Viper Touch

Broiler - Production

User Manual

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Big Dutchman

Software version 8.2

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

Product:	Viper Touch series
Type, model:	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 62368-1:2020/AC:2020

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

Location: Hedelund 4, DK-7870 Roslev

Date: 2023.09.01

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.

Note

1 Guidelines

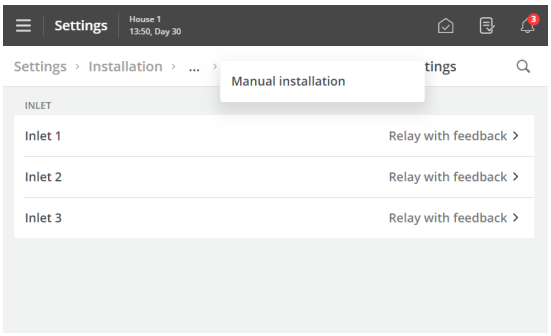
This user manual deals with the daily operation of the controller. The manual provides fundamental knowledge about the functions of the controller that is required to ensure optimum use of it.

The user manual only describes the production functions of the controller. You will find a general description of the operation and the climate functions of the controller in the appurtenant user manual.

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

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. The pages shown on the display are adapted to the different variants where the most relevant functions are easily accessible.

A wide range of functions such as 24-hour clock, light, water meter, and auxiliary sensor can be named by the user to suit the individual house and functions can be easily recognized in menus and alarms.

The controller has 2 LAN ports for connection to BigFarmNet Manager and also 2 USB ports.

Viper Touch Profi can regulate and monitor the climate and provides complete two-zone control that can regulate temperature, humidity, ventilation, cooling, humidification, and CO2 ventilation in 2 separate zones.

Viper Touch Profi is available in combination with different production variants:

- Broiler
- Breeder
- Layer

The controller has 6 main pages, which are adapted to poultry production and a menu page. The pages contain selected functions and views relevant to the daily work.

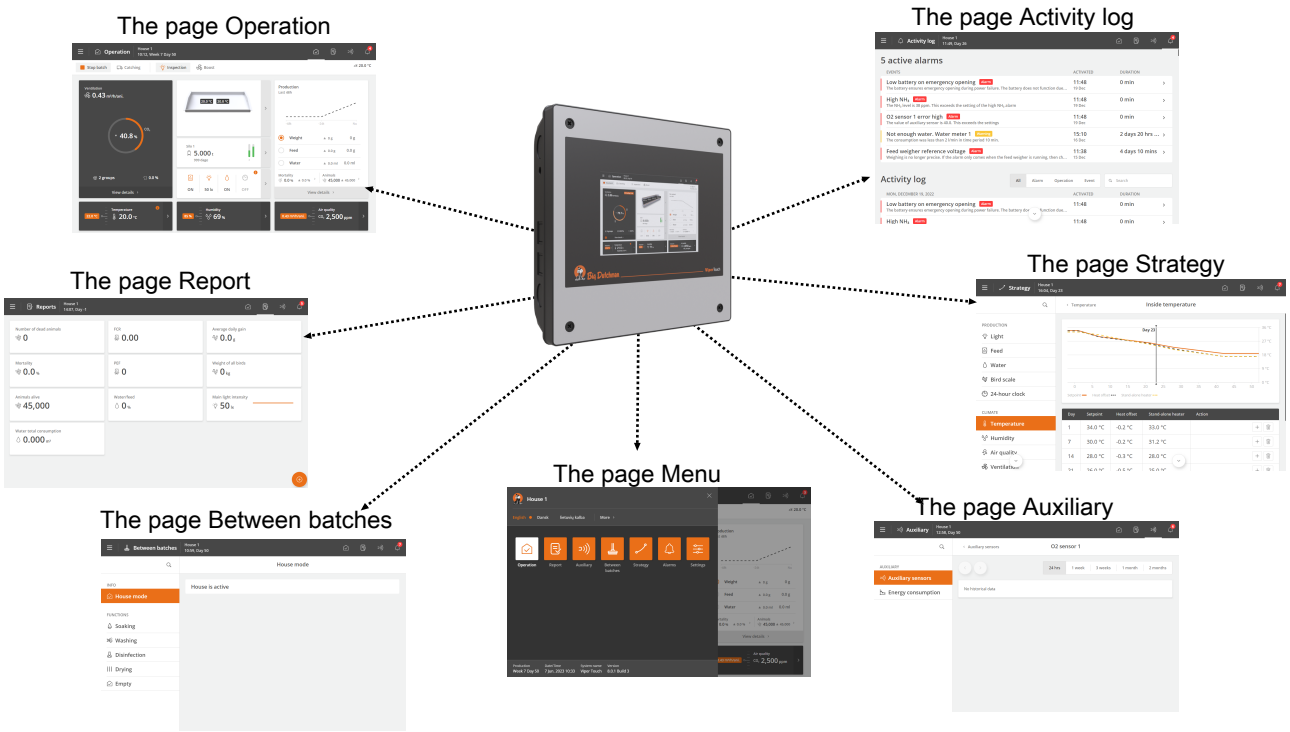
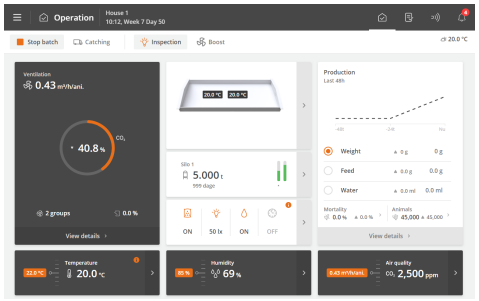
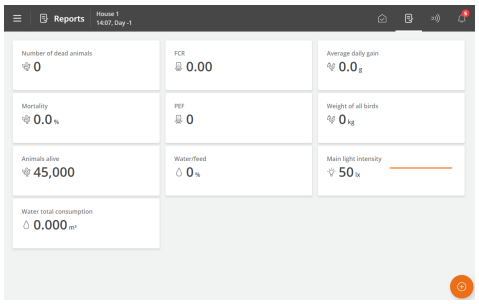


Figure 1: By selecting the different elements of the pages, there is furthermore access to underlying functions and data from the front pages.



The page **Operation**

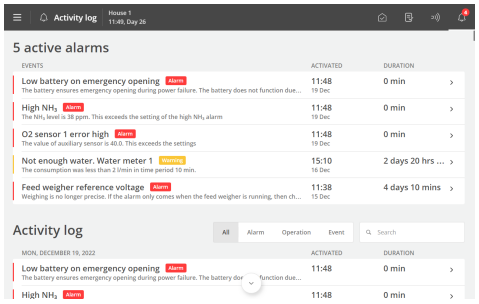
The page is the main page view where the functions that must be used for daily operation are gathered.



The page **Report**

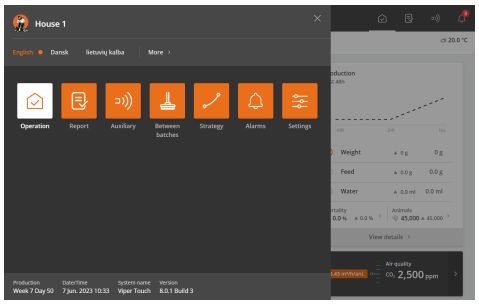
The page can be set up according the user's wishes to contain cards with key values showing current data.

It can thus be used to collect values that must be read daily and collect data to be reported.



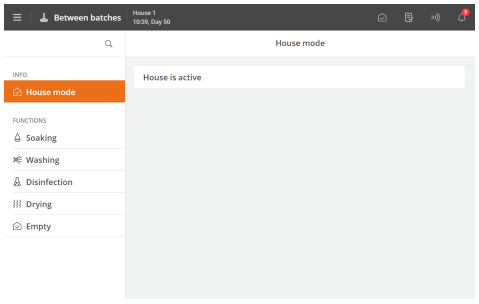
The page **Activity log**

The page displays a log of all recorded alarms, operations of the controller and events.



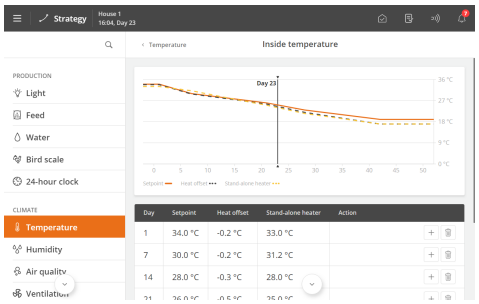
Menu button

The button gives access to language selection and to a collection of shortcuts to the various pages.



The page **Between batches**

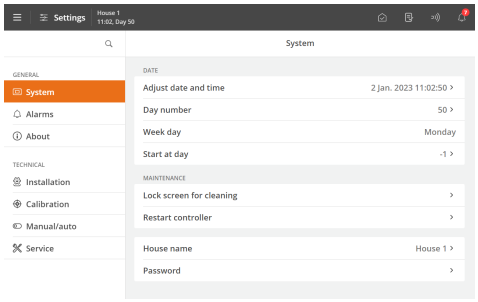
The page gives access to functions designed partly to facilitate the activities you must carry out in the house to clean it and prepare it for the next batch and partly to ensure the air change and temperature in the house while it is empty.



The page **Strategy**

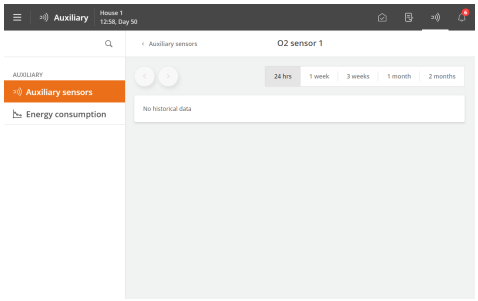
The page gives access to determination of the desired production strategy, which must be repeated from batch to batch.

These are, for example, program settings, references, and batch curves.



| The page **Settings**

The page provides access to general settings and alarm limits.



The page **Auxiliary**

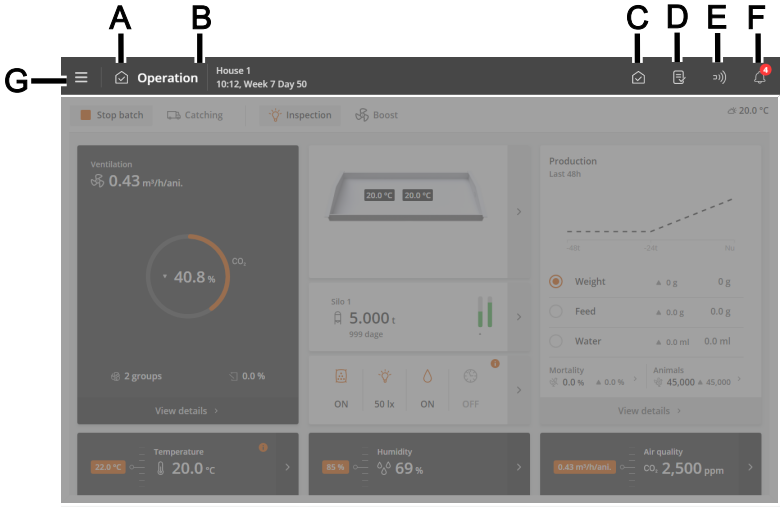
The page gives access to graphical displays of historical data from various types of additional equipment (auxiliary sensors and energy meters).

The page is only displayed if additional equipment is installed.

3 Operating instructions

3.1 Operation

Each page is composed by different types of cards that provide information about the operation and quick access to operation.



From the top bar of the page, there are shortcut buttons that allow you to switch between the main pages **Operation** (**C**), **Report** (**D**)**, Auxiliary** (**E**) and **Activity log** (**F**).

A The icon and name of the page.

B The house name, time, and possibly week and day number.

C The **Operation** page provides an overview and the ability to operate the functions most needed for your daily work.

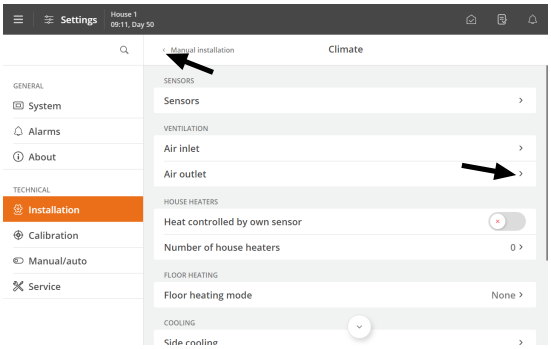
D The **Reports** page shows the key values the user wants on the page.

E The **Auxiliary** page displays the consumption figures and auxiliary equipment status (if installed).

F The **Activity log** page displays active alarms and a complete log of operations, events, and alarms.

G The menu button gives access to language selection (see section Selection of language [▶ 12]) and other pages: **Between batches**, **Strategy,** and **Settings**.

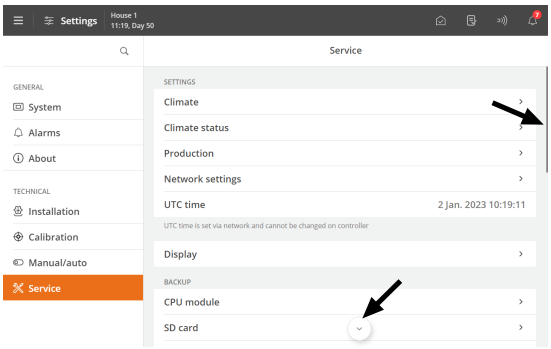
For additional operating instructions for the general functions of the controller, see the user manual for the climate controller.



Navigation menus provide access to sub-menus.

> The right arrow displays a sub-menu.

< The left arrow in the upper left corner allows you to take one step back in the menu.



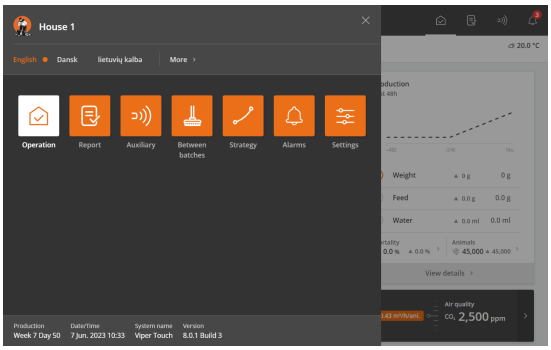
Scroll

If the page is higher or wider than the display, you can scroll.

This is shown in the display as arrows or a scroll bar.

Scroll by pressing the arrows or letting your finger slide across the display.

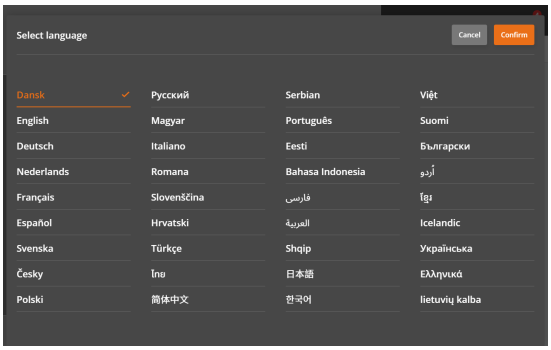
3.1.1 Selection of language



Press the Menu button.

A dot indicates the selected language.

Press **More** if the requested language is not displayed.



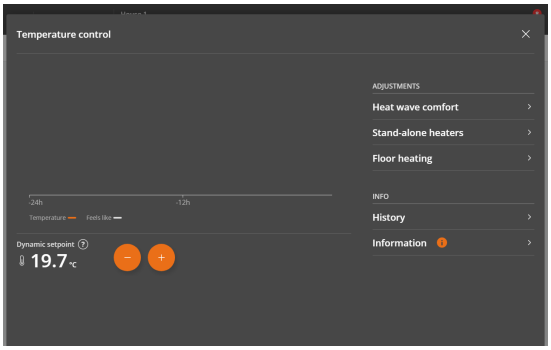
Select the language from the list. Press **Confirm**.

Note that function names (such as 24-hour clocks, water meters, and programs the user can name) are not translated into the selected language.

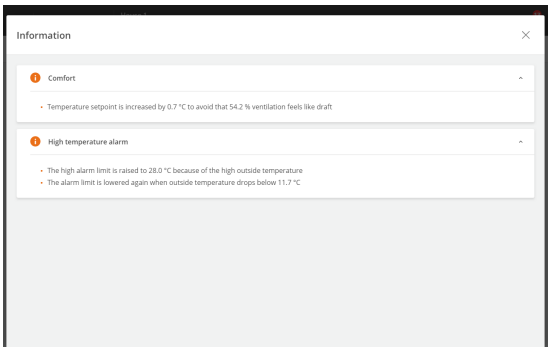
The factory setting for the names is English.

3.1.2 Information card

The information card is meant to give the daily user a better understanding of how the controller is working right now.



The information is available on pages with the icon .



Press to view more details.

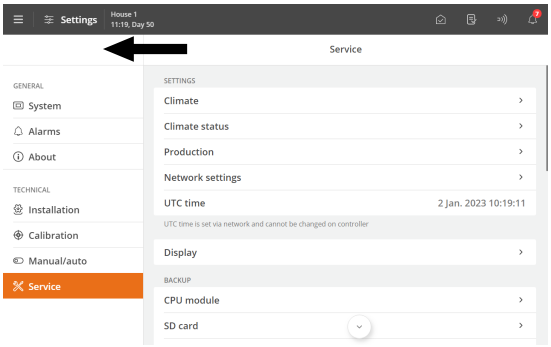
The following is described for selected control areas:

- The current status.
- The reason for the current adjustment.
- What the next step in adjustment will be.

3.1.3 Search in menus

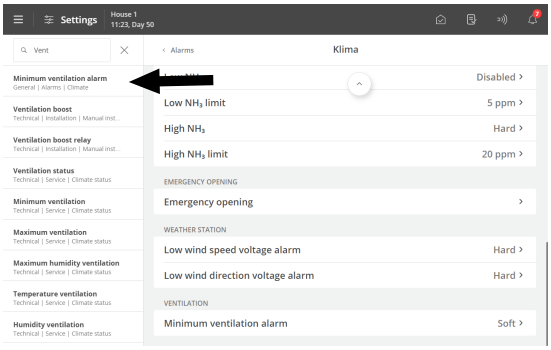
It is easy to search for the individual functions of the controller. There are search fields on the pages: **Auxiliary, Between batches, Strategy,** and **Settings**.

The search takes place within the individual page, and it may be necessary to search for the same several times.



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

Enter at least 3 characters to search.



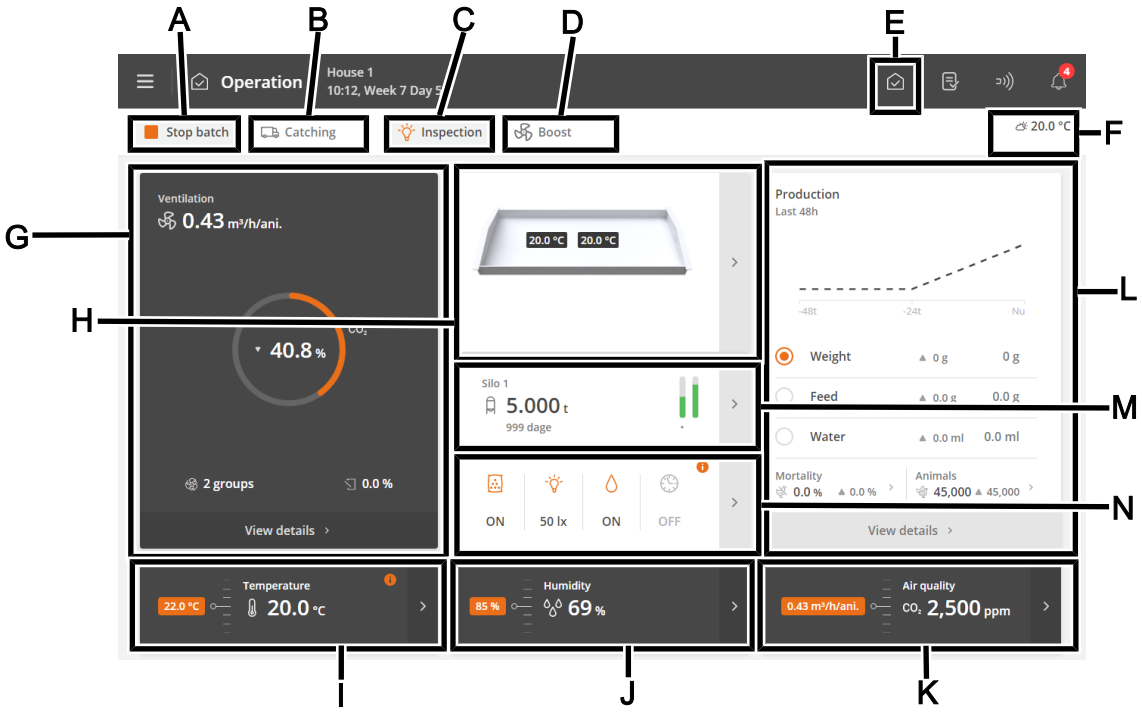
The result is shown below the search field. The path for the individual menus is also shown, for example, under Settings: **General | Alarms | Climate**.

Press a search result to go directly to that menu.

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

3.2 Operation – for broilers

The page has been adapted for broiler production. It contains views and settings relevant to the daily work of a broiler house.



A The function button **Stop batch/Start batch**. See section House status Active house - Empty house.

B The function button **Catching function**. The function is designed to alter the air change in the house in connection with all or some animals leaving the house. See section Catching.

C The function button **Inspection** for manually activating the inspection light.

D The function button **Boost** for manually activating boost. The function improves air quality by briefly increasing ventilation. See section Ventilation boost.

E **Shortcut to the main page Operation**.

F View of outside temperature and outside humidity.

G Status display for the climate control and access to the ventilation equipment menus.

The card also provides a shortcut for manual control of the climate equipment. It is intended for situations where equipment must be stopped.

H View of the current inside temperature of the individual climate sensors.

I Temperature settings. See section Temperature.

J Humidity settings. See section Humidity.

K The ventilation functions CO_2 and NH_3. See section CO2 and NH3.

L View the key figures for animal weight, feed, and water consumption development during the last 2 days. In addition, the view of calculated mortality and the current number of animals and shortcuts for recording the number of animals, the number of dead and moved animals.

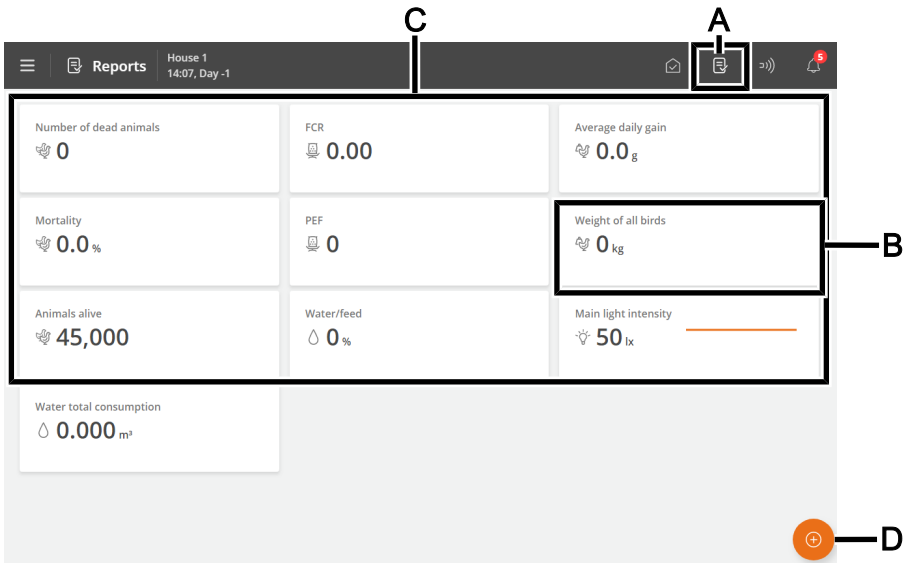
The view also provides a shortcut to details with information and settings options.

M Status view for silo content. The views provide a shortcut to recording of feed supplies and settings options for silo.

N Status view for climate and production functions controlled by time programs. The view provide an overview of all programs and appurtenant settings, and for status and settings for production equipment.

3.3 Report

The user can set up the page to include the key values that give the desired overview of climate and production values.

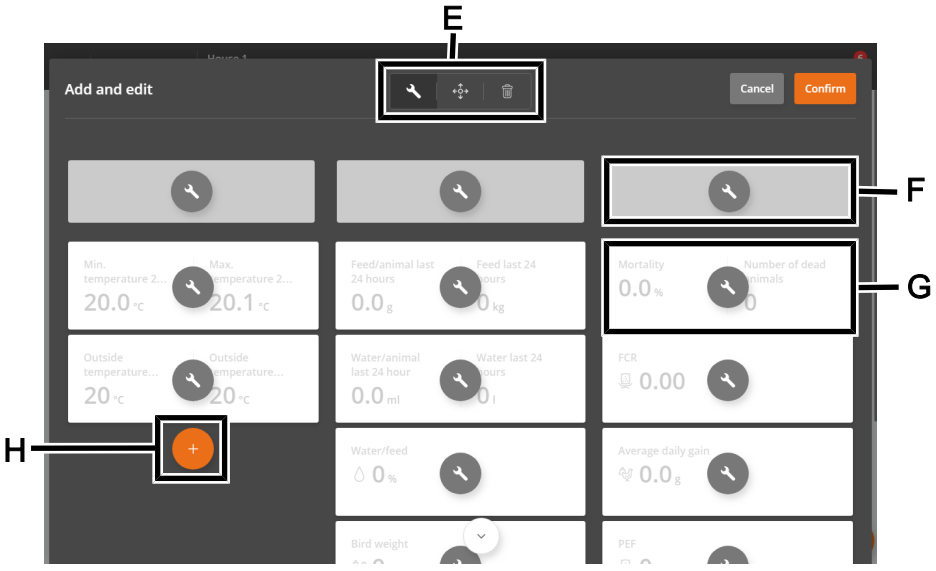


A Shortcut to the **Reports** page.

B Card with the key value. Each card can be set up to include up to 3 key values. Some key values can also comprise a small graphical history view.

C The page displays a series of cards with selected key values for, for example, history and current values.

D Edit button. Gives access to choose between the desired key values.



E Tools for editing headlines or content on cards and moving or deleting cards.

First, press a tool and then make the desired change.

F Column header.

Press to name.

G Card with the key value.

Press to change the key value and set up its view.

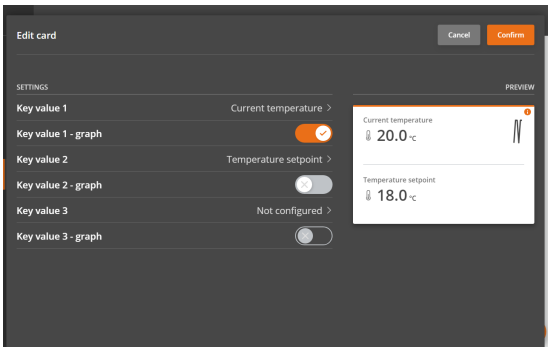
H Tool for adding a new card in the column.

Press to add a card and select the desired key value.

Cards with several key values

You can merge several cards to view up to 3 key values in one card.

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



Press the editing tool.

Press on the key value to be changed.

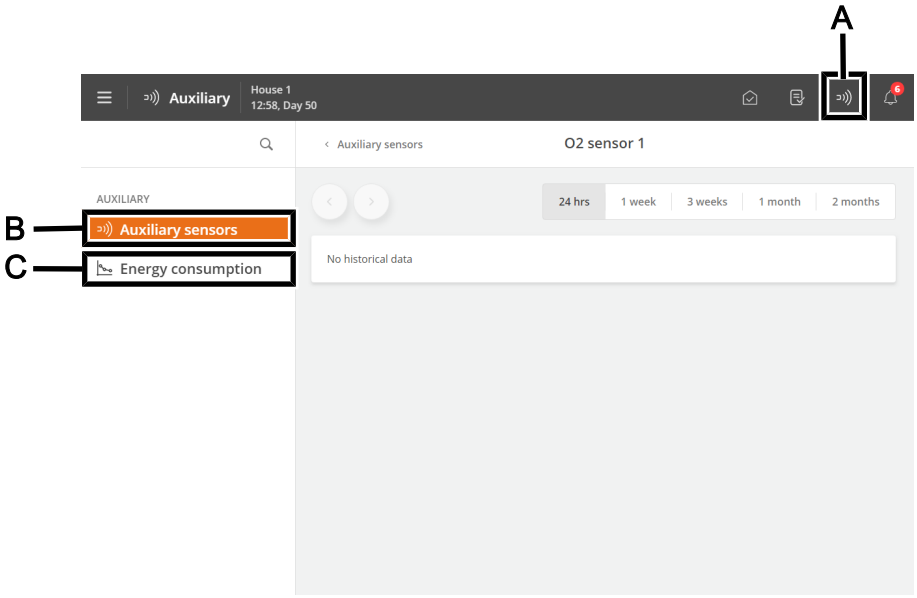
Select Key value 2 and select the key value to be displayed.

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

To the right a preview of the card is shown.

3.4 Auxiliary

The page provides access to recordings from different types of equipment (auxiliary sensors and energy meters), which can be used for monitoring, as an example.



A Shortcut to the page **Auxiliary**.

B The **Auxiliary sensors** menu provides an overview of the controller recordings supplied by the auxiliary sensors in a graphical view.

The auxiliary sensors do not influence the regulation.

The controller records the content of CO_2, NH_3, O2 in the air as well as humidity, pressure, and temperature. You can also connect air velocity and wind direction sensors that can measure the wind direction and wind velocity outside the house.

The values measured by each sensor are viewed in intervals of 24 hours to 2 months.

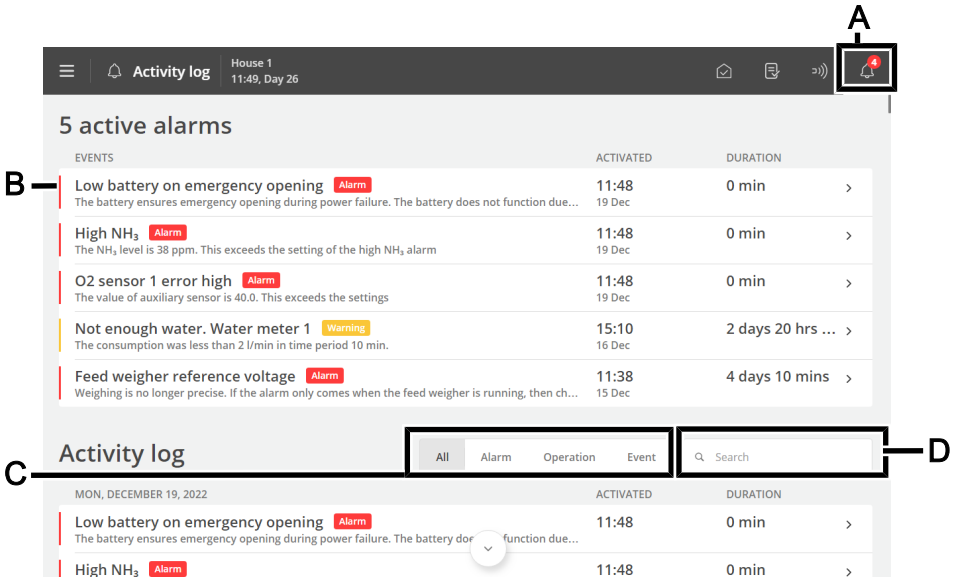
C The menu **Energy consumption** shows the current consumption in W and total consumption in kWh. The menu content depends on the type and the setup of the controller.

3.5 Activity log

The page displays a log of all recorded alarms, operations, and events.

Alarm status colors:

- Red – hard active alarm
- Yellow – soft active alarm (warning)
- Gray – deactivated alarm



A Shortcut to the page **Activity log**.

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

B Each line shows an activity.

Press the activity line to see details, such as when an alarm was activated and acknowledged. Also, when a value/setting was changed.

Press **Close** to close the details screen again.

C Filtering options for the various types of activities:

All: shows all types

Alarm: shows alarms

Operation: shows the operation of the controller

Event: shows, for example, reset of the controller

D Search the field for the activity log.

Enter at least 3 characters to search. It is also possible to combine filtering and search.

Several alarms often 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 allow you to follow an alarming course back in time to detect the error that caused the alarm.

See the description of alarms in the section Alarms [▶ 25].

3.6 Menu button

The menu button gives access to language selection and general settings pages.

A Menu button

B Displaying house name, day number, time, week number, if required, variant name, and software version.

C Select language. Access other languages under **More**.

Note that function names (such as 24-hour clocks, water meters), and programs the user can name are not translated into the selected language. The factory setting for the names is English.

D Shortcut to the page **In-between batches**.

The page is designed partly to facilitate the activities 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.

E Shortcut to the page **Strategy**.

The page provides access to the batch curves, which form the basis for controlling climate and production functions. See also the section Setting curves [▷ 22].

F Shortcut to the page **Settings**.

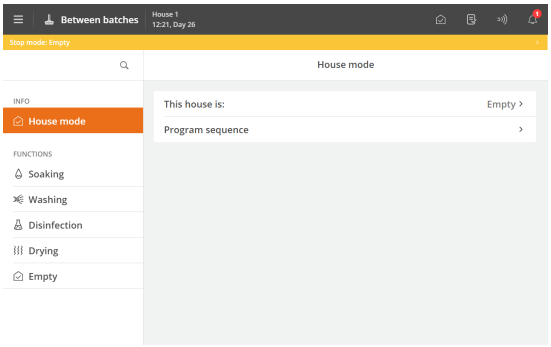
The page provides access to the user settings for **House info**, **Alarm settings,** and **Password**. See the sections System [▷ 23], Alarms [▷ 25], and Password [▷ 23].

In addition, you have access to the technical menus used for setup and service. See the Technical Manual.

3.6.1 Between batches - In-between functions

The page gives access to functions designed partly to facilitate the activities 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.

- Soaking
- Washing
- Disinfection
- Drying
- Empty



Status

The controller can only activate the functions when the house status is **Empty**.

Empty house status is indicated at the top of the page by a colored bar.

When the time of a function is up, the controller will again regulate according to the settings for **Empty house**.

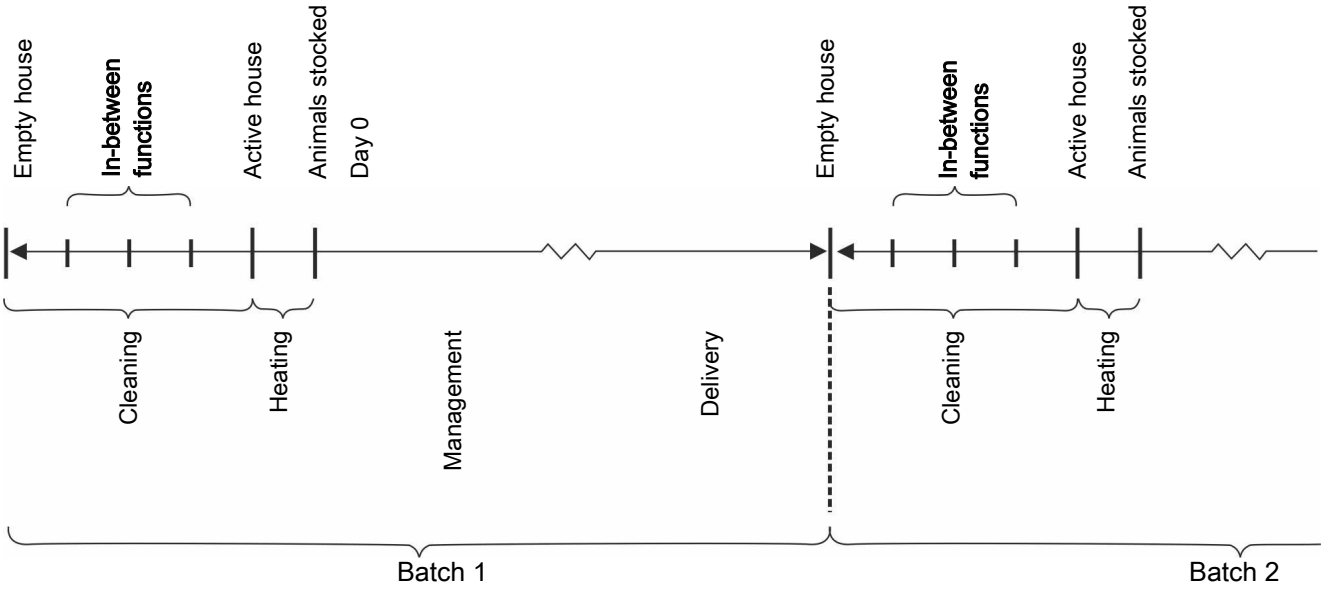


Figure 2: Setup example of the Between batches function for batch production

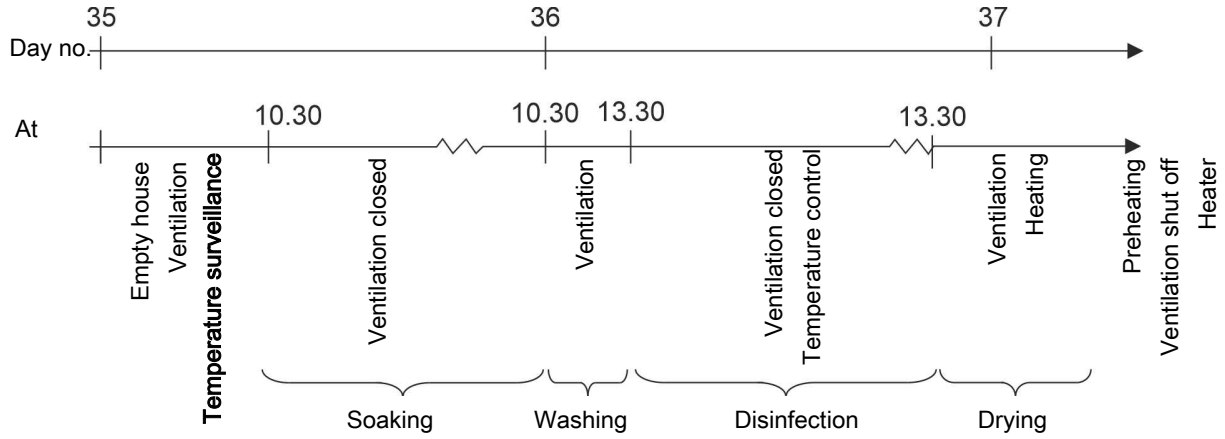
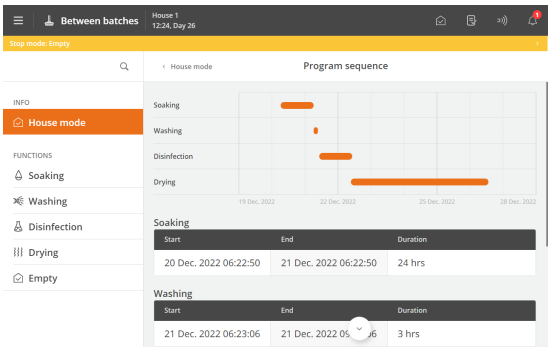


Figure 3: Sequence of functions



Program sequence

You can set up each function to start at a specified time. It is thus possible to set an entire program sequence for the functions.

Menu button | **Between batches** | **Info** | **House mode** | **Program sequence**

This house is:	Function selection menu (only displayed when the house status is **Empty**).
Function remaining time	When a function is activated, the set time counts down (only displayed when the house status is **Empty**).
Program sequence	Menu for setting the start time and function duration (only displayed when the house status is **Empty**).

Also see the section Between batches for a description of the various functions.

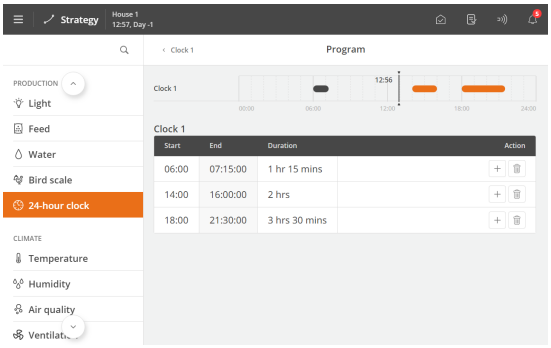
3.6.2 Strategy

The page provides access to the more constituent function settings that you typically do not need to change during a batch. The strategies are thus determined in light of the overall requirements for the production.

It is where batch curves for temperature and light are set up, sub-functions such as nozzle cleaning for cooling are selected, and limit value settings are made.

See the relevant section below for a description of the various functions.

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

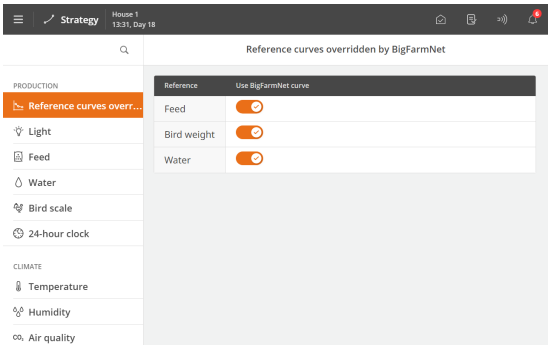


The controller can adjust automatically according to the animals' age.

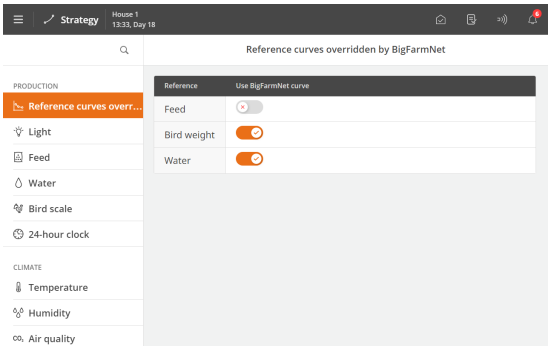
When the controller is connected to a network with the management program BigFarmNet Manager, curves can also be changed via BigFarmNet.

Depending on the type and setup of the controller, different batch curves are available:

- Feed
- Water
- Weight
- Light

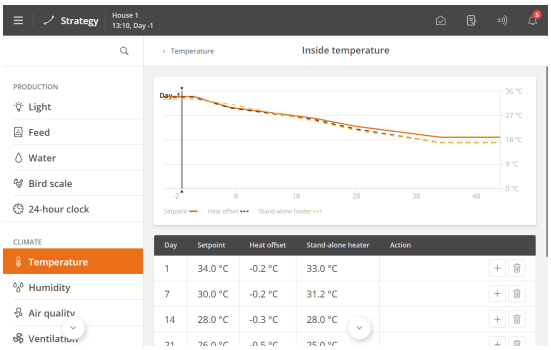


When curves are adjusted via BigFarmNet Manager it appears in the menu.



Select if the reference curve from BigFarmNet Manager or the curve from the controller should be used.

3.6.2.1 Setting curves



Menu button | **Strategy**

Set up for each curve:

- A day number for each of the required curve points.
- The desired value of the function for each curve point.

Press + to add the required number of curve points.

Typically, the last day number of the batch curve is set to match the expected production time.

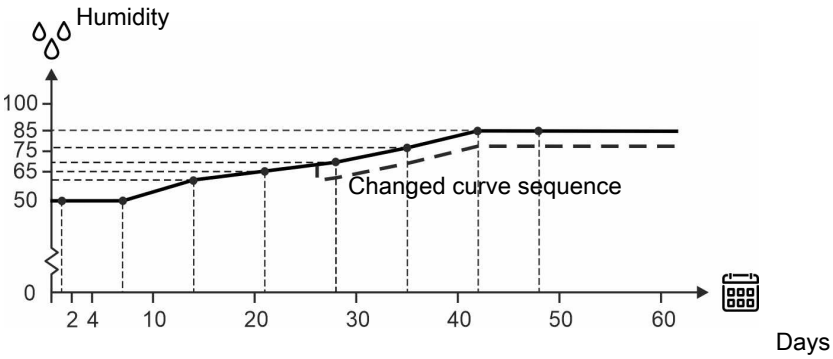


Figure 4: Curve for air humidity

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

3.6.3 Settings

The page provides access to general settings and alarm limits.

3.6.3.1 System

Menu button | **Settings** | **General** | **System**

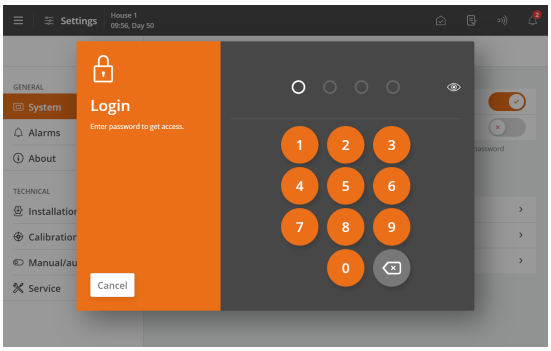
Adjust date and time	Setting current date and time. Correct clock setting is important for several control functions and alarm recording. Thus, all controller programs use date, time, and day number. The clock will not stop in the event of a power failure. **Summer and wintertime** There is no automatic adaptation in summer and winter, 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, you must manually change the time setting by +/- 1 hour.
Day number	Select whether the day number should show the time since the batch start or the 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. Setting day number. At midnight, the day number counts up 1 every 24 hours after the house has been set to active house. Please note that if the day number is changed during a batch, it will shift/destroy the historical data of the batch (feed consumption, etc.). The function **Day number** can also be used to preheat the house by setting a number of minus days.
Week day	Viewing week day.
Start on day	Setting the day on which the batch shall start. Day number can be set as low as -3 so the controller can control the preheating of the house before the animals are stocked.
House name	Setting house name. Each livestock house must have a unique name when the controller is integrated with a LAN network. The house name is transferred through the network, and the livestock house should be identifiable based on the name. Set up a plan for naming all controllers connected to the network.
Password	Decide whether the controller must be protected against unauthorized operation using passwords. See section Password [▶ 23].

3.6.3.1.1 Password

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

The controller can be protected against unauthorized operation using passwords.

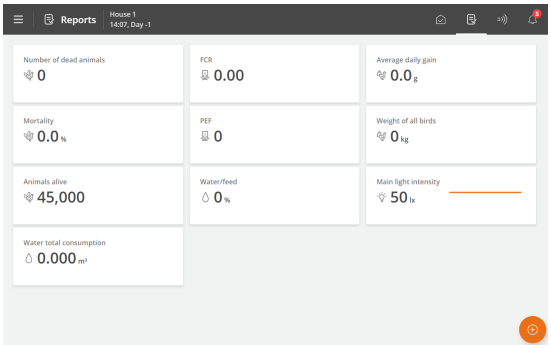
In order to have access to changing a setting, a password must be entered that corresponds to the user level which the relevant function is found at (**Daily**, **Advanced** and **Service**).



Menu button | **Settings** | **General** | **System** | **Password** to access the activation of the function.

Enter a service password.

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



Select a page after an operation. After 1 minute, the controller will request the password 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**.

Change password for each of the 3 user levels.

To gain access to changing a password a valid password must first be entered.

Menu button | **Settings** | **General** | **System** | **Password**.

User level	Gives access to	Factory-set code
Daily view (without login)	Entry of number of animals Fine-tuning of temperature, humidity, and air quality Manual climate control	
Daily	Daily: Changing set values	1111
Advanced	Daily + advanced: Changing curves and alarm settings Manual production control	2222
Service	Daily + advanced + service: Changing settings under Technical menu	3333

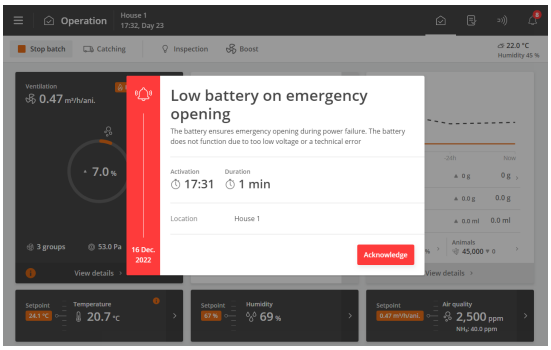
Access limitation to operate the controller

We recommend that you change the default passwords and subsequently change the password regularly.

3.6.3.2 Alarms

Alarms only work when the status is Active house.

The only exceptions are alarm tests and alarms for CAN communication and temperature surveillance at **Empty**.



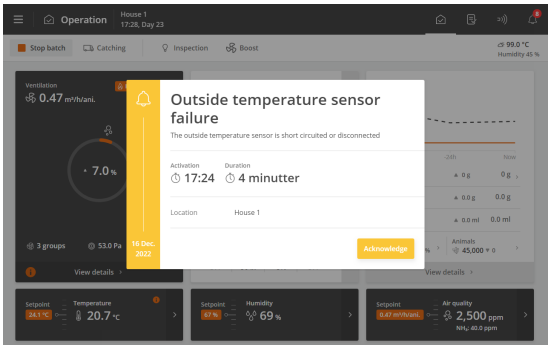
The controller will record the alarm type and time when an alarm occurs.

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

Red: hard alarm

Yellow: soft alarm

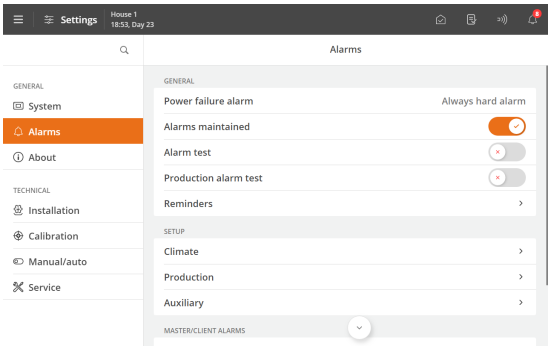
Gray: deactivated alarm (alarm state ceased)



You can choose whether the alarm should be hard or soft for selected climate and production alarms.

Hard alarm: Red alarm pop-ups on the controller and generation through the connected alarm units, e.g., a horn. Only hard alarms trigger the alarm relay.

Soft alarm: Yellow pop-up alert on the house controller. Soft alarms generate a pop-up in the display.

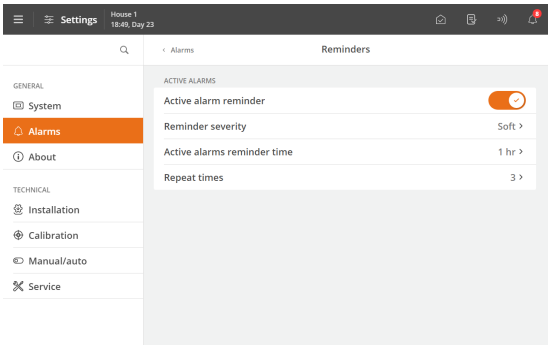


The controller will also trigger an alarm signal, which you can choose to maintain.

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

Menu button | **Settings** | **Alarms**

Alarms maintained: Selecting whether the alarm signal should continue after the alarm condition has ceased.



Reminder

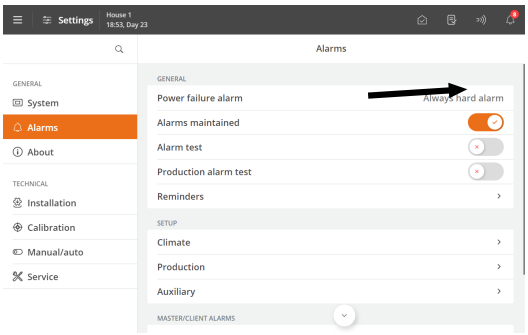
The controller can remind you of an ongoing alarm once you have acknowledged a hard alarm. It should ensure that the cause of the alarm is handled.

Reminder settings:

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

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

See section Climate for setting the alarm and alarm limits.



Switch change

When the controller is connected to an override switch module, an alarm is available for changing the module's switch position.

Changes in the switch position are logged in the Aktivitet-sloggen.

3.6.3.2.1 Stopping an alarm signal

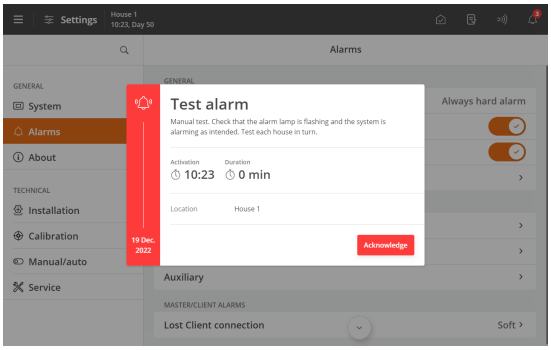
The alarm window disappears, and the alarm signal stops when you acknowledge the alarm by pressing **Acknowledge**.

3.6.3.2.2 Power failure alarm

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

3.6.3.2.3 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.

4 Production

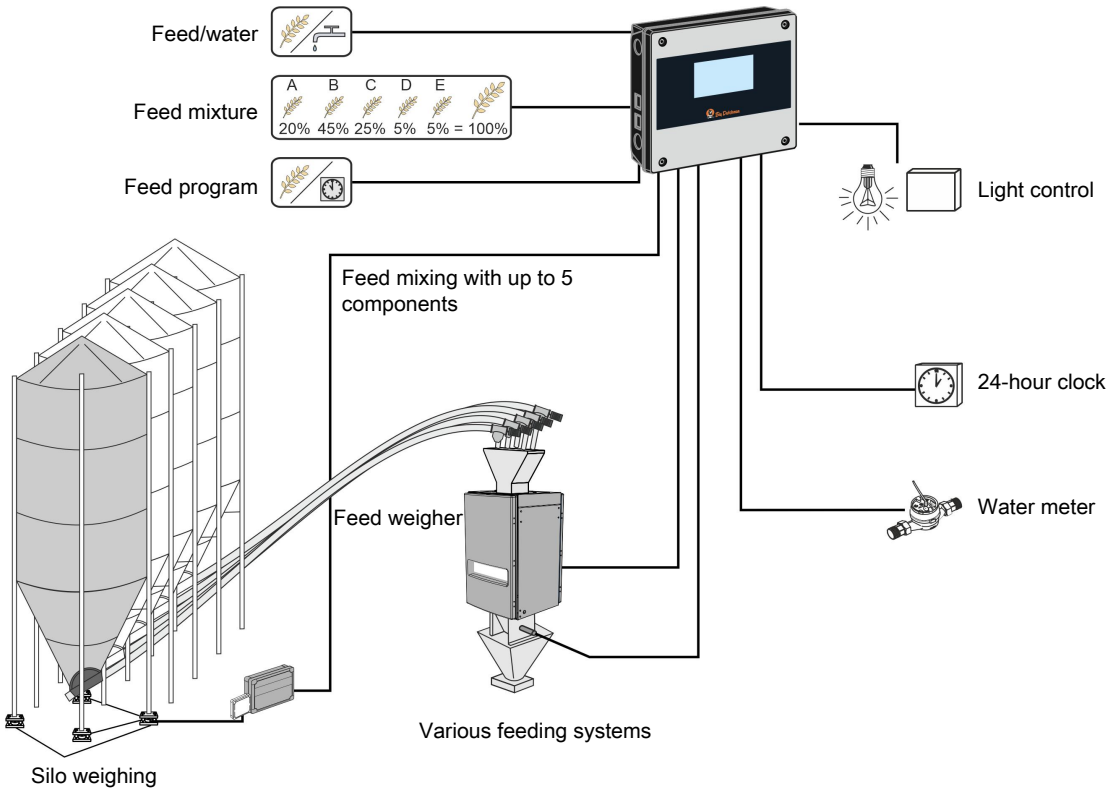
It is of particular importance to know the weight of the animals to monitor and control their productivity.

Being able to control animal behavior means providing the right amount of light in the right places at the right time.

Changes in water consumption can indicate disease outbreaks and water loss, increased temperature in the house, or poor feed quality. In the case of a disease outbreak or increased temperature in the house, the animals' water intake will increase.

The production module is adapted to broiler production and enables systematic monitoring and effective control of the production.

- Continuous monitoring and production control
- Advanced feed program ensuring an optimum FCR/PEF
- Light control for good animal welfare
- Water monitoring and control - quick response in the event of irregularities



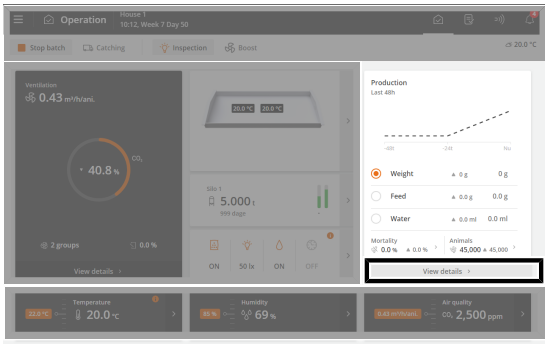
4.1 Batch

Information about the number of stocked and moved animals helps to form the basis for the calculations relating to the production control made by the controller. Key values, such as mortality and feed/animal, are thus dependent on you entering the correct numbers.

The controller continuously calculates the total number of live animals, the number of dead animals yesterday, and the mortality in the livestock house. You can also register the number of stocked animals at the batch start, reasons for culling, etc.

The controller can display whether the registrations were made in the morning or the evening, and a total number of each type of recording for the batch.

Calculations of previous registrations can be viewed in the PC management program BigFarmNet Manager.



Operation. The most important values and recordings for animals in the livestock house can be viewed and entered via the **Production results** card.

A graphic on the face of the card illustrates the current weight, feed, and water values during the last 48 hours. In addition, you can see the actual values for mortality and number of animals in the house and have easy access to record the appurtenant numbers during the batch.

Mortality: entry of the number of dead animals in different categories.

Animal: entry of the number of moved animals.

In the following section, you will see a description of the functions and setting options available for animals.

Operation | Production results card | **Animal**

Stocked	Entry of the total number of animals at start. If animals are stocked or removed from the house during a batch, you can make the entry via the face of the **Production results** card or the menu **Add/remove** (moved) or **Culled/dead**.
Live animals	Displays the number of live animals.
Add/remove	Entry of the number of animals removed or stocked in the livestock house in the different categories.

Operation | Production results card | **Mortality**

Culled/dead	Entry of the number of animals in categories, including reasons for culling/death. These numbers are used to calculate the mortality rate.
Number of dead animals	Display of the total number of dead animals. Here it is also possible to enter a number instead of in the menu **Culled/dead animals**. The numbers entered here are included in the recordings under **Culled/dead animals** in the category **Dead**.
Number of dead animals today	Display of the total number of dead animals since midnight.
Number of dead animals yesterday	Display of the total number of dead animals.
Mortality	Display of the total calculated mortality in percent.
Livability	Display in percent of the number of live animals compared to the number of stocked animals.

Operation | Production results card | **Daily gain**

Daily gain	Display of the animals' gain the last 24 hours.

Operation | Production results card | **FCR**

FCR	Display of the calculated feed conversion **(FCR- Feed conversion rate).** It reflects how efficiently the animals convert feed into body weight. **FCR** is calculated based on: animal weight and feed consumption. The lower the **FCR**, the better the feed conversion.

Operation | Production results card | **PEF**

PEF	Display of the calculated feed efficiency factor (**PEF- Production Efficiency Factor**). It is an overall indication of production efficiency. **PEF** is calculated based on: Weight (kg) x (100 – mortality (%)) Age (days) x **FCR** The higher the **PEF** value, the better the productivity.

Information about the number of stocked and moved animals helps to form the basis for the calculations relating to the production control made by the controller. Key values, such as mortality and feed/animal, are thus dependent on you entering the correct numbers.

The controller continuously calculates the total number of live animals, the number of dead animals yesterday, and the mortality in the livestock house. You can also register the number of stocked animals at the batch start, reasons for culling, etc.

The controller can display whether the registrations were made in the morning or the evening, and a total number of each type of recording for the batch.

Calculations of previous registrations can be viewed in the PC management program BigFarmNet Manager.

Operation. The most important values and recordings for animals in the livestock house can be viewed and entered via the **Production results** card.

A graphic on the face of the card illustrates the current weight, feed, and water values during the last 48 hours. In addition, you can see the actual values for mortality and number of animals in the house and have easy access to record the appurtenant numbers during the batch.

Mortality: entry of the number of dead animals in different categories.

Animal: entry of the number of moved animals.

In the following section, you will see a description of the functions and setting options available for animals.

Operation | Production results card | **Animal**

Stocked	Entry of the total number of animals at start. If animals are stocked or removed from the house during a batch, you can make the entry via the face of the **Production results** card or the menu **Add/remove** (moved) or **Culled/dead**.
Live animals	Displays the number of live animals.
Add/remove	Entry of the number of animals removed or stocked in the livestock house in the different categories.

Operation | Production results card | **Mortality**

Culled/dead	Entry of the number of animals in categories, including reasons for culling/death. These numbers are used to calculate the mortality rate.
Number of dead animals	Display of the total number of dead animals. Here it is also possible to enter a number instead of in the menu **Culled/dead animals**. The numbers entered here are included in the recordings under **Culled/dead animals** in the category **Dead**.
Number of dead animals today	Display of the total number of dead animals since midnight.
Number of dead animals yesterday	Display of the total number of dead animals.
Mortality	Display of the total calculated mortality in percent.
Livability	Display in percent of the number of live animals compared to the number of stocked animals.

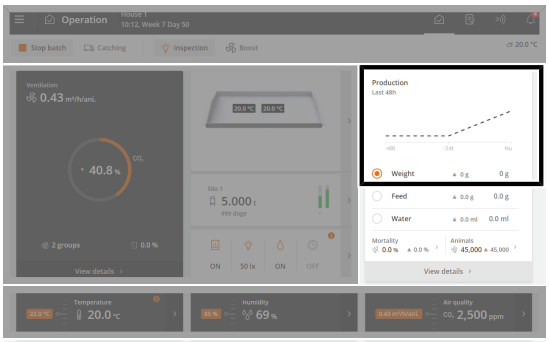
Operation | Production results card | **Daily gain**

Daily gain	Display of the animals' gain the last 24 hours.

4.2 Weight

To achieve optimum production, it is important that the animals' gain follows the recommendations of the breeding company. Changing the amount of feed or the light control can regulate the gain.

Weighing can be carried out automatically or manually.



Operation. A graphic on the **Production results** card shows the current average weight for the last 48 hours (14 days for breeder).

The card also provides a shortcut for entering the result of manual weighings.

In the following section, you will see a description of the functions and recording options available for weight.

Automatic weighing

In automatic weighing mode, the controller calculates, among other things, these key values:

- Coefficient of variance
- Uniformity
- Average
- Gain
- Number of weighings for each bird scale
- Number of registrations

These values can also be recorded and calculated based on *animal groups* (for breeders or layers).

Operation | Production results card | **Scale | Bird scale**

Gain	Display of the animals' estimated gain in the last 24 hours.

Coefficient of variance	Displays the animals' weight deviation as a percentage compared to the average weight. The higher the standard deviation, the less uniform the animals.
Uniformity	Display of the percentage of animals that are within a limit of +/- 10% of the average weight. The higher the percentage, the more uniform the animals.
Number of weighings	Display of the number of weighings in the last 24 hours. There should be at least 100 approved weighings per day (weighings within the search limit). Too few weighings may be due to: - The scale being placed in an area with too few animals and too little activity. - The **Search limit** setting is incorrect.
Number of registrations	Display of the number of stable weighings higher than 25 grams recorded within the last 24 hours.
Average uncorrected	Display of the measured average weight before correction of the correction factor.
Adjusted reference weight	Display of the expected weight of the animals at the current day number. It is based on the batch curve values under **Strategy**. The controller, however, adapts the reference weight to include as many weighings as possible.
Positive search limit/ Negative search limit	Setting limit values for sorting out weighing results. Weighing results above or below this limit in relation to the reference are not used. In this way, the weighing results obtained from weighing more than one animal or other types of incorrect weighings shall be eliminated. See also the section Search limits [▷ 32].
Correction factor	Setting a correction factor that compensates for the less active and less frequent weighing of heavy animals. The controller calculations take into account the different sizes and behavior of the animals. The value is set as a batch curve under **Strategy**.
Period for deactivation of bird scale	Setting a period of time where the animals are not weighed automatically. See also the section Disconnect period [▷ 33].
Bird scale signal	Display of the current weight recorded by the animal scale (not displayed for manual weighing).

We recommend calibrating bird scales at least once per batch. See also the Technical Manual.

Manual weighings

In manual weighing mode, you must enter the animals' average weight in the controller.

The manual weighings should be carried out on the same day and time of the week before feeding to ensure that the weighings are comparable.

Operation | Production results card **| Weight**

Manual weight	**Without automatic bird scale** Enter the average of your manual weighings. The value forms the basis for the controller calculations.

	Weigh the animals manually on day 7, 14, 21, 28, 35, 42 ... or on the same day numbers as used in the controller reference curves (if automatic weighing is applied). Weigh at least 100 birds or 0.5 % of the batch. Preferably, you should make at least 4 weighings evenly distributed in the house.
Inspection weight	**With automatic bird scale** The inspection weight can be used as a basis for comparison of the automatic weighings. Enter the average of your manual weighings. Weigh the animals manually on day 7, 14, 21, 28, 35, 42 ... or on the same day numbers as used in the reference curves of the controller. Weigh at least 100 birds or 0.5 % of the batch. Preferably, you should make at least 4 weighings evenly distributed in the house.

4.2.1 Search limits

The controller only approves weighings within the deviation in percentage from the adjusted reference weight.

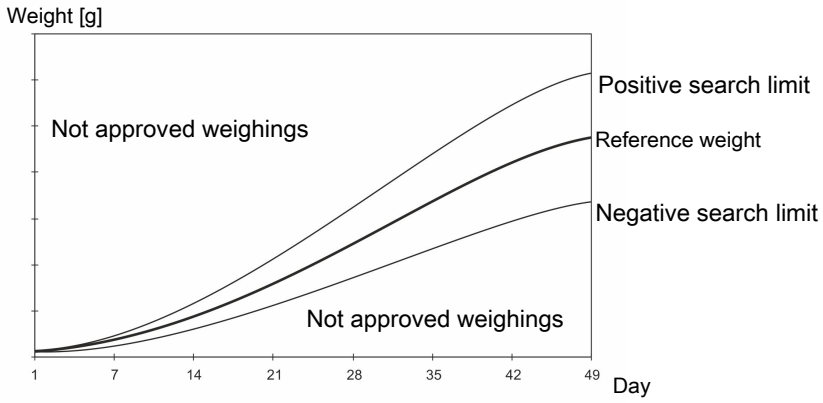


Figure 5: Example of search limit in relation to the reference weight

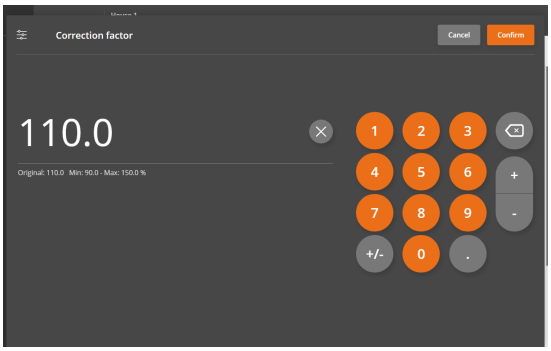
Day	Reference weight [g]	+/- 15% [g]	Minimum values [g]	Maximum values [g]
1	42	12.6	29.4	54.6
7	162	48.6	113.4	210.6
14	419	125.7	293.3	544.7
21	785	235.5	549.5	1020.5
28	1223	366.9	856.1	1589.9
35	1794	538.2	1255.8	2332.2
42	2143	642.9	1500.1	2785.9
49	2483	744.9	1738.1	3227.9

Example of calculated, accepted minimum and maximum weighings at a search limit of 15%.

4.2.2 Correction factor (only broilers)

The natural behavior of the broilers results in the heavier broilers not stepping onto the bird scale as often as the lighter broilers. The recordings from the scale might therefore show a weight lower than the broilers' actual weight.

You can set a correction factor, **Correction factor,** to compensate for the weight deviation. By means of the correction factor, the controller corrects the recorded weight, depending on the age of the animals.



The controller factory settings are preset with a correction factor curve, which you can adjust with your observations during the batch.

To set a correction factor, you must calculate how much the recorded weight is lower than the settled slaughter weight (in percent).

Slaughter weight:	2190 g
Final weight controller:	2110 g
Calculation:	2190 / 2110 x 100% = 103.8%
Correction factor:	Approx. 104%

Example of calculation of correction factor based on the factory-set value.

We recommend that the correction factor be adjusted for the current animals.

It can be done by setting the correction factor to 100% for all day numbers and making frequent manual weighings during the first 1 or 2 batches. Compare weight results with the weight reference curve and adjust the correction factor.

Use the slaughter weight from the slaughterhouse as the last curve point.

Be aware of the animals' weight loss during catching, transport, and stay at the slaughterhouse. If possible, ask the slaughterhouse for information about weight loss.

From the last feeding to weighing at the slaughterhouse	Weight loss in grams per animal
< 6 hours	0-20
6-8 hours	40-50
8-12 hours	60-70

Table 1: Indicative weight loss figures [g]

4.2.3 Disconnect period

When feeding, the animals eat and drink a lot in a short time; therefore, their weight also increases greatly. For a period after feeding, the weight of the birds is therefore "false."

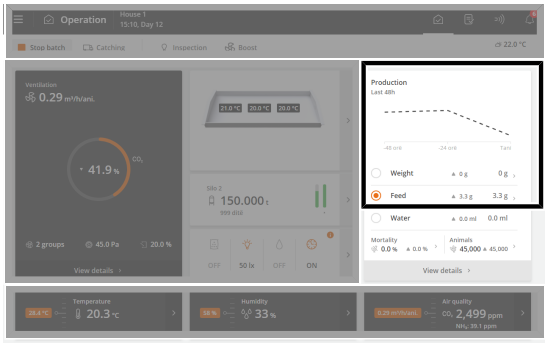
It is possible to ignore all the weighings in a given period during and after feeding to get a more accurate average weight. The controller will disconnect weighing for the period of time you set.

If you set **Start** and **Stop** at the same time, the weighing will not be interrupted (The factory setting is 00:00).

With the setting **Start** 23:00 and **Stop** 02:00, the weighing is interrupted for 3 hours from one day to the following day.

4.3 Feed

The feed function can be adapted to different types of feeding systems. Combined with add-on production software, it allows you to control chain feeding, pan feeding, destination feeding, and tier feeding. Feed programs and feeding according to reference values enable fully automatic feeding. The feed programs can also be extended with functions such as feed mixture and feed supplements.

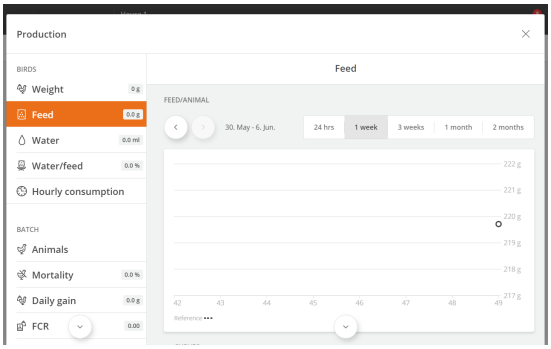


Operation. A graphic on the **Production results** card shows the current feed consumption the last 48 hours.

4.3.1 Feed consumption

The controller calculates the feed consumption continuously and updates the consumption as the feed content in the silo is reduced. Consumption for all types of feed is calculated separately.

The controller also displays calculations for feed consumption per animal and water/feed consumption ratio.



Operation | Production results card | **Feed**

Feed data is collected and presented in graphs and overviews, including key metrics.

It is also possible to enter the weight of feed manually. For example, it may be appropriate to supply feed if there is not enough feed in the silo and feed is provided through other means, or you feed from sacks due to system errors.

Operation | Program overview card **| Manual feed**

Add feed	Enter the weight of feed available in the feeding system. Enter (max. 1000 kg at a time).
Remove feed	Enter the weight of feed the animals consume. Enter (max. 1000 kg at a time). The controller uses the data entered to make calculations for feed consumption.

4.3.1.1 Feed in system

When using pan or chain feeding, the amount of feed used to fill the system before the animals arrive is subtracted from the feed consumption. It is done to ensure correct FCR and PEF calculations for broilers, among other things. The system is considered full, when there is no longer a feed demand.

In houses with a feed weigher the production controller will fill up the feed system when you set the house to active house (see the section Aktivt hus - Tomt hus). The amount of feed used for filling is not entered as feed consumption (as the feed has not been consumed but only fills the system).

When the feed system is emptied in connection with partial or complete catching, the feed is added to the feed consumption for the batch.

4.3.1.2 Manual distribution of feed before start

In houses with a feed weigher, the controller will fill up the feeding system when you set the house to Active house (see the section House status Active house - Empty house). The amount of feed used for filling is not counted as feed consumption (as the feed has not been consumed but only fills the system).

If you want to manually distribute feed (e.g., on paper) in the house, follow this procedure to ensure that the feed is included in the feed consumption.

1. Wait until the first filling procedure is completed.
2. Take out the feed from the last hopper with the cross auger sensor.

4.3.2 Feed control

Depending on the type of feed control, the feed can be regulated in terms of time or the amount of feed.

You can change the amount of feed by:

- Increasing/decreasing the amount of feed per day.
- Changing the day number on which the amount of feed is increased in the feed curve.

Operation. When the feeding is in progress, it is displayed with a colored icon on the card **Program overview**.

The card provides access to view and change the program, which is active on the day number.

4.3.2.1 Feed programs

The time control of feeding is regulated using the feed programs. The feeding follows a fixed program, which determines at what time of day and the maximum length of time to be fed.

The feed programs can contain up to 16 programs starting on different day numbers. A program is maintained from one day number to the next day number. If no programs have a higher day number, the program applies to the rest of the batch.

Set for each day number (up to 16):

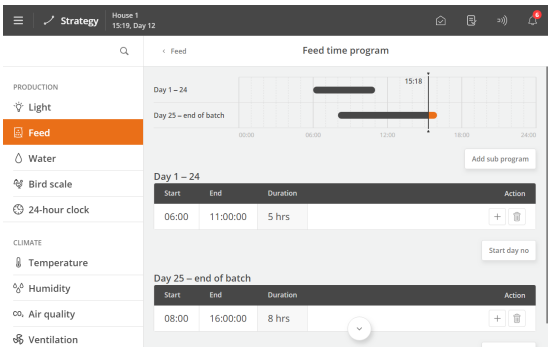
- Number of periods per day
- Start and stop time

Please note that:

- On the day before day number 1 (Day 0), the feed relay is always switched on. Feeding has therefore been carried out before stocking a new batch in the house.
- The feeding line is off outside the selected periods. However, the cross auger is still able to fill the cross-auger hopper.
- If a start time is set from 00:00 to 24:00, feeding will be carried out for 24 hours.
- When **Status** is **Empty house**, feeding is disconnected.

Feeding via lighting program

There must be an adequate lighting level in the house during feeding so that the animals are active and seek out the feed. The feeding can also be set up to follow the lighting program. See also the section Light [▶ 46]. The **Feed time program** is not visible if the lighting program regulates the feeding.



Menu button | **Strategy** | **Feed** | **Feed time program**

Press the field in the column **Start** to set a start time.

Press the field in the column **End** to set an end time.

Press + to add a new period.

The blocks on the timeline show when and for how long feeding is taking place.

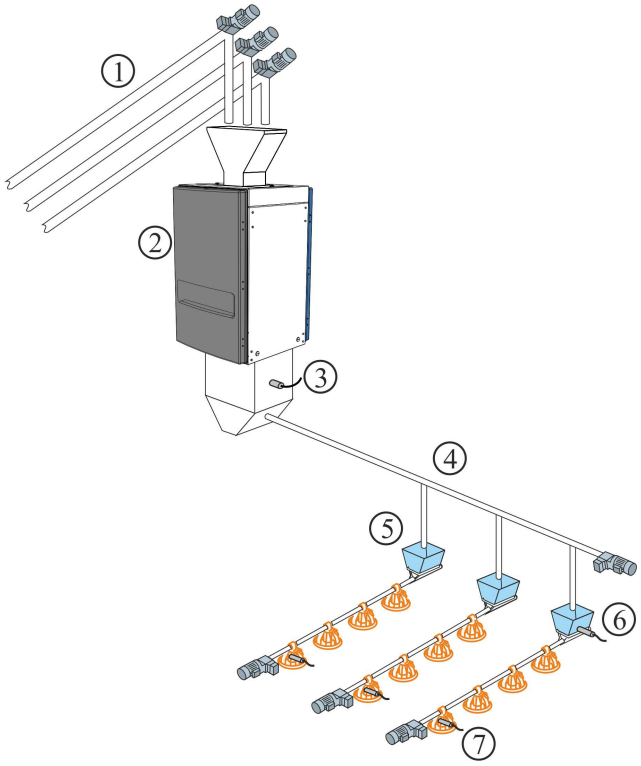
Press the **Start day no** field to change the day number on which the program begins, if necessary.

Press the **Add sub program** to create a new program starting with another day number.

Press to delete a period.

4.3.2.2 Feed control - pan feeding

In principle, the feeding system is structured as follows:



1. Silo auger – up to five types of feed
2. Feed weigher
3. Feed demand sensor
4. Cross auger
5. Cross-auger hopper
6. Cross auger sensor in hopper
7. Level sensor in control pan

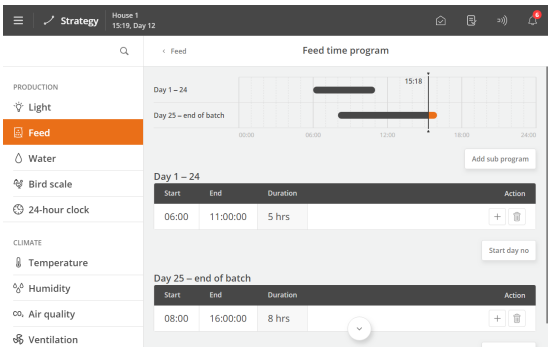
When the installation is carried out, set pan feeding according to one of the following control methods: See also the Technical Manual.

- Time-controlled [▶ 36]
- Time- and amount-controlled [▶ 37]
- Time- and amount-controlled with distribution [▶ 37]

4.3.2.2.1 Time-controlled pan feeding

Feed is dispensed in the time intervals set in the feed program.

A sensor in the cross-auger tank of the last feed line registers whether there is a requirement for feed supply. If so, the cross auger fills up all the tanks during the feeding period. The system stops when the sensor is covered by feed.



Feed program

Setting the feed program. See the section Feed programs [▶ 35].

The quantity of feed the animals are expected to eat is determined in a feed reference curve. If the time it takes the animals to eat changes suddenly, it can indicate problems that should be investigated further.

4.3.2.2.2 Time and amount controlled pan feeding

Feed is dispensed in the amount set in the feed reference curve and in the time intervals set in the feed program or the lighting program under **Strategy**.

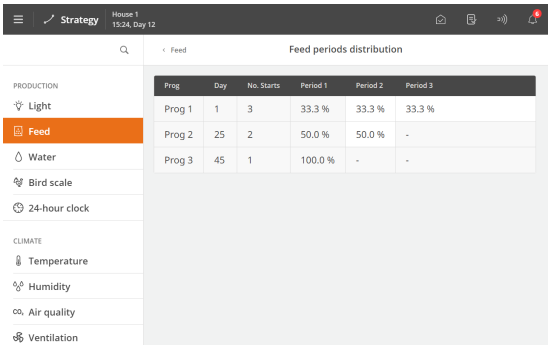
If the controller is part of a network with the management program BigFarmNet Manager, the reference curves must be set there. An offset value may, however, be set directly at the controller.

The feed program is set as described in the section Feed programs.

Period only with time control

Time and amount controlled feeding can be set to be active only for part of the batch. A start day and an end day indicate in which part of the batch the time and amount controlled feeding applies, respectively. Outside this period, only time controlled feeding is applied according to the feed or lighting program. (is set by pressing the **Menu button** | **Settings** | **Installation** | **Manual installation** | **Production** | **Feed control settings** | **Controlled feeding**).

4.3.2.2.2.1 Feed periods distribution



Menu button | **Strategy** | **Feed** | **Distribution of feeding periods**

In the feed programs, several daily starts are set for each program.

The desired amount of feed on the day (as indicated in the reference curve) can be divided between the number of starts (periods).

If a period changes, the controller automatically adjusts the successive values. Therefore, make the changes, so they follow the periods' sequence.

4.3.2.2.3 Time and amount controlled pan feeding with distribution

For time and amount controlled feed, the controller calculates whether the amount consumed corresponds to the consumption required. The controller automatically adapts the amount in successive periods if more or less than the required amount has been consumed. See also the section Feed periods distribution [▶ 37].

Consumption is checked when the animals have finished eating. That is, when the controller no longer records consumption.

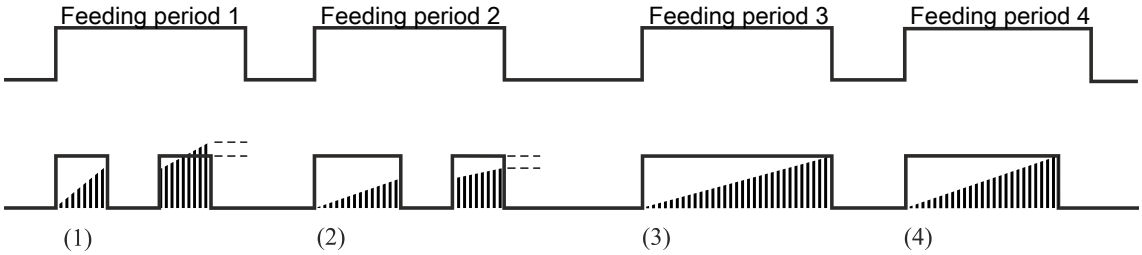


Figure 6: Example of correction of feed consumption over periods.

(1) Too much feed is deducted from the next feeding period.

(2) Is stopped by the feed program. Too little feed is transferred to the next feeding period.

(3) No correction. The feed program stops feeding. The feeding amount is as required.

*(4) Feeding stops before the feeding period ends. The animals have not eaten for a set period (***Check consumption when birds full***) and have received the required amount of feed.*

The controller stops the feeding period if more feed has been allocated than required. An amount corresponding to too much feed allocated compared to the required amount will be deducted from the necessary amount of feed for the next feeding period.

If less than required has been allocated, the controller starts refeeding after a pause.

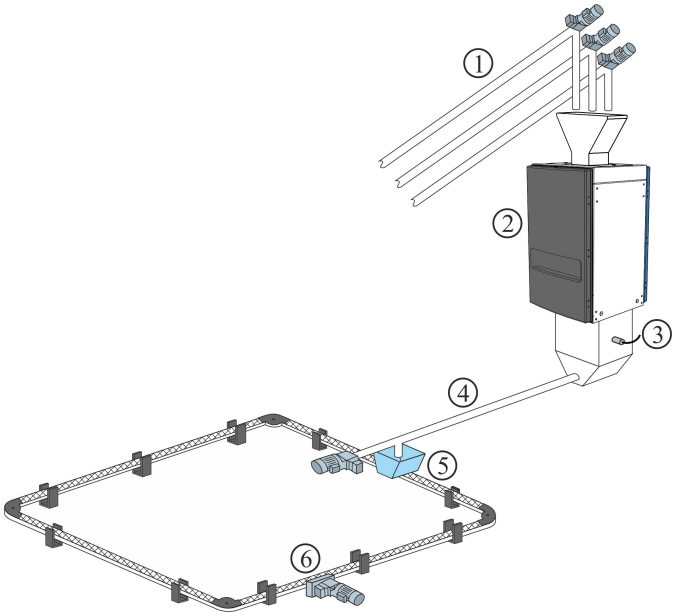
The controller stops the feeding period if the required amount has now been reached.

If the amount has not been reached, feeding will continue until the required amount of feed has been achieved or the feeding period has ended. If the required feeding amount has not been reached before the end of the feeding period, the lacking amount of feed will be transferred to the next feeding period.

To set up **Controlled feeding**, you press the **Menu button** | **Settings** | **Technical | Installation | Manual installation | Production | Feed control settings | Controlled feeding**. See also the Technical Manual.

4.3.2.3 Feed control – chain feeding

In principle, the feed system is structured as follows



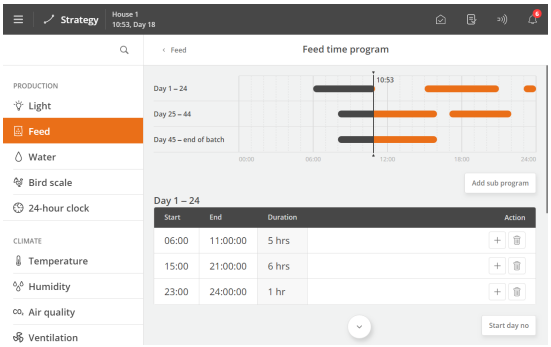
1. Silo auger – up to five types of feed
2. Feed weigher
3. Feed demand sensor
4. Cross auger
5. Cross-auger tank
6. Chain feeding system

When installation is carried out, chain feeding is set to one of the following control methods: See also the Technical Manual.

- Time controlled
- Control according to light program

Chain feeding controls feeding by supplying feed daily for a number of times during the set periods of time.

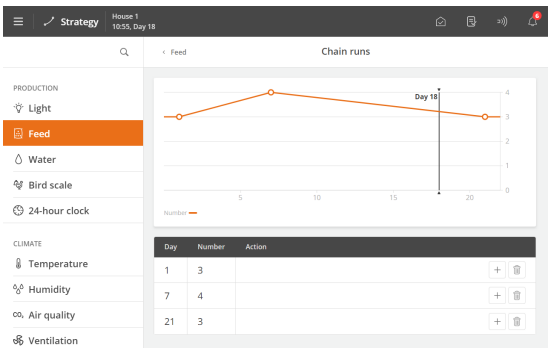
4.3.2.3.1 Time-controlled chain feeding



Feed program

Set the feeding periods. Also, see Feed programs [▶ 35].

The menu **Feed program** is not visible if chain feeding is controlled according to the lighting program.



Chain runs

Menu button | **Strategy** | **Feed** | **Chain runs**

Set the following for each program:

- Day number
- The number of daily runs

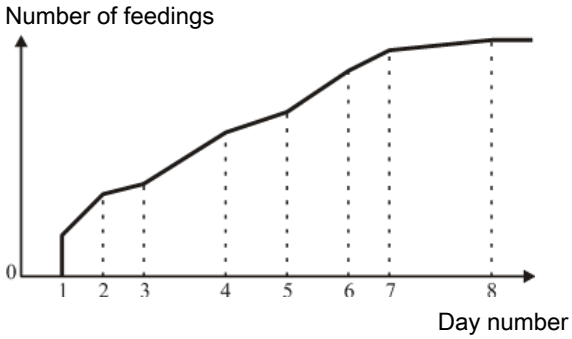


Figure 7: Chain feeding: Number of feedings per day.

The number of daily feedings gradually increases between two day numbers.

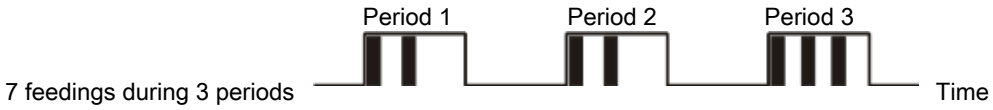


Figure 8: Chain feeding: Example 1: Distribution of the number of feedings

The number of feedings is distributed equally between the number of starts. Excess feedings are distributed from the last start.

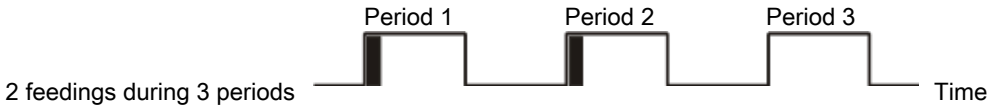


Figure 9: Chain feeding: Example 2: Distribution of the number of feedings

If the number of feedings is less than the number of starts, feeding is carried out once at each start until the set number of feedings is reached.

Operation | Program overview card **| Feed settings**

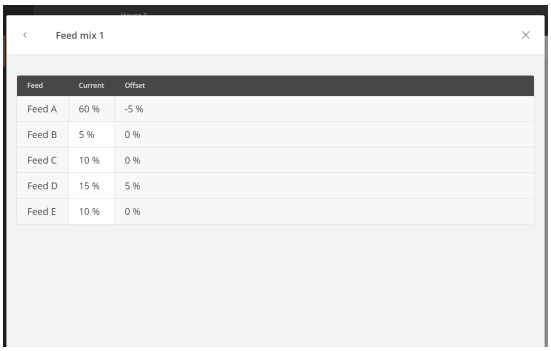
Chain last start time	Display of the latest chain start.
Chain next start time	You can set a manual chain start if you want to change the start time in relation to the feed program. The controller postpones the chain start if the cross auger hoppers are not full.
Total number of chain starts today	Display of the calculated number of chain starts for the current day. The number gradually increases between two day numbers.
Total number of chain starts yesterday	Display of the total number of chain starts yesterday compared with the number of the current day.
Number of chain runs today	Setting several chain runs for the current day. The number of chain runs is otherwise set in the feed program. The following days will proceed using the same offset. If this number is higher than the calculated number of chain runs, there are too many runs compared to the length of the period.
Number of chain runs today calculated	Display of the number of chain runs that can be applied within the periods.
Number of chain runs offset	Display of the offset compared to the number of feedings set in the program.

Chain runtime	Setting the runtime for one chain rotation. It is important to set this parameter correctly.

4.3.2.4 Feed mixture

Only for feed weigher of the type Drum weigher and 9940.

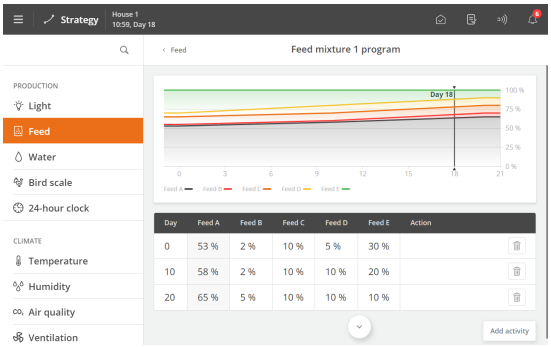
When a drum weigher or FW 9940-2 is used, the controller can handle feed mixtures of up to 5 types of feed.



Operation | Program overview card **| Feed settings | Feed mixture**

The feed mixture can be adjusted with an offset without changing the feed mixture curve. The proportion of feed B, C, D, and E is adjusted according to the current curve value.

By subtracting the offset value from **Current**, it is possible to reset the offset and return to the original curve value.



Menu button | **Strategy | Feed | Feed mixture**

A mixing program with 8 programs controls the mixture of different feed types.

Enter the desired quantity in percent of feeds B, C, D, and E. The controller then calculates the amount of feed automatically.

The controller changes the mix proportion continuously, from day to day, to prevent sudden changes in the feed composition.

One offset is added to the feed mixture curve. If very high offset values have been set, **Feed X today** may, in time (when the curve rises and falls) exceed 100% or fall below 0%. In that case, the **Feed X today** value should be corrected. However, the controller will always calculate the correct mix proportion.

Operation | Catching | Control

Type of feed when feed mixing is stopped	Catching. Displaying the type of feed selected for the transition to Catching. See also the Catching section.

4.3.2.5 Feed supplement

The function allows feeding supplementary feedstuffs (such as grain shells or whole wheat fed on the floor) independently of the normal feed system. Supplementary feedstuffs can be fed on a set day number and time during the day.

Menu button | **Strategy | Feed | Feed supplement**

Feed supplement from day	Setting the day number from when the feed supplement is to be used.
Feed supplement feed type	Setting of the feed type that contains the feed supplement.
Feed supplement percentage	Setting the feed supplement percentage of the normal feed.
Feed supplement time period	Setting the time when the feed supplement is to start and stop.

The feed weigher weighs 20 kg each time. The feed supplement is set at 10%.

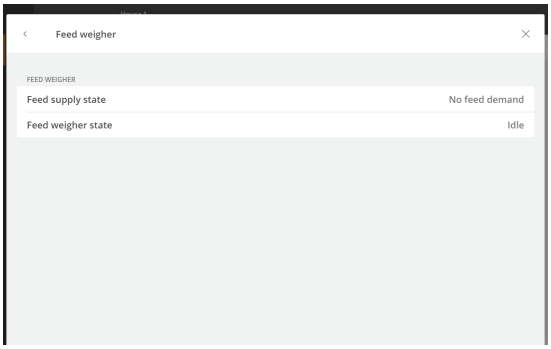
The normal feed mixture comprises 50% A and 30% B.

C feed:	10% of 20 kg:	2 kg.
A feed:	70% of (20-2):	12.6 kg.
B feed:	30% of (20-2):	5.4 kg.

Table 2: Example of the addition of feed supplements.

The supplement is added, for example, just before the end of the penultimate feed and stops just before the end of the last feeding.

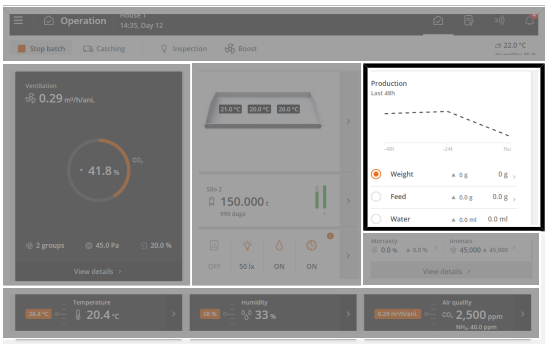
4.3.3 Feed weigher



Operation | Program overview card **| Feeding | Feed weigher**

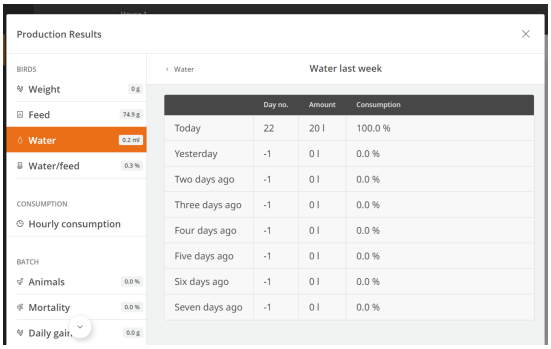
The controller provides information about the filling of the weigher and the current status of the weigher.

4.4 Water



Operation. A graphic on the **Production results** card shows the current average water consumption for the last 48 hours (14 days for breeder).

In the following section, you will see a description of the functions and recording options available for water.



Operation | Production results card | **Water**

Water data is collected and presented in graphs and outlines, including important key figures.

The controller records the water consumption in liters to provide a complete overview. The water consumption is also recorded in percent to make sudden changes visible.

Under normal conditions, the percentages will increase by a few percent per day as the age of the animals increases.

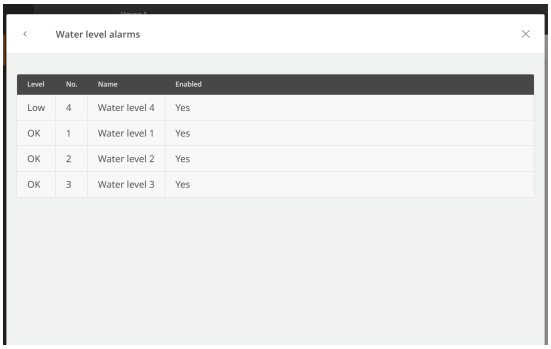
Operation | Program overview card | **Water settings** (only in case of water control)

Water status	Displays whether the controller has turned the water on or off. When setting up water alarms, it is possible to choose whether the water should be turned on or off when an alarm is generated.
Water amount this period	Display of water consumption in the current period.
Water target amount	Display of the maximum amount of water the animals are allowed to consume in the current period.
Water reference	Display of the water consumption target per animal in the current period.

Water level alarms

The water level alarm is used to monitor the water level to ensure that there are no breaks on the drinking lines.

It quickly shows water supply errors, such as blockage, broken water pipes, or lack of water supply. The primary purpose is thus to ensure a stable water supply for the animals. See also the section Water alarms [▶ 58].



Input terminals in alarm mode are displayed at the top of the list. Next, the faulty input terminals are displayed, which are monitored before an alarm is released. At the bottom of the list, you find the input terminals where the status is OK.

Water level alarms	Display of the current water level alarms. The list is sorted continuously according to the status of the input terminals (**Critical, High,** **Low, OK**).
Enable/disable individual water level alarm	Connection and disconnection of the alarm for each water level input.

4.4.1 Water control

The controller has 4 types of water control:

- Time controlled according to the program
- Time controlled according to the lighting program
- Time and amount controlled according to the program
- Time and amount controlled according to the lighting program

In the case of time and amount controlled water, the controller turns off the water when the desired amount has been consumed.

It is also relevant to install water control to draw attention to alarms to quickly monitor leakages and blockages in the water system.

In principle, water control works as feed control. The water program can contain up to 16 programs starting on different day numbers. A program is maintained from one day number to the next day number. If no programs have a higher day number, the program applies to the rest of the batch.

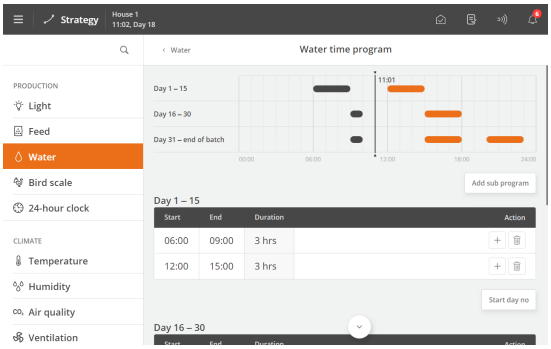
Set for each day number (up to 16):

• Number of periods per day

• Start and stop time

Please note that:

- During the time up to the first day number, the water supply is open all the time.
- That there is no access to water outside the periods selected.
- That if a start time is set from 00:00 to 24:00, water is available around the clock.



Water time program

Menu button | **Strategy** | **Water** | **Water time program**

Press the field in the column **Start** to change the start time.

Press the field in the column **End** to change the stop time.

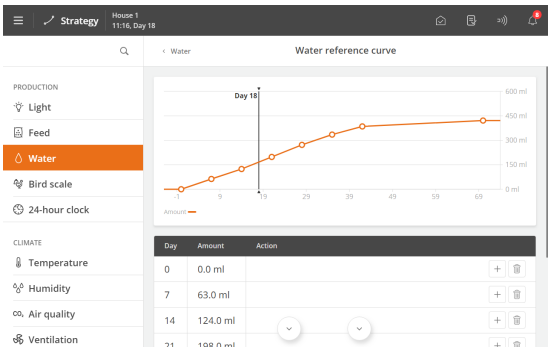
The blocks on the timeline show when and how long the water is available.

Press + to add a new period.

Press the **Start day number** field to change the day number on which the program begins, if necessary.

Press the **Add subprogram** to create a new program starting with another day number.

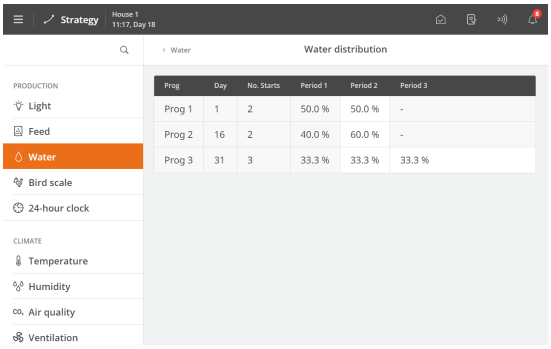
Press to delete a period.



Water reference curve

Menu button | **Strategy** | **Water** | **Water reference curve**

The available water quantity is determined in a water reference curve.



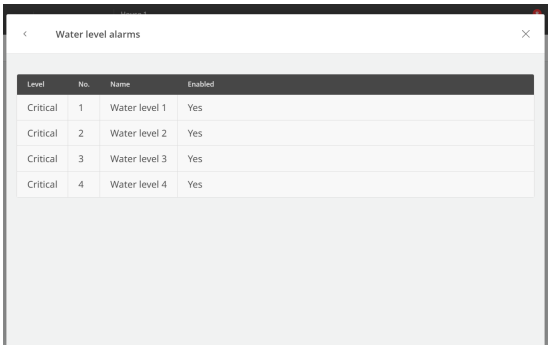
Water distribution by periods

Menu button | **Strategy** | **Water** | **Water distribution**

Several starts for each program are set in the water programs.

The desired amount of water on the day (as indicated in the reference curve) can be divided between the number of starts (periods).

If a period changes, the controller automatically adjusts the following values. Therefore, make the changes so they follow the periods' sequence.



Water level

When a sensor detects that the water level is not within the desired range, the state of this sensor is displayed at the top of the list.

From the factory the alarm is set to send a warning after one minute. See also the section Water alarms [▷ 58].

4.5 Light

Among other things, the light can be used to adjust the animals' behavior during the day as increased light intensity increases the activity and decreased light intensity decreases the activity.

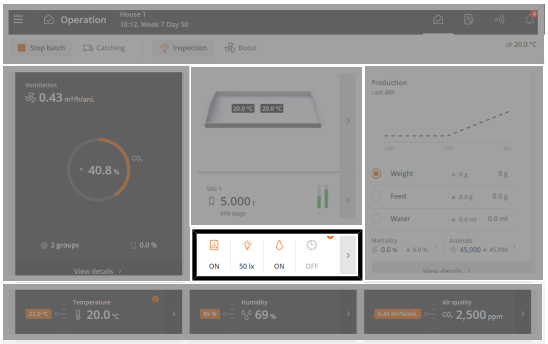
The controller has 3 types of program-controlled light:

- Main light
- Slave light
- Extra light

And inspection light which is manually controlled (by add-on software).

Each type of light has various settings options depending on how the light is installed and set up.

	Mode	Program	Light intensity
Main	Standard (dimmer)	Yes	Dawn/dusk
		Reduced main light	Fixed level
	Flexible (dimmer)	Yes	Up to 30 points a day
	Standard (ON/OFF)	Yes	No
Slave	Standard (dimmer)	No. Offset to main	Dawn/dusk
	Standard (ON/OFF)	No. Offset to main	No
Auxiliary	Flexible	Yes	Up to 30 points a day
Inspection	Manual (automatic stop)	No	Fixed level



Operation. When the light is on, it is displayed with a colored icon on the card **Program overview**.

The card provides access to view and change the program which is active on the day number.

4.5.1 Light program

In principle, the light control works as feed control.

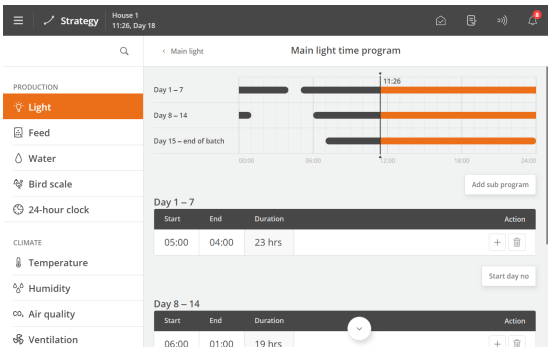
The light program can contain up to 16 programs starting on different days numbers. A program is maintained from one day number to the next day number. If no programs have a higher day number, the program applies to the rest of the batch.

Set for each day number (up to 16):

- Number of periods per day
- Start and stop time

Please note that:

- The light up to the first day number is on 24 hours a day with the same light intensity as for Day 1.
- That there is no access to light outside the periods selected.
- Light is available around the clock if a start time is set from 00:00 to 24:00.



| Menu button **Strategy** | **Light**

Press the field in the column **Start** to change the start time.

Press the field in the column **End** to change the stop time.

Press + to add a new period and set the start and stop time.

Press the field **Start day no.** to change the day number of the period, if required.

Press **Add subprogram** to add a new day number.

The blocks on the timeline show when and how long the light is on.

Press to delete a period.

4.5.2 Main light

The controller has 2 types of main light:

- Standard – same light intensity all day (but with reduced light, and dawn and dusk options)
- Flexible - different light intensities during periods of the day

Operation | Program overview card **| Main light settings**

Main light intensity set-point	The setting of light intensity for the main light (with light dimmer).
Main light off intensity setpoint	The setting of minimum light intensity (with light dimmer). The setting of light intensity when the lighting program is OFF.
Main light sensor value	Reading of the current light intensity measured by the light sensor (with light sensor). When there are more sensors, the controller shows an average value.
Light sensor history	Graphic display of the history curve values in different time intervals from 24 hours to 2 months.
Reduce main light	Reading of whether the reduction of the main light is ON or OFF. See section Reducing main light [▶ 49].

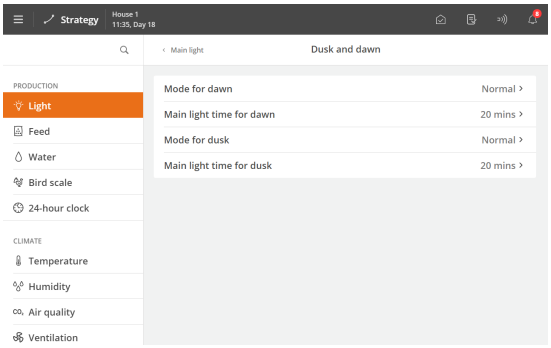
Menu button **Strategy**	**Light**	
Main light time program	The controller automatically regulates the light in the house based on the values you indicate in the **Light time program** menu. The time program is set as described in the section Light program [▶ 46].
Light intensity relative to setpoint (Only at flexible light)	The setting of the light intensity in percent relative to 100% light intensity during periods of the day. See section Flexible light settings [▶ 49].
Main light intensity curve	The setting of the light intensity of each day number.
Dusk and dawn (Only at standard)	Settings of periods with increasing and decreasing light intensity for transition between light and darkness in the house. See also the Dawn and dusk [▶ 48] section. Only available in houses with light dimmers.
Settings for flexible main light (only at flexible)	Menu for setting light programs. The controller automatically regulates the light in the livestock house based on the values you indicate in the menu. The program is set as described in the section Flexible light settings [▶ 49].

Please note that there may be correlation between feather pecking, injury, mortality and the light intensity in the house.

4.5.3 Dawn and dusk

The function is intended for houses with standard lighting control.

When a light dimmer is used, the light level can be controlled so that a light period starts with "Dawn" where the light is changed from "Night" to "Day". Similarly, a light period ends with "Dusk".



Over a set period, the controller changes the light to the required level.

Periods for dawn and dusk can be set independently.

Set the duration of the individual periods and the value of the light intensity when the period expires.

Start time: 14:00

Dawn: 00:20

Dusk: 00:30

Stop time: 16:00

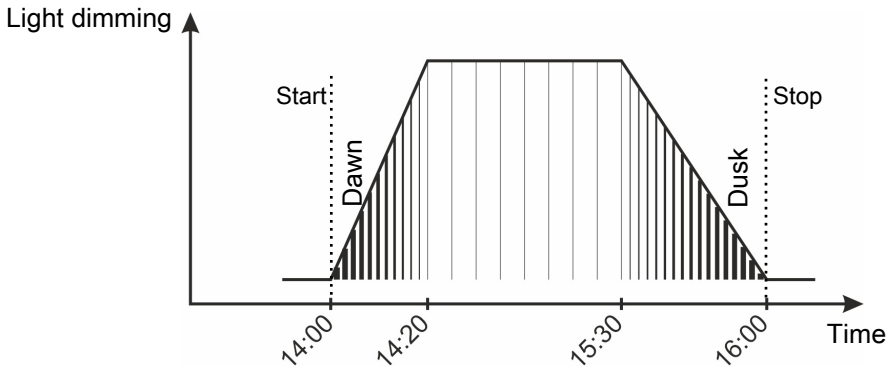
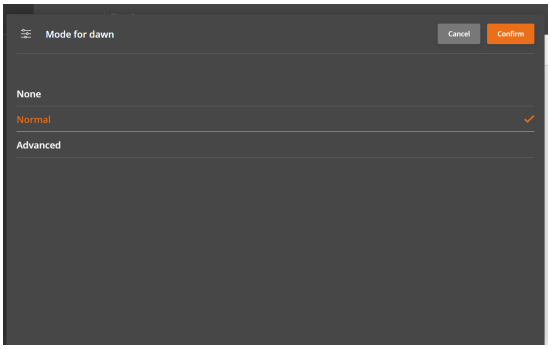


Figure 10: Normal light dimming Dawn and dusk are integrated in the light period.

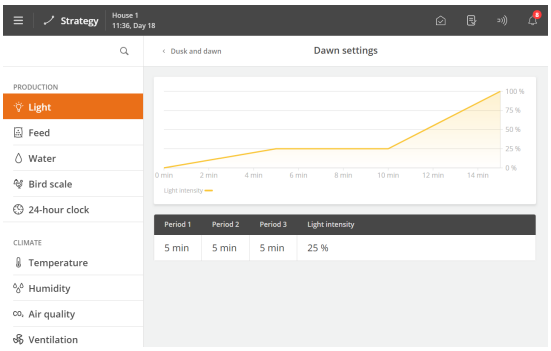
4.5.3.1 Dawn and dusk - advanced

The dawn and dust periods can follow a selected sequence of time, independently of each other: **Normal** or **Advanced**.



Normal: Over a set period, the controller changes the light to the required level

Advanced: Over three periods, the controller changes the light to the required level.



Advanced

Set the duration of the individual periods as well as the value of the light intensity when the period expires.

Operation | Catching

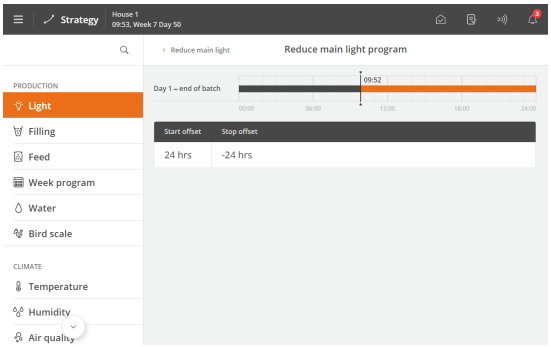
Light control	Catching. See also the section Catching. Selection of activation/deactivation of the different light types at catching. Display of the status for catching light.

4.5.4 Reducing main light

The function is intended for houses with standard lighting control. Changing the light level for a period every 24 hours can contribute to regulating the behavior of the animals. A lower light level would thus make the animals calmer.

Operation | Program overview card **| Reduce main light**

Reduce main light state	Reading of whether the reduction of the main light is ON or OFF.



Start offset and **Stop offset** must be within the ON time of the light program.

Menu button | **Strategy | Light | Main light | Reduce main light**

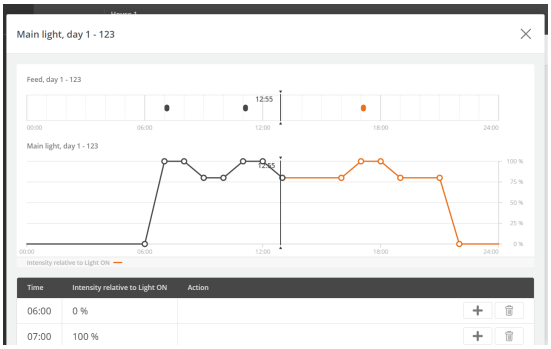
Start offset	The light reduction starts after the lighting program has started. Setting how long after.
Stop offset	The light reduction stops before the lighting program stops. Setting how long before.
Reduce main light program	Setting the light reduction according to the main light program.
Reduce main light intensity to	Setting the light intensity level to which the main light should be reduced.
Time to reduce main light **Time to return to main light**	Setting how much time should pass from the start and stop of the light reduction until the light intensity is back to the normal level.

4.5.5 Flexible light settings

When the light control is set to **Flexible**, the light intensity can be adjusted within the on period(s) with up to 30 points and can be adjusted in percent compared to 100% light intensity for periods during the day.

It may be advantageous to start by setting a start and a stop time where the light intensity is 0% to limit the light on period. Then you can set the individual time periods where the light intensity should deviate from 100%.

Create a light program. See section Light program [▶ 46].



Operation | Program overview card **| Main light**

Press the field **Time** to set the time.

Press the field **Light intensity relative to setpoint** to set the light intensity at this time.

Press + to add a point in the program.

Press 🗑 to delete a time/point.

The feed program is visible on the card at tier feeding with feed program. Thus, you can choose to adjust the light intensity according to the feeding times.

4.5.6 Slave light

Slave light is a function that is activated offset from the main light. In addition to an alternative light source, for example, curtains that blind the windows.

The offset can be set with a start and stop offset for each slave light.

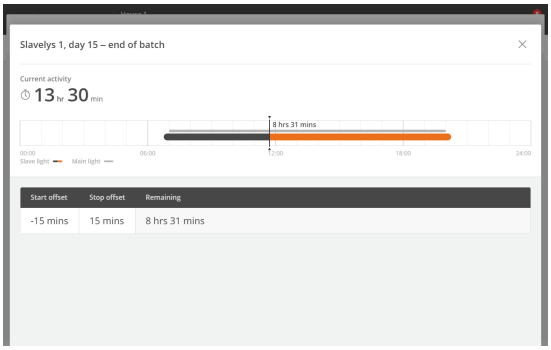
Operation | Program overview card **| Slave light 1 settings**

Slave light 1 intensity setpoint	Changing the light intensity of the slave lights (with dimmer) if you want to change the light intensity according to the program.
Slave light 1 off intensity setpoint	Setting of minimum light intensity (with light dimmer). Changing the light intensity when the lighting program is OFF if you want to change the light intensity according to the program.

Menu button **Strategy	Light| Slave light**	
Slave light 1 time program	Setting the **Start offset** and **Stop offset** program for when the slave light is on in relation to the main light. The offset can be set as a positive or negative value, depending on whether the slave light should switch on before or after the main light.
Slave light 1 intensity curve	Setting the light intensity curve for slave light.
Start offset relates to	Setting if the slave light should switch on with an offset to **Start time** or **Stop time** settings in the light program.
Start offset to when Main light turns on	Setting of curve point for **Start offset** in the slave light program.
Stop offset relates to	Setting if the slave light should switch off with an offset to the settings of **Start time** or **Stop time** in the light program.
Stop offset to when Main light turns off	Setting of curve point for **Stop offset** in the slave light program.

Dusk and dawn	Settings of periods with increasing and decreasing light intensity for transition between light and darkness in the house. See also the section Dawn and dusk [▶ 48]. Only available in houses with light dimmers.

When a light dimmer for the slave light is used, the **Light intensity**, **Light OFF intensity** and **Light intensity offset** settings function as described for main light.



The main light program is shown above the slave light program in the menu.

4.5.7 Extra light

Among other things, extra light can be used to, for example, control light according to a separate light program in specific parts of the livestock house. Extra light has the same settings options as the flexible main light, see Flexible light settings [▶ 49].

Operation | Program overview card **| Extra light**

Program	Setting of **Light intensity relative to setpoint** in the lighting program. The program is set as described in the section Flexible light settings [▶ 49].

Operation | Program overview card **| Extra light 1 setpoint**

Extra light 1 intensity setpoint	Setting the light intensity for the extra light.
Extra light 1 OFF intensity setpoint	Setting of minimum light level. Setting of light intensity when the light program is OFF.

Menu button | **Strategy | Light | Extra light**

Extra light 1 time program	The time program is set as described in the section Light program [▶ 46].
Extra light 1 intensity curve	Setting the light intensity for the extra light.

Menu button | **Strategy | Light**

Light color	Menu for setting the time and light color (in Kelvin). The controller automatically adjusts the light color in the livestock house based on the values you set in the menu **Light color program**.

4.5.8 Inspection light

The inspection light is used to control the light when entering the house. The light is controlled through a menu button or an external push button.

All types of light can be used as an inspection light (main light, slave light,and extra light).

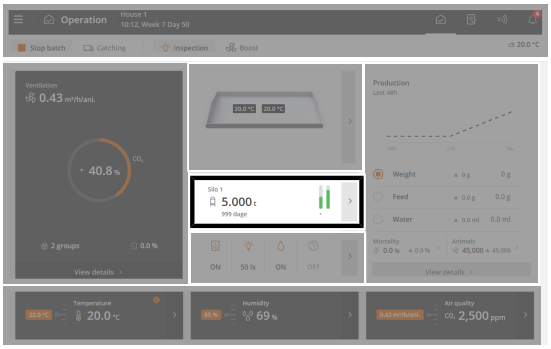
Operation | Inspection

Duration	Setting for how long the inspection light should be on. The light automatically returns to normal light after the set period.
active	Activation of the inspection light. When the inspection light is on, it is displayed with a colored icon.
light intensity	Setting the light intensity of the inspection light.

4.6 Silo

To monitor the feed consumption, it is important to know how much feed is filled into the silos. It can be recorded manually or automatically (electronic silo weighing). In the case of electronic silo weighing, the recording of the delivered feed quantity is automatic.

The controller weighs the feed consumed from the individual silos and calculates feed consumption.



Operation**.** The **Silo** card shows the silo content of the active silo, and a graphic for and the number of days until the silo is calculated to be empty.

The silo card will also take you to the silo settings.

Operation | Silo card

Silo 1 content	Display of the current amount of feed in the silo. The current amount is continuously updated based on the current consumption. In the case of manual feed recording, the menu can be used to correct the current amount of feed. It is used if there is a discrepancy between the current silo content and the displayed content. The feed delivery log is used when feed is delivered. You find a corresponding log under each silo. Thus, the individual silo deliveries can be found in the silo delivery log at a later stage.
Automatic change	Setting whether the controller is to change automatically to a different silo with the same type of feed when the active silo is empty. This function is not available when two independent silo weighers are used.
Gradual changeover	For an automatic change, the controller can gradually change to a different silo. Setting the quantity of residual feed at which the gradual transition is to start. See section Gradual changeover [▶ 53].
Time before changeover	Setting the time before the automatic change of silos occurs.
Minimum silo content before change	The controller considers a silo empty when the quantity of feed is lower than the setting, and the silo auger does not deliver feed to the weigher. It compensates for inaccuracies in the delivery data entered and at the feed weigher. If a silo is emptied and the quantity of feed in the silo overview is higher than the **Minimum silo content**, the controller cannot automatically change. The quantity must therefore be changed to 0,000 tons for it to be able to make an automatic change.

Operation | **Silo** card | **Settings** | **Silo**	
Silo 1 feed delivery	When manually recording feed. Enter the delivered quantity of feed.
Silo 1 feed delivery log	Delivery log with the amount and date for each delivery of feed. Up to twenty deliveries can be stored for each silo.
Type of feed	Feed type selection.
Select silo 1/ Silo 1 selected	In case there is the same type of feed in several silos. Setting the silo from which feed is to be taken. The change comes into effect as soon as the setting has been changed. **Select silo 1**: Change to feed from this silo. **Silo 1 selected**: The feed is taken from this silo.
Silo 1 estimated time to empty	The number of days until the silo is empty is calculated based on the last 24 hours of feed consumption.

In connection with electronic silo weighing:

It may lead to inaccuracies when the feeding system is running and at the same time feed is being delivered to a silo that supplies feed to the feeding system. It should therefore be avoided.

If feed is still supplied to the silo while the feeding system is running, the controller will stop the feeding during delivery when using pan and destination feeding.

When using tier and chain feeding, the controller uses the experience from normal feedings to calculate the correct delivery amount and the feed consumption.

4.6.1 Silo empty sensor

When a silo empty sensor is used, the production controller stops the silo auger when the sensor registers that there is no more feed in the silo.

You can also select whether the production controller should automatically change over to another silo with the same type of feed (**Automatic change**). If another silo with the sufficient quantity of feed is not available, the production controller will display an alarm: **No feed for feed weigher**. See also the Feed alarms [▸ 55] section.

4.6.2 Gradual changeover

The controller can change gradually between two silos with the same type of feed. This way, it can change gradually to a different feed mixture (applies only to drum weigher and FW 9940-2).

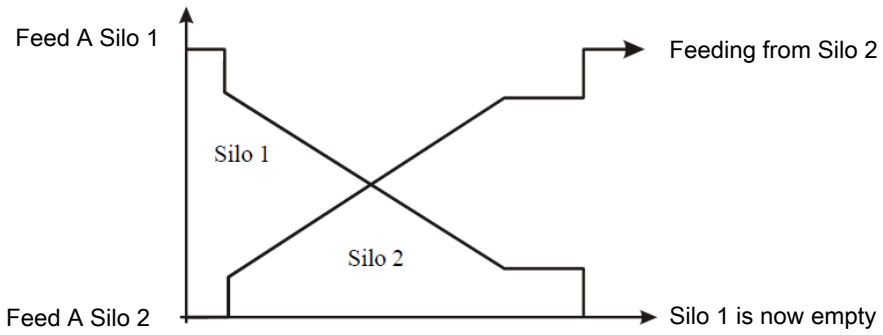
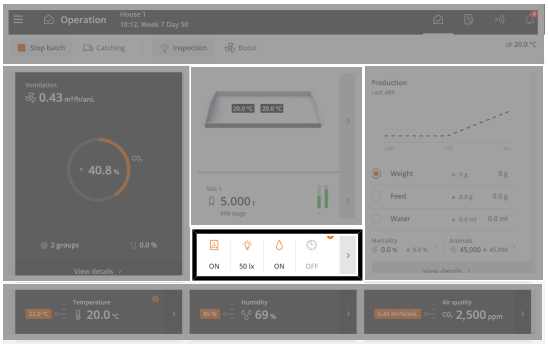


Figure 11: When the content in the silo falls to a set quantity, the gradual transition to a silo with the same type of feed will start.

4.7 24-hour clock

The 24-hour clock function allows you to automatically turn on and off equipment at specific times or time intervals. In addition, the 24-hour clock allows you to choose how often equipment will run in a week. It is done by applying a week program.

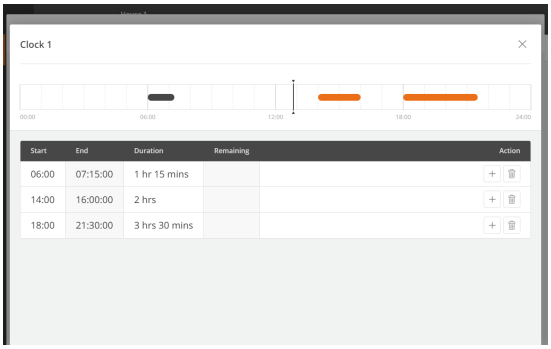


Operation. When 24-hour clock is on, it is displayed with a colored icon on the card **Program overview**.

The card provides access to view and change the programs of all the 24-hour clocks.

In each program you must set the following:

- Start time
- Duration



Operation | Program overview-card | **Clock**

Press the field in the column **Start** to set a start time.

Press the field in the column **Duration** to set the duration of the period.

Press + to add a new period, then set the start time and duration of the period.

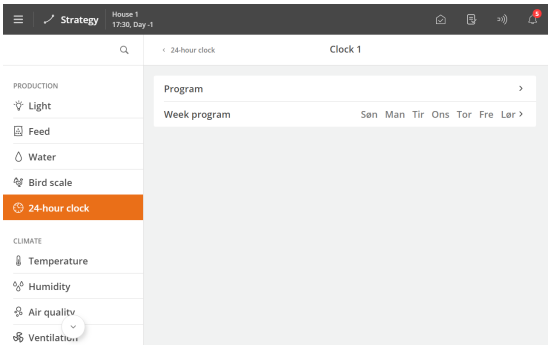
The blocks on the timeline show when and how long the 24-hour clock is on.

Outside the selected periods, the 24-hour clock is off.

Press to delete a period.

.

24-hour clock with week program



Menu button | **Strategy | Production |** **24-hour clock**

Select which days the 24-hour clock is on.

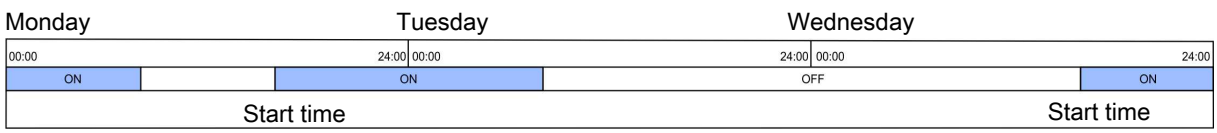


Figure 12: If an ON-time runs past midnight on a day when the 24-hour clock is not active, the function will remain ON until the time has elapsed.

5 Alarm settings

The 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.

See also the section Alarms [▶ 25].

5.1 Production

5.1.1 Light alarms

The controller has light alarms for the light sensor, main light, slave light, and extra light.

When the light alarm is active, light is not regulated according to light sensors, if any.

Menu button | **Settings** | **Alarms | Production | Light**

Light sensors deviation limit ±	If more light sensors are connected to the same light source (main/slave/extra light), the controller will generate an alarm if the difference in light intensity is too big at the sensors (+/-20 lux).
Alarm delay	Setting a delay for all light alarms to prevent unintended alarms in connection with brief light changes.
Alarm limit	Setting of alarm limit. The controller generates the light alarm if the light intensity deviates (+/-20 lux) from the required level.

5.1.2 Feed alarms

Menu button | **Settings** | **Alarms | Production | Feed**

No feed to feed weigher	The alarm is triggered when the feed weigher determines that no feed is coming from the silos. The function can be connected and disconnected. In the event of an alarm, the controller deactivates the silo auger. Set how much time shall pass before the controller triggers an alarm in **Time before alarm**. The alarm remains active until the feed weigher can register feed again. When the alarm is acknowledged, the silo auger starts again. It is possible to set the silo auger to run and stop alternately for shorter periods after the alarm has been acknowledged. When the silo auger is pumping, feeding may start again if the stop was due to a bridge formation in the silo. The pump function can be overridden by setting the **Stop time silo auger** to 0 minutes. This way, the controller will ensure that the silo auger stays turned off until the feed demand sensor is manually removed and reconnected. The controllers will then activate the silo auger once in the set runtime (**Runtime silo auger**).
Missing feed type	One of the feed components included in the mixing program is not available in any of the silos. Check the status of silos and change type of feed in the controller, as required.
Feed weigher can not empty	Feed cannot be discharged from the weigher. As for the drum weigher, the drum cannot turn nor can the stop position be found.

Feed weigher calibration	The calibration of the feed weigher was not finished within the set period of time.
Feed weigher not stable	The feed weigher cannot carry out a stable weighing process. Vibrations may cause this.
Feed weigher reference voltage	The controller recorded that the reference signal from the weigher is less than 9.0V in a given period of time.
Feed weigher hopper not empty	At feed weigher shared between several houses via network. The feed weigher could not empty feed below the feed weigher. Check the empty sensor of the feed weigher and the stop sensor of the cross auger.
Feed shutter incorrect position	Af feed weigher shared between several houses via mechanical distribution shutter. The weigher wants to change to the other house, but the distribution shutter does not react.
Cross auger alarm	The controller triggers an alarm if it cannot fill the cross auger hopper back up before the stated alarm time **(Time before alarm).** The controller stops the feeding system to avoid overfilling of feed. In the case of pan feeding, **Stop feed system if cross auger empty** in the menu **Adjustment** must be set to a time shorter than the alarm time for the cross auger.
Not enough feed (not in the case of chain feeding)	The alarm is generated if the consumption of feed is lower than indicated in the period of time selected (**Check interval**) It can be disconnected automatically during the first days of a batch. The alarm is active only during a feeding period.
Too much feed	The alarm continuously monitors whether too much feed is supplied to the house within a time interval. A system can supply a certain quantity of feed per time unit, depending on the size of supply augers and cross augers. Instructions for setting the alarm limits: Find the maximum quantity of supplied feed in the feed reference. Multiply the figure by the number of animals in the house. Divide by 1000 for a figure in kg. This figure indicates the level of consumption in 24 hours. Set the alarm limit to consumption x 2.5. Ex.: Number birds = 45000 Max. feed quantity = 156 g (42 days) (feed/animal reference) Kg per 24 hours = 45000 x 156 / 1000 = 7020 kg Alarm limit = kg per 24 hours x 2.5 (24 x 60) (min. per 24 hours) = 12.2 kg/min. Set monitoring time to, e.g., 30 minutes. The alarm is generated if feed consumption over 30 minutes exceeds 12.2 x 30 = 336 kg. If the alarm is generated and no error has occurred, monitoring time should be increased to,e.g., 1 hour. The alarm can be disconnected automatically at the start of a batch by setting a start day.
Feed consumption has decreased	The alarm can be disconnected automatically at the start of a batch by setting a **Start day**. The alarm continuously compares the previous 24 hours with the current 24 hours and generates an alarm if consumption deviates by more than the set percentage.

Not enough feed at start (pan and chain feeding)	The alarm must ensure that the feeding system is in order when feeding restarts after a stop. As a main rule, the alarm limit should be set to 10 kg (**Feed consumption in given check time**). For chain feeding, monitoring time may not exceed the time for a chain rotation. An alarm is generated if consumption at the start of a feeding period (or at the start of chain feeding) is lower than indicated in the period of time selected (**Time for alarm check**). Can be disconnected automatically during the first days of a batch (**Begin to check at day number**).
Too much feed after stop (pan and chain feeding)	The controller monitors whether too much feed has been put through the feed weigher after a feeding period has ended (pan feeding) or the chain has been run through once. Too high a water consumption can indicate that something is wrong. The cross auger hoppers will be filled up at the end of a feed. The type of hoppers, and how much they are filled up before feeding stops, determines how much feed is used in refilling. An alarm is triggered if consumption after a feed period (or when chain feeding stops) is higher than the set value (**Max. feed consumption after stop**).
Water feed ratio (pan and chain feeding with water meter)	The alarm indicates that the water/ feed ratio does not follow the reference curve. Possible reasons: 1) Defective water system 2) Sick animals 3) Feed inaccuracies However, note that the water/ feed ratio may be increased in houses without cooling systems when the outside temperature is high. The alarm is generated if the water and feed consumption ratio within a given period of time (**Time for alarm control**) deviates from the value set (**Water/feed ratio alarm limit**). Can be disconnected automatically during the first days of a batch (**Begin to check at day number**). Choose whether the water is to turn off when an alarm is generated. When all water alarms have been acknowledged, the controller turns on the water again.
Feed level too low	Based on the feed consumption of the previous day, the controller calculates how long it will be until the feed is consumed and will trigger an alarm once this time is exceeded**(Feed level too low**). A total overall level will be calculated if the same type of feed is in multiple silos.
Day silo content (tier feeding)	The alarm indicates that the content of the day silo is too low (below a set limit) during feeding. The feeding is paused. Check that the filling amount for the day silo is sufficient in relation to the current feed consumption. Start filling the day silo in the menu **Production | Day silo | Manual filling of day silo** or stop the feeding allowing the feeding system to refill automatically at the next feeding.

Silo content	
Silo content low	The displayed silo content is a calculated value. The alarm is generated when the feed amount in a silo is below a set limit.

Silo is empty alarm	The empty silo sensor records that there is no more feed in the silo and it is impossible to switch to another silo, possibly due to too low silo content.
Calibration of silo	
Calibration of silo	The controller will give an alarm if the calibration is not completed within the set time (1 hour). As long as the silo weigher is set for calibration, it cannot be used by the feeding system.
Silo is not calibrated	The controller will give a soft alarm if the electronic silo/day silo is not calibrated after installation. The silo must be calibrated to show the correct data.

Silo content	
Silo content low	The displayed silo content is a calculated value. The alarm is generated when the feed amount in a silo is below a set limit.
Silo is empty alarm	The empty silo sensor records that there is no more feed in the silo and it is impossible to switch to another silo, possibly due to too low silo content.
Calibration of silo	
Calibration of silo	The controller will give an alarm if the calibration is not completed within the set time (1 hour). As long as the silo weigher is set for calibration, it cannot be used by the feeding system.
Silo is not calibrated	The controller will give a soft alarm if the electronic silo/day silo is not calibrated after installation. The silo must be calibrated to show the correct data.

5.1.3 Water alarms

These alarms can be disconnected automatically at batch/flock start by setting a **Start alarm day**.

Menu button | **Settings** | **Alarms | Production | Water**

Min. and max. water alarm	The alarms are used for monitoring the animals' drinking patterns. The alarm limits for maximum and minimum water consumption is a set percentage of the normal consumption. The controller calculates the normal consumption by comparing the current 24-hour period with the 24-hour period that is two hours older. At 1 P.M., for example, you look at the period from 11 A.M. on the previous day to 11 A.M. on the current day. Choose whether the water is to turn off when an alarm is generated. When all water alarms have been acknowledged, the house controller turns on the water again.
	With water control These alarms are used for monitoring leakages and stoppages in the water system.
Not enough water	The alarm is triggered if the water consumption measured by a water meter is too low during a given period of time. It is recommended to set this alarm to 1.0 l/min. and a monitoring time to 30 minutes. An alarm will be generated if consumption is lower than 30 liters each half hour.

Too much water alarm when open	The alarm is triggered if the water consumption measured by a water meter is too high in a given period. Depending on the capacity of the water supply, the system can supply a certain quantity of water per unit of time. The alarm is triggered when the system has operated at maximum output for too long. If a water relay is installed, the water will be turned off at excessive water consumption. *Guidelines for alarm limit settings:* Measure the amount of water flowing per minute to the current water meter. Set the alarm limit for 1 liter less than the measured. Set the monitoring time to 30 minutes.
Too much water alarm when closed	The alarm monitors whether the water system is turned off when it should be. The recommended setpoint for this alarm is 0.1 l/min. and a monitoring period of 30 minutes.
Water level alarm	Setting the time before alarm. The controller does not trigger an alarm until the water level has been recorded as OFF during this time (15 min). It ensures that brief changes in the water level of the livestock house do not trigger the alarm. The controller does not change the regulation at the water level alarm.
Start alarm on day	Automatic disconnection at the beginning of a batch/flock. To avoid triggering false alarms, you can indicate how many days should pass before the controller triggers a water alarm.
Water level alarm (only tier feeding with DOL 100 water)	The alarm monitors if there is a sufficient water level. An alarm will be triggered if the water level has not been sufficient for more than 15 minutes (factory setting). See the **Production | Water | Water** level alarms menu to see which water meter the alarm is being triggered by.

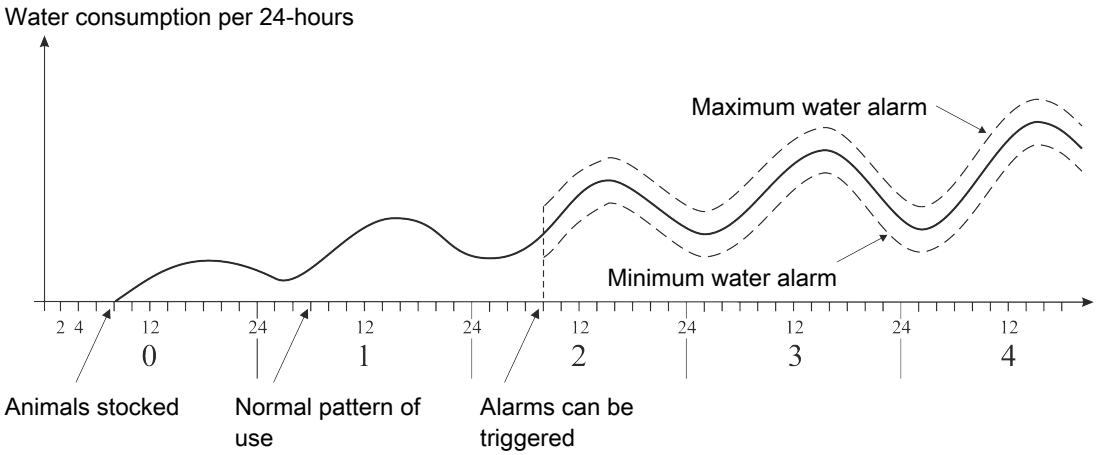
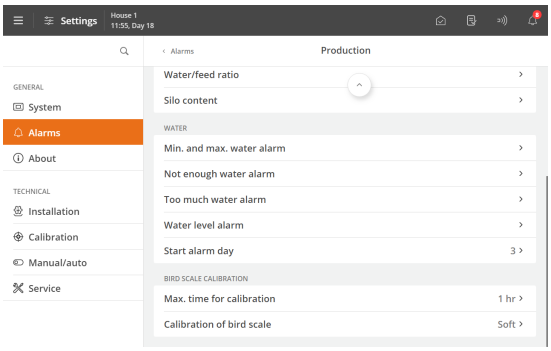


Figure 13: Example of minimum and maximum water alarm

The controller triggers an alarm when the limit for maximum water consumption is exceeded or the consumption is below the limit for minimum water consumption.

There may be various reasons for the fluctuation in the animals' water consumption that will all trigger an alarm. For example, an alarm may be triggered due to stocking more animals or the slaughter of some animals, an outbreak of disease in the livestock or a rupture of the water pipe.



Start alarm on day

In the event of major changes to the number of animals in the house, at least 26 hours should pass before the controller can trigger the alarm.

To avoid triggering false alarms, you can indicate how many days should pass before the controller triggers a water alarm.

5.1.4 Bird scale calibration

The bird scale must be calibrated to show the correct data.

Menu button | **Settings** | **Alarms** | **Production** | **Bird scale calibration**

Max. time for calibration	The controller will give an alarm if the calibration is not completed within the set time (Factory setting: 1 hour). As long as the bird scale is set for calibration, it cannot be used by the controller.
Calibration of bird scale	If the bird scale is not calibrated after installation, the controller will give an alarm (Factory setting: soft alarm).

5.2 Master/Client alarms

If the controller is set up to share equipment with other controllers, it gives an alarm if the connection between the controllers is lost. A ‘Client’ controller will continue to regulate according to the latest received value from the ‘Master’ controller equipment until the network connection is restored.

Menu button | **Settings** | **Alarms**

Connection to Client lost **Connection to Master lost**	Select the alarm type **Hard**, **Soft** or **Disabled**.

6 Maintenance instructions

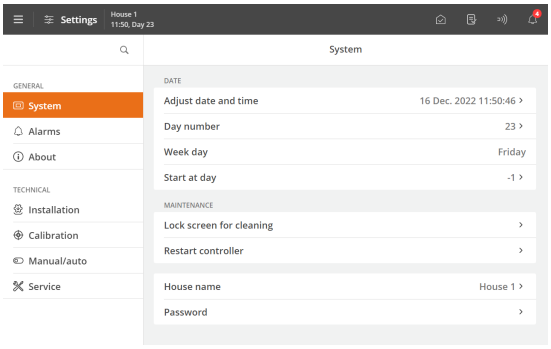
The controller requires no maintenance to function correctly.

You should test the alarm system every week.

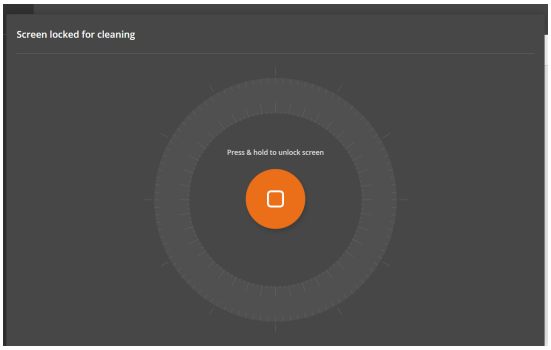
Use only original spare parts.

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

Lock screen for cleaning



When the controller is to be cleaned, it is possible to lock the screen to avoid inadvertent operation during cleaning.

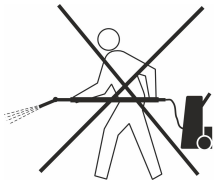


Press Menu button | **Settings | General | Maintenance | Lock screen for cleaning** to lock the screen.

Press and hold for 5 seconds to unlock the screen.

The controller automatically cancels the lock after 15 minutes.

6.1 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

We recommend to calibrate bird scales at least once per batch. See also the Technical Manual.

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