Usermanual

Amacs Supply
Broiler / Breeder

Code No. 99-97-2392 GB

Edition: 11/2013 (Version: 2.0.6)

These instructions are a translation of the original instructions!

Program version

The product described in this manual is computer-based, and most functions are realised by software. This manual corresponds to:

Software version: V2.0.6

Product- and Documentation changes:

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IMPORTANT

Notes concerning the alarm system

Where climatic control is used in livestock buildings, break-downs, malfunctions or faulty settings may cause substantial damage and financial losses. It is therefore **most important to install a separate, independent alarm system**, which monitors the house concurrently with climatic control. Please note that the product liability clause of **BIG DUTCHMAN**'s general terms and conditions of sale and delivery specifies that an alarm system **must be installed**.

We want to draw your attention to EU-directive No. 998 of 14/12-1993 concerning minimum requirements for domestic animals, which specifies that an alarm system must be installed in any house, which is mechanically ventilated. In addition to this, there must be a suitable emergency system.

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1 Main screen

AMACS can satisfy all of the birds' needs individually. The visual elements allow for intuitive and simple operation of the light and water control.

The first chapter deals with the main screen for supply. Further settings are explained in the corresponding chapters.

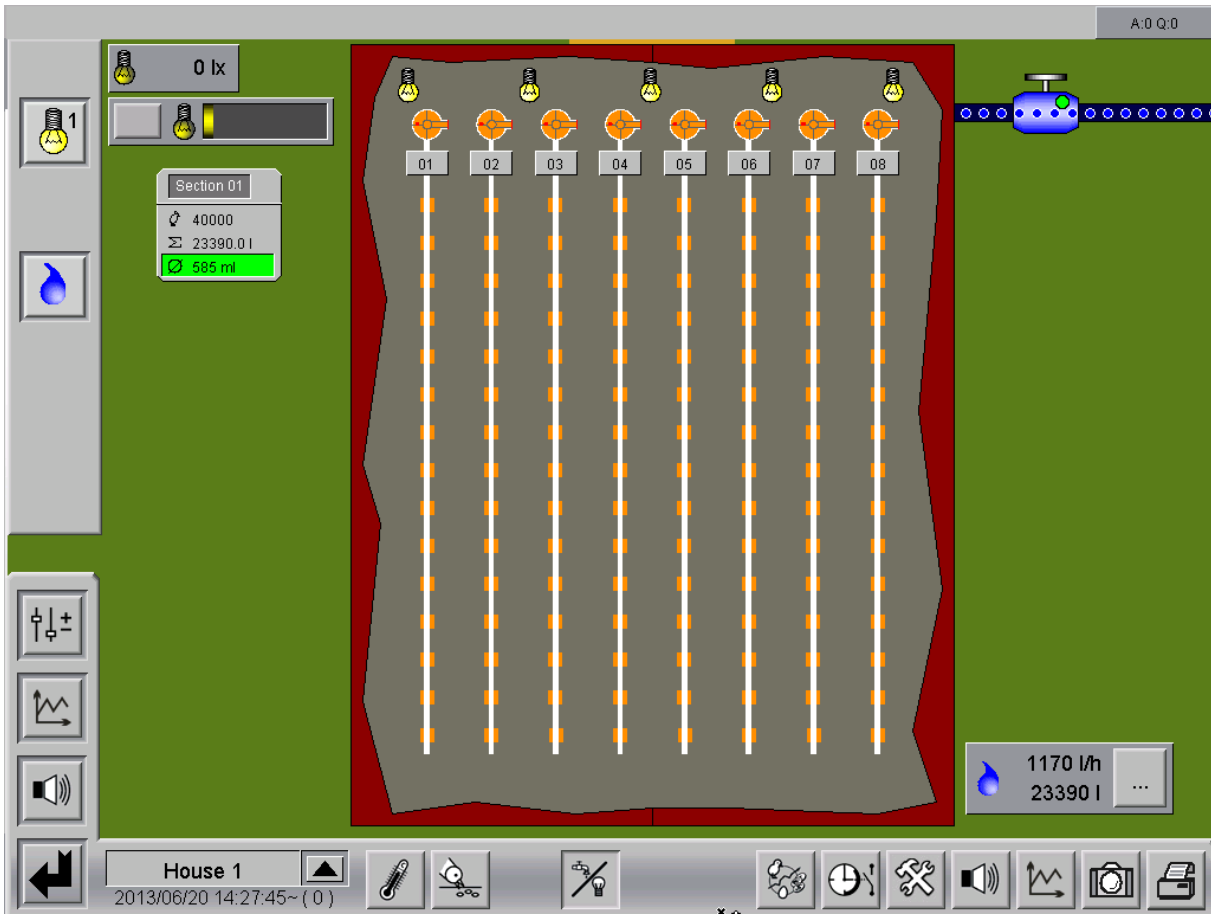


Figure 1-1: Main view

	The presentation of the screenshots in this manual may differ from those depicted on your FarmController, depending on which equipment exists in your company. Which areas are visible depends on the system configuration. Menus having no function are faded out to enable a better overview.

To access the supply overview screen, open the area selection by clicking on the shaded lower right corner in each house view. Click on the supply icon. The overview screen only opens if you have the required rights.

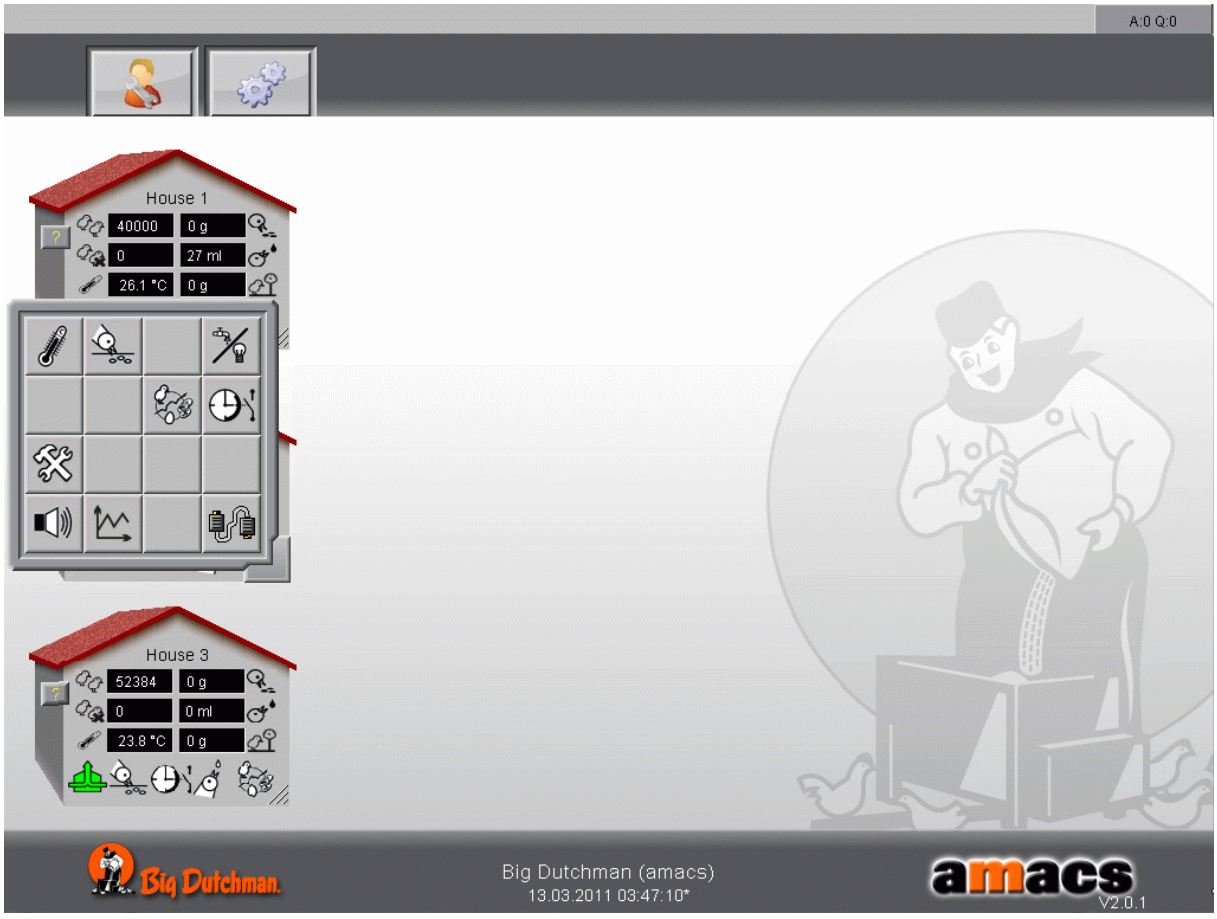


Figure 1-2: Opening supply

1.1 Overview of objects

In the following chapter we have listed all existing objects and have explained them briefly. The other functions are explained in the respective chapters.

1.1.1 Light

- **Light group**

The light can be controlled, among others, when the main screen is open. The intensity currently controlling the light is depicted by the light bulbs. Clicking on the bulbs opens the control panel for the light group.

•Control light

To change the light intensity during the inspection rounds, the control light can be activated for a pre-set time period by clicking on the button. This function ensures that the light is always switched off again after the inspection rounds. To switch the control light off manually, simply click on the button again.
If several control light groups have been configured, the button displays the number of the selected light group.

- **Light sensor**

The light intensity currently measured by the light sensor is displayed here in lux.

1.1.2 Water

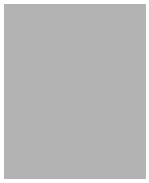
- **Water valve**

Apart from the light group control, the water valve can be turned on and off if the supply main screen is open. This can be done by clicking on the valve/water icon.

- **Water counter**

The entire water consumption of the house is displayed here in litres per hour and as total sum. For houses in which one water counter per compartment is installed, these values may also be viewed per counter. Clicking on the button opens a display of the individual values for each counter.

- **Water consumption**



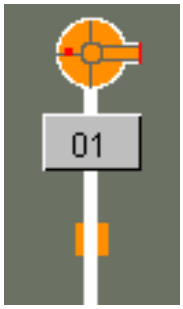
The figure shown here indicates how easy it is to monitor the water consumption per bird or per section. The values for "current bird number", "total consumption per section" and "ml per bird" are available. A bar is displayed to determine whether the water consumption corresponds with the target value. The dark grey bar is filled slowly from left to right, depending on the water consumption. The set consumption has been reached when the colour of the bar changes from grey to green.

Important!

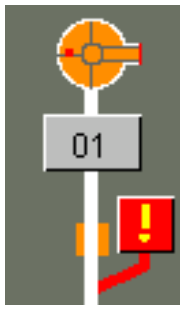
The birds' life is at risk if too little water is supplied!
All birds must be able to access water in any case!
Statutory and local notes and provisions must be observed!

- **Water alarm**

To further facilitate monitoring of the water lines in the house, the so-called water alarm has been integrated. If the required control units haven been installed at the lines' riser pipes, it is possible to check the correct water level in all lines by means of a computer. If the level in the riser pipes falls below the control level within a pre-set time period, a delayed water alarm is triggered.



No water alarm



Water alarm active

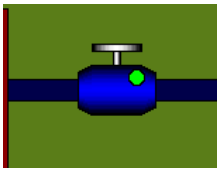
1.2 Drives

Each drive can be checked for its status in this screen and operated manually. The following explains what the colours mean and how to operate the drives.

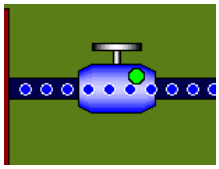
1.2.1 Status

The icons at the drives indicate whether they are currently operated manually or automatically (green or orange point) and if the drive is turned on.

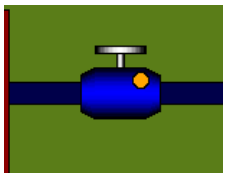
Colours



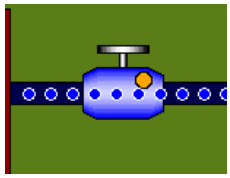
Automatic "OFF"



Automatic "ON"

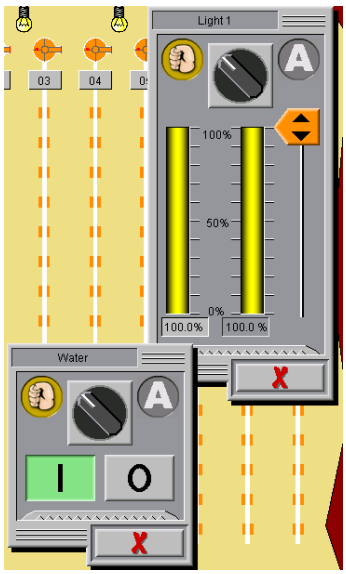


Manual "OFF"



Manual "ON"

1.2.2 Manual operation

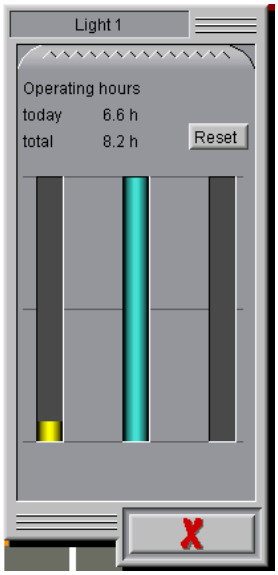


Clicking on a drive opens a control panel. Depending on whether the element is digital or analogue, either a switch or a slider control are displayed, allowing for a switch from manual to automatic operation and turning on and off of the drive.

To switch from automatic to manual operation of the drive, there is a rotary switch depicted in the upper part of the menu.
In the case of a digital drive, the drive can be turned on and off with the I/O buttons.
In the case of an analogue drive, the required position can either be reached using the orange slider or the set position can be entered via the entry field appearing below the yellow column.

⚠	**Caution!** Maintenance or service works at drive units or fans may only be carried out if the protective switch is in the OFF position. The drive units can be activated without warning, e.g. by the time switches. Observe local security signs and instructions.

1.2.3 Operating hours



In order to determine service intervals, it is very helpful to know the operating hours of your motors. Clicking on the jagged area opens the respective operating hours counter of the component.

The performed hours "today" and "total" are indicated here. The values can be reset to 0 via the reset button.

1.3 Settings

In order to open the settings menu, click on the symbol for parameter settings. Here the runtimes can be preset and the control mode can be adapted.

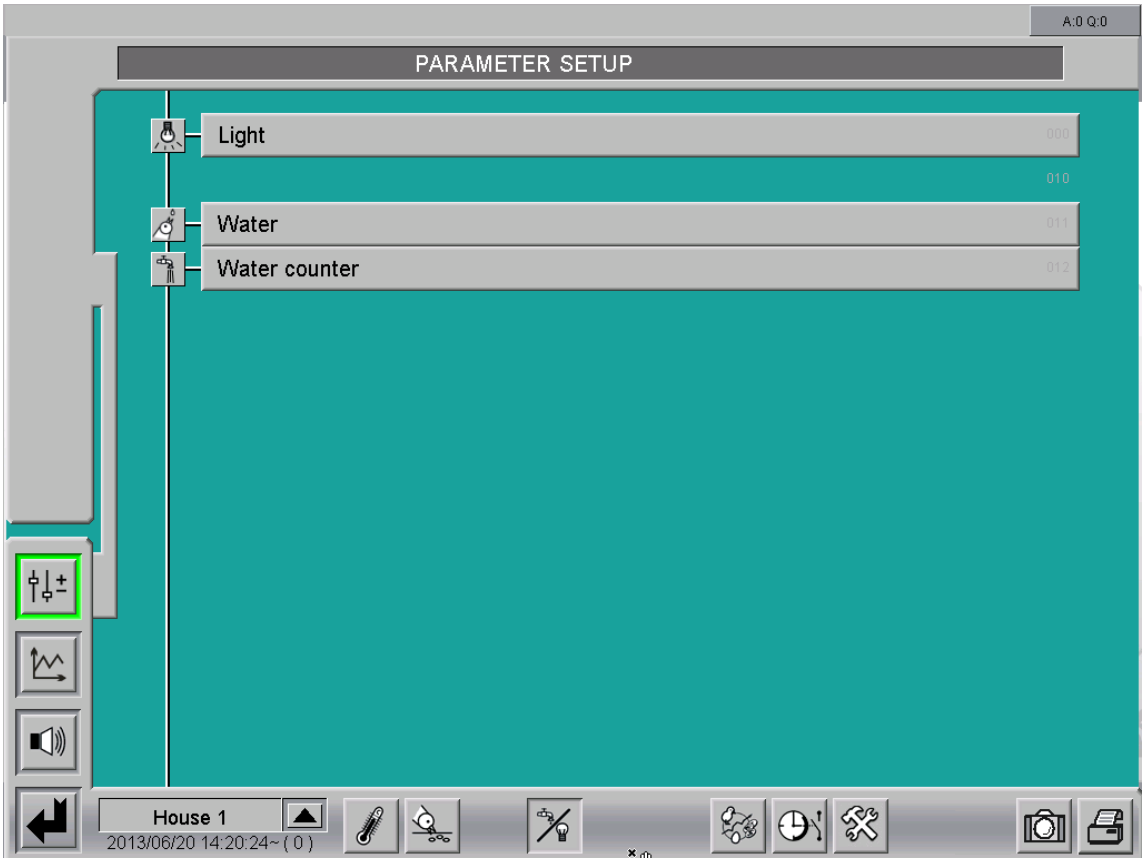


Figure 1-3: Settings

Clicking on one of the buttons in the menu takes you to the submenus where e.g. light times, set water consumption, etc. can be adjusted.

All shown settings only serve as examples. The appropriate settings are made during the initial operation and may then by optimized during operation.

If a submenu is divided into several pages, these pages can be accessed by clicking on the arrow keys in the upper right corner.

Figure 1-4: Switching between the screen pages

2 Light

Clicking on the button **Light** opens a menu in which light times, twilight phases, intensity of light groups, etc. can be entered.

Figure 2-1: Light

The light control is divided into different types of control. These consists of a maximum of two light groups, which can be time-controlled via a digital or analogue signal. In addition, the twilight phase can be simulated with analogue light control and the light intensity can be adjusted via a light sensor.

The basic settings (e.g. switch times, start on production day) are always the same.

!	**Important:** **To ensure sufficient feed intake, the house must always be lighted adequately. Light intensity must be checked regularly with an appropriate measuring device (luxmeter). The intensity must be adapted to the birds' age and behaviour. Light should be dimmed if the birds start feather pecking. Please consult a technical advisor if the problems continue.**

The settings possible for the light can be found on one screen page. If more than one light group is available, these can be accessed by means of the arrow in the upper right corner of the screen.

2.1 Switch times

Times during which the light should be switched on can be entered in the screen pictured below. The graphical display of the clock provides a good overview of the set switch times for the day.

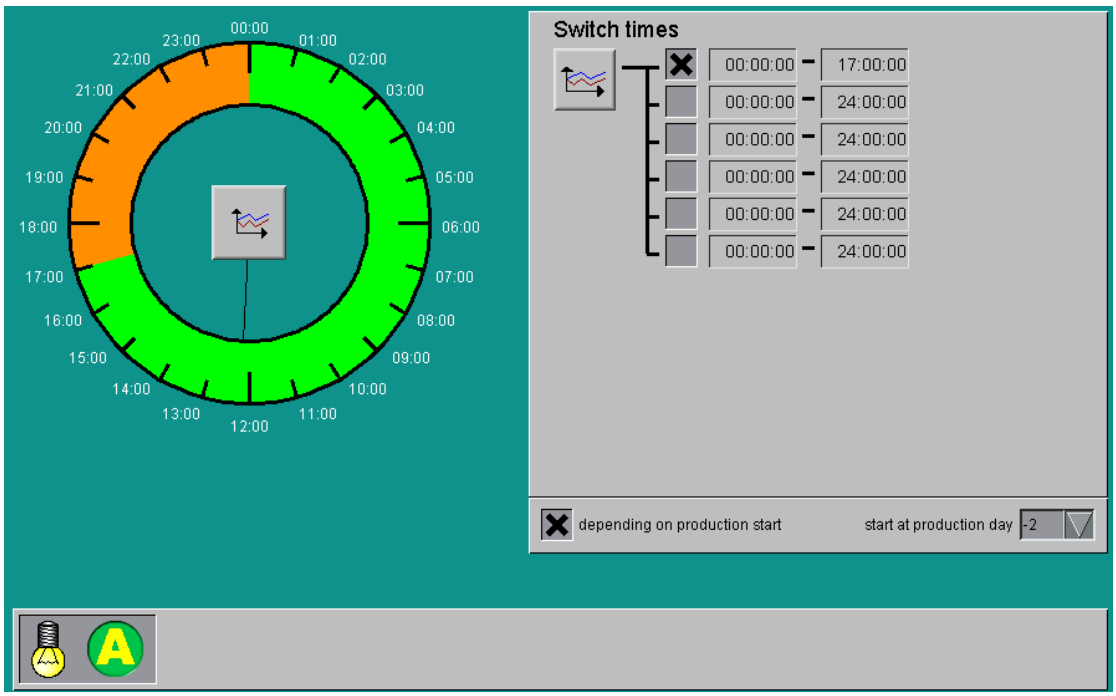


Figure 2-2: Switch times

- **Graphical display**

  The graphical display indicates when the light is turned on (**green**) and off (**orange**). The **black hand** indicates the system's current time. Clicking on the **curve symbol** opens a curve overview of the previous switch times.

- **Setting up switch times**

  A maximum of six switch times can be activated by checking the box next to the start time. The **start** and **stop time** within which the light should be turned on is entered in the production manager and displayed there. The production manager can be opened by clicking on the button with the curve symbol. This opens a new window.

	The start and stop times of this curve are changed and saved as described in the chapter **Production curve** in the manual **AMACS Operation**.

- **Depending on production start**

  Using the setting **Depending on production start**, the light may be set to only switch on automatically when production has been started.
  A checked box means that light is switched on automatically when the production has started. The additional entry field indicates from which day the light should be switched on, in relation to the production start.
  For the light to be controlled independent of the production, the box must be deactivated.

- **Operation display**

The light bulb displayed in the status indicates for each light group whether the light is turned on or off. The icon next to it shows in which mode the light is currently operated (**M**anual or **A**utomatic).

2.2 Time-controlled light control

The time-controlled light control only consists of one digital light group. There are no further setting options for this control, except for the control light.

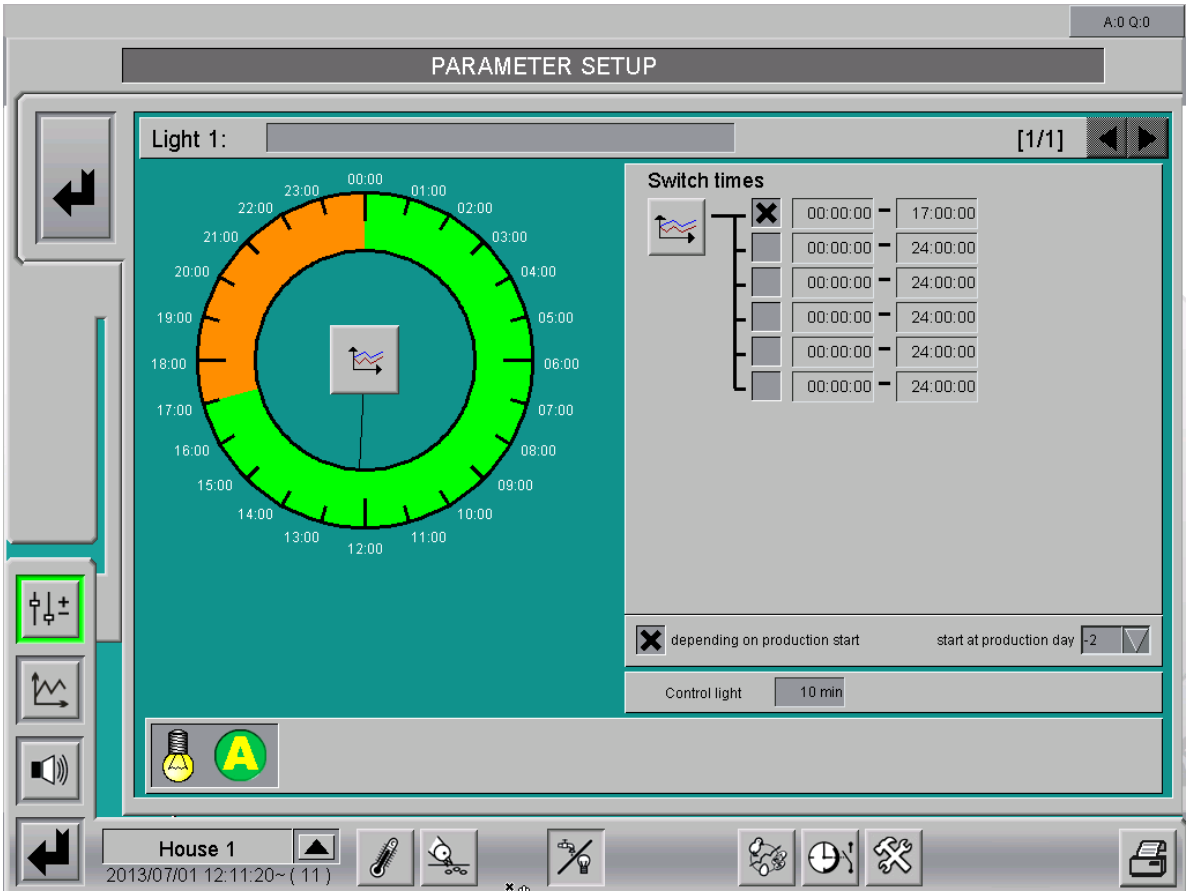


Figure 2-3: Time-controlled

2.2.1 Control light

To change the light intensity during the inspection rounds, the control light can be activated for a pre-set time period. This function ensures that the light is always switched off again after the inspection rounds.
The control light can be turned on either on the supply main screen or by pressing a push button in the house.

As displayed in the figure, the switch-on duration can be entered in minutes.

Figure 2-4: Control light

2.3 Time-controlled light control with twilight phase

The time-controlled light control with twilight phase consists of an analogue light group and six limit switches connected via the set value either in series or in parallel.

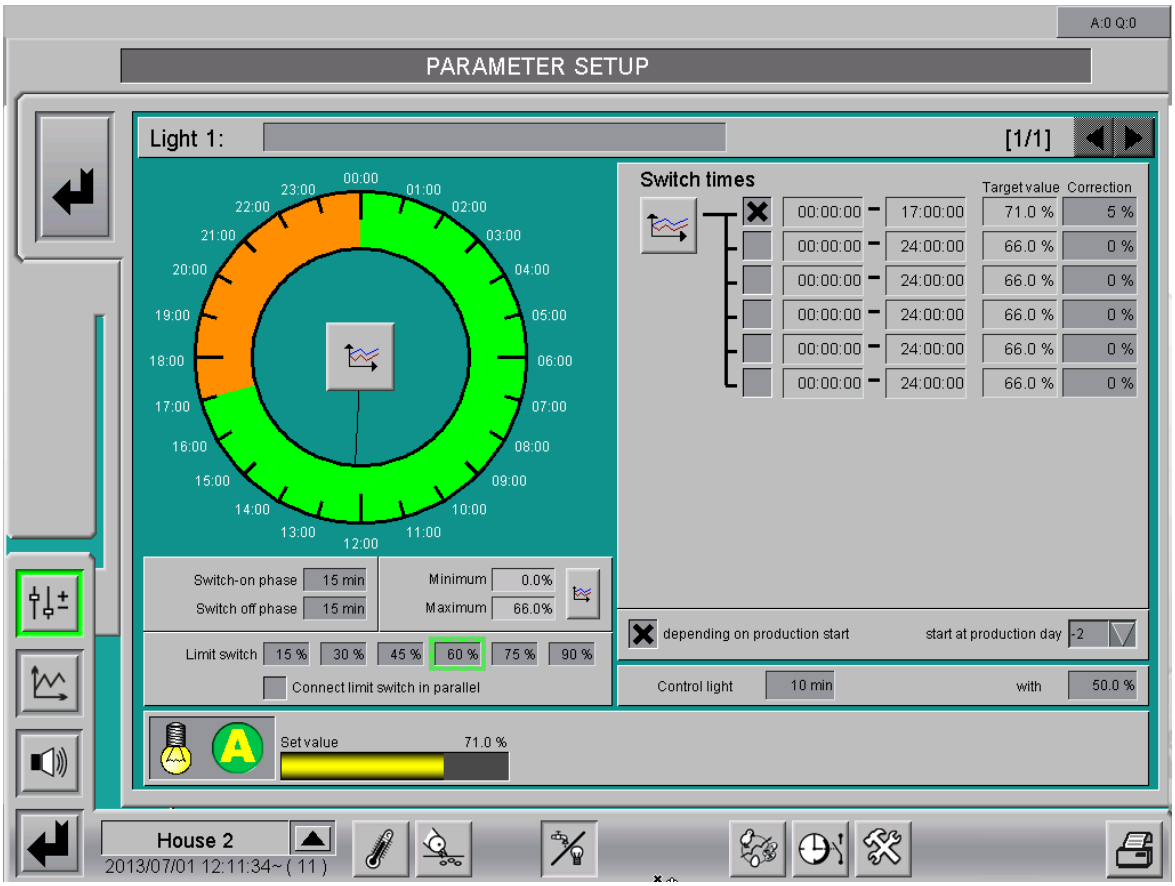


Figure 2-5: Time-controlled with twilight phase

2.3.1 Set value

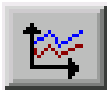
The set value is displayed in % next to each switch time which can be activated. This set value controls the light via the twilight phase and is calculated based on the **maximum** value entered in the curve Minimum/Maximum and the **correction** value.

- **Set value**

  The current set value used for dimming is shown next to the operation display.

Figure 2-6: Status display

- **Minimum/Maximum**



To determine the light intensity via the bird age, the limits for the set value can be entered in the curve Minimum/Maximum.

– The curve value **Minimum** sets a lower switch-on limit for the piloting of the lighting. This prevents flickering in the lower light spectrum.

– The curve value **Maximum** sets the value required after the twilight phase in the house.

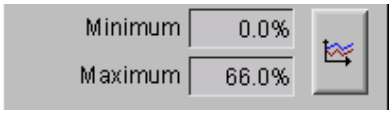


Figure 2-7: Limit values minimum/maximum

The values in this curve are changed and stored as described in the **AMACS User manuel chapter set curves**.

- **Correction value**

  The correction value can be used to enter a correction of the corresponding set value for each time period so that different intensities per switch time are possible. This value can be entered with positive or negative (+/-) signs to indicate a positive or negative correction.
  The correction is entered in percent.

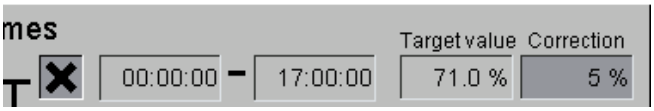


Figure 2-8: Correction value

- **Twilight phase**

  The twilight phase simulates sunset and sunrise. The value entered for **Switch-on phase** determines the time period during which the brightness is increased from minimum to maximum. The value entered for **Switch-off phase** determines how long dimming from maximum to minimum shall take. Both values are entered in minutes.

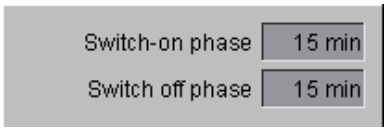


Figure 2-9: Twilight phase

2.3.2 Limit switch

If it is necessary for the light control to connect one or more relays in relation to the intensity, up to six limit switches can be set.
The settings for the control light can be found on the second page of the parameter setup.

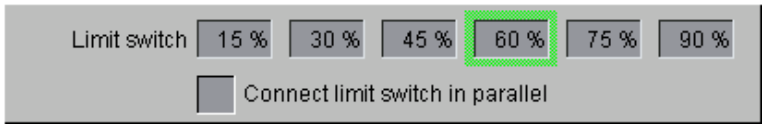


Figure 2-10: Limit switch

To define the switch-on time, enter at the limit switches the value at which the respective output is to be activated.

If the limit switches shall be activated in parallel, i.e. all relays smaller than the current intensity are energised, the checkbox **Connect limit switch in parallel** must be activated. If only the relay with the limit below the intensity shall be activated, the checkbox must be deactivated. The limit switches currently switched on are encircled in **green**.

2.3.3 Control light

To change the light intensity during the inspection rounds, the control light can be activated for a pre-set time period. This function ensures that the light is always switched off again after the inspection rounds.
The control light can be turned on either on the supply main screen or by pressing a push button in the house.

As displayed in the figure, the switch-on duration can be entered in minutes, the intensity in percent.

Figure 2-11: Control light

2.4 Time-controlled light control with twilight phase and light sensor

The time-controlled light control with twilight phase and light sensor consists of an analogue light group controlled by a sensor.

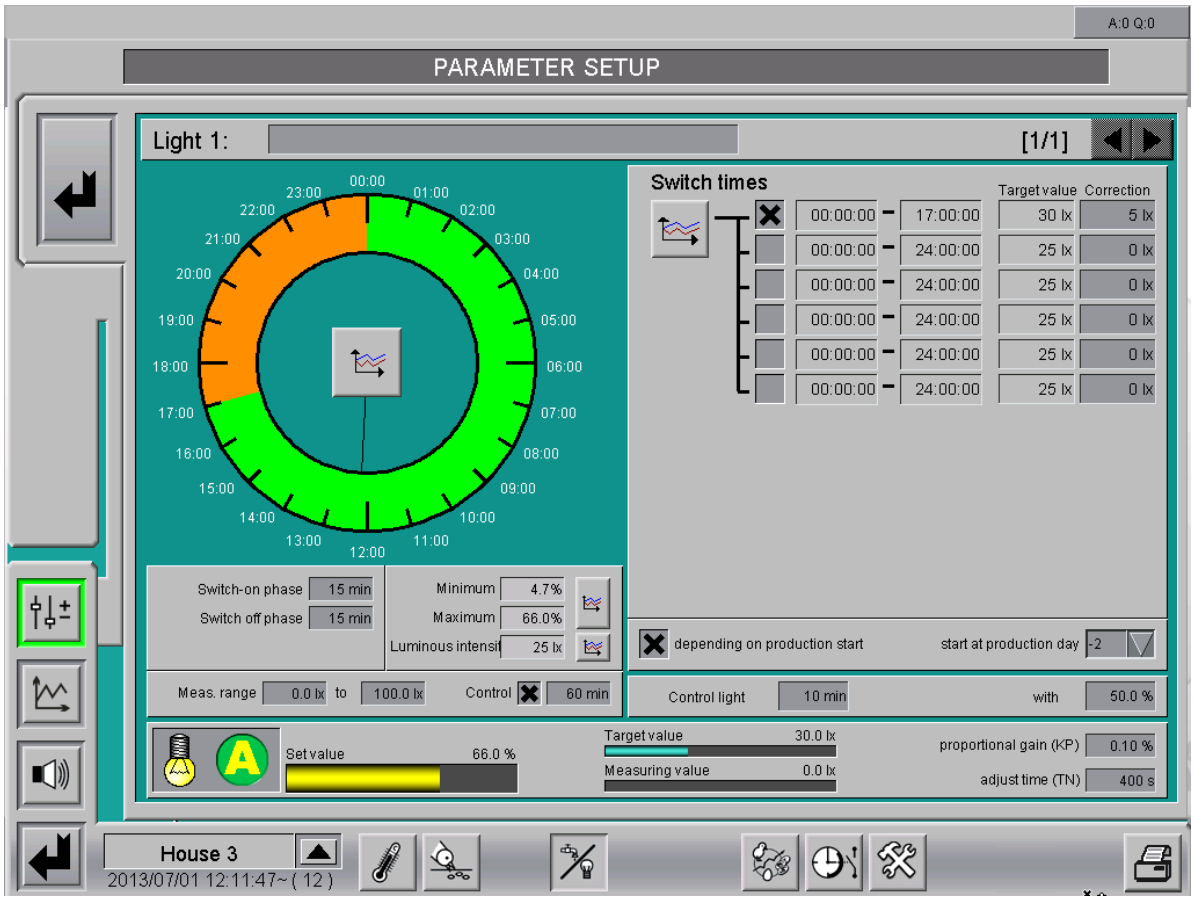
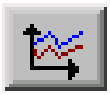


Figure 2-12: Time-controlled with twilight phase and light sensor

2.4.1 Light intensity

As displayed in the previous figure, a display with the target value in lux can be found next to each switch time which can be activated. This value is calculated based on the curve **Luminous intensity** and the **correction** value.

2.4.1.1 Luminous intensity



The curve "luminous intensity in relation with the bird age" can be used to set the intensity the light control should adjust to in lux.

Figure 2-13: Luminous intensity

The values in this curve are changed and stored as described in the **AMACS User manuel chapter set curves**.

2.4.1.2 Correction

The correction value, which can be set next to the switch time, can be used to enter a correction of the corresponding target value for each time period so that different intensities per switch time are possible. This value can be entered with positive or negative (+/-) signs to indicate a positive or negative correction.
The correction is entered in lux.

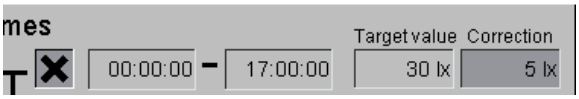


Figure 2-14: Correction value

2.4.1.3 Current luminous intensity

Apart from the current set value, the current luminous intensity according to which the light is to be controlled as well as the **measuring value** measured by the light sensor are displayed.

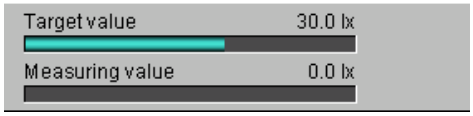


Figure 2-15: Target value/measuring value

2.4.1.4 Light sensor

The settings for the measuring range and for the light sensor checking for signal changes are available for security reasons and to be entered separately.

Figure 2-16: Light sensor

- **Measuring range**

  The measuring range entered here defines the spectrum which the light sensor can measure. As a standard, Big Dutchman uses a sensor with a measuring range from 0 to 100 lux.

- **Control**

  A control of the input value can be activated and a monitoring time can be set during which the value must change. In the case of an error, an alarm for cable break will be released, which involves the signal change control and also controls whether the input signal has reached the end of the measuring range (short circuit or open).

- If the sensor fails (cable break), the light is controlled according to the curve's maximum value.

2.4.2 Set value

The set value currently used for dimming to reach the desired luminous intensity is displayed next to the operation display. It is controlled by a PI controller whose amplification factor and reset time can be adjusted.

Figure 2-17: Status display

- **Control parameters**

  The **amplification factor** (proportional gain, **KP**) is the proportional component of the controller. For each lux of deviation, the set value is corrected by the value set here.

  The **adjust time** (**TN**) is responsible for the integral component of the controller.For a constant control difference, the set value is corrected by the proportional component in addition to the proportional component during this time.

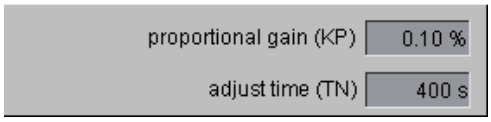


Figure 2-18: Control parameters

- **Minimum/Maximum**

The set value limits during the production cycle can be determined in the Minimum/Maximum curve.

– The curve value **Minimum** sets a lower switch-on limit for the piloting of the lighting. This prevents flickering in the lower light spectrum.

– The curve value **Maximum** sets the value required after the twilight phase in the house.

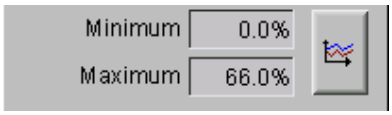


Figure 2-19: Limit values minimum/maximum

The values in this curve are changed and stored as described in the **AMACS User manuel chapter set curves**.

- **Twilight phase**

  The twilight phase simulates sunset and sunrise. The value entered for **Switch-on phase** determines the time period during which the brightness is increased from minimum to maximum. The value entered for **Switch-off phase** determines how long dimming from maximum to minimum shall take. Both values are entered in minutes.

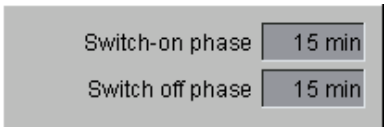


Figure 2-20: Twilight phase

2.4.3 Control light

To change the light intensity during the inspection rounds, the control light can be activated for a pre-set time period. This function ensures that the light is always switched off again after the inspection rounds.
The control light can be turned on either on the supply main screen or by pressing a push button in the house.

As displayed in the figure, the switch-on duration can be entered in minutes, the intensity in percent.

Figure 2-21: Control light

3 Water

Clicking on the button **Water** opens a menu in which the settings for the water control can be carried out.

Figure 3-1: Water

Important:

Make sure that there is always enough water in the house and the water consumption is adapted to the age of the birds.

If problems continuously occur or in case of an insufficient water consumption, please consult a technical adviser.

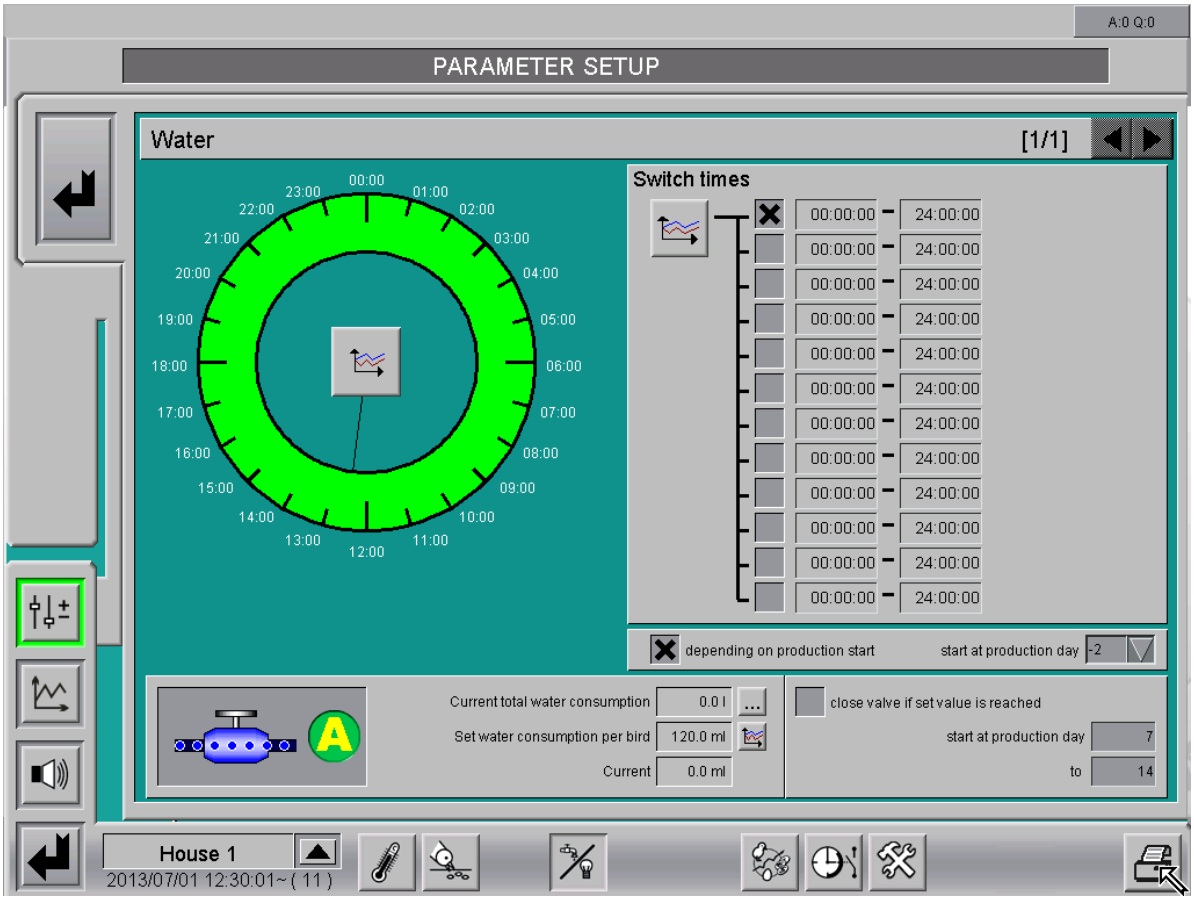


Figure 3-2: Water

3.1 Switch times

Times during which the water valve should be open can be entered in the screen pictured below. The graphical display of the clock provides a good overview of the set switch times for the day.

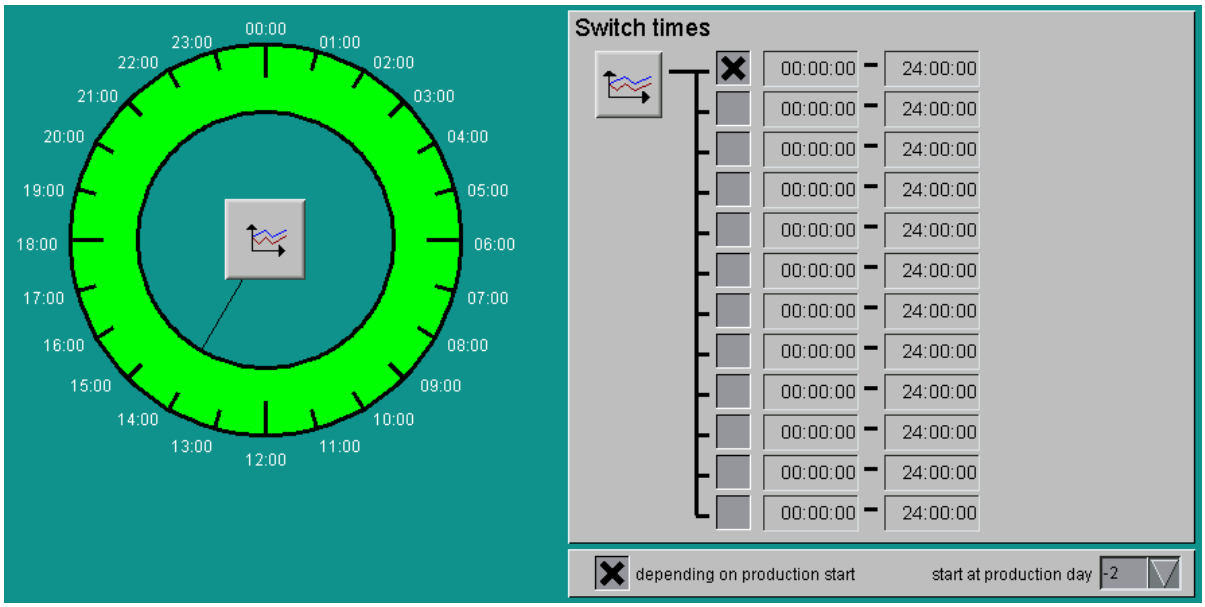


Figure 3-3: Switch times

- **Graphical display**

  The graphical display indicates when the water valve is activated (**green**) and de-activated (**orange**). The **black hand** indicates the system's current time. Clicking on the **curve symbol** opens a curve overview of the previous switch times.

- **Setting up switch times**

  A maximum of twelve switch times can be activated by checking the box next to the start time. The **start** and **stop time** within which the water valve should be activated is entered in the production manager and displayed there. The production manager can be opened by clicking on the button with the curve symbol. This opens a new window.

	The start and stop times of this curve are changed and saved as described in the chapter **Production curve** in the manual **AMACS Operation**.

- **Depending on production start**

  Using the setting **Depending on production start**, the water valve may be set to only activate automatically when production has been started.

  A checked box means that the water valve is opened automatically when the production has started. The additional entry field indicates from which day the valve should be activated, in relation to the production start.
  For the water valve to be controlled independent of the production, the box must be deactivated.

3.2 Status display

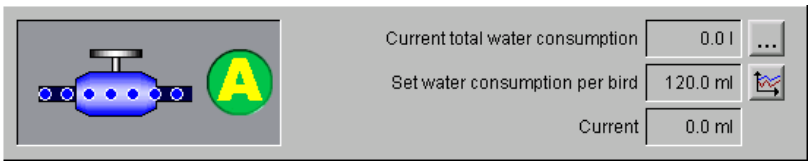
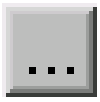


Figure 3-4: Status display

- **Operation display**

  The water valve displayed in the status indicates whether the valve is open or closed. The icon next to it shows in which mode the water is currently operated (**M**anual or **A**utomatic).

- **Current total water consumption water counter**

  The total water consumption of a house is added up and displayed here as sum. Where several water counters are installed in one house, counting the water consumption e.g. per group, these values may also be viewed per counter. Clicking on the button opens a display of the individual values for each counter.

- **Set water consumption per bird**

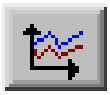
  

  Figure 3-4 shows the currently valid set consumption per bird and the button for the curve, which allows settings regarding the birds over the whole production cycle.

	The values in this curve are changed and stored as described in the **AMACS User manuel chapter set curves**.

- **Current water consumption per bird**

  The current water consumption per bird is displayed here. The current consumption is calculated based on the total consumption (sum of all counters), divided by the number of birds, independent of groups. This value is identical to the value displayed in the main overview of the houses.

3.3 Water control

The water consumption can be limited to the set water consumption for a specific production phase.

Checking the "**Close valve if set value is reached**" box limits the water consumption to the target value for an adjustable production period from "**start at production day**" to "**to**".

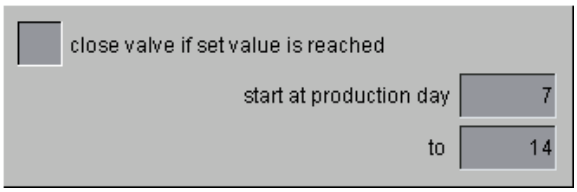


Figure 3-5: Water control

If the water valve was closed because the target value has been reached, a red exclamation mark with the text "Target value" appears to indicate this closing.

	For this function, the water valve must be operated automatically!

4 Water counter

Clicking on the button **Water counter** opens a menu in which settings for the water counters can be carried out.

Figure 4-1: Water counter

	Caution! Once the impulse values of the water counters have been set, they may only be changed if absolutely necessary, since this could result in incorrect measuring values!

All settings for the water counters can be found on two screen pages:

1. The first page determines the impulse values of the water counters. In addition, the flow rates can be adjusted and are displayed here.
2. The second page indicates the grouping in case several water counters are available.

4.1 Settings

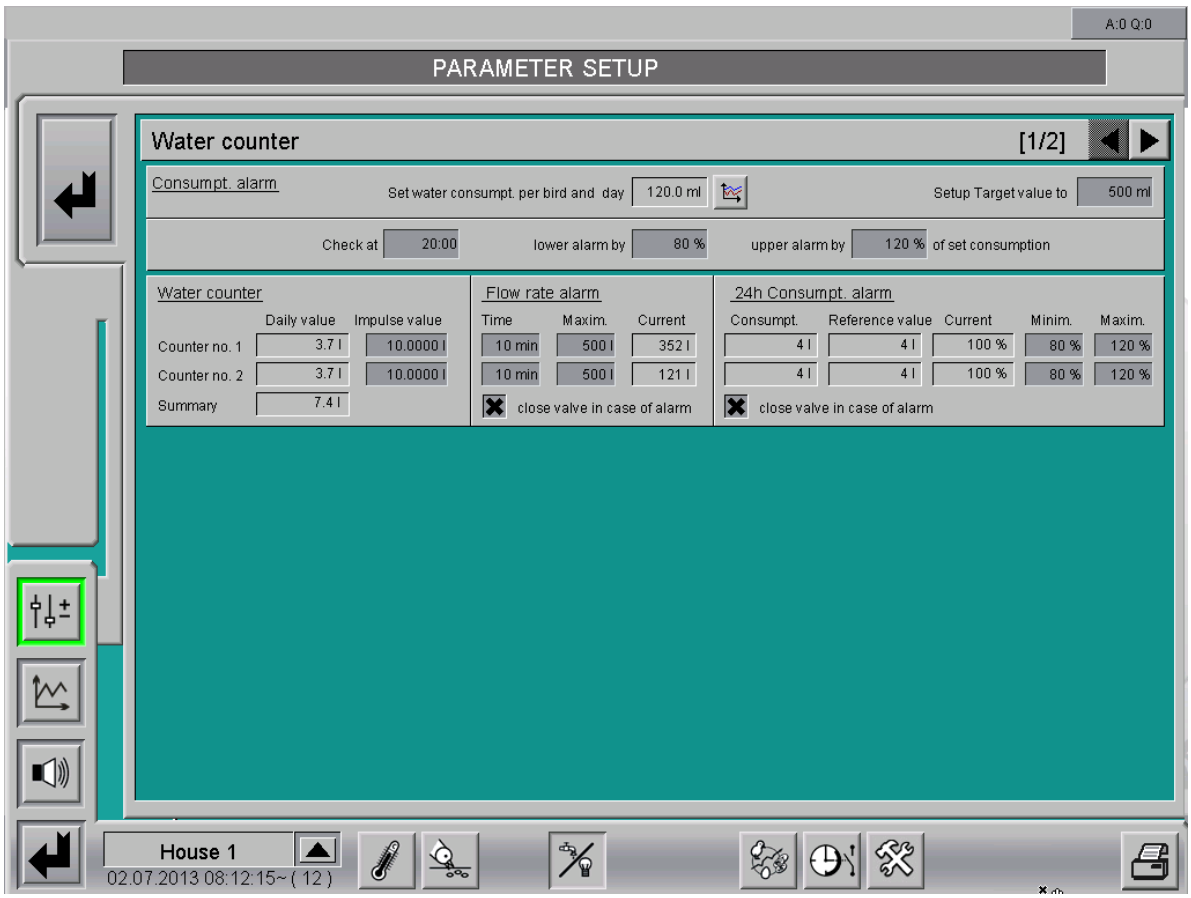


Figure 4-2: Water counters

4.1.1 Consumption alarm per bird

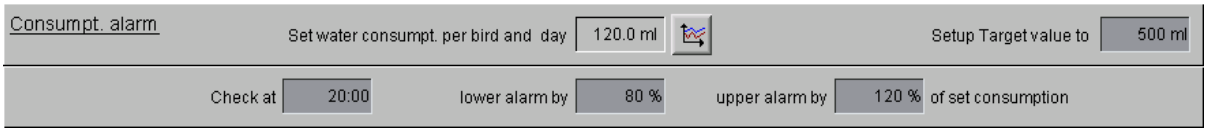
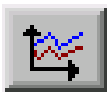


Figure 4-3: Consumption alarm

- **Set water consumption per bird and day**

  The previous figure displays the currently valid set water consumption and the button **Curve set water consumption**, which allows individual settings over the whole production cycle.



The set curve can be opened by clicking on the button with the curve symbol.

	The values in this curve are changed and stored as described in the **AMACS User manuel chapter set curves**.

The setting range for the set curve can be entered in ml next to the curve symbol in the field **Setup target value to**. This function ensures that the measuring range corresponds with the breed and is not too small or too large.

- **Check at**

  The menu determines when the water consumption is compared to the target value established in the reference curve **Set consumption per bird and day**.

- **Alarm limits**

  Next to the entry field for the consumption check, the fields for the limit values triggering a water alarm can be found. Enter here how much water may be consumed **at least** and **at most** in percent.

If an alarm is triggered, a control panel for acknowledging this alarm is shown in the main screen. The alarm is reset after it has been acknowledged.

4.1.2 Counters

Where several water counters are installed in one house, counting the water consumption per group, the consumption values may also be recorded per counter.

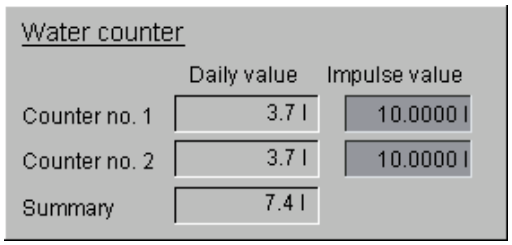


Figure 4-4: Counters

- **Daily value**

  As displayed in the previous figure, the current water consumption of each counter is displayed here. It is possible to connect up to 12 water meters and to evaluate their data. The entire water consumption of a house is added up and displayed here as sum.

- **Impulse value**

  In addition, the water quantity per impulse is displayed here. Usually, Big Dutchman water counters are set so that ten litres of water trigger one impulse.

4.1.3 Flow rate alarm

If e.g. the **current** water consumption is above the **maximum** water consumption (here: 500 litres) within the set **time** (here: 10 minutes), an alarm is triggered. A possible cause is a ruptured water line.

To prevent the house from filling up with water, the checkbox **close valve in case of alarm** can be activated. The water valve will now close automatically in the case of a flow rate alarm.

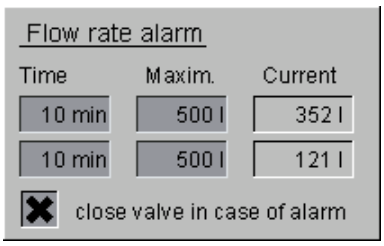
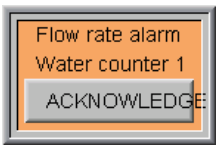


Figure 4-5: Flow rate alarm



If an alarm is triggered, a control panel for acknowledging this alarm is shown in the main screen. The alarm is reset after it has been acknowledged, and the water valve is opened again if it was closed.

4.1.4 24h consumption alarm

The 24h consumption alarm checks if the water consumption is unusually high or low compared to the previous 24 hours.

The water consumption of the past 24 hours is displayed under **Consumption** and compared to the water consumption **Reference value** of the previous 24 hours. The current consumption is compared with the reference value under **Current** and the deviation displayed in percent. If the current value falls below the set **Minimum** or exceeds the **Maximum**, an alarm is triggered. A possible cause is a leak in the water pipe which was not immediately detected.

To close the water valve automatically in the case of an alarm, activate the checkbox **close valve in case of alarm**.

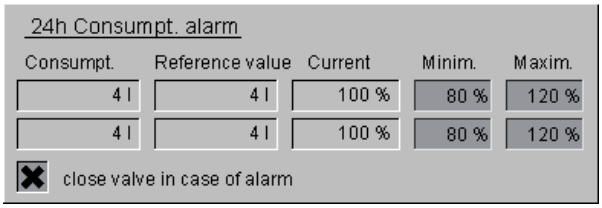


Figure 4-6: 24h consumption alarm

If an alarm is triggered, a control panel for acknowledging this alarm is shown in the main screen. The alarm is reset after it has been acknowledged, and the water valve is opened again if it was closed.

4.2 Grouping

Depending on the configuration of the water supply and the number of water counters, the counters can be assigned to the rows and tiers on the following screen. The corresponding settings can be found on the second page.

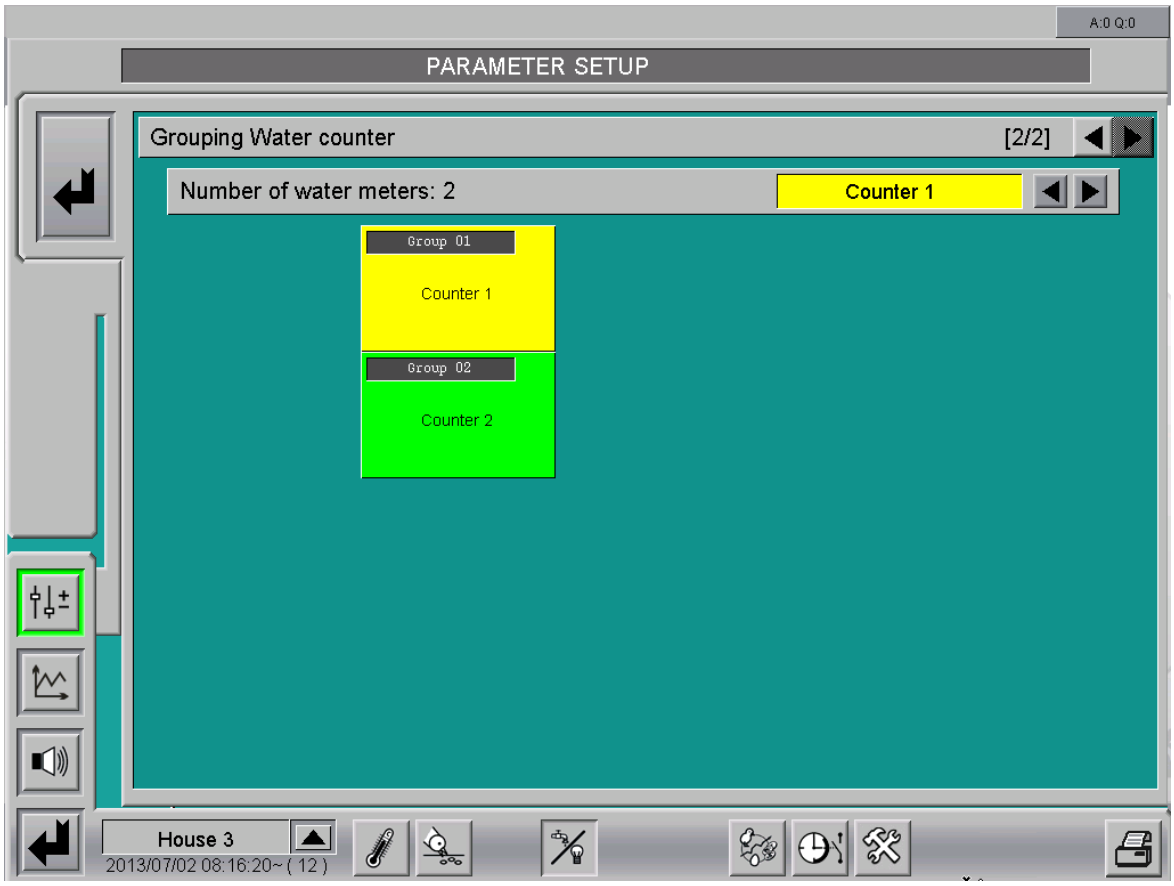


Figure 4-7: Grouping

1. **Selecting water counters**

   An installed water counter can be selected by using the arrow keys in the field **Number of water meters** in the upper part of the screen.

2. **Assigning water counters to groups**

   If a water counter has been selected, clicking on the corresponding group and number displays the counter. This counter's registered water quantity is distributed over the number of birds in these groups. All groups must be assigned a water counter in this manner.

5 Alarm description

In the alarm settings you can choose which alarms you require and when they should appear. In addition you can state whether the alarm is to be issued by the alarm device or sent to the users by e-mail.

Attention!

All alarms are activated as standard!
Before deactivating an alarm you should check whether it is really not required. Alarms help to prematurely recognise problems that may potentially endanger the animals' health. Alarms should not be viewed as disturbing but as a chance to be able to keep the productivity of the house at a consistently high level.

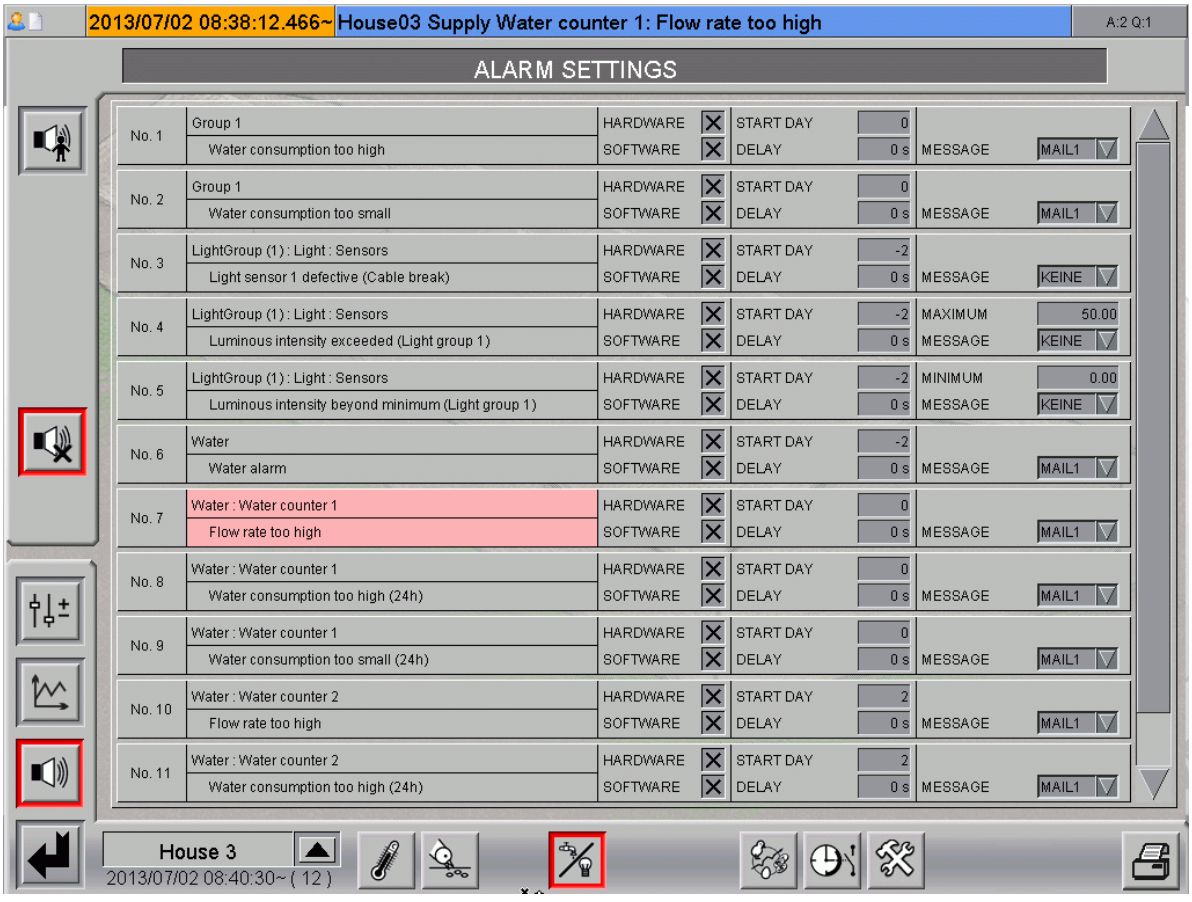


Figure 5-1: Alarm settings

This section describes the various alarms shown in the alarm line and their cause.

	How to operate the **alarm settings** can be found in the **Amacs Operation** manual.

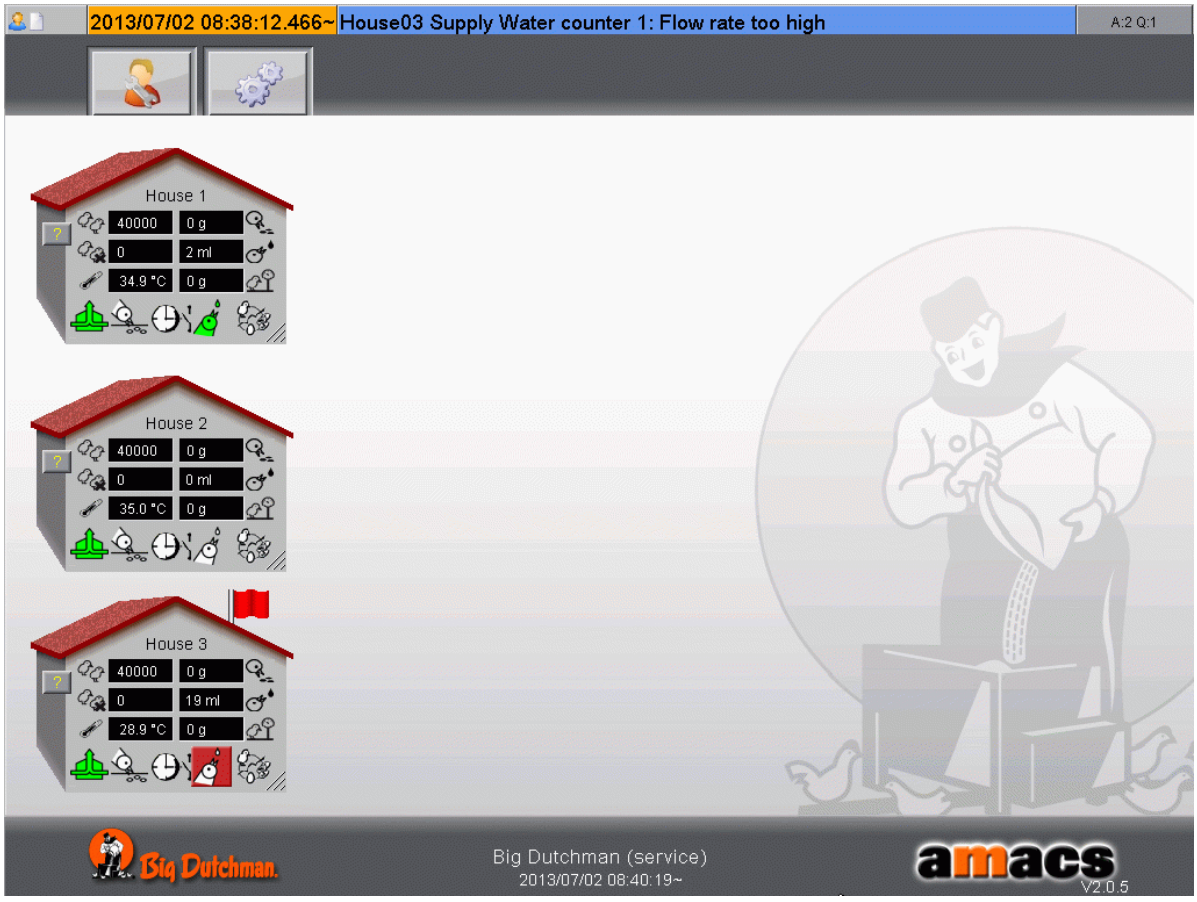


Figure 5-2: Alarm line

Light sensor defective (cable break)
The light sensor indicates an alarm after an adjustable control time has elapsed without changes and when reaching the end of the measuring range.
Luminous intensity exceeded
The measured luminous intensity is above the set maximum.
Luminous intensity beyond minimum
The measured luminous intensity is below the set minimum.

Table 5-1: Alarms light

Water consumption too high
The monitoring of the set water consumption per bird has detected that the permissible tolerance has been exceeded.
Water consumption too low
The monitoring of the set water consumption per bird has detected that the consumption has fallen below the permissible tolerance.
Water alarm
The water level at a water line has declined.
Flow rate too high
Too much water has been consumed within an adjustable time.
Water consumption too high (24)
The water consumption increased too much during the past 24 hours.
Water consumption too low (24)
The water consumption decreased too much during the past 24 hours.

Table 5-2: Alarms water