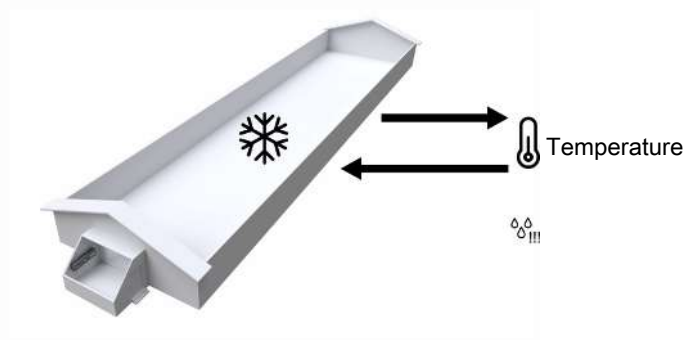
Setpoints	Minimum air speed		
Information	Information	Tunnel status	Tunnel inlet
			Tunnel fan status

4.9 Tunnel cooling

This section is relevant only to houses with tunnel cooling.

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, the controller automatically disconnects cooling when the house humidity exceeds **Humidity to stop tunnel cooling** (normally 75-85%, factory setting: 85 %).

The following sections describe the functions and setting options available in the tunnel cooling menu.

It is possible to search for functions via the search function in the Settings menu. See section Search in menus [▶ 20].

4.9.1 Adaptive tunnel cooling

From the factory the control is set to adaptive control. This means that the house controller constantly adapts the regulation to the current conditions. Thus, there is less need for the user to make manual changes to settings.

Climate | Tunnel cooling	
Adaptive reaction	Setting how fast the adjustment should react (**Fast/Medium/Slow**). It is not necessary to change the factory setting **Medium** unless the adjustment reacts too slowly (select **Fast**) or too fast (select **Slow**). This will depend on the system in question. Also, see the Adaptive control section of the Technical Manual.

4.9.2 Tunnel cooling menu

| Climate | Tunnel cooling

Setpoints	Humidity to stop tunnel cooling	
	Cooling is gradually removed 10% before humidity limit	
Settings	Adaptive reaction	Fast
		Medium
		Slow
Information	Tunnel cooling temperature	

Climate | Tunnel cooling | Information	
Tunnel cooling temperature	The temperature on the inside of the cooling system. The temperature is used for alarm in connection with cooling system failure. The function disconnects cooling if the temperature falls below the outside temperature limit in the chill curve (cf. the age of the animals). This way small animals will not be exposed to cold air.

The combination of a high housing temperature and high air humidity can be life-threatening to the animals. Therefore, tunnel cooling should be disconnected when the air humidity is very high since cooling will increase air humidity further.

4.10 Stir fan

This section is relevant only to houses with stir fans.

A stir fan improves the circulation of air and thus provides a more uniform temperature in the house.

The controller can regulate up to four stir fans at a time.

Climate | Stir fan	
Start level	The stir fans are only active within designated ventilation levels.
Stop level	
Mode	Each stir fan can be regulated in connection with a heat source, one or two temperature sensors or a 24-hour clock.

4.10.1 Regulation via 24-hour clock

The stir fan operates according to a set ON/OFF time and the time setting as to when it should start and stop.

Climate | Stir fan	
Start time	Setting the time for the stir fan to be active.
Stop time	Setting the time for the stir fan not to be active.
ON-time	Setting the active period for the stir fan.
OFF-time	Setting the period during which the stir fan does not run while the function is active.
Activate override control	Selecting if it should be possible for the user to start and stop the stir fan manually.
Override relay status	Manual activation or deactivation of the stir fan - for example, to increase air movement shortly.

Start time: 14:00 hh:mm

Stop time: 16:00 hh:mm

ON time: 00:05:00 hh:mm:ss

OFF time: 00:05:00 hh:mm:ss

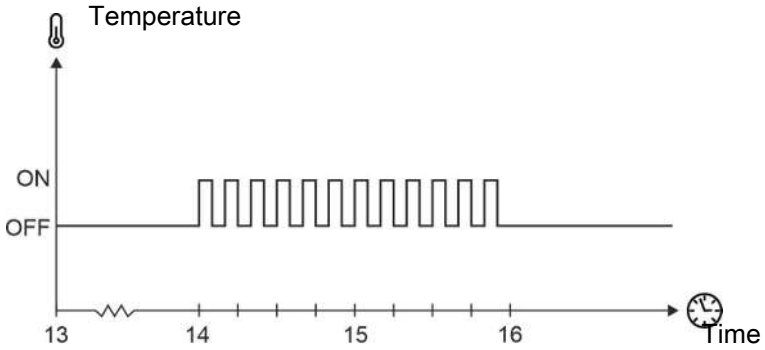


Figure 2: 24-hour clock control

4.10.2 Regulation via temperature

When a stir fan is operating in relation to the temperature in the house, set which sensor the controller should control according to and the temperature activating the stir fan.

Installation with relay (ON/OFF)

A relay-controlled stir fan can be regulated based on a measured temperature in the house (1 temperature) or based on a difference between two locations in the house (Differential temperature). When active, it will alternately run and be stopped for short periods.

Climate | Stir fan	
Mode	Select if the stir fan should be regulated by temperature or by a 24-hour clock.
Start at ventilation/ Stop at ventilation	Setting the active ventilation area for the stir fan to be active. When the ventilation requirement is above and below this level, the stir fan is not active. Not used in livestock houses with only natural ventilation.
Control	Select control of the stir fan. One temperature: The control takes place according to an offset to the inside temperature. Difference temperature: The control takes place according to the temperature difference between the selected sensors.
Temperature sensor selection	Selecting which temperature sensors should be used for controlling the stir fan.
ON-time	Setting the active period for the stir fan.
OFF-time	Setting the period during which the stir fan does not run while the function is active.
Activate override control	Selecting if it should be possible for the user to start and stop the stir fan manually.
Override relay status	Manual activation or deactivation of the stir fan - for example, to increase air movement shortly. Remember to deactivate the function again.

1 temperature sensor	
Start temperature offset	Setting an offset to Temperature setpoint. The stir fan is activated when the inside temperature exceeds **Temperature setpoint** + **Start temperature offset**.

	At high temperatures, a stir fan can be used to create the experience of cooling via air speed.
Stop temperature natural	Setting of the temperature where the stir fan stops.
Stop temperature side / tunnel	In livestock houses that also have side/tunnel ventilation. Display of the temperature where the stir fan stops at side and tunnel ventilation.

Differential temperature	
Temperature difference activation	Setting the temperature difference between the 2 sensors. The stir fan is activated when the temperature difference exceeds the setting. In case of temperature differences in the house, a stir fan can be used to compensate for temperature differences between colder and warmer areas.

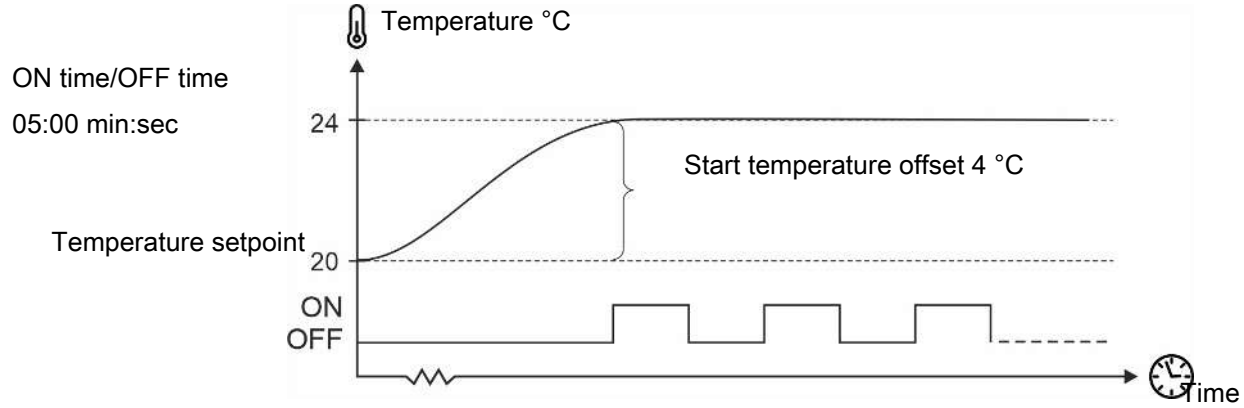


Figure 3: Relay-controlled stir fan (ON/OFF) controlled by temperature

Installation with 0-10V (variable)

A 0-10 V controlled stir fan can be regulated based on a measured temperature in the house. It variates in speed relative to the temperature.

Climate | Stir fan | Variable fan settings	
Start at ventilation/ Stop at ventilation	Setting the active ventilation area for the stir fan to be active. When the ventilation requirement is above and below this level, the stir fan is not active. Not used in livestock houses with only natural ventilation.
Minimum speed	Setting the speed at which the stir fan starts.
Maximum speed	Setting the maximum speed at which the stir fan is running.
Temperature sensor selection	Selecting which temperature sensor to use for the control.
Start temperature offset	At high temperatures, a stir fan can be used to create the experience of cooling via air speed. Setting an offset to Temperature setpoint. The offset can be set as a positive or negative value. Positive value: The stir fan starts at an excess temperature to **Temperature setpoint**. E.g. 15 °C **+5 °C** = 20 °C. Negative value: The stir fan starts at a temperature below **Temperature setpoint**. E.g. 15 °C **-5 °C** = 10 °C.
Stop temperature natural	Setting the temperature that stops the stir fan at natural ventilation.

Stop temperature side / tunnel	In livestock houses that also have side/tunnel ventilation. Display of the temperature where the stir fan stops at side and tunnel ventilation.
Variable temperature range	Setting an inside temperature range where the stir fan will run between minimum and maximum speed.
Activate override control	Manual activation of the stir fan. It will run at the speed set in **Override speed**. Remember to deactivate the function again.
Override speed	Setting the speed that the stir fan must run at when in manual mode.

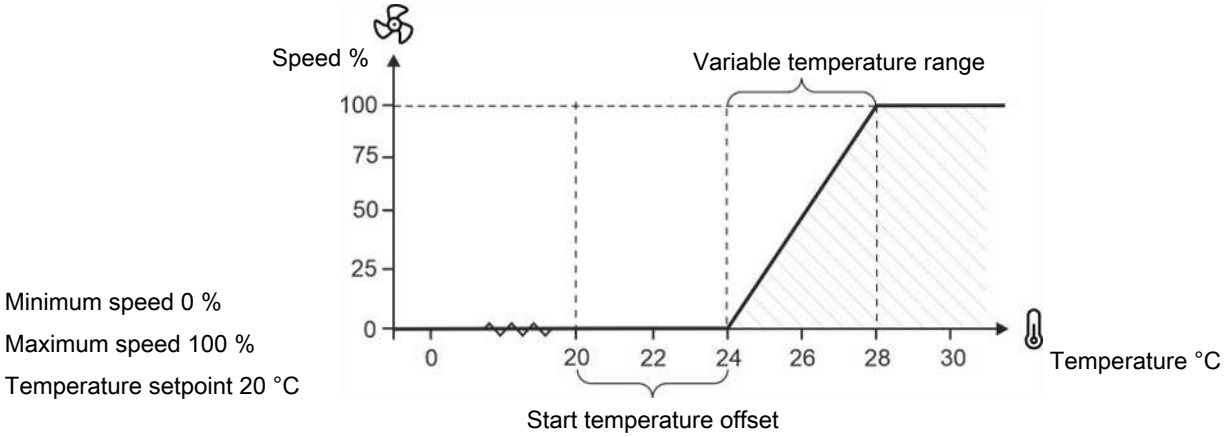


Figure 4: 0-10 V controlled stir fan with a positive Start temperature offset.

Installation of 0-10V and reverse relay (variable)

An 0-10V-controlled stir fan with reverse relay works as described above but can also reverse the rotation of the stir fan.

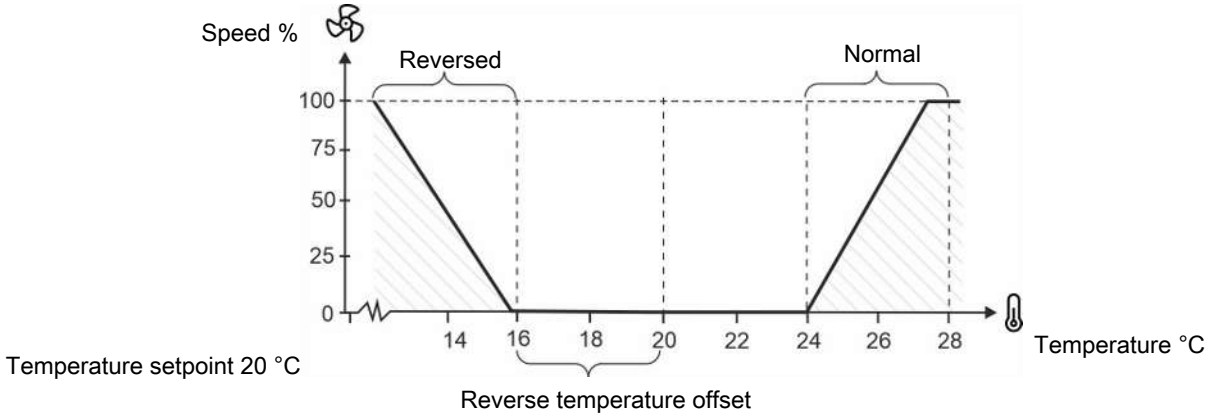


Figure 5: 0-10 V-controlled stir fan with reverse relay

Climate | Stir fan	
Stir fan 1 direction	Display of direction of rotation (**Normal/Reverse**) for the stir fan (at reverse relay).
Reverse temperature offset	Setting an offset to Temperature setpoint. When the inside temperature deviates from the temperature setpoint, the stir fan is activated. The offset can be set to a negative value so the air direction is reversed at falling inside temperature.
Override direction	Select if the stir fan must reverse in manual mode.

4.10.3 Regulation via heat source

When the stir fan is to operate in connection with heat sources, you must opt for a way to control and set the start and stop time of the fan

Control:

With heater: The stir fan runs while the heat source supplies heat, but starts and stops with a set time delay (Start delay/ Stop delay).

After heater: The stir fan runs after the heat source has supplied heat. It starts with a time delay (Start delay) and runs for a set period of time (ON time).

This function is active only when heating is required.

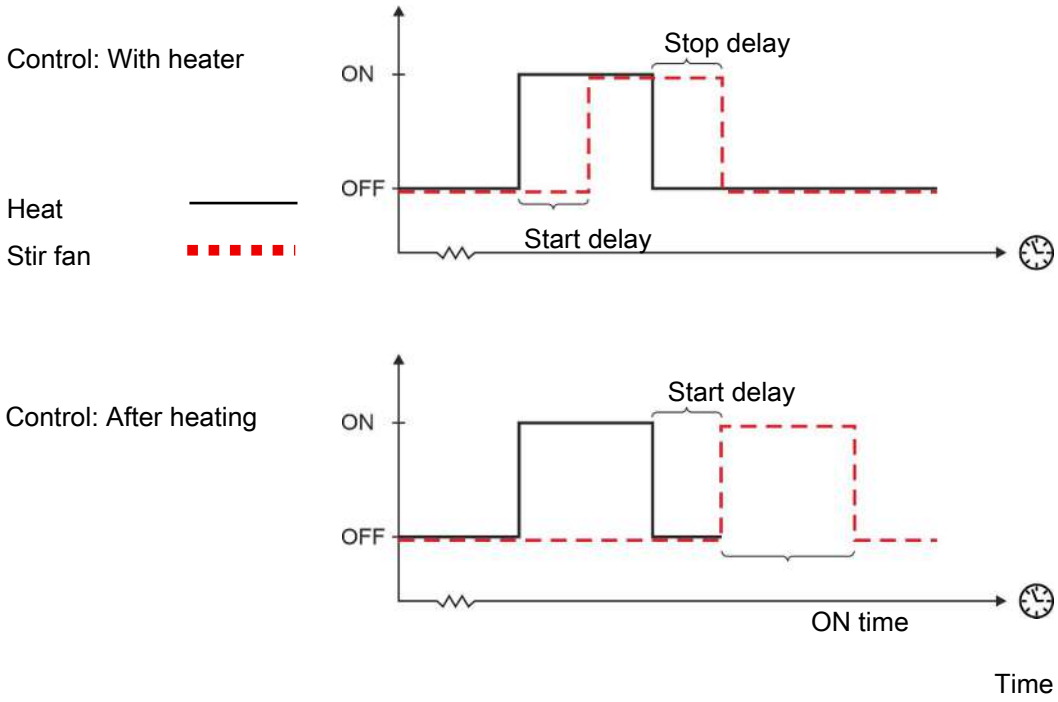


Figure 6: Control with heater

4.10.4 Stir fan menu

	Climate	Stir fan	Only applies to
		ON/OFF	
ON/OFF Fan Status			
Current temperature			Control using temperature
Level	Start level		Flex
	Stop level		
ON/OFF fan settings			
Mode	24-hour clock		
	Temperature		
	Heating		
24-hour clock	Start time		
	Stop time		
	ON-time		
	OFF-time		
	Activate override control		
	Override relay status		
Temperature	Control		
	Temperature sensor selection		
	Start temperature offset		
	ON-time		
	OFF-time		
	Activate override control		
	Override relay status		
Heating	Control by heater no.		
	Control		
	Start delay		
	Stop delay		
	Activate override control		
	Override relay status		
		0-10 V	
Variable fan state			
Current temperature			
Level	Start level		Flex
	Stop level		

Variable fan settings	Minimum speed
	Maximum speed
	Temperature sensor selection
	Start temperature offset
	Variable temperature range
	Activate override control
	Override relay status

4.11 Climate status

 **| Climate | Climate status**

TEMPERATURE USER OFFSETS
OTHER USER OFFSETS
CONTROL PRINCIPLES

Climate | Climate status	
User offsets	View of the current user offset for standard curve values.

5 Management

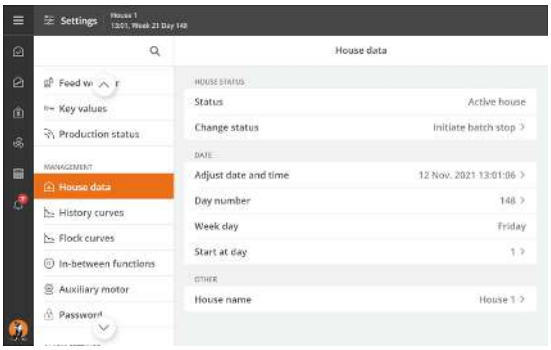
5.1 House data

5.1.1 House status Active house - Empty house

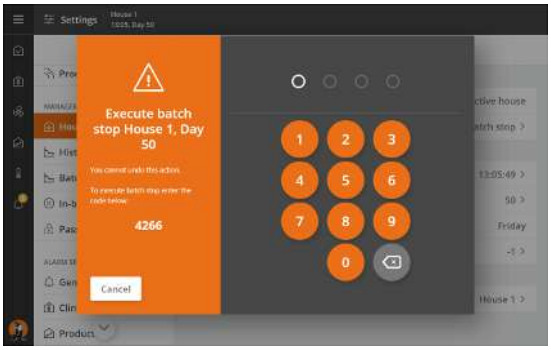
The controller has 2 different modes of operation, one for when there are animals in the house and one for when the house is empty.

With animals in the house – **Active house**. Control takes place according to the automatic settings and day programs, the day number counts upwards and all alarms are active.

Without animals in the house – **Empty house**. Control takes place according to the in-between settings **Empty house**. Only active alarms are alarms for CAN communication and temperature surveillance for **Empty house.**



Select the menu  **Management | House data | Change status** to change the house status to **Empty house** (**Initiate batch stop**) or **Active house** (**Initiate batch start**).



Enter the displayed code to change the house status.

The change takes place immediately when the fourth digit is entered.

Active house

It may be an advantage to change the status to Active house the day before stocking the animals. This way the controller has time to adapt the climate to the needs of the animals and to feed in the house.

The day number then switches to day 0, and the controller operates in accordance with the automatic settings.

Empty house

The status should not be changed to **Empty house** until the house has been depopulated.

Then the controller disconnects the adjustment and controls according to the in-between function **Empty house**. This function protects the animals in case a house is set to **Empty house** by mistake.

If the house is to be completely closed, the settings of the in-between function **Empty house** must be reset. See the section Empty house [▶ 46].

When the house status is changed to **Initiate batch stop**, the controller resets all changes made in curves and settings.

The function **Change status** can also be added as a card to a page, see the section Edit pages [▶ 18] for information about setting up pages.

5.1.2 Settings

Management | House data	
Status	Display of status (**Active house**/ **Empty house**).
Change status	Changing the house status by entering a unique code, which is shown in the display.
Stocked animals	Setting number of animals.
Active grow zone (Only broilers and breeders, Basic + Flex)	The house can be divided into 3 zones; grow zones. Depending on the age of the animals, either 1/3, 2/3 of the house or the entire livestock house is used as grow zone. The controller controls the climate and production in: • 1/3 of the livestock house as one grow zone • 2/3 of the livestock house as 2 grow zones • the entire of the livestock house as 3 grow zones
Adjust date and time	Setting of current date and time. Correct setting of the clock is important, both as regards several control functions and as regards the registration of alarms. Thus, all programs in the controller use both date and time and day number. The clock will not stop in the event of a power failure. **Summer and winter time** There is no automatic adaptation in relation to summer and winter time, as some animal types are very sensitive to changes in their circadian rhythm. If you want the controller to follow the local time for summer and winter time, you must therefore manually change the time setting by +/- 1 hour.
Day number	Setting of day number. The at midnight the day number counts up 1 for every 24 hours that pass after the house has been set to active house. Select whether the day number should show the time since batch start or actual age of the animals. When the actual age of the animals is required, the day number must be adjusted until it matches the life expectancy. Day number can be set as low as -9 so the climate and production controller can control the preheating of the house prior to the animals being stocked.
Week number	Display of current week number. Week 0: Day 0 – 6 Week 1: Day 7 – 13 . . Week 15: Day 105 – 111 Week 16: Day 112 - 118
Week day	Display of week day.
Start at day	Setting of the day on which the batch shall start.
House name	Setting of house name. When the house controller is integrated in a LAN network, it is important that each livestock house has a unique name. The house name is transferred through the network and the livestock house should therefore be identifiable based on the name. Set up a plan for the naming of all controllers connected to the network.

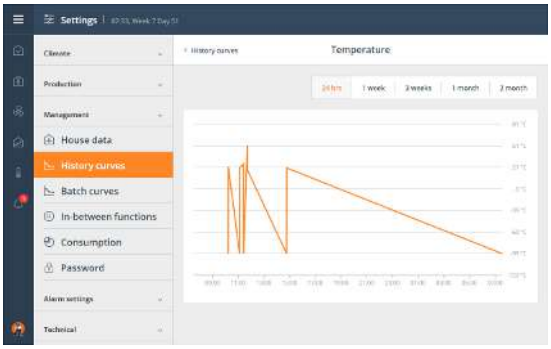
Service Access activated	Information that the climate and production controller is being remotely controlled via the farm management program BigFarmNet Manager. When Service Access is activated, the icon for the user menu changes to red in the main menu.

5.1.3 House data menu

	Management | House data		**Only applies to**
House status	Status	Active house/Empty house	
	Change status	Initiate batch start	
		Initiate batch stop	
Grow zone	Active grow zone		Broiler, breeder
			Basic + Flex
	Batch status front/rear		Broiler, breeder
			Basic + Flex
Date	Adjust date and time		
	Day number		
	Week day		
	Start at day		
Other	House name		
	Remote Access Activated		

5.2 History curves

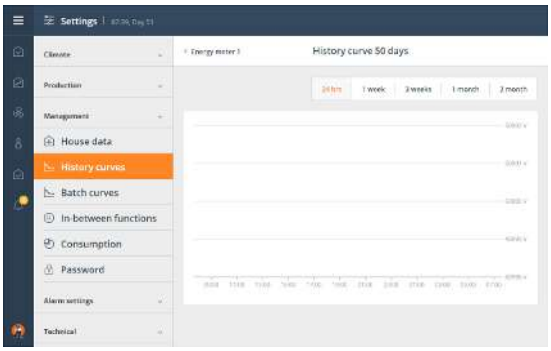
	Management | History curves	**Only applies to**
History curves	Climate	Only Climate controllers and Climate and Production controllers
	Production	Only Production controllers and Climate and Production controllers
	Power monitoring	Only Climate controllers and Climate and Production controllers



A total overview of the climate development can be seen from the history curves which can show the values at different time intervals from 24 hours to 2 months.

Depending on the type and setup of the house controller, the following history curves for climate may be available:

- Temperature
- Humidity
- Outside humidity
- Outside temperature
- Auxiliary sensors
- Ventilation
- …



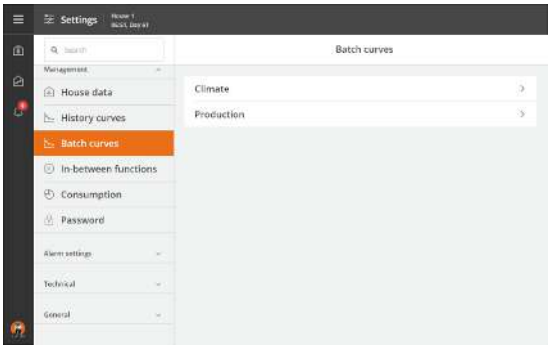
The history curves for monitoring electricity show current consumption calculated over different periods.

5.3 Batch curves

This section applies only to houses with batch production.

	Only applies to
Management | Batch curves	
Batch curves	Climate	Only Climate controllers and Climate and Production controllers
	Production	Only Production controllers and Climate and Production controllers

Together with other information, the curve settings form the basis of the controller's calculation of climate regulation.



The controller can adjust automatically according to the animals' age.

When the house controller is connected to a network with the management program BigFarmNet Manager curves can also be changed via BigFarmNet.

Depending on the type and setup of the controller, the following batch curves may be available:

- Inside temperature
- Heat offset temperature
- Stand-alone heater temperature
- Humidity
- Minimum ventilation
- Maximum ventilation
- …

5.3.1 Setting curves

Use the button **Add activity** to add the required curve points.

For each curve set:

- a day number for each of the required curve points.
- the required value of the function of each of the curve points.

See also the section User offsets.

Changes are carried out in the menu Climate | Humidity

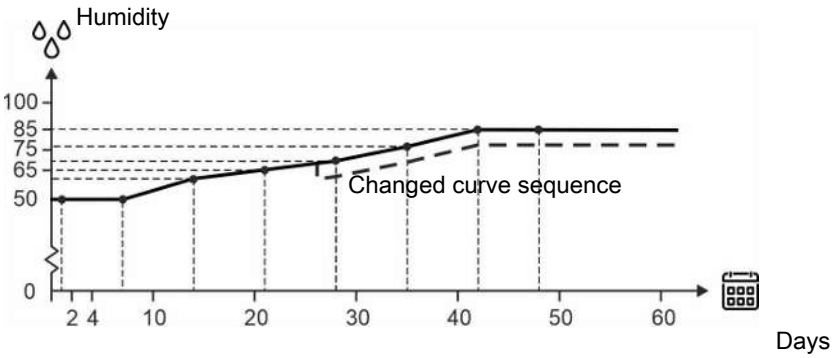


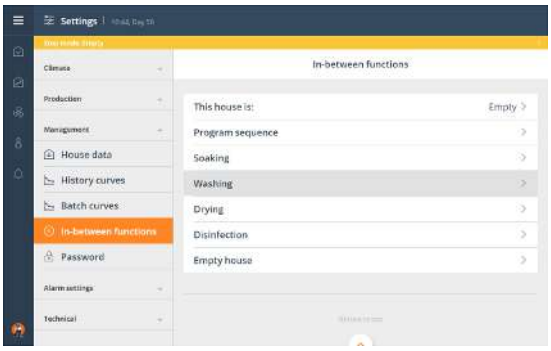
Figure 7: Curve for air humidity

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

Changes in settings can be seen in the menu Climate | Climate status.

5.4 In-between functions

The in-between functions are designed partly to facilitate the activities which you must carry out in the house to clean it, and partly to ensure the air change and temperature in the house while it is empty.



Status

The climate controller can activate the in-between functions only when the status is **Empty house** (in the menu **Management/ House data/ Status**).

The menu is only visible when status is **Empty house**.

When the time for an in-between function is up, the controller will again regulate according to the settings for **Empty house**.

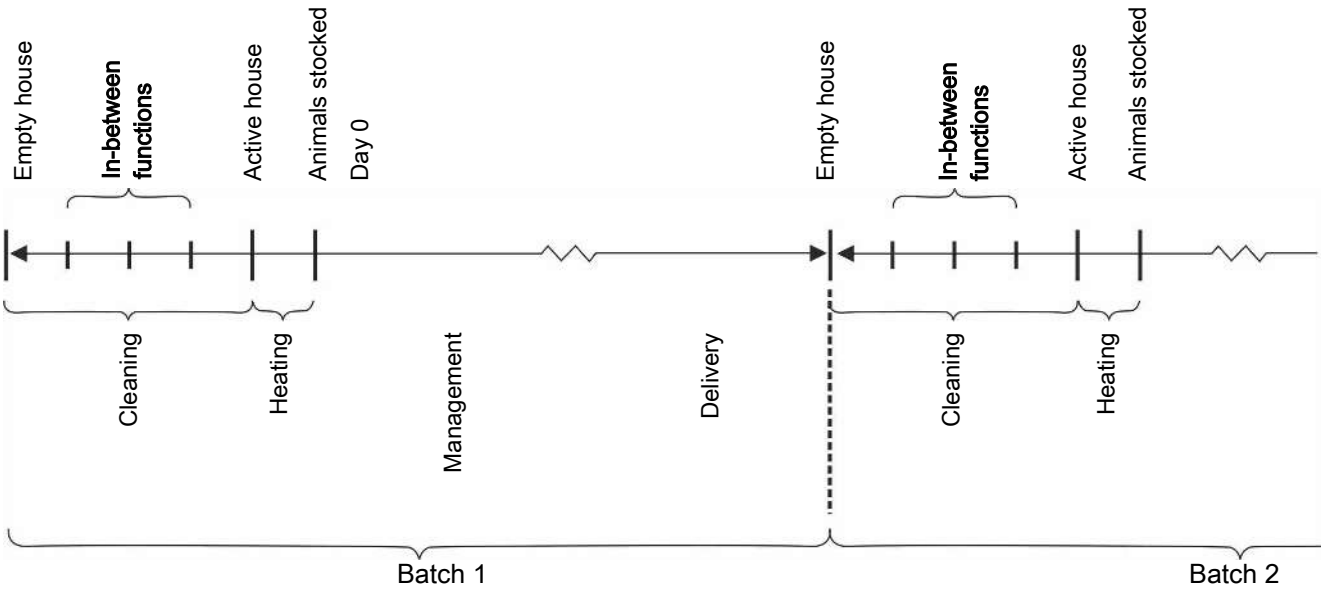


Figure 8: In-between function at batch production

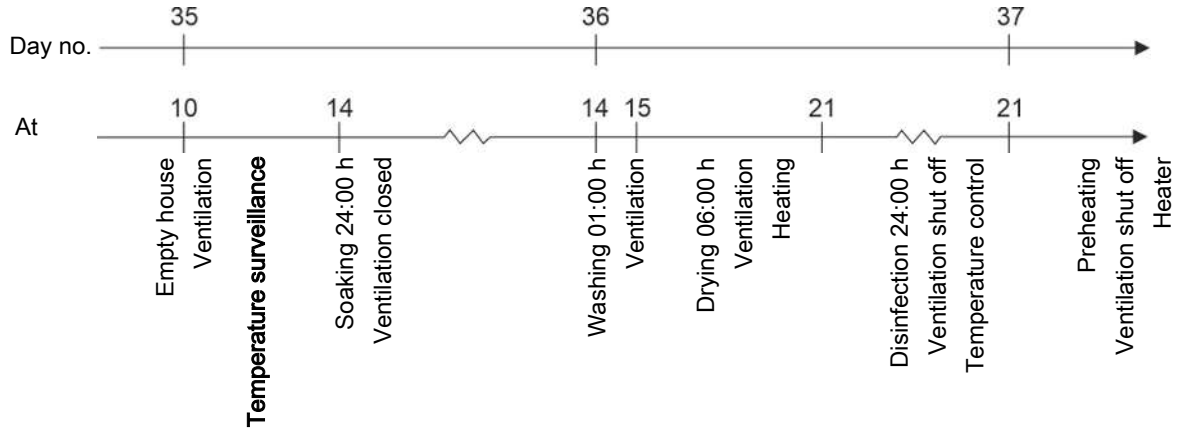
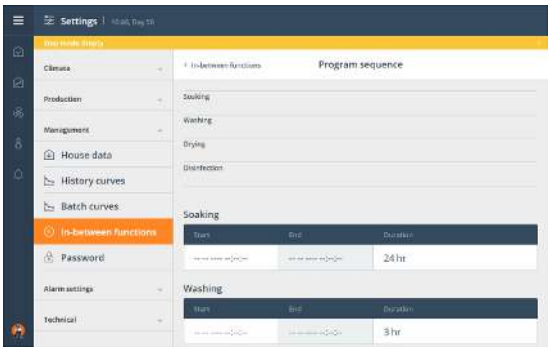


Figure 9: Sequence of in-between functions



Program sequence

With time control, each in-between function can be set to start at a specified time. It is thus possible to set a total sequence for the in-between functions.

Washing

While washing the house manually, ventilation must run again to start changing the air in the house.

Drying

Drying is a combination of ventilation and heat supply. The more heat is supplied to the the house, the faster it dries.

Heating can be supplied as room heating or floor heating.

A desired temperature is set when room heating is used.

When floor heating is used, the percentage the floor heating system will operate at must be set. The floor heating stops when the inside temperature exceeds the temperature that has been set.

Disinfection

Disinfection is carried out manually by adding disinfectant to the water.

A certain temperature must be maintained in the house during disinfection in order for the disinfectant to have optimal effect (often over 20 °C).

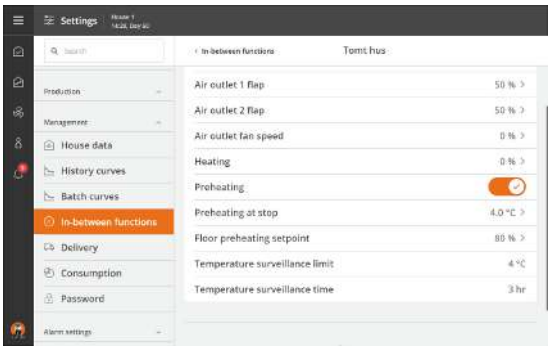
The house controller shuts off the ventilation system and supplies heat as needed to maintain the correct temperature for disinfection.

Heating can be supplied as room heating or floor heating.

A desired temperature is set when room heating is used.

When floor heating is used, the percentage the floor heating system will operate at must be set. The floor heating stops when the inside temperature exceeds the temperature that has been set.

5.4.1 Empty house



Empty house

When batch status is **Empty house** (in the **Management | House data** menu), the house controller will regulate according to the settings for **Empty house** (set in the **In-between functions** 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 to **Empty house** by mistake.

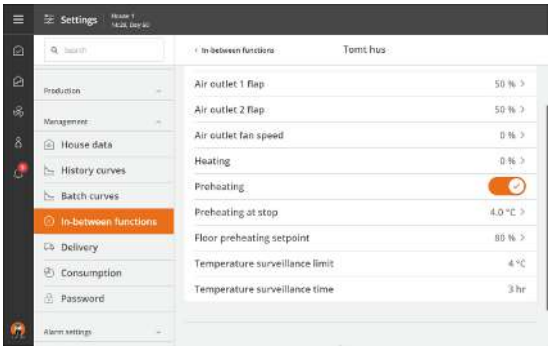
When status is **Empty house**, all alarm functions - except temperature surveillance at empty house - are disconnected. See also the section Temperature surveillance [▶ 48].

When batch status is **Empty house**, the house controller disables all automatic regulations and operates according to the settings in the **Empty house** in-between function.

5.4.2 Settings

Management | In-between functions	
The house is	Menu for selection of in-between function
Side inlet	Setting the flap opening for side air inlet.
Tunnel inlet	Setting of the tunnel opening (tunnel).
Level	Setting the ventilation level.
Air outlet 1 flap	Setting the flap opening for air outlet. When the house is in Empty house, this function is typically used to open the stepless flap.
Air outlet fan speed	Setting of speed control for air outlet. When the the house is in Empty house, this function is typically used to turn off the stepless fan.
Washing time	Setting the active period for washing.
Heating	Setting the heating in connection with the Drying function.
Drying time	Setting the active period for drying.
Disinfection time	Setting the active period for disinfection.
Temperature	Setting of the temperature it needs to be in the house during disinfection.

5.4.3 Preheating



Preheating ensures that the inside temperature does not fall below the set temperature when batch status is empty house for a longer period of time.

Thus, the function can also be used to protect the house against frost.

Heating can be supplied as room heating or floor heating.

A desired temperature is set when room heating is used.

When floor heating is used, the percentage the floor heating system will operate at must be set. The floor heating stops when the inside temperature exceeds the temperature that has been set.

At batch production the **Preheating at stop** function maintains an inside temperature of 4°C, for example, between two batches. Note that ventilation must be shut off and the heating system must be connected.

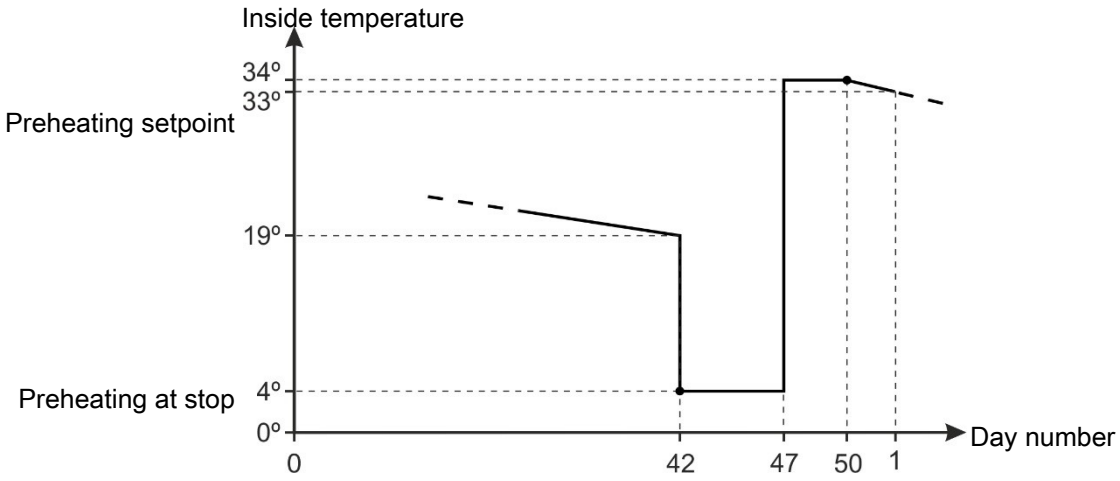
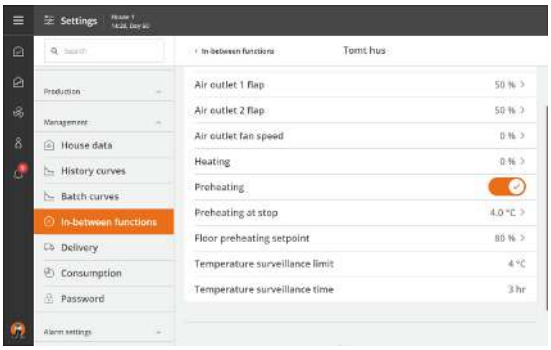


Figure 10: Example of setting of preheating.

When the batch state is **Empty house** (**Management**/ **House data**) and **Preheating** is connected, the house controller regulates according to the temperature for **Preheating at stop**.

Management | In-between functions	
Preheating	Connection and disconnection of the Preheating function.
Preheating setpoint	Temperature setpoint for preheating at batch start.
Preheating at stop	Temperature setpoint for preheating at stop.
Floor preheating setpoint	Setting the percentage the floor heating will operate at when used for preheating.

5.4.4 Temperature surveillance



The house controller prevents incorrect setting of **Empty house**. The climate controller monitors the temperature in the house for three hours after changing the batch status to **Empty house**. If the temperature increases in this period by more than 4 °C (indicate there are animals in the house), the house controller triggers an alarm and activates the ventilation.

This temperature surveillance is interrupted if an in-between function is activated.

Management | In-between functions	
Temperature surveillance limit	Display of the number of degrees the temperature must rise after batch stop.
Temperature surveillance time	Display of the time period when the temperature is monitored after batch stop.

5.4.5 In-between function menu

| Management | In-between functions

In-between functions	This house is:	Washing/ Drying/ Empty

Program sequence	Outside the programmed intervals the status is Empty house Start washing Start drying Start disinfection
Washing/ Drying	Side inlet Tunnel inlet Level Air outlet flaps Air outlet speed control Washing time Heating Drying time
Disinfection	Disinfection time Temperature
Empty house	Side inlet Tunnel inlet Level Air outlet flaps Air outlet speed control Heating Pre-heating Temperature surveillance active

5.5 Auxiliary sensors

This section is relevant only to houses with auxiliary sensors.

The **Auxiliary sensors** menu gives you a quick overview of the registrations of the house controller from the auxiliary sensors. The auxiliary sensors have no influence on the regulation.

The climate controller registers the content of CO2, NH3, O2 and humidity in the house air, as well as pressure and temperature. You can also connect air speed and wind direction sensors that can measure the wind direction and air speed outside the the house.

The display of the auxiliary sensors menu depends on which types of auxiliary sensors you install.

Climate | Auxiliary sensors	
Auxiliary sensor	Current value registered by the sensor.

5.5.1 Auxiliary sensor menu

 **| Management | Auxiliary sensors**

Auxiliary sensors	CO2 sensor
	Pressure sensor
	NH3 sensor
	O2 sensor
	Temperature sensor
	Humidity sensor
	Air speed sensor
	Wind direction sensor
	Chill sensor
	pH sensor

	Water level sensor
	Conductivity sensor

5.6 Consumption

 **| Management | Consumption**

Consumption	Ventilation consumption
	Heat consumption
	Stand-alone heat consumption
	Power consumption

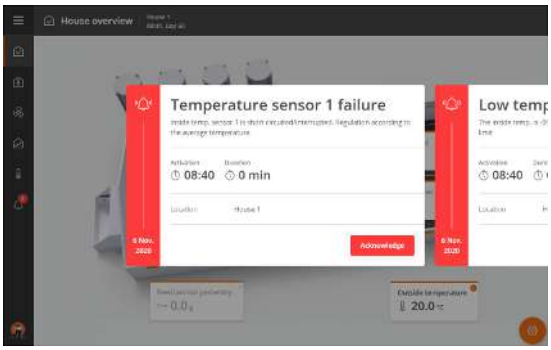
Management | Consumption

The menu shows the energy consumption in the house. The contents of the menu depend on the type and the setup of the controller.

6 Alarms

Alarms only work when the status is **Active house**.

The only exceptions are alarm test and alarms for CAN communication and temperature surveillance for **Empty house**.



When an alarm occurs, the house controller 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.

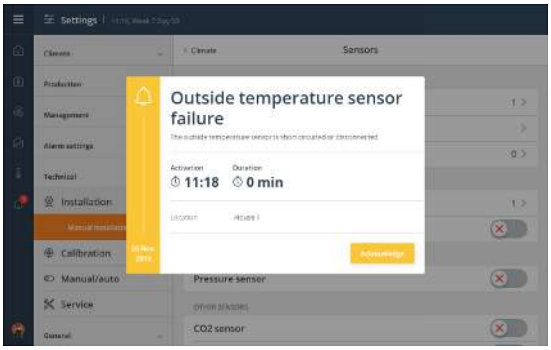
The alarm relay is only trigged by hard alarms.

Soft alarms generate a pop-up in the display.

Red: active alarm

Yellow: active warning

Gray: deactivated alarm (alarm state ceased)

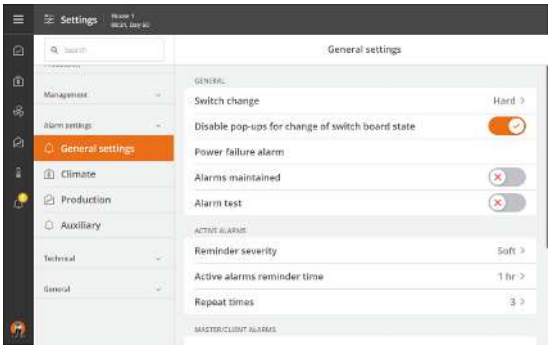


There are two types of alarm:

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

Soft alarm: Yellow pop-up alert on the controller.

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



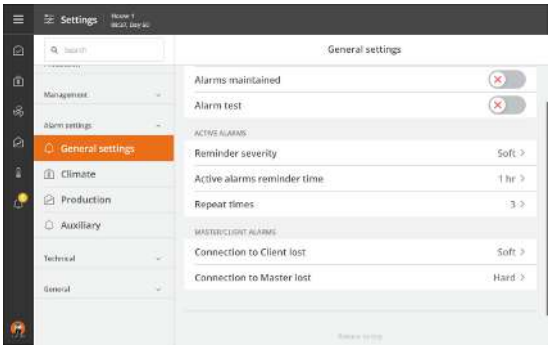
The controller will also activate an alarm signal, which you can choose to maintain.

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.



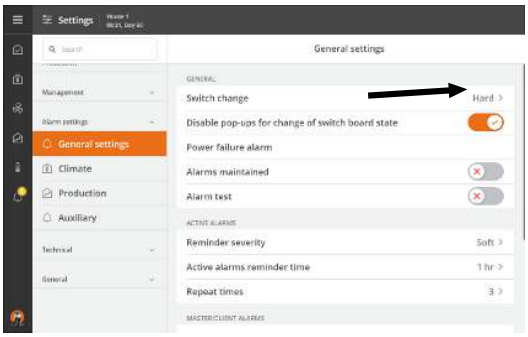
The controller can remind you of an on-going alarm situation once you have acknowledged a hard alarm. This to ensure that the cause of the alarm is handled.

Settings for reminders:

Alarm time: Setting how long after the alarm, the reminder is to appear.

Repeat times: Setting how many times the reminder is to appear.

Switch change



When the house controller is connected to an override switch module, an alarm can be set for when the module's switch position changes.

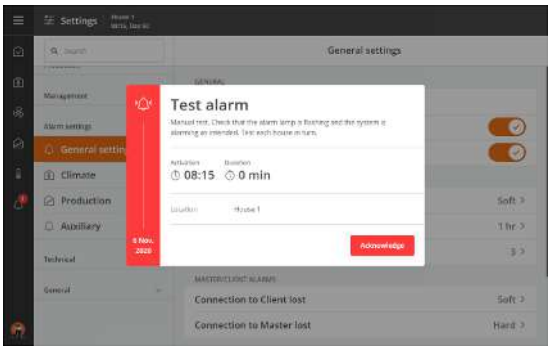
Changes in the switch position are logged in the Activity log [▷ 12].

6.1 Stopping an alarm signal

The alarm window disappears, and the alarm signal stops when you acknowledge the alarm by pressing **Acknowledge**.

6.2 Alarm test

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



Activate **Alarm test** to start testing.

Check that the alarm lamp is flashing.

Check that the alarm system alarms as intended.

Press **Acknowledge** to finish testing.

6.3 Power failure alarm

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

6.4 Alarm settings

The house controller has 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.

6.4.1 Temperature alarms

Alarm settings | Climate | Temperature	
High temperature limit	The temperature alarm for high temperature is only activate when the batch state is **Active house**. The alarm is set as an excess temperature to **Temperature setpoint**.
Low temperature limit	Alarm for excessively low temperature in relation to the **Temperature setpoint**.

Summer temp. at 20° C and 30° C outside	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. The house controller only triggers the alarm if the inside temperature also exceeds the high temperature alarm.

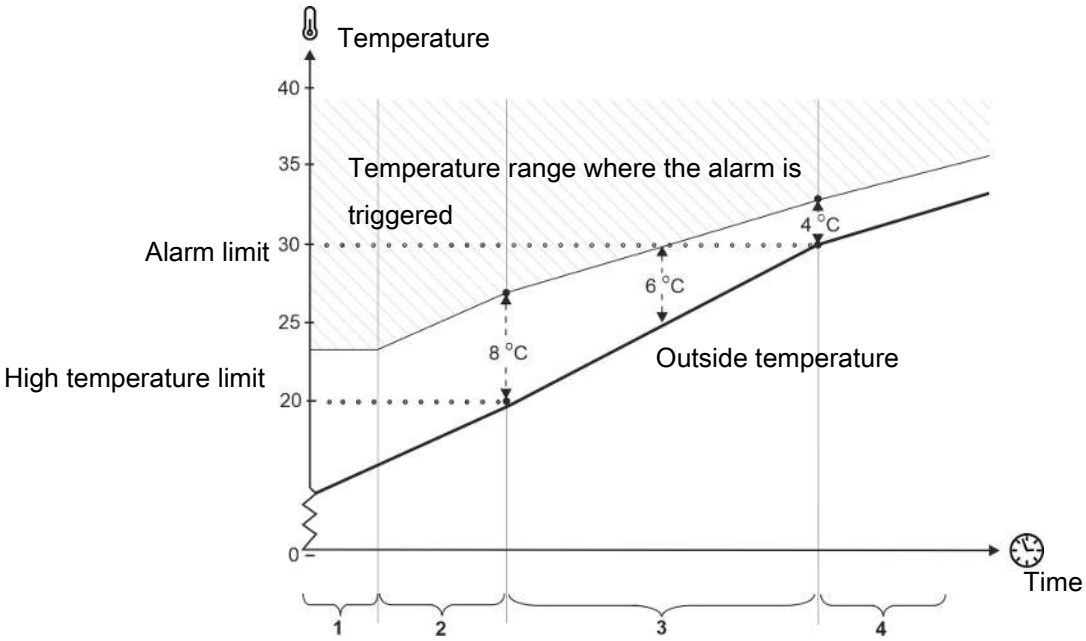


Figure 11: Summer temperature at 20° C and 30° C outside

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, there is a gradual transition from 8° C to 4° C. At an outside temperature of e.g. 25° C, the inside temperature must 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.*

Absolute high temperature	The alarm for absolute high temperature is triggered by an actual temperature, such as 32° C. The house controller triggers the absolute high temperature alarm when the inside temperature exceeds this setpoint. The absolute high temperature alarm is set as a temperature curve.

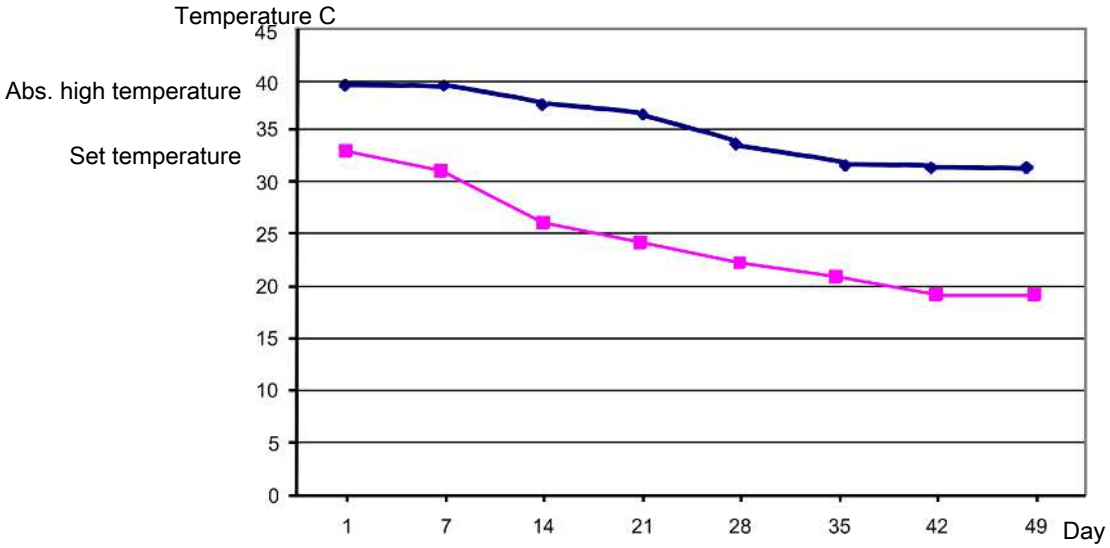


Figure 12: Example of Absolute high temperature alarm.

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.

House heater alarm **House heater limit** **Stand-alone heat alarm** **Stand-alone heat limit**	All active heating temperatures are compared to the active grow zone temperature. An alarm is generated if the difference exceeds the set limit. In tunnel mode the alarms are based on the tunnel temperature.

6.4.2 Humidity alarm

Alarm settings | Climate | Humidity alarm	
Absolute high humidity	The house 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.

6.4.3 Inlet and outlet alarm

Alarm settings | Climate | Inlet and outlet alarm	
Inlet and outlet alarm	The inlet and outlet alarms are technical alarms. The house controller triggers an alarm if the actual flap position on the air inlet or air outlet deviates from the setpoint that the controller has calculated as correct.
Missing fan setting	This alarm indicates that the fan voltage has not been set in the Installation menu. When a 0-10 V output fan has been selected, a voltage value must be set which corresponds to the fan running at low and full speed.
Tunnel cooling temperature	Alarm for when the inside temperature exceeds the outside temperature. This indicates an error in tunnel opening.

6.4.4 Sensor alarm

Alarm settings | Climate | Sensor errors	
Error inside temperature sensor	The house controller triggers an alarm if the sensor is short-circuited or disconnected.

	Without this sensor, the house controller 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 is always a hard alarm.
Error outside temperature sensor	The house controller triggers an alarm if the outside temperature sensor is short-circuited or disconnected.
Error outside temperature sensor low (-35°C)	Selection of whether the house controller should monitor whether there is an error in the outside temperature sensor. The function is intended for use in areas where the outside temperature usually does not fall below -30 °C.
Misplaced outside sensor	The alarm indicates whether the sensor is exposed to solar heating and therefore displays an incorrect outside temperature. The house controller 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).
Error humidity sensor **Error outside humidity sensor**	The controller triggers an alarm when the humidity sensor is disconnected or the air humidity is lower than humidity setpoint.

6.4.5 Tunnel cooling sensor alarm

Alarm settings | Climate | Sensor errors	
Alarm for tunnel opening failure	The climate controller triggers an alarm when the tunnel temperature exceeds the outside temperature by the number of degrees you set for **Tunnel cooling sensor limit**. **Tunnel opening failure** The alarm is only active at tunnel ventilation.
Cooling pump failure	The climate controller triggers an alarm when the tunnel temperature exceeds the outside temperature by the number of degrees you set for **Tunnel cooling sensor limit**. **Cooling pump limit**
Tunnel cooling sensor 1 alarm	The house controller triggers an alarm if the sensor is short-circuited or disconnected. In case of sensor failure, the climate controller will adjust tunnel cooling according to the outside temperature + 2 °C.

6.4.6 Pressure sensor

Alarm settings | Climate | Pressure sensor	
Pressure sensor	With the function Sensor alarm delay you can postpone the alarm signal so that the alarm is not triggered by transient changes of the pressure level in the house, e.g. when a door is opened. The controller activates an alarm when the pressure in the house drops below or exceeds the settings of **Pressure high limit/ Pressure low limit**.

6.4.7 Auxiliary sensor and CO2 alarm

Alarm settings | Climate | Sensor errors/CO2 alarm	
Auxiliary sensor **CO2 alarm**	The house controller triggers an alarm if the values for the sensor fall below or exceed the setpoints.

6.4.8 NH3 alarm

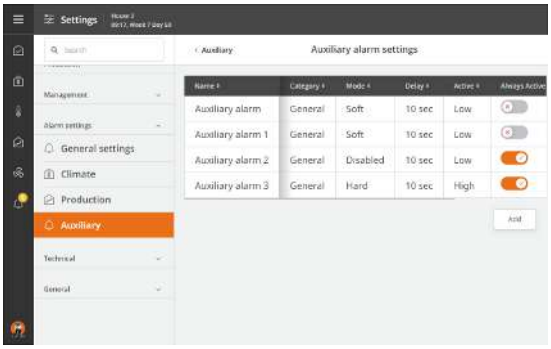
Alarm settings | Climate | NH3 alarm

NH3 alarm	The house controller triggers the alarm when the NH3 content of the air in the house registers above or below the alarm limit. From the factory the low alarm is disconnected. The alarm limit is factory pre-set at such a low level (5 %) that the alarm is only usually triggered upon intrinsic sensor errors. In the case of a high alarm (30 ppm) the house controller ventilates 100%.

6.4.9 Auxiliary alarms

It is possible to create a number of auxiliary alarms. For example, the controller may give an alarm from a connected motor controller, a water pump or other equipment.

The alarms are set up in the menu **Alarm settings | Auxiliary | Auxiliary alarms | Auxiliary alarm settings**



Press **Add** to add a new alarm.

Press the field **Name** to give the alarm a name.

Press **Category** to select the category the alarm belongs to.

Set the control mode **Hard**, **Soft** or **Disabled**.

Set a delay, if required.

Set the activation to take place in the event of high or low input.

Select if the alarm should be active always or from a specific day number.

To delete an auxiliary alarm, press the icon .

After creating the alarm, see the menu | **Installation** | **Show connection** for information about where to connect the extra equipment.

6.4.10 Equipment status

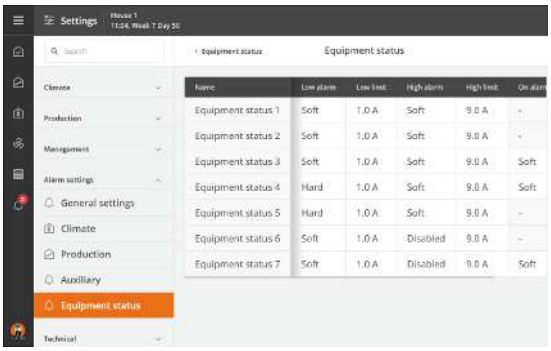
When connecting monitoring equipment such as e.g. a current sensor for the individual components of the system (stepless and MultiStep fans), it is possible to get an alarm which can indicate the possible fault type.

There are 3 alarm types:

Low alarm	Possible equipment failure. The equipment may be disconnected by mistake. Alarm due to missing current consumption. For example, MultiStep/stepless may be activated and the power consumption too low, if the emergency stop at the fan is activated.
High alarm	The equipment shows signs of wear. Alarm due to excessive current consumption.
ON alarm	The equipment is active, but should not be in relation to the controller's regulation. Alarming due to current consumption, which should not be there. For example, MultiStep/stepless may be activated and the power consumption too high, if there is an emerging defect in the fan.

Alarms are only triggered when a limit has been exceeded for 5 minutes.

The alarms are set up to match the connected monitoring equipment. This is done in the menu **Alarm settings | Equipment status.**



Select the alarm type **Hard**, **Soft** or **Disabled**.

Set voltage ranges for **Low alarm**, **High alarm** and **ON alarm**. First read the current consumption during normal operation to get an indication of the voltage ranges.

6.5 Emergency control

6.5.1 Emergency opening

The house 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 case of a relevant alarm - even if it is cold outside.

The emergency opening can be activated by five types of alarms.

Activated by	Side	Tunnel (CT, T)
High temperature	Yes	
Absolute high temperature	Yes	Yes
Absolute high humidity	Yes	Yes
Pressure high alarm	Yes	Yes
Pressure low alarm (negative pressure)	Yes	Yes
Pressure low alarm (positive pressure)	No	No
Power failure	Yes	Yes

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

6.5.2 Temperature-controlled emergency opening

This section is relevant only to houses where 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 the house controller's display. The emergency opening is also triggered in the event of power failure.

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 Temperature setpoint.

Warning at emergency temp.

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

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

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 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.

The house controller 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.

6.5.3 Emergency inlet

This section is relevant only to houses where emergency inlets are installed.

The emergency air intake can be triggered by four types of alarms.

Activated by	
Emergency inlet (temperature)	Set
Absolute high temperature	Connect or disconnect
Error temperature sensor	Connect or disconnect
Power failure	Always activate

Whether an inside temperature sensor error should trigger the emergency inlet depends on the general climate conditions. If it is very hot, you could profit from using the function. However, if it is cold, you should consider the necessity of using it and whether the animals will suffer.

The emergency Inlet has its own temperature setting **Emergency Inlet**, where the number of degrees are entered for the **Temperature setpoint** and any **Comfort temperature.**

This setting makes it possible to open the air intake during a hot season where the air intake, under normal conditions, is not activated by the normal high temperature alarm limit.

6.6 Alarm menu

 **| Alarm settings | Climate**

General settings	General	Switch change	
		Disable pop-ups for change of switch board state	
		Power failure alarm [▶ 52]	Always hard alarm
		Alarms maintained	
		Alarm test [▶ 52]	
	Active Alarms	Reminder severity	
		Active alarms reminder time	
		Repeat times	

Climate	Temperature	High temperature limit	4 □
		Low temperature alarm	
		Low temperature limit	- 3 °C
		Low temp. limit with FreeRange	- 10 °C
		Summer temp. at 20°C/68°F outside	8 □
		Summer temp. at 30°C/86°F outside	4 □
		Actual Abs. high temperature	32 □
	Humidity [▶ 54]	Abs. high humidity alarm	
		Abs. high humidity limit	100%
	Air inlet and Air outlet [▶ 54]	Inlet and outlet alarm	
	Sensors	Error inside temperature sensor: Always hard alarm	
		Error outside temperature sensor	
		Error outside temperature sensor low (-35°C)	5 □
		Misplaced outside temperature sensor	
		Tunnel opening failure 1 alarm	2 □
		Tunnel cooling sensor alarm limit. Tunnel opening failure	- 1 °C
		Cooling pump 1 failure alarm	
		Tunnel cooling sensor alarm limit. Cooling pump limit	
		Tunnel cooling sensor 1 alarm	
		Error humidity sensor 5%	
		Error outside humidity sensor (5%)	
		Auxiliary sensors	
	Pressure	Sensor alarm delay	01:00 m:s
		Pressure high alarm	ON/OFF
		Pressure high limit	100 Pa
		Pressure low alarm side	ON/OFF
		Pressure low alarm tunnel	ON/OFF
		Pressure low limit	5 Pa
	CO2	Low CO2	
		Low CO2 limit	300 ppm
		High CO2	
		High CO2 limit	8500 ppm
	NH3	Low NH3	
		Low NH3 limit	5 ppm
		High NH3	
		High NH3 limit	20 ppm
	Emergency opening [▶ 57]	High temperature	
		Absolute high temperature	
		Abs. high humidity alarm	

	Pressure high alarm: ON	
	Low pressure alarm: ON	
	Power failure: ON	
Temperature-controlled emergency opening [▶ 57]	Emergency opening setpoint	40.0 □
	Temperature setpoint	19.0 □
	Warning at emergency temp.	ON/OFF
	Warning emergency temp. limit	6 □
	Battery alarm: Always ON	16 V
	Battery voltage limit	
	Power failure: ON	
	Current battery voltage	
	Lowest measured battery voltage	
Emergency inlet [▶ 58]	Emergency inlet	4 □
	Absolute high temperature	
	Error temperature sensor	
	Power failure: ON	

7 Maintenance instructions

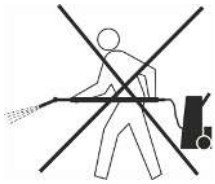
The house controller requires no maintenance to function correctly.

You should test the alarm system every week.

Use only original spare parts.

Note that the service life of the house controller will be extended if it stays connected all the time, as this will keep it dry and free from condensation.

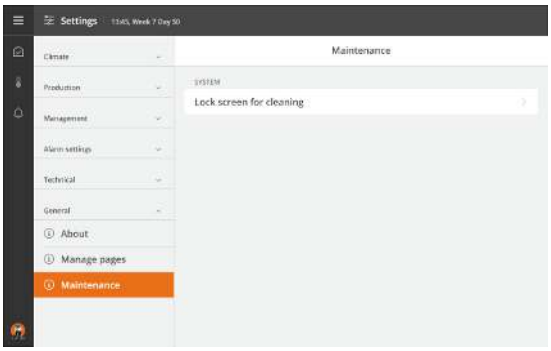
7.1 Cleaning



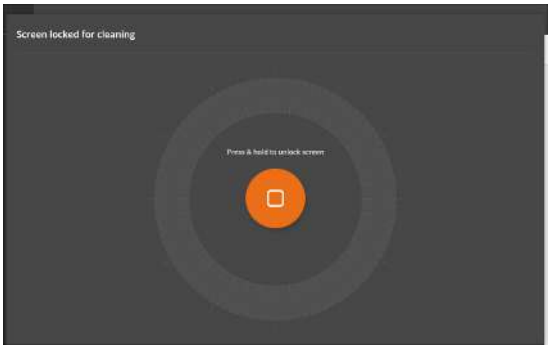
Clean the product with a cloth that has been wrung out almost dry in water and avoid using:

- high-pressure cleaner
- solvents
- corrosive/caustic agents

Lock screen for cleaning



When the controller is to be cleaned, it is possible to lock the screen to avoid inadvertent operation during cleaning. Lock the screen in the menu **| General | Maintenance | Lock screen for cleaning.**



The screen shows that it is locked. Press and hold on the screen for five seconds to unlock it. The controller automatically cancels the lock after 15 minutes.

7.2 Recycling/Disposal

Products suitable for recycling are marked with a pictogram.

It must be possible for customers to deliver the 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, recovery and recycling.

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