

PL-9400(i)

POULTRY CLIMATE AND MANAGEMENT COMPUTER



PL-9400



PL-9400i

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1 General introduction

The manual is intended for the user of this device. It contains all the information necessary for operating and cleaning this product. Please read all information and instructions carefully before using the product.

Symbols mark warnings, important notes, tips, etc. in this manual.

Stienen has compiled this manual with all due care. If you find any errors, please let us know.

1.1 Symbols and definitions



Risk of injury by dangerous electric shock. Danger to people and animals.



Warning indicating danger to product, people and animals if procedures are not strictly complied with.



Warning indicating damage to products if procedures are not strictly complied with.



Pressure cleaning is not allowed.



Collect as separate flows



Important note



Additional information



Example of a concrete application of the functionality described.



Example calculation



Manual control



Tips and advice



Screenshot



Application note

1.2 Customer service

If you have any questions, please contact your installer. Be sure to have all the necessary data handy. You should also always write down the cause of a fault and the circumstances that occurred during the fault. This will enable you to avoid any ambiguities and it will enable your installer to deal with any faults quickly and effectively.

2 Safety instructions and warnings

Read the general safety instructions in this chapter carefully before using the device. A certified installer must install the device and resolve any faults, in accordance with the applicable guidelines. If this product is installed and used in any other way, the warranty will not apply.

2.1 Sound, independent alarm system

Although we have designed and built our control equipment with the greatest care possible, technical faults can never be ruled out. Insurance requirements in many countries are becoming increasingly stringent. This requires the alarm contacts of the various control computers to be connected a central alarm unit.



We recommend also installing a sound independent alarm system, for example a min/max thermostat.



We advise you to manually test the alarm at least once a week.

2.2 During use

The people who operate the device have read the manual carefully. They are aware of potential hazards that may arise from improper use and maintenance of the product.



The device must only be opened by authorized personnel.



Do not switch off the control computer while the house is empty, but switch it to *Off* mode. This will prevent condensation caused by the equipment cooling down.



Check the device for any damage at regular intervals. A damaged device is unsafe. Always report any damage to your installer.



Electronic equipment is splash-proof and must not be cleaned using a pressure cleaner.



If any emergency has occurred, write down: the circumstances under which the emergency occurred, installation settings, software date, software version number and possible causes.

2.3 Disposal

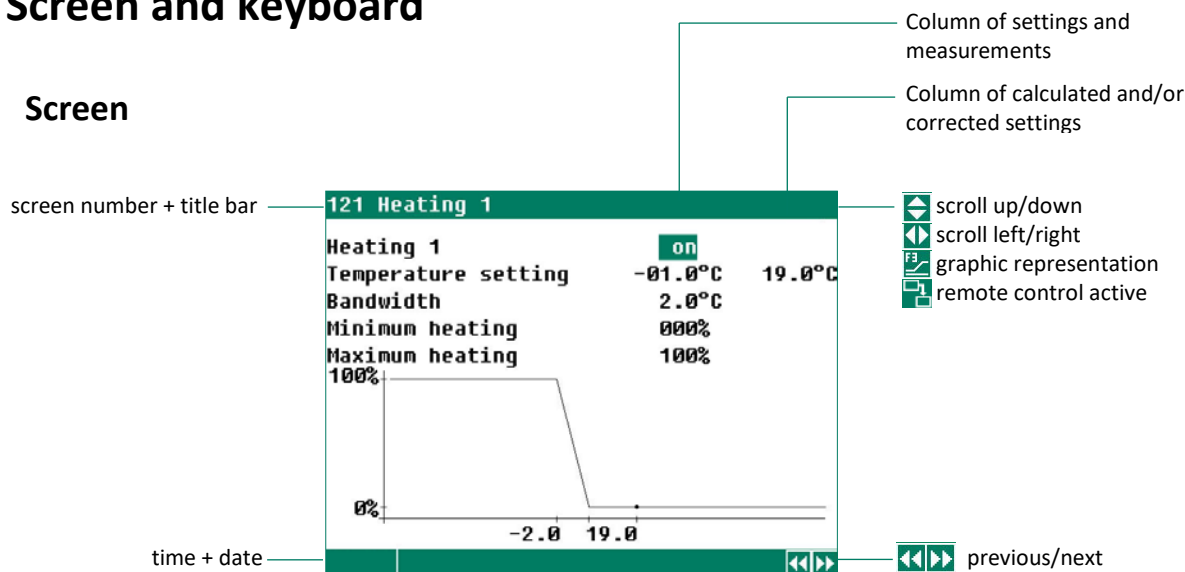
The EU has set up systems for the separate collection of waste electrical and electronic equipment and batteries (Directive 2012/19/EU). If you do not dispose of the device properly, you risk a fine.



Electrical and electronic equipment must be collected separately at the end of its life.




3 Screen and keyboard

3.1 Screen






As a result of the growth curve and/or offsets, the calculated setting may differ from the value set by the user.




If some text lines extend beyond the screen, you will see  in the title bar. Press   to retrieve the remaining settings and/or measurements.



If some text lines extend beyond the screen, you will see  in the title bar. Press   to retrieve the remaining settings and/or measurements.

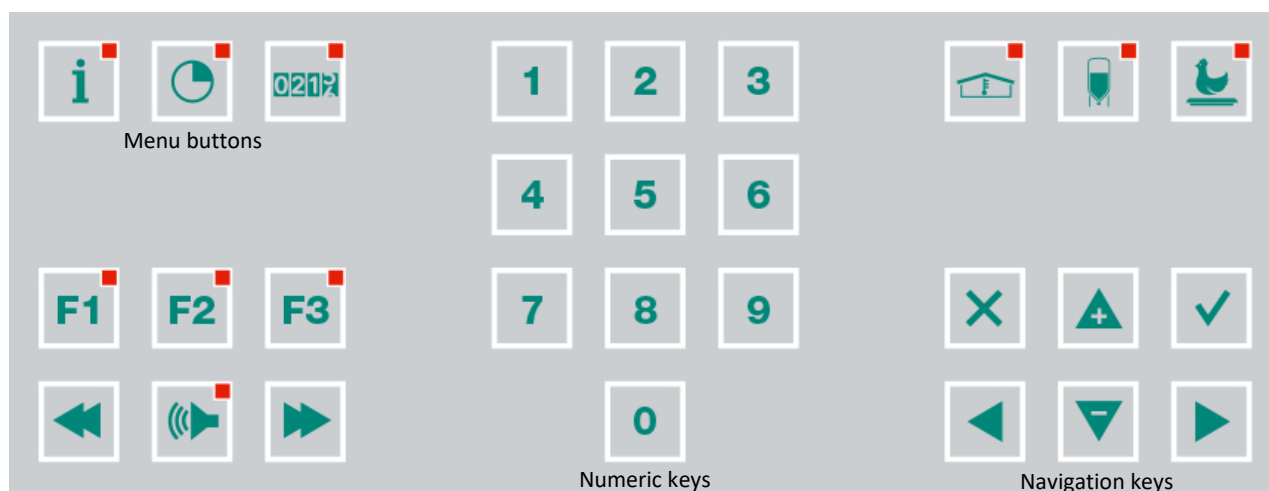


If  is shown in the title bar and you press function key F3, the settings will be displayed graphically. The dot (•) in the graph indicates the calculated value. Pressing F3 again turns off the graphical display. The display lights up for a few minutes every time a key is pressed. This enables you to see the settings and measurements in a dark animal house.



Use these buttons to select the previous or the next control, if there are any controls of the same type, such as ventilation groups (left, right, recirculation, etc.).

3.2 Keyboard



Do not use sharp objects such as pen or screwdriver to operate the keys.

Menu keys



Information on animal welfare, number of animals, mortality, feed intake, etc.



Timers (standard timers, light controls etc.)



Counters (water, feed water/food ratio, etc.)



Poultry house climate



Feed weighing system.



ANote-FeedSysP-N-ENxxxxx.




Animal weighing system.



ANote-AWeighing-N-ENxxxxx.

Function keys



Press and hold F1 and press   to select the previous/next language.













Call up poultry house status.







The graph function is active when the LED in the function key lights up. You can switch off the graph function by pressing the function key again. The LED in the key is off then.


Numeric keys (0..9)

Use the numeric keys to enter a screen number, value or text. Select menu item 10 with .

Key	Character
	_0
	.,1'-.:+
	abcäáâàç2ABCÄÅÂÛÇ
	defëéèê3DEFËÊÛË
	ghïîîî4GHIÎÎÎ
	jkl5JKL
	mnoöóòô6MNOÖÓÔÛ
	pqrs7PQRS
	tuvüúûû8TUVÜÛÛÛ
	wxyz9WXYZ

Text input







With  ...  you can change the name (max. 15 characters including spaces) of a recipe, timer, counter, external alarm, etc. The character appears in a block. Press the numeric key repeatedly until the character to be selected appears. To enter a punctuation mark, press  repeatedly. Use  to insert spaces.

 : Press once for a, twice for b, etc.






Use   to move the text cursor.

For example, in menu choices the text automatically starts with a capital character.

Navigation keys

-  Abort menu option or change.
Press and hold this key to return to the main menu
-   In control mode, press and hold to move the cursor to the right or left.
Move cursor left or right in edit mode.
-   Move cursor up or down in control mode.
Increase or decrease value in edit mode.
-  Confirm the selected menu option, start edit mode and confirm the change.
In edit mode, the value to be changed appears in a green rectangle: 19.5°C.
While a change is being made, the character to be changed appears in a black frame: 19.5°C.

3.3 Adding and removing breakpoints or periods

1. Press the ( Enter) key to enter the edit mode.
2. Press and hold  and press  to add a breakpoint/period (provided that the maximum value for periods/breakpoints has not been reached).
3. Press and hold  and press  to remove a breakpoint/period (provided that there is at least one period/breakpoint).
4. The number of breakpoints/periods is adjusted automatically.

3.4 Programming hot keys


The six function keys below can be assigned to a menu screen of the corresponding group.









1 2 3 4 5 6 (group number = first digit of menu option)



Assigning the overview screen to the hot key

You want to program the overview screen (611, menu group 6) under the info key ().

611 Overview house temperature				
House temperature		20.1°C		
Day	Min.°C	Time	Max.°C	Time
Today	19.2	6:26	20.1	15:09
Saturday	18.7	6:23	19.8	15:28
Friday	19.0	6:43	19.7	15:21
Thursday	19.2	6:39	20.1	15:17
Wednesday	18.8	6:32	20.0	15:01
Tuesday	18.6	6:24	20.2	15:06
Monday	18.9	6:19	19.7	15:11
Sunday	18.6	6:14	20.3	15:26

1. Go to the main menu.
2. Press successively   .
3. Press and hold  and then press . The function key has now been programmed.
4. If you press , screen 611 will be displayed.
5. Press a numerical or navigation key to return to the main menu.

Deprogramming a hot key

Hold down  and press the hot key to be deprogrammed. You can clear the programmed  key from the example by pressing the key combination  + .

3.5 Alarm key



Shortcut for alarm screen. The LED in the alarm key lights up if one of the controls has an alarm situation.

Alarm status	
Main alarm	on
🕒 off	no
Snooze	no
Alarm code	No alarm
Control	
Alarm external house 0	
1 Options	
2 External alarms	3 Communication

Here you can turn the main alarm on and off. If the main alarm is off, the LED in the alarm button flashes evenly. No more alarms are issued. Installation errors cannot be disabled.

Reset

Set *Reset* to *yes* to clear all alarms. After all alarms have been cleared, any active alarms will be turned on again.

🕒 off = temporarily disable alarm

Option for temporarily disabling the alarm (siren). This does not apply to hardware alarms. The main alarm is disabled for 30 minutes; the LED flashes unevenly. After 30 minutes, the main alarm automatically reactivates. If the alarm cause has not been remedied, the alarm relay will de-energize again, causing an alarm.

You can clear the temporary alarm deactivation time by setting 🕒 off to *no*.

Alarm code Code representing the alarm cause.

Control The control to which the failure relates.

'Terminal + control' Terminal number plus any second control to which the alarm relates.

Alarm external house If a message received via loop communication shows that the alarm relay of a controller connected has failed, the relevant house number is shown here.

Alarm testing

Test = yes The alarm relay (siren) is tested for 60 seconds.

Test = no The alarm test time is cleared.

Snooze function

The snooze function allows you to suppress the alarm notification up to a set time. If the snooze time is before the current time, the alarm notification is snoozed until the next day at most.



Alarms resulting from a setting error cannot be snoozed. Consider, for example, an incorrectly assigned input or output, or a setting error on the timers.

If the alarm disappears by itself, it is not removed from the snoozed alarm list. Thus, short-lived, repeating alarms can still be snoozed.

Possible options: 00:00, 12:00, 16:00, 20:00, Clear

- A snoozed alarm remains in the list until the time setpoint is reached. At the time entered, the snoozed alarm will be removed from the list.
The *Clear* option enables to clear the snoozed alarm list in its entirety. Any active alarms will then be re-generated.
- You can snooze up to 20 alarms simultaneously. Once the snoozed alarm list contains 20 alarms, you cannot add any more alarms to the list. You can still use the temporary alarm off function (🕒 off).
- A snoozed alarm does not appear in the alarm log.

Snoozed alarms

Snoozed alarms		
Alarm 1:
Alarm code	
Control	
Alarm 2:
Alarm code	
Control	
Alarm 3:
Alarm code	
Control	



After resolving the fault, do not forget to turn the alarm back *on*. Preferably use the ⌚ *off* function to clear the fault.



Always resolve installation errors such as *Output already assigned*, *Output type error*, *Input already assigned* etc., before commissioning.



By snoozing the alarm for a particular control, no new alarm is generated for this control until the set time.

Options

1 Options alarm
1 Latest alarms
2 Alarm schedule

1 Options alarm → 1 Latest alarms

See page 48.

12 Alarm schedule		
	Begin	End
Alarm active	--:--	--:--
Status	active	

1 Options alarm → 2 Alarm schedule

Alarm active At *Start* and *End* you set the period, during which the on-time set alarms should be active.

Only when *Status* is set to *Active*, time-set alarms are transmitted to the computer. Alarms that occur during the *Off state* are no longer transmitted.

External alarms

2 External alarms
1 External alarms 1-10
2 External alarms 11-20

See page 49.

Communications

The screenshot shows a screen titled '3 Communication'. It has a green header bar. Below the header, there is a section for 'Alarm' with a green 'on' button. Below that, there are fields for 'Device address' (0), 'Date' (---/---/---), and 'Time' (..:..4h). At the bottom, it says 'Alarm status No alarm'.

- Alarm** Here you can turn the communication alarm on and off.
- Device address** The first address, from which the main station did not receive data.
- Date** The date on which the communication alarm occurred.
- Time** The time at which the communication alarm occurred.
- Alarm status** *No alarm, Communication address x or Communication WEB-485*

A communication alarm occurs when:

- The main station has not received data from any device (PL-9xxx, PFA-9400, PFV-9xxx, WEB-485 etc.) in the same RS485 data communication loop.
- Central controls are installed and the poultry computer has not received data from the relevant central control (for example, a central heating system).
- A PFB-35/70 feed weigher is installed and the poultry computer has not received data from the PFB-35/70.
- An PW-2 animal weigher is installed and the poultry computer has not received data from the PW-2.
- A PSW-1 silo weigher is installed and the poultry computer has not received data from the PSW-1-D. On the PSW-1-D silo weigher, check that dip switch SW1-6 is in the *OFF* position (slave mode).

3.6 Terminal numbering of inputs and outputs

The terminal number of an input/output consists of a 2-digit module address (between 00 and 31), the input/output type (character) and a 2-digit serial number (between 01 and 99, 00 = output not used).

Character	I/O type	Description
A	0-10V output	Analog output with a range of 0-10V or 10-0V.
B	Relay output	Relay contact output (<u>no</u> alarm relays, digital outputs, etc.)
C	Digital output	Optocoupler output (max. 35Vdc 30mA).
D	Open/close output	Open/close control with position feedback. This includes heaters and valves with feedback potentiometers.
F	Controlled triac output	Controlled triac output with a range of 30-230Vac.
G	Analogue output	Analogue output with fixed range of 2-10V with position feedback reporting. This includes valves with feedback potentiometers.
K	Temperature sensor	All types of temperature sensors with a 10K NTC resistor (N10B, BV10B etc.)
L	0-10V input	Analogue input with a measuring range of 0-10V. For connection of e.g. measuring sensors (RH, pressure, CO ₂ , NH ₃ , etc.)
M	Digital input	These include measuring fans, counter contacts etc.
N	Meteo station	Module to which a wind speed meter, wind direction meter and rain sensor can be connected to.
R	Pressure sensor	n. a.

4 Main Menu

4.1 Overview screen



When using an access code, we recommend that you write it down and keep it somewhere safe. You will not be able to change any settings if you do not have the access code.

If one access code is active, you can only change the setting after entering the correct access code.

The access code will remain active until the overview screen is selected. If you want to change a setting, you will then have to enter it again.

4.2 Access Code

You can set an access code (four digits) to prevent unauthorized personnel from changing settings. Your installer can set a maximum of 6 access codes for you.



You can program a separate access code for the status screen. If you only set an access code for the status screen, this will apply to all user screens.

5 Climate Controls

5.1 House status

19 House status		
House status	in use	
House temperature	20.0°C	20.0°C
Growth curves	off	
Day	001	
Entry date	--/--/----	
New entry	no	

Growth curves = on

19 House status		
House status	in use	
House temperature	20.0°C	20.0°C
Growth curves		
Day	001	
Entry date	--/--/----	
New entry	no	

Growth curves = off

- House status** *in use* = The poultry computer controls are based on the settings.
not in use = All control, alarm and temperature monitoring functions are switched off; air inlets are closed and timers are switched off.
- House temperature** The temperature based on which the ventilation groups and heaters are controlled. The second value indicates the corrected house temperature based on any active corrections.
- Growth curves** If your installer has set you not to use *Growth curves*, the text *Growth Curves, Day* will still appear on the screen; the day number is used by *FarmConnect*.

5.2 Relative or absolute temperature setpoint

- Relative** The temperature control follows the set house temperature. Control is based on the set house temperature and the differential temperature.



Set house temperature 20.0°C
 Differential temperature 5.0°C

The temperature is controlled at: $20.0^{\circ}\text{C} + 5.0^{\circ}\text{C} = 25.0^{\circ}\text{C}$

If you change the house temperature setting to 18.0°C , the computer will continue controlling at: $18.0^{\circ}\text{C} + 5.0^{\circ}\text{C} = 23.0^{\circ}\text{C}$.

- Absolute** The temperature control works with absolute temperature settings. If the temperature is set to 5.0°C , the output will be controlled at 5.0°C . The temperature control works independently of the set house temperature.

Control	Type of setting (absolute or relative)
Main ventilation group	Always relative to house temperature
Add. ventilation group	Always relative to house temperature
Manure belt: intake fan	Value between -9.9°C and +9.9°C → setting is relative to house temperature Value equal to or higher than 10.0°C → absolute temperature setting
Manure belt: heater block	Always relative to house temperature
Ventilation groups	Always relative to house temperature
Heating 1..6	Value between -9.9°C and +9.9°C → setting is relative to house temperature Value equal to or higher than 10.0°C → absolute temperature setting
Central heating 1+2	Absolute temperature setting
Cooling 1..4	Value between -9.9°C and +9.9°C → setting is relative to house temperature Value equal to or higher than 10.0°C → absolute temperature setting
Temperature 1+2	Inform your installer whether temperature control 1/2 is a relative or absolute temperature setting.

5.3 Main ventilation

11 Ventilation	111 Main ventilation	111 Main ventilation
Total capacity 60,000m³/h	Temperature setpoint +00.0°C 20.2°C	Growth curve temperature 20.0°C
Current capacity 6,000m³/h	Bandwidth 06.0°C 6.0°C	Bandwidth 06.0°C 6.0°C
Capacity per animal 0.200m³/h	Minimum ventilation 010.0% 10.0%	Growth curve minimum +00.0% 10.0%
	Maximum ventilation 100.0% 100.0%	Growth curve maximum +00.0% 100.0%
1 Main ventilation	Current temperature 20.1°C	Current temperature 23.2°C 23.2°C
2 Aux. ventilation	Current ventilation 10.0% 0.0%	Current ventilation 58.2% 50.0%
3 Heat exchanger	Capacity 0m³/h	Capacity 23,260m³/h
4 Manure belt	Capacity per animal 0.000m³/h	Capacity per kg 6.46m³/kg/h
5 Inlet flaps	1 Options	1 Options 2 AQC-Flap
6 Mixed air	2 Interval 3 Tunnel	3 Duty cycle 4 Tunnel

Main ventilation with growth curves

Ventilation capacity

The calculated total ventilation capacity, the actual ventilation capacity and the ventilation capacity per animal in m³/h.

Total ventilation capacity house = auxiliary ventilation + manure belt ventilation (exhaust ventilation) + total ventilation capacity of the main ventilation group (capacity of 1st, 2nd and 3rd fan and step control).

Main ventilation

The group which controls the *main ventilation* in the house. Compensations can cause the calculated value to differ from the value setting.

Temperature setting

The temperature on which the main ventilation group controls; this setting is relative to the house temperature. The calculated temperature on the basis of which the ventilation group controls is shown behind the temperature setting.

Bandwidth

The 'sensitivity' of the fan to temperature changes. The smaller the bandwidth, the greater the fan's response to a temperature change. Large ventilation fluctuations are not good for the internal house climate.



A>Note-CompensP-N-ENxxxxxx → Automatic bandwidth increase

Min/max ventilation

If compensation is set based on the occupancy rate, the minimum/maximum ventilation is adjusted to the number of animals housed. In addition, the minimum and maximum ventilation can be affected by the RH, CO₂, NH₃, meteo, night settings and outside temperature.

Current temperature

Readout of the current, average house temperature.

Current ventilation If the main ventilation is controlled using a measuring fan, the measured ventilation is displayed behind the calculated ventilation. If no measurement fan has been installed or if it is defective, the calculated ventilation will be equal to the measured ventilation. The current ventilation is calculated using the bandwidth and the minimum and maximum ventilation settings.

Capacity Ventilation capacity of the main group: *total, per animal or per kg*.

Main ventilation using growth curves



The text Growth curve appears in front of the climate settings calculated from the curve. You can increase/decrease the calculated curve settings by changing the value in the first column (+0.0°C/+0.0%). With sick animals, you then do not need to adjust the curve settings each time.

Growth curve temperature Increasing or decreasing the calculated temperature for main ventilation.

Growth curve minimum Increasing or decreasing the calculated minimum main ventilation.

Growth curve maximum Increasing or decreasing the calculated maximum main ventilation.

Displaying curve, changing settings or switching off curve

Place the cursor on *Growth curve temperature*, *Growth curve minimum* or *Growth curve maximum* and press . Use  to return to the previous screen. If you have switched off the curve, the text *growth curve* will be replaced by the standard text and you can no longer access the relevant curve settings from this window.

Options

If the main ventilation system consists of more than one fan, then at Start fan 2 and/or Start fan 3 you enter the percentage at which the fans should switch on. The activation percentage is relative to the total ventilation capacity of the controlled ventilation group.

1111 Options main ventilation		
	at	Max.
Start fan 2	050%	1:100%
Start fan 3	066%	2: 99%
Proportional	5%	
Proportional	Step	3
Step control	Step	1
Current ventilation	24.3%	24.6%
Capacity	83,600m³/h	

Proportional **Step x** Current step of the controlled ventilation group that is activated.

1. Fan 1 is on;
2. Fans 1 + 2 are on
3. Fans 1+2+3 are on

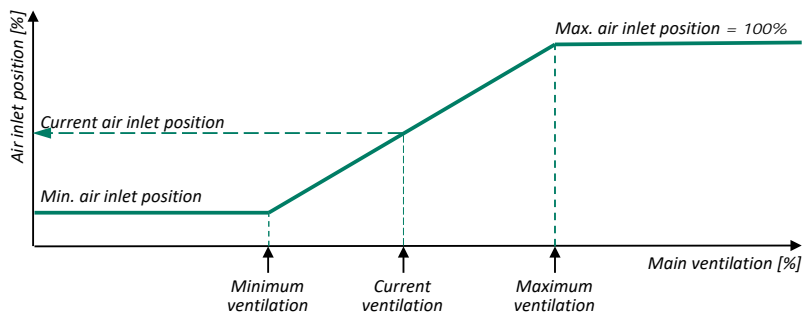
Step control **Step x** Current step of the step control.



If the capacity of the controlled ventilation group in relation to the total capacity is less than the percentage entered at *Minimum ventilation*, the controlled group is fully on.

AQC valve

You can only set the control characteristics for an AQC valve without a measuring fan. If a measuring fan is present in the controlled ventilation group, menu item 2 AQC valve will not be displayed.



The AQC valve without measuring fan controls on the basis of the calculated main ventilation (main fan output).

Duty-cycle

1113 Duty cycle			
Duty cycle	on		
Duty cycle	till 015%		
Cycle time	10m00s	Step 2	
Main ventilation	15.0%		
Cycle time on	83%		
Duty cycle	active	on	
Cycle time on	8m16s		
Cycle time off	1m44s		
Cycle time	10m00s	0m10s	
1 Inlet flaps			

11131 Inlet flaps	
Calculated air inlet pos.	
Step 1	020%
Step 2	025%
Step 3	030%
Pressure control	on

Tunnel

1114 Tunnel ventilation		
Tunnel ventilation	auto	off
Active from day	008	2
Min. outside temp.	+00.0°C	20.0°C
Outside temperature		27.9°C
Minimum ventilation	010.0%	
Start tunnel	04.0°C	24.0°C
Current temperature		20.2°C



ANote-IntVent-N-ENxxxxx → Interval ventilation and Duty-cycle

ANote-Tunnel-N-ENxxxxx → Tunnel ventilation

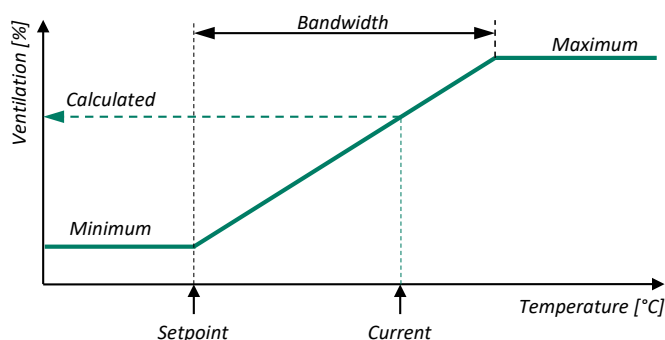
ANote-AuxVent-N-ENxxxxx → Auxiliary ventilation

ANote-HeatExcP-N-ENxxxxx → Heat exchanger

ANote-ManureB-N-ENxxxxx → Manure belt

5.4 Air inlet valves

1151 Left		
Temperature setpoint	+01.0°C	21.0°C
Bandwidth	04.0°C	4.0°C
Minimum air inlet pos.	000%	0%
Maximum air inlet pos.	100%	100%
Current temperature	23.2°C	
Calculated air inlet pos.	55%	
Correction air inlet pos.	55%	
Current air inlet pos.	55%	



The air inlet valve settings *Left*, *Right*, *Front*, *Middle*, *Rear*, *Recirculation*, *Top* and *Bottom* are identical in terms of settings and are all set accordingly.

An inlet valve has up to three separate controls (valves). The temperature setpoint, bandwidth, minimum and maximum ventilation apply to all three controls (1, 2 and 3).

Temperature setting The calculated temperature based on which the air inlet positions are controlled. This setpoint is relative to the house temperature.

Bandwidth The bandwidth determines the 'sensitivity' of the control. A short bandwidth will cause the control to react to a change in temperature very quickly. Result: too many fluctuations of the air inlet positions. This is not good for the climate in the house. That is why we advise a bandwidth of 4 to 7°C, depending on the outside temperature.



ANote-CompensP-N-ENxxxxxx → Automatic bandwidth increase

Min/max air inlet pos. Setting the minimum and maximum air inlet positions.

Current temperature The current, average temperature based on which the air inlets are controlled.

Calculated air inlet pos. *Control based on temperature*
The actual air inlet position is calculated from the measured temperature, bandwidth, minimum and maximum air inlet positions.

Control based on ventilation

The actual air inlet position is calculated from the main ventilation and the minimum and maximum air inlet positions entered.

Control based on differential pressure

When the ventilation group control is based on the setpoint entered and pressure control is enabled, the control tries to keep the differential pressure in the house as constant as possible.



ANote-CompensP-N-ENxxxxxx → Pressure control.

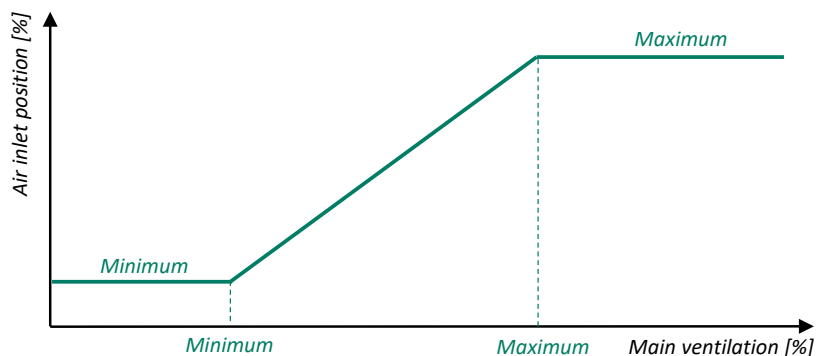
Pressure control features

- The pressure setpoint is automatically adjusted to the outside temperature.
- Any temperature differences in the house are taken into account when determining the air inlet positions.
- The pressure control will be instantaneously switched-off if a ventilation alarm occurs at the main ventilation control.
- In the event of a pressure alarm, the pressure control is switched off with a delay (*delay time*, see screen 1861).

Correction air inlet pos. When the output characteristic is active, the calculated air inlet position is corrected according to the valve characteristic (installer setting).

Current air inlet position The current position of the air inlet valve.

Air inlet position control based on ventilation



Minimum air inlet position The air inlet never closes beyond the set *Minimum air inlet position*. (%)

Maximum air inlet position The air inlet never opens beyond the set *Maximum air inlet position* (%).

Minimum ventilation (%) Below this minimum percentage, the air inlet is in its minimum open position. If the main ventilation rises above the set minimum (%), the air inlet will open further.

Maximum ventilation (%) Above this maximum percentage, the air inlet is in its maximum open position.

5.5 Mixed air

You can reduce ammonia emissions by blowing warm air from the ridge horizontally over the manure bedding through the ventilation ducts and fans. This will make the manure litter dry faster.

116 Mixed air	
Mixed air	on
Ventilation setpoint	010%
Current ventilation	10%
Capacity per animal	0.067m³/h
1 Running hours	

In this screen you can enable and disable the mixed air control. You can manually enter the ventilation rate of the mixed air fan.

Operating hours

1161 Running hours Mixed air	
Today	0:01
Sunday	0:00
Saturday	0:00
Friday	0:00
Thursday	0:00
Wednesday	0:00
Tuesday	0:00
Monday	0:00
Total	0 hours
Clear running hours	no

Running hours

Reading out operating hours of mixed air control:

- today's operating hours
- operating hours of the past seven days
- total number of operating hours

Clear running hours yes = delete operating hours.

5.6 Heating

12 Heatings		
1 Heating 1	19.5°C	25%
2 Heating 2	19.3°C	35%
3 Heating 3	19.6°C	20%
4 Heating 4	19.5°C	on
5 Heating 5	19.6°C	on
6 Heating 6	19.7°C	on
7 -----		
8 -----		
9 -----		

121 Heating 1		
Heating 1	on	
Temperature setpoint	-01.0°C	19.0°C
Current temperature	20.5°C	
Current heating	off	
1 Running hours		

On/Off heating

121 Heating 1		
Heating 1	on	
Temperature setting	+00.0°C	21.0°C
Bandwidth	2.0°C	
Minimum heating	000%	
Maximum heating	100%	
Current temperature	22.0°C	
Current heating	off	-0%
1 Running hours		

121 Heating 1		
Heating 1	on	
Temperature setting	+00.0°C	21.0°C
Minimum heating	000%	
Maximum heating	100%	
Current temperature	22.0°C	
Current heating	off	-0%
Limit supply		
Temperature setting	50.0°C	
Current temperature	20.0°C	
1 Running hours		

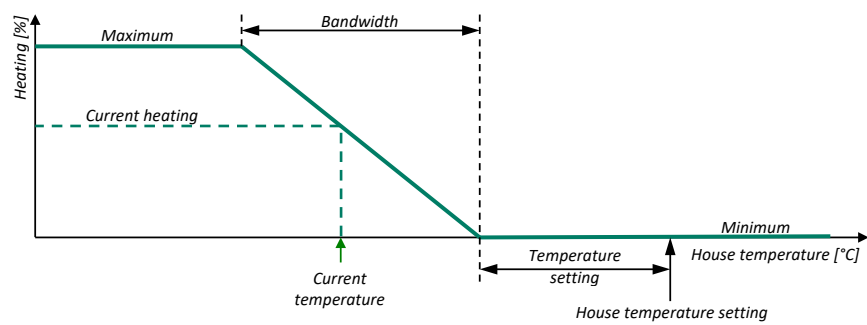
121 Heating 1		
Heating 1	on	
Temperature setting	-01.0°C	20.0°C
Minimum ventilation	000%	
Maximum ventilation	100%	
Current temperature	22.0°C	
Current heating	off	0%
Return water		
Temperature setting	50.0°C	
Current temperature	20.0°C	
1 Running hours		

Controlled heating

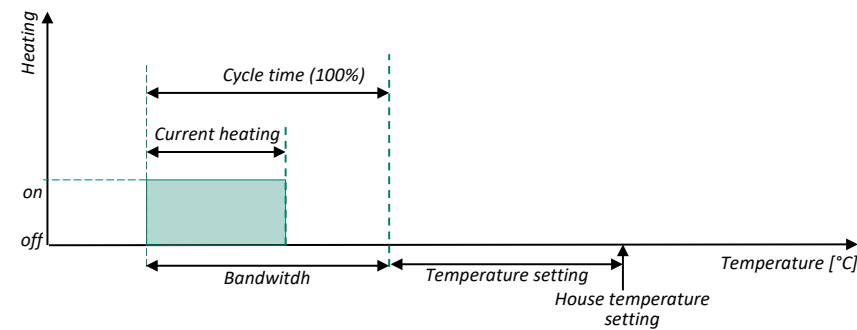
Floor heating

Return water control

Proportionally controlled heating



Proportional control



Time-proportional control

Heating

Switching the heating on or off.

Temperature setting

Relative setting (value lower than 10.0°C) to the house temperature or absolute house temperature setting (10.0°C or higher).

<i>Growth curve</i>	If the cursor is on <i>Growth curve temperature</i> and you press the confirmation key the curve of the heating will be displayed. You may change the curve settings or switch off the curve. Press the cancel key to return to the previous screen. If you have switched off the curve, the text <i>growth curve</i> will be replaced by the standard text. You can then no longer access the curve settings from this screen.
<i>Bandwidth</i>	The bandwidth determines the 'sensitivity' of the heating to temperature changes. Within the bandwidth, the heating is controlled from minimum to maximum. If the bandwidth is too small, the heating will react very quickly to temperature changes. The switched heater has a fixed switching hysteresis set by the installer.
<i>Min/Max heating</i>	Limits for the minimum or maximum heating capacity of a controlled heating.
<i>Current temperature</i>	Displays the average temperature of the assigned temperature sensors. You can assign a maximum of 4 temperature sensors to a heating control.
<i>Current heating</i>	The current heating status and the current, calculated valve position resp. heating capacity. If the actual, calculated position is 0% (or the heating is switched off), the stop voltage will be sent out instead of the minimum voltage setting (provided that <i>house status</i> = <i>in use</i>). If <i>minimum heating</i> is activated, the <i>minimum voltage</i> is outputted when the current temperature exceeds the temperature setting. The current position or the current heating capacity is only displayed with controlled heating.
<i>Limit supply</i>	
<i>Temperature setting</i>	The supply water temperature of the floor heating is limited to the water temperature setpoint entered here.
<i>Current temperature</i>	The currently measured supply water temperature.
<i>Return water</i>	
<i>Temperature setting</i>	The heating return water temperature is limited to the water temperature setpoint entered here.
<i>Current temperature</i>	The currently measured return water temperature.

On/Off-controlled heating

124 Heating 4	1241 Running hours Heating 4
Heating 4 on	Today 0:22
Temperature setting -01.0°C 20.0°C	Saturday 0:00
	Friday 0:00
	Thursday 0:00
	Wednesday 0:00
Current temperature 19.5°C	Tuesday 0:00
Current heating on	Monday 0:00
	Sunday 0:00
	Total 0 hours
1 Running hours	Clear running hours no

<i>Running hours</i>	Readout of the operating hours of an on/off heating: <ul style="list-style-type: none"> today's operating hours operating hours of the past seven days total number of operating hours
<i>Clear running hours</i>	yes = delete operating hours.

5.7 Cooling

131 Cooling 1		1311 Options Cooling 1	
Cooling 1	on	Soaking	off
Temperature setting	+30.0°C 30.0°C	Begin	08:00
		End	20:00
Maximum RH	100%	Cycle time on	00:00
Current RH	75%	Cycle time off	00:00
Current temperature	20.0°C	Current status	off
Current cooling	off	Start reduction	-02.0°C 28.0°C
		Reduce until	-06.0°C 24.0°C
		Outside temperature	23.0°C
1 Options	2 Running hours	Reduction	max. 100%

Options

Maximum RH Cooling increases the humidity in the house. Above this setting, the cooling system will switch off to prevent the relative humidity from rising too high.

Soaking The soaking option is only available with cooling 1. If the house is not in use, you can use the *soaking* function. As soon as the house status changes, *Soaking* will be switched *off* to prevent the soaking from starting immediately after having switched the house to *not in use*.



If you have an on/off, you can call-up the operating hours.

You can limit the current cooling level and prevent too much cold air from entering into the house when the outside temperature is low and the current house temperature is higher than the house temperature setting.

Start reduction Enter the temperature at which the reduction should start.

Reduce until Enter the temperature until which the reduction should take place.

Outside temperature Readout of the current outside temperature.

Reduction max. Setting of the maximum (relative) reduction.

Running hours

1312 Running hours Cooling 1	
Today	0:00
Monday	0:00
Sunday	0:00
Saturday	0:00
Friday	0:00
Thursday	0:00
Wednesday	0:00
Tuesday	0:00
Total	0 hours
Clear running hours	no

Running hours Reading out the operating hours of an on/off (non-modulating) cooling system:

- Today's operating hours
- operating hours for the last seven days
- the total number of operating hours

Clear running hours Set to *yes* to erase the operating hours.

5.8 Pressure control

14 Miscellaneous controls			141 Pressure control			141 Pressure control		
1 Pressure control			Pressure control	on		Pressure control	on	
2 Humidification			Pressure setting	015Pa	15Pa	Pressure setting	015Pa	15Pa
3 Temperature 1			Current pressure	15Pa		Current pressure	15Pa	
4 Temperature 2			Current status	on		External input	off	
5 Temperature 3						Outdoor timers	closed	
6 Temperature 4			Calculated flap opening	000%		Current status	off	
7 -----						Calculated flap opening	000%	
8 Thermo-differential								

Air inlet control is based on a preset negative pressure to guarantee an optimum flow pattern of the incoming air.

The pressure control is disabled if:

- A pop-hole timer is installed;
- The *Compensation pressure control* is activated at the pop-hole timer;
- The current status of the pop-hole timer is *on*.

The *calculated flap opening* is determined on the basis of the set and measured pressure. The pressure-controlled air inlets are controlled every 2 minutes. Change the *Calculated flap opening* to speed up or slow down the settling time for the air inlets.

External input

Items such as the status of the pop-holes that provide access to an open-air run can be connected to the external input. The openings of these pop-holes enable a lot of cold air to enter the house which causes a significant drop in the house temperature, specifically at the bottom of the house. If the pressure control was not switched off, the air speed and the temperature difference in the house would increase enormously. As this may easily cause a draught which would affect the animals the pressure control is switched off as soon as the pop-hole doors are open. The air inlet control being based on pressure will now be based on temperature.

5.9 Humidification control

142 Humidification		
Humidification	on	
RH setting	080%	80%
Current RH	75%	
Current status	on	

If *Cooling 1* and *Humidification* are connected to the same output, the output will be energized as soon as one of both controls is active.

Humidification Switching the humidification control on and off.

RH setting The percentage setpoint of the relative humidity below which the humidification control has to be active.

5.10 Temperature control

143 Temperature 1			144 Temperature 2		
Heating	<input checked="" type="checkbox"/>		Cooling	<input checked="" type="checkbox"/>	
Temperature setting	+20.0°C	+20.0°C	Temperature setting	+20.0°C	+20.0°C
Bandwidth	00.0°C				
Minimum heating	000%				
Maximum heating	100%				
Current temperature	22.0°C		Current temperature	22.0°C	
Current heating	off	-0%	Current cooling	on	

You can set the temperature control as heating or cooling. Depending on the type of output, it is either regulated or switched heating/cooling.

Temperature control as heating

If you have set the temperature control as heating, the temperature control is set in the same way as a heating, see page 16. The minimum and maximum heating can be set separately.

Temperature control as cooling

If temperature control has been set as cooling, the temperature control is set identically to the cooling on page 18.

Temperature setting See *Relative or absolute temperature*, page 10.

5.11 Central exhaust

147 Central exhaust	
Minimum ventilation	<input checked="" type="checkbox"/> 005%
Maximum ventilation	100%
Current ventilation	014%
Correction ventilation	+0.0% in 35s
Average ventilation	14%
Optimal valve position	67%
Maximum air inlet pos.	18%
House	2



*A*Note-CentVent-N-ENxxxxx

5.12 Thermo-differential

148 Thermo-differential			
Thermo-differential			
Relative alarm limit	+4.0°C/m		
Absolute alarm limit	58.0°C		
Sensor 1	20.0°C	20.0°C	+0.0°C/m
Sensor 2	20.0°C	20.0°C	+0.0°C/m
Sensor 3	20.0°C	20.0°C	+0.0°C/m
Sensor 4	20.0°C	20.0°C	+0.0°C/m

Measurement last minute Current measurement Temperature difference

The thermo-differential function is activated by your installer (max. 8 sensors). The current measurement of each sensor is compared with the measurement of one minute ago. If the measurement is within the limits, the previous measurement is made equal to the current measurement and a new measurement is started.

An alarm is given if:

- The temperature increase in that minute is greater or equal than the relative limits.
- The temperature measured by the sensor exceeds the absolute limit.

The thermo-differential alarm occurs only in case of a *positive difference*.

5.13 Compensations (offsets)

15 Compensations climate controls	
1 Night setting	
2 Temperature	
3 Ventilation	
4 Pressure control	
5 RH	
6 CO2	
7 NH3	
8 Meteo	



A Note-CompensP-N-ENxxxxx

5.14 Growth curves

16 Growth curves climate controls	
Growth curves	off
Day	15
1 House temperature	
2 Ventilation	
3 Heating	
4 Cooling	
5 RH compensation	
6 Humidification	
7 Animal weight	

Several growth curves are available for gradual automatic adjustment of the climate in the house. A growth curve can consist of a maximum of 7 breakpoints.

The current setting is determined on the basis of the growth curve, depending on the current day number. The uses this calculated setting to control the climate in the house.



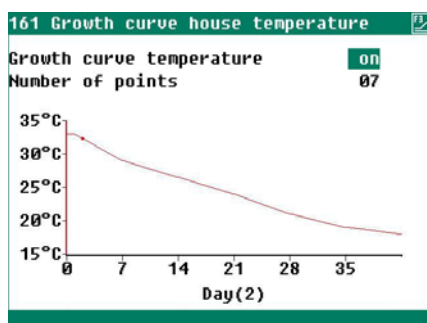
Growth curves (installer setting) must be set to on.

Growth curves on/off You can use this setting to switch all curves on or off simultaneously.



- Relative or absolute temperature setting, see page 10.
- Day numbers in the growth curve should be consecutive.
- The setting of the first breakpoint determines the day numbers.
- If the temperature compensation is active, the calculated house temperature will immediately be adjusted to the curve setting.
- The settings obtained from a growth curve are recalculated every hour to achieve a more gradual development of the setting.
- Function key F3 can be used to switch between diagrammatic and graphic presentation of data.

161 Growth curve house temperature		
Growth curve temperature		on
Number of points		07
Point	Day(2)	Temp.
1	001	33.0°C
2	007	29.0°C
3	014	26.5°C
4	021	24.0°C
5	028	21.0°C
6	035	19.0°C
7	042	18.0°C



Day (2) The current day number is shown in brackets.

House temperature When the growth curves of the stall temperature are changed, all controls change relative to this temperature.

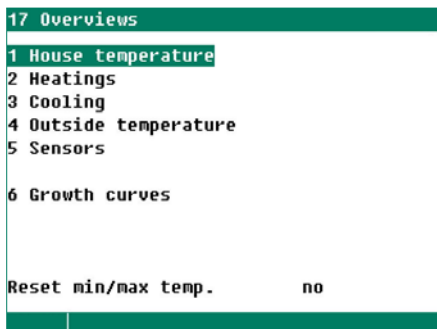
Ventilation The temperature setting of the ventilation groups is relative to the house temperature.

<i>Heating/Cooling ...</i>	Temperature setting below 10.0° → Temperature is relative to house temperature. Temperature setting higher than or equal to 10.0°C → Temperature is an absolute value.
<i>RH Compensation</i>	Setting growth curve RH compensation.
<i>Humidification</i>	Setting growth curve humidity control.

Animal weight growth curve

The *animal weight growth curve* appears, if the *Capacity per kg* is displayed. You cannot turn the growth curve *on* and *off*.

5.15 Overviews



An overview of the selected temperature control.

Animal weights equal to or greater than 10,000 grams are displayed in kilograms: 10,000 grams = 10.0 kg.

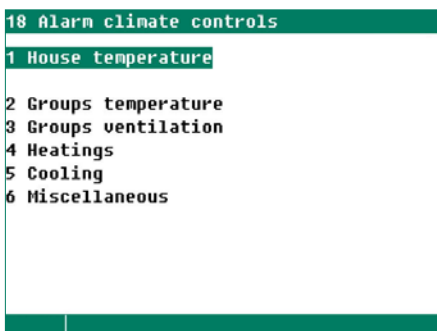
Use the double-arrow buttons to select the next/previous control.

You can clear the operating hours of all heaters via:
Heater overview (screen 172) → *Clear running hours*.

You can delete the min/max readings in temperature overviews via:

Overview house temperature (screen 17) → *Reset min/max temp. Today* will then read the current temperature.

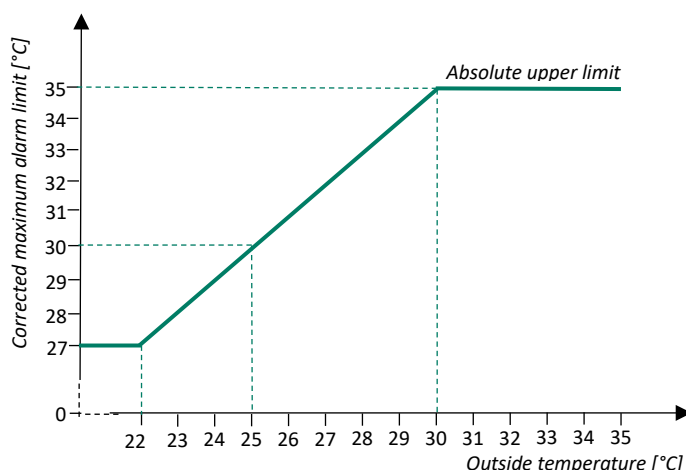
5.16 Alarm



House temperature limits

These temperature limits apply to all ventilation groups.

Outside temperature compensation for alarms



If the outside temperature is higher than the temperature setpoint, the maximum alarm limit shifts. The corrected alarm limit can never exceed the absolute temperature limit setpoint. This prevents the alarm from being triggered unnecessarily in case of high outside temperatures.

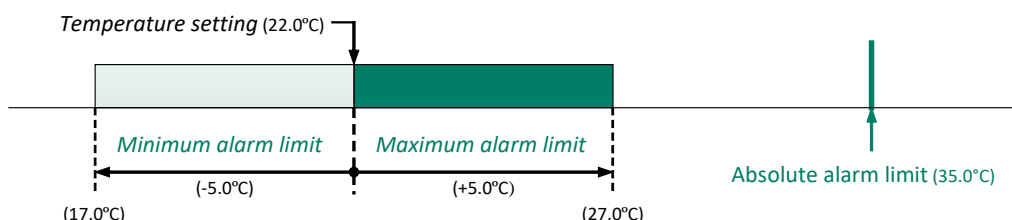
If the actual temperature rises above the absolute value, an alarm is still triggered. You should then take measures to lower the temperature in the house.



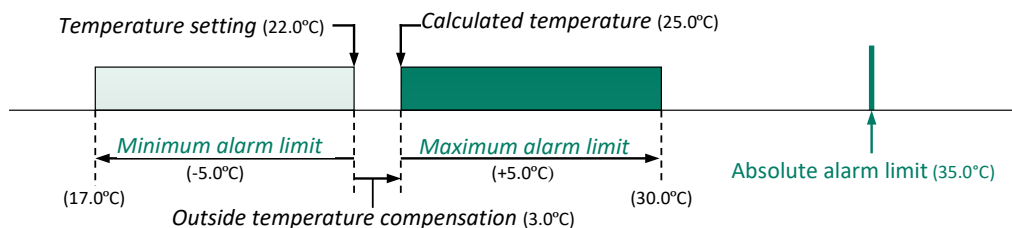
Example

	$T_{\text{OUTSIDE}} < T_{\text{HOUSE}}$	$T_{\text{OUTSIDE}} \geq T_{\text{HOUSE}}$	$(T_{\text{OUTSIDE}} + T_{\text{ALARM}}) > T_{\text{ABS}}$
Absolute temperature limit setting	35.0°C	35.0°C	35.0°C
Temperature setting	22.0°C	22.0°C	22.0°C
Maximum alarm limit setting	5.0°C	5.0°C	5.0°C
Measured outside temperature	18.0°C	25.0°C	31.0°C
Calculated maximum alarm limit	$22.0 + 5.0 = 27.0^\circ\text{C}$	$25.0 + 5.0 = 30.0^\circ\text{C}$	35.0°C
	1	2	3

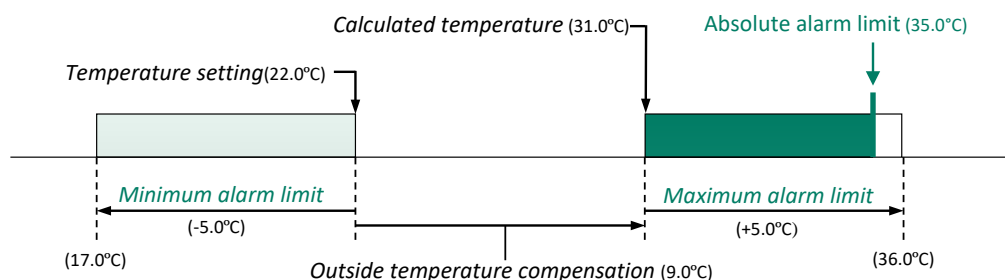
1. Outside temperature is lower than the house temperature setting → The calculated alarm limit will be increased to the maximum alarm limit setting in keeping with the house temperature.



2. Outside temperature is higher than the house temperature setting → The calculated alarm limit will be made equal to the outside temperature and the calculated alarm limit is shifted.



3. Maximum alarm limit exceeds the absolute alarm limit → The maximum alarm limit will be made equal to the absolute alarm limit.



Temperature groups

Switch the alarm on/off. The alarm limits shown are the calculated alarm limits and depend on such factors as the preset house temperature limits and the preset temperature of the control itself.

Ventilation groups

If the measuring fan is switched off it no longer influences the control and alarm functions of the main ventilation group. You can only switch the ventilation alarm on/off for air inlet valves connected to a DMS or PL-9200-POT module.

Heating / Cooling / Miscellaneous

The alarm limits can be set separately for every individual control.

5.17 Alarm other controls

186 Alarm miscellaneous controls		
1	Pressure control	
2	RH	
3	CO2	on
4	NH3	on
5	Meteo	on
6	Temperature control	
7	Central exhaust	on
8	Outside temperature	on
9	Thermo-differential	on

Pressure control

1861 Alarm pressure control		
1	Pressure control	on
2	Pressure 1	on
3	Pressure 2	on

18611 Alarm pressure control			
Pressure alarm	on		
Minimum alarm limit	-10Pa	6Pa	
Maximum alarm limit	+10Pa	26Pa	
Absolute alarm limit	050Pa		
Delay time	10m00s	10m00s	
Current pressure	15Pa		
Alarm status	No alarm		

18612 Alarm Pressure 1		
Pressure alarm	on	
Minimum alarm limit	0000Pa	
Maximum alarm limit	0050Pa	
Delay time	10m00s	
Current pressure	15Pa	
Alarm status	No alarm	

The *Pressure Control 2* settings are identical to the *Pressure Control 1* settings.

RH

1862 Alarm RH	
1 RH	on
2 RH outside air	on
3 THI	on

18621 Alarm RH	
Alarm RH	on
Minimum alarm limit	020%
Maximum alarm limit	100%
Current RH	77%
Alarm status	No alarm

18623 Alarm THI	
Alarm THI	on
Minimum alarm limit	080
Maximum alarm limit	105
Current THI	97
Current RH	77%
Current temperature	20.5°C
Alarm status	No alarm

The relative humidity (RH) of the outside air has no alarm limits.

CO₂

1863 Alarm CO2	
Alarm CO2	on
Minimum alarm limit	0000ppm
Maximum alarm limit	5000ppm
Current CO2	1049ppm
Alarm status	No alarm

NH₃

1864 Alarm NH3	
Alarm NH3	on
Minimum alarm limit	000.0ppm
Maximum alarm limit	030.0ppm
Current NH3	7.0ppm
Alarm status	No alarm

Meteo

1865 Alarm meteo	
Alarm meteo	on
Wind speed	3.5m/s
Wind direction	front
Alarm status	No alarm

This menu item does not appear when meteorological data is received over the communication loop.

Temperature control

1866 Temperature control	18661 Alarm Temperature 1	18663 Alarm Temperature 3
1 Temperature 1 <input type="checkbox"/> on	Alarm temperature <input type="checkbox"/> on	Alarm temperature <input type="checkbox"/> on
2 Temperature 2 <input type="checkbox"/> on	Minimum alarm limit -10.0°C 10.0°C	
3 Temperature 3 <input type="checkbox"/> on	Maximum alarm limit +10.0°C 30.0°C	
4 Temperature 4 <input type="checkbox"/> on	Absolute alarm limit 35.0°C	
	Outside temperature 14.7°C	
	Temperature setpoint +20.0°C	
	Current temperature 20.1°C	
	Alarm status No alarm	Alarm status No alarm

Heating and cooling are configured identically.
A Delta-T control does not have separate alarm limits.

Central exhaust

1867 Alarm central exhaust
Alarm <input type="checkbox"/> on
Alarm status No alarm

Outside temperature

1868 Alarm outside temperature
Alarm outside temperature <input type="checkbox"/> on
Outside temperature 14.7°C
Alarm status No alarm

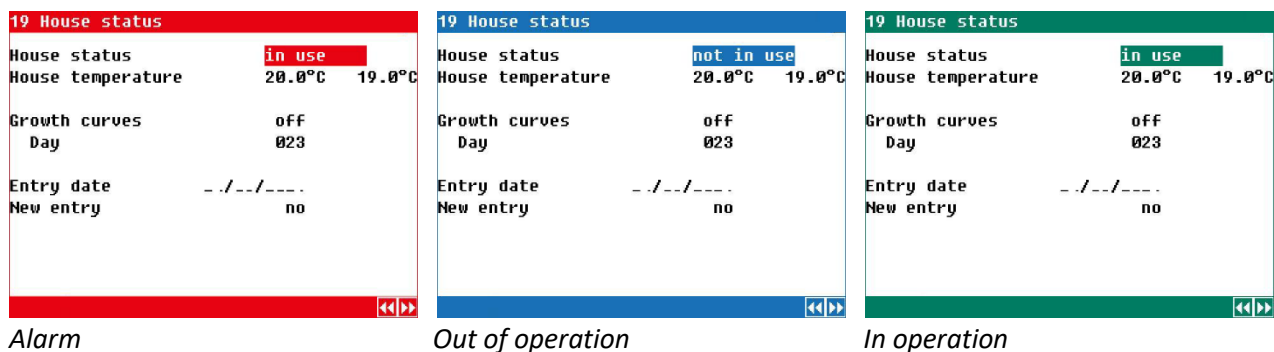
5.18 Thermo-differential alarm

1869 Alarm thermo-differential
Alarm temperature <input type="checkbox"/> on
Relative alarm limit +4.0°C/m
Absolute alarm limit 58.0°C
Alarm status No alarm

You can turn off the thermos-differential alarm by setting *Alarm temperature* to *off*. The current temperature reading is then cleared and the alarm is automatically turned back on. See also temperature monitoring page 20.

6 House status

6.1 Putting the house in and out of operation



 = displaying house status

The colour of the title bar, status bar and cursor change depending on the stall status and alarm status:

RED = alarm (alarm relay active or main alarm disabled)

BLUE = House status is not in use (no alarm)

GREEN = House status is in use (no alarm)

House status: in use The poultry computer controls as set.

House status: not in use All controls, alarms and temperature monitoring functions are switched off. Air inlets are closed and timers are switched off.

Growth curves Switching the growth curves on and off.
Day Here you can change the day number of the curves.

Entry date The date on which the animals were set-up in the house.

New entry When setting up the animals, this *New entry* setting has to be set to *Yes*. After that:

- the setup date is then given the date of 'today';
- mortality tables are cleared;
- the corrections entered at *growth curve min/max main ventilation* and *auxiliary ventilation* are cleared;
- the house temperature, min/max main ventilation and auxiliary ventilation are recalculated from the growth curve;
- the occupancy rate is recalculated (if it depends on the setup data);
- the feed dosing will be started (if a feeding cycle is active).



The day number is not automatically updated.

You can have a separate access code set up for the status screen (F2).

7 Feeding system

7.1 Feeding system with feed counter(s)

! If no feed weigher has been installed but one or more feed counters have been installed, all these feed counters relate to one and the same silo, i.e. silo 1.

21 Silos		
1	Silo contents	
2	Component names	
3	-----	
4	-----	
5	-----	
6	Silo status	
7	Filled	

2 Feed system		
1	Silos	
2	-----	
3	-----	
4	-----	
5	-----	
6	-----	
7	-----	

Silos

211 Silo contents		
Silo Contains	Filled	Contents
1 Component 1	00,000kg	00,000kg

212 Component names		
Number of components	1	
No. Component		
1 Component 1		

216 Silo status		
Silo Contains		Fed
1 Component 1		0kg

<i>Silo</i>	<i>Contains</i>	The name of the component in the corresponding silo.
	<i>Filled</i>	Setting the bulked amount of feed.
	<i>Content</i>	Readout of current silo contents: stock or shortage.

After filling up the silo's (feed bulking), the control computer adds the bulked amount of feed to the current *Content* and then resets *Filled* to 00,000kg.

Filled up (bulked)

217 Silo 1 filled		
Silo contents	Component 1	
Date	Time	Filled
--/--/--	0:00	0kg
--/--/--	0:00	0kg
--/--/--	0:00	0kg
--/--/--	0:00	0kg
--/--/--	0:00	0kg

An overview per silo of the last five dates with the times at which the silo was filled up. You should always enter this data immediately after filling up the silo.



A^{Note}-FeedSysP-N-ENxxxxx → Feeding systems

8 Animal Weighing

3	Animal weighing
1	Scale 1
2	Scale 2
3	Norm curve
4	Overview
5	Alarm



ANote-AWeighing-N-ENxxxxx → Animal weighing

9 Counters

9.1 Clearing counter(s)

You can request an overview of the counter readings.
For the water and feed counters you can set a dosage alarm.

4 Counters	
1 Water counter	
2 Feed counter	
3 Counter 3	
4 Counter 4	
5 Counter 5	
6 Counter 6	
7 Miscellaneous counters	
8 Overview	
9 Alarm	
Clear all counters	no

41 Water counter	
Today	1,000 l
Monday	992 l
Sunday	0 l
Saturday	0 l
Friday	0 l
Thursday	0 l
Wednesday	0 l
Tuesday	0 l
Week total	0 l
Total	1,992 l
Clear counter	no

Clear all counters yes = clear all counters.

Clear counter yes = only clear the counter readings of the counter selected.



When the counter is cleared the data for today is also deleted. In addition, the overviews of the amounts fed and the feeding times of the selected counters or of all counters are deleted.

9.2 Counter readings of miscellaneous counters

47 Miscellaneous counters	
1 Counter 7	
2 Counter 8	
3 Counter 9	
4 Counter 10	
5 Counter 11	
6 Counter 12	
7 Hour counter	

471 Counter 7	
Today	0,001,000
Monday	992
Sunday	0
Saturday	0
Friday	0
Thursday	0
Wednesday	0
Tuesday	0
Week total	0
Total	1,992
Clear counter	no

Today Here you can change the counter value of 'today'.

Hour counter

477 Hour counter		
Today	0:00	off
Tuesday	0:00	
Monday	0:00	
Sunday	0:00	
Saturday	0:00	
Friday	0:00	
Thursday	0:00	
Wednesday	0:00	
Week total	0:00	
Total	0 hours	
Clear Hour counter	no	

The input's status is displayed in addition to today's operating hours.
Total shows the total number of operating hours since the last time the hour counter was cleared.

9.3 Counters overview

48 Overview counters			
1 Total			
2 Per animal			
3 Per group per animal			

481 Overview counters total			
	Water	Feed	Misc.
	[l]	[kg]	
Today	2,734	1,285	370
Tuesday	2,692	1,240	248
Monday	2,429	1,193	386
Sunday	2,317	1,151	230
Saturday	2,187	1,100	220
Friday	2,157	1,072	344
Thursday	2,037	1,034	268
Wednesday	2,171	1,157	226
Week total	15,990	3,263	838
Total	25,385	9,232	2,292

If several water, feed and/or other counters have been installed, the counter readings of all identical counters (water, feed and/or other) are added together and shown in the corresponding column. For example, if two water counters have been installed, today's totals for water counter 1 and water counter 2 will be displayed after *Today* in the *Water* column, etc.

Day	Water counter 1	Water counter 2	Water [l]
today	1,323	1,411	2,734
Thursday	1,245	1,447	2,692
Monday	1,311	1,118	2,429
Sunday	1,047	1,270	2,317
Saturday	1,098	1,089	2,187
Friday	1,002	1,155	2,157
Thursday	1,049	988	2,037
Wednesday	1,053	1,118	2,171

Week total The weekly total is the sum of the counter readings of the past week for every type of counter (from the first day of the week to 7 days later, see page 40). This means that the weekly total is not the sum of the readings shown on the screen

Per animal

The counter readings shown are per animal. This screen also shows the *water/feed ratio*.

Per animal group

The counter readings shown per animal group.

9.4 Alarm counters

49 Alarm counters 1 Water counter off 2 Feed counter off 3 Counter 3 off 4 Counter 4 off 5 Counter 5 off 6 Counter 6 off 7 Miscellaneous counters 8 Growth curves	491 Alarm Water counter Alarm off Maximum 1000 l in 60 minutes Minimum 0020 l in 06 minutes Current status active Alarm status No alarm	491 Alarm Water counter Alarm off Growth curve maximum 1000 l in 60 minutes Growth curve minimum 20 l in 6 minutes Current status active Alarm status No alarm
49 Alarm counters 1 Water counter off 2 Feed counter off 3 Counter 3 off 4 Counter 4 off 5 Counter 5 off 6 Counter 6 off 7 Miscellaneous counters 8 Growth curves	492 Alarm Feed counter Alarm off Maximum 1000 kg in 60 minutes Minimum 0020 kg in 06 minutes Current status active Alarm status No alarm	492 Alarm Feed counter Alarm off Growth curve maximum 1000 kg in 60 minutes Growth curve minimum 20 kg in 6 minutes Current status active Alarm status No alarm

Without growth curve

With growth curve

Without growth curve Here you enter the maximum amount of water and feed to flow through the pipes during the set period. If this amount is exceeded, an alarm is triggered.

With growth curve The current value is calculated from the curve. If the counter value exceeds the maximum amount during the time entered or remains below the set minimum, an alarm is triggered. Your installer must have activated the minimum supply alarm.

Actual status When the input is active, the *Minimum supply alarm* is also active. Connecting this input to the light timer, for example, prevents the minimum supply alarm from being activated at night.

In this way, any pipe breaks or leaks can be detected early. If the counter is connected to a dosing timer, the output of the dosing timer is also switched off.

Alarm *on* Alarms are transmitted to the poultry computer.
 off The alarms are not transmitted to the poultry computer.
 time If the *Alarm Schedule* is active, alarms are transmitted to the poultry computer. If the *Alarm Schedule* is not active, then any alarms are not transmitted to the poultry computer.

Growth curve counter alarm limits

498 Growth curves counters Growth curves Day 8 1 Water counter 2 Feed counter 3 Counter 3 4 Counter 4 5 Counter 5 6 Counter 6	4981 Growth curve Water counter Growth curve Water counter on Number of points 08 Day (8) Maximum Minimum 001 1000 60 0020 06 007 1100 60 0022 06 014 1400 60 0024 06 021 1700 60 0027 06 028 2000 60 0030 06 035 2400 60 0034 06 042 2900 60 0040 06	4982 Growth curve Feed counter Growth curve Feed counter on Number of points 02 Day (8) Maximum Minimum 001 0300 60 0020 06 042 0900 60 0060 06
---	--	---

With minimum supply alarm

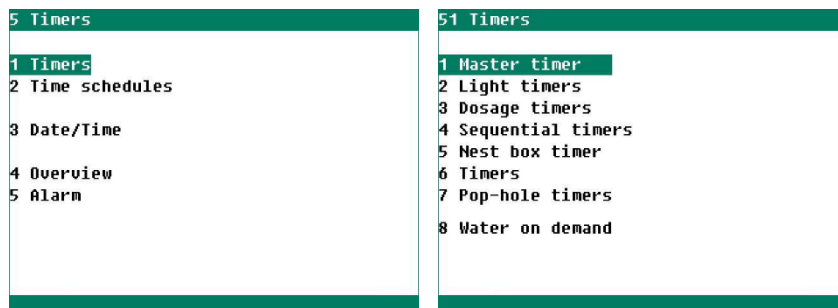
Without minimum supply alarm

You can record the maximum and minimum counter readings with the corresponding period times in a growth curve, see screens 491 through 496.

10 Timers

You can set up to 24 time periods per timer. All times must be consecutive and the time difference between two times is at least 1 minute. If you are using growth curves (*growth curve schedule*), you can automatically activate a different schedule depending on the animals' age.

For example, when feeding and watering times vary within a short time frame (several days/weeks), you can use different time schedules. By programming these time schedules in advance, you can quickly change schedules.



Number of periods = 0: timer off. Application: switching of the timer using a time schedule.

Number of periods = 1: start and end = 00:00, timer is switched on for 24 hours.

Master timer



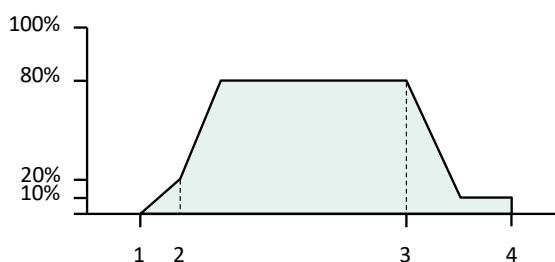
A^{Note}-Timers-N-ENxxxxx

Light timers

It is possible to use a light control so that the switching on/off of lighting is gradual. With a light control, ideal day and night conditions can be created (dawn switching).

Standard lighting scheme

5121 Light timer 1				
Light timer 1	on			
Current status	on		80%	
Light schedule	no		no	
Number of points	04			
Point	Begin	Time	Duration	%
1	05:00	:04	020	
2	05:04	:16	080	
3	19:50	:20	010	
4	20:30	:00	000	



At 05:00 the lights turn on and their intensity is controlled to 20% in 4 minutes (⏏:04).

At 05:04 the intensity is driven to 80% in a time of 16 minutes (⏏:16).

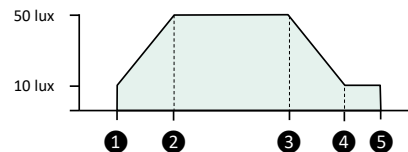
At 19:50 the lighting is regulated back (dimmed) to 10% in 20 minutes (⏏:20); At 20:10 the 20-minute after burn time starts.

At 20:30 the lights turn off.

Light timer based on brightness

5121 Light timer 1		
Light timer 1	on	
Current status	on	50lx
Brightness		
Time schedule	no	no
Number of periods	01	
Per. Begin End		
1 05:00 - 20:30		

51210 Brightness Light timer 1		
Brightness		
Minimum	010lx	
Maximum	050lx	
Dimming time light on	20 minutes	
Dimming time light off	20 minutes	
Off-delay	10 minutes	



At 05:00, the lighting switches on at minimum intensity (①).

The intensity is controlled from minimum to maximum in 20 minutes (②).

At 20:30, the switch-off process starts (③).

The intensity is regulated from maximum to minimum in 20 minutes; at 20:50, the after burn time of 10 minutes starts (④).

At 21:00, the lighting switches off again (⑤).

Inspection light

512 Light timers		
1 Light timer 1	10	-----
2 Light timer 2		-----
3 Light timer 3		-----
4		-----
5		-----
6		-----
7		-----
8		-----
9 Growth curves		
Inspection light	active	
Cycle time on	26m45s	30 min

You can manually switch the light, using a pushbutton, in order to inspect the houses.

At *Cycle time on* you enter the maximum time the light should remain on after pressing the *inspection light* button. Pressing this button again within this period switches the inspection light off again.

10.1 Dosing timers


The timer output of a dosing timer is linked to a counter input to enable the water and/or feed intake to be monitored. If significant variations occur, the control can generate a *Dosing alarm* and stop the dosing of water or feed. If the installer has set the *Dosage curve* setting to *no*, the dosage timer will act as a 'normal' timer.

Water timer The water clock can be used to switch elements such as the water valves on or off. In addition, there is the possibility of feeding back information on the actually administered water amount to a counter input of the poultry computer (see *Water dosage*).


Water dosage For water dosing, the water amount actually dosed is compared to the amount setting. Dosing stops when the pre-set amount is reached, even if the stop time has not been reached yet. A water dosing alarm is generated if the stop time is reached and the amount has not been reached yet.

Feed timer The feed clock can be used to switch elements such as the discharge augers on or off. In addition, there is the possibility of feeding back information on the actually administered amount of feed to a counter input of the poultry computer (see *Feed dosage*).

Feed dosage For feed dosing, the amount actually fed is compared to the amount setting. Feeding stops when the pre-set amount is reached, even if the stop time has not been reached yet. A feed dosing alarm is generated if the stop time is reached and the amount has not been reached yet.

5132 Feed timer				
Feed timer	<div>on</div>			
<u>Dosage</u>				
Dosage schedule	no	no		
Number of periods	03			
Per.	Begin	End		
1	06:30	-	07:30	
2	13:00	-	15:00	
3	18:00	-	20:30	


Fixed dosing schedule

5132 Feed timer				
Feed timer	on			
Dosage				
Dosage schedule	3	3		
Number of periods	3			
Per.	Begin	End		
1	5:30	-	7:30	
2	13:00	-	15:00	
3	18:00	-	20:30	

5132 Feed timer				Feed
Feed timer	<div>on</div>			
Dosage				
Growth curve schedule				3
Number of periods	3			
Per.	Begin	End		
1	5:30	-	7:30	
2	13:00	-	15:00	
3	18:00	-	20:30	

Variable schedule (from curve)

51320 Dosage Feed timer						
Today per animal		0100g		0g		
Active period		0	1,000kg	0kg		
Dosage schedule		no		no		
Number of periods		3				
Per.	Begin	End	Part	Ready	g/a	
1	6:30	7:30	050%	9:50	0	
2	13:00	15:00	030%	0:00	0	
3	18:00	20:30	100%	0:00	0	

51320 Dosage Feed timer							
Today per animal			0100g				0g
Active period			0	1,000kg			0kg
Dosage schedule			3			3	
Number of periods			3				
Per.	Begin	End	Part	Ready	g/a		
1	5:30	7:30	50%	9:50	0		
2	13:00	15:00	30%	0:00	0		
3	18:00	20:30	0%	0:00	0		

51320 Dosage Feed timer						
Today per animal		0100g		0g		
Active period		0	1,000kg	0kg		
Growth curve schedule		3				
Number of periods			3			
Per.	Begin	End	Part	Ready	g/	
1	5:30	- 7:30	50%	0:00		
2	13:00	- 15:00	30%	0:00		
3	18:00	- 20:30	0%	0:00		

If *Auto. partition period* has been switched off by your installer, you can manually divide the total daily amount of the feed etc. over the pre-set number of periods.

Water and feed dosing make use of the number of animals present in the house. The number of animals is determined at the start of the first actual dosing period, in order to calculate the total amount to be dosed. If the number of animals changes in the meantime (due to animals dying, being removed or added) this no longer affects the calculation.

Today per animal If the dosage curve is active, the current amount per animal is calculated from the dosage curve, using the day number. If the curve is not active, you can set the current amount of feed per animal at *Today per animal*. The last column shows the amount already dosed per animal today.

Active period This line shows the active dosing period, followed by the total amount to be dosed and the amount already dosed in the active period.

Dosing schedule / Growth curve schedule This line states the current time schedule (see *Timers* on page 33).

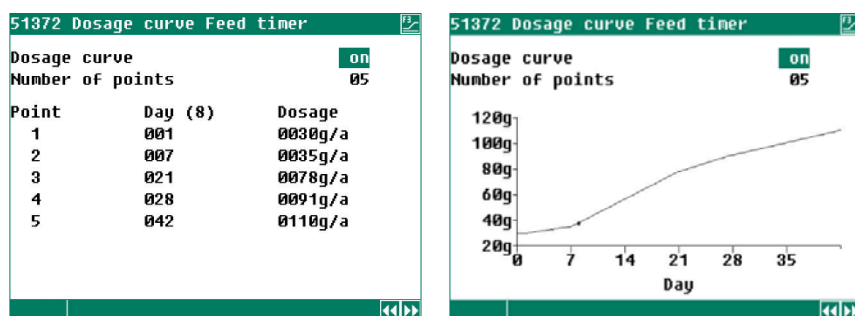
Distribution of feeding cycles over a number of periods

- The quantity to be dosed is (re)calculated between two periods.
- With Auto. partition period - The total daily amount is divided over the preset number of periods.
- Without Auto. partition period - The percentages entered in column *Part* are dosed. If the total dosage is less than the minimum dosage, *Dosage Alarm* is given.
- The dosed amount per period is listed under the last column (*ml/d* or *g/d*). If the amount to be dosed is reached within the period, the time at which the cycle has ended is shown under *Ready*.
- If something has gone wrong in previous cycles, this will be corrected in the last cycle. If possible, this will be corrected until the total amount has been dosed.

10.2 Dosage curves

If no growth curves have been installed for the climate control, you can set the day number of the dosing curve here.

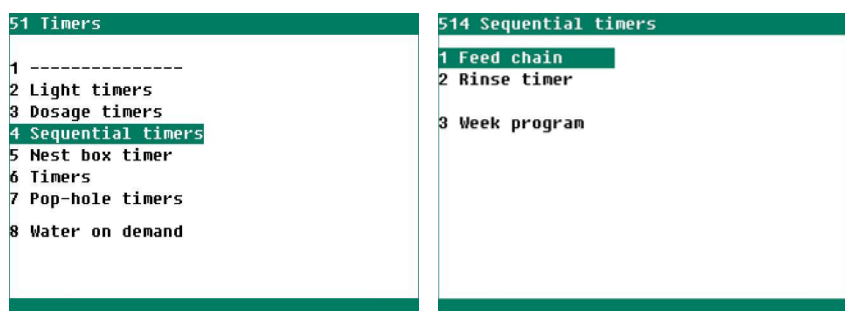
If the installer has activated the dosing curves, you can use *programmable curves* to have the amount of water and/or feed per animal increase automatically as the animals grow older. The total amount is calculated again every day using the curve settings, the current day number and the current number of animals in the house.



In the dosage curve the amount per animal per day can be set.

A curve can consist of a maximum of 15 breakpoints, the day number must be between 1 and 999. The current day number is increased automatically at midnight.

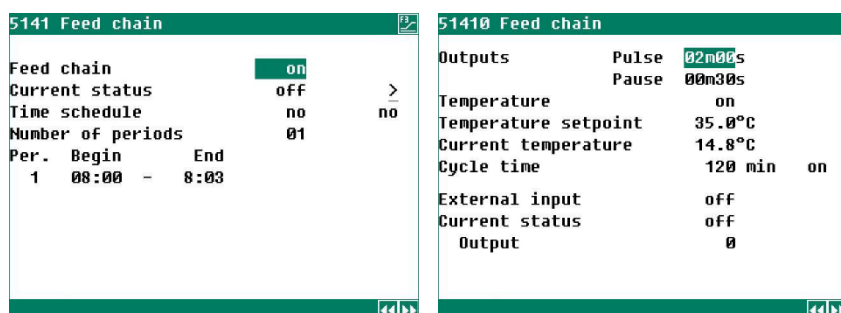
10.3 Sequential timers



Sequential timers activate the different outputs that have been assigned to the timer in turn, after each other. An output is not activated until the preceding output is no longer active. The different actions carried out after each other are also called 'phases' or 'steps'.

Sequential timers are used for actions such as driving feed chains or rinsing water pipes. You set the starting time for the sequential timer. The end time is determined by the total pulse-pause time and the number of outputs.

Feed Chain



Feed chain

off The feed chain control is disabled.

on The feed chain control is enabled. You can use the local on/off times (*Time Schedule = no*) or preset time schedules (*Time Schedule = 1..9*).

slave On/off times of the timer are based on the switch times of the *Master timer*.

Current status The current status of the feed chain timer.

Time schedule

no The local on/off times are used.

1..9 The on/off times are taken from the preset time schedule.

Number of periods

Feed chain	Timetables	Number of periods
<i>on</i>	<i>no</i>	Adjustable between 0..24
<i>on</i>	<i>1..9</i>	Settings are taken from the set time schedule.
<i>slave</i>	<i>master clock</i>	Settings are taken over from the master clock. Locally, the times can still be influenced by entering a difference time from the master clock at <i>Start</i> .

Output

Pulse Time that an output is enabled.

Break Waiting time until the next output is enabled.

Temperature Turn on/off rinsing based on temperature.

Temperature setting When water temperature exceeds the set value, flushing starts.

Current temperature The currently measured water temperature.

Cycle time After you have started rinsing, you cannot restart rinsing until the cycle time has elapsed. *Cycle time* shows the status: off → cycle time not active; on → cycle time active.

Current status Current status of the feed chain timer

Output The output (1..6) which is currently being activated (0 = no output).

External input The feed chain can also be stopped temporarily via an external contact. When the input is active, the process is 'frozen'; once the input is no longer active, the process will continue again.

Rinse timer

5142 Rinse timer				51420 Rinse timer			
Rinse timer		on		Outputs	Pulse	03m00s	
Current status		off			Pause	00m15s	
Time schedule		no	>	Temperature		on	
Number of periods		01		Temperature setpoint		35.0°C	
Per. Begin	End			Current temperature		15.0°C	
1	13:00	-	13:03	Cycle time		120 min off	
				External input		off	
				Current status		off	
				Output		0	

Without *Stop at amount of water*

The rinse timer (without *Stop at amount of water*) is set according to the feed chain.

5142 Rinse timer

Rinse timer on
Current status off
Time schedule no
Number of periods 01
Per. Begin End
1 18:00 - 18:10

51420 Rinse timer

Outputs Pulse 03m00s
Pause 00m15s
Stop on
Temperature on
Temperature setpoint 35.0°C
Current temperature 15.0°C
Cycle time 120 min off
External input off
Current status off
Output 0

514200 Stop Rinse timer

Stop at amount of water

No.	Counter	Stop
1	Water counter	010 1
2	Water counter	010 1
3	Water counter	010 1

With Stop at amount of water

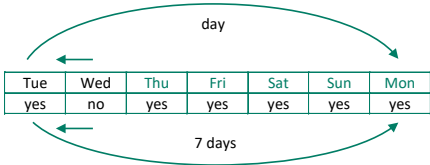
If the amount of water is reached within the pulse time, the next output is selected after the pause time has elapsed. This is repeated until all outputs have been used.

 *A*Note-Timers-N-ENxxxxx

Weekly Program

51431 Week program Feed chain

Week program no
Days in cycle 7 days
Active on
Tue yes
Wed no
Thu yes
Fri yes
Sat yes
Sun yes
Mon yes



For example, based on the *Week Program*, the feeding chain is active for 6 days and inactive for 1 day. In this case, then one day in the week is not fed.

The weekly program of the spool clock is set in the same way as the feed chain.

10.4 Laying nest timer

The PL-9400 has an on/off timer for opening and closing the laying nests. The opening and closing can even be done in intervals, according to the pulse-pause principle. Your installer sets the pulse-pause times so that the laying nests open and close at the required rate.

The laying nest timer is set in the same way as the standard timer, see *Timers*.

10.5 Timers

These timers are on/off time switches. The standard timers are controlled based on preset time schedules or a growth curve of preset time schedules.

516 Timers

1 Timer 1
2 Timer 2
3 Timer 3
4 Timer 4
5 Timer 5
6 Timer 6
7 Timer 7

5161 Timer 1

Timer 1 on
Current status off
Time schedule no no
Number of periods 03
Per. Begin End
1 08:00 - 10:00
2 12:00 - 14:00
3 19:00 - 20:00

Standard timer

10.6 Pop-hole timers

517 Pop-hole timers	5171 Pop-hole tmr 1	5171 Pop-hole tmr 1
1 Pop-hole tmr 1	Pop-hole tmr 1 <input type="checkbox"/>	Pop-hole tmr 1 <input type="checkbox"/>
2 Pop-hole tmr 2	Current status on	Current status on
	Begin End Position	Begin End Position
	08:00 - 20:00 100%	08:00 - 20:00 100%
		Current air inlet pos. 100%
	Start outside temp. -05.0°C	Start outside temp. -05.0°C
	On/off	Controlled

<i>Outdoor timer 1</i>	Enabling and disabling the pop-hole timer.
<i>Current status</i>	Current status of the pop-hole timer.
<i>Begin - End</i>	Period that the pop-hole timer is active.
<i>Current pop-hole pos.</i>	The pop-hole door position during the active period.
<i>Start outside temp.</i>	Below the outside temperature setpoint, the pop-hole timer does not activate.
<i>Compensation Pressure control</i>	See <i>Pressure control</i> , page 19.
<i>Outdoor timer 2</i>	This timer is set in the same way as <i>Outdoor timer 1</i> .

10.7 Setting growth curves and time, light and dosage schedules

Time schedules

You can set a maximum of 24 different time schedules.

52 Time schedules	521 Time schedules	5211 Time schedules 1-8
1 Time schedules	1 Time schedules 1-8	1 Time schedule 1
2 Light schedules	2 Time schedules 9-16	2 Time schedule 2
3 Dosage schedules	3 Time schedules 17-24	3 Time schedule 3
4 Growth curves		4 Time schedule 4
		5 Time schedule 5
		6 Time schedule 6
		7 Time schedule 7
		8 Time schedule 8
5212 Time schedules 9-16	5213 Time schedules 17-24	52111 Time schedule 1
1 Time schedule 9	1 Time schedule 17	Number of periods 01
2 Time schedule 10	2 Time schedule 18	Per. Begin End
3 Time schedule 11	3 Time schedule 19	1 08:00 - 12:00
4 Time schedule 12	4 Time schedule 20	
5 Time schedule 13	5 Time schedule 21	
6 Time schedule 14	6 Time schedule 22	
7 Time schedule 15	7 Time schedule 23	
8 Time schedule 16	8 Time schedule 24	

Each schedule consists of up to 24 periods.

Lighting schedules

You can set a maximum of 24 different lighting schedules.

52 Time schedules	522 Light schedules	5221 Light schedules 1-8
1 Time schedules	1 Light schedules 1-8	1 Light schedule 1
2 Light schedules	2 Light schedules 9-16	2 Light schedule 2
3 Dosage schedules	3 Light schedules 17-24	3 Light schedule 3
4 Growth curves		4 Light schedule 4
		5 Light schedule 5
		6 Light schedule 6
		7 Light schedule 7
		8 Light schedule 8

5222 Light schedules 9-16	5223 Light schedules 17-24	52211 Light schedule 1
1 Light schedule 9	1 Light schedule 17	Number of points 02
2 Light schedule 10	2 Light schedule 18	Point Begin / %
3 Light schedule 11	3 Light schedule 19	1 08:00 :20 100
4 Light schedule 12	4 Light schedule 20	2 20:00 :20 000
5 Light schedule 13	5 Light schedule 21	
6 Light schedule 14	6 Light schedule 22	
7 Light schedule 15	7 Light schedule 23	
8 Light schedule 16	8 Light schedule 24	

Each light schedule consists of up to 48 periods.

Dosing schedules

You can set a maximum of 24 different dosing schedules.

52 Time schedules	523 Dosage schedules	5231 Dosage schedules 1-8
1 Time schedules	1 Dosage schedules 1-8	1 Dosage schedule 1
2 Light schedules	2 Dosage schedules 9-16	2 Dosage schedule 2
3 Dosage schedules	3 Dosage schedules 17-24	3 Dosage schedule 3
4 Growth curves		4 Dosage schedule 4
		5 Dosage schedule 5
		6 Dosage schedule 6
		7 Dosage schedule 7
		8 Dosage schedule 8

5232 Dosage schedules 9-16	5233 Dosage schedules 17-24	52311 Dosage schedule 1
1 Dosage schedule 9	1 Dosage schedule 17	Number of periods 03
2 Dosage schedule 10	2 Dosage schedule 18	Per. Begin End Part
3 Dosage schedule 11	3 Dosage schedule 19	1 06:00 - 08:00 050%
4 Dosage schedule 12	4 Dosage schedule 20	2 12:00 - 14:00 040%
5 Dosage schedule 13	5 Dosage schedule 21	3 19:00 - 20:00 100%
6 Dosage schedule 14	6 Dosage schedule 22	
7 Dosage schedule 15	7 Dosage schedule 23	
8 Dosage schedule 16	8 Dosage schedule 24	

Each dosing schedule consists of up to 24 periods.



If your installer has set *automatic cycle distribution* for a dosage timer, the amount of feed to be fed is divided over the number of periods. In this case, the part is not taken as set in the time schedule (see page 34).

Growth curves

52 Time schedules	524 Growth curves time schedules	52432 Growth curve Feed timer
1 Time schedules	Growth curves Day 001	Growth curve Feed timer off
2 Light schedules	1 -----	Number of points 03
3 Dosage schedules	2 Light timers	Point Day(1) Schedule
4 Growth curves	3 Dosage timers	1 001 3
	4 Sequential timers	2 007 2
	5 Nest box timer	3 014 no
	6 Timers	

You can include the time schedules in a growth curve. As soon as the day number is reached, another time schedule is selected. If a breakpoint is set to *no*, the times of the original timer will be used, see page 33.

10.8 Date/Time

You can set the *First day of the week*. This setting is used to determine the weekly totals. For example, if you set the *First day of the week* to *Sun (Sunday)*, the weekly totals will be calculated on Sunday. A week total is the sum of Sunday, Saturday ... and Monday.

If the PL-9400 poultry computer is linked to a feed computer, you cannot change the settings *First day of the week* and *Begin new day* on the PL-9400 poultry computer. These settings are taken from the feed computer.



Be careful when changing the *Begin new day* setting. If this time is within a dosing period, the error message *Beginning day in period* is generated.

10.9 Timer overview

A graphical overview of the time switches appears on the screen. The on/off times are only shown for the activated timers only. If a master timer has been installed, it will be displayed on every screen.

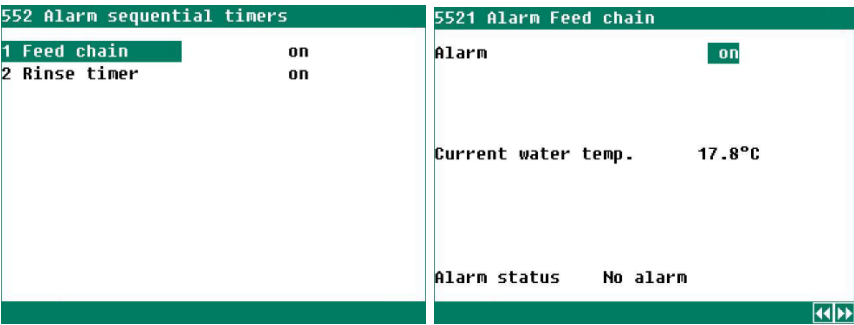
10.10 Alarm

Water and feed timers

5511 Alarm Water timer	
Alarm	on
Minimum dosage	100%
Present dosage	0%
Dosage calculated	100ml/a
Present dosage	0ml/a
Alarm status	No alarm

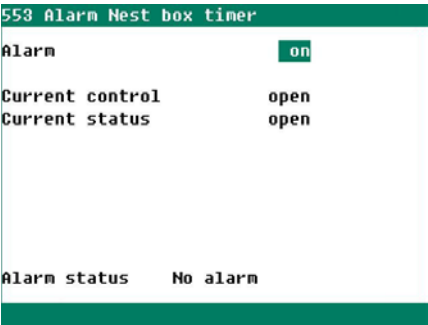
With a water/feed timer, you can set the minimum amount to dose. This is a percentage of the total amount to be dosed. If this percentage is not met, a dosing alarm¹ is generated.

Sequential timers



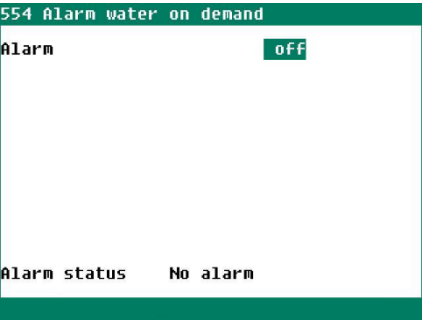
If the sequential timer has a temperature sensor, you can enable/disable the temperature alarm for the sequential timer in this screen¹.

Laying nest clock



Turning the laying nest timer alarm on/off¹.

Water on demand



Alarm Turning the water-on-demand alarm on/off¹.

¹Alarm on Alarms are transmitted to the poultry computer.
 off Alarms are not transmitted to the poultry computer.
 time Only when the *Alarm schedule* is active, alarms are transmitted to the poultry computer. Alarms that occur when the *Alarm schedule* is off, are not transmitted.

Pop-hole timers

5551 Alarm Pop-hole tnr 1	
Alarm	on
Current control	open
Current status	open
Alarm status No alarm	

On/off timer

5551 Alarm Pop-hole tnr 1	
Alarm	on
Calculated air inlet pos.	100%
Current air inlet pos.	100%
Minimum alarm limit	90%
Maximum alarm limit	100%
Alarm status No alarm	

Controlled timer

5551 Alarm Pop-hole tnr 1	
Alarm	on
Calculated air inlet pos.	100%
Limit switch close	no
Limit switch open	yes
Alarm status No alarm	

Limit switches (runtime)

Alarm¹

Enabling and disabling the pop-hole timer alarm.

Current control

Actual control of the pop-hole door.

*Current status*Actual status of the pop-hole door: *closed*, *running* or *open*.*Calculated flap opening*With a controlled pop-hole door, the maximum pop-hole opening can be set at *Pop-hole timer*. In other cases, the maximum position is 100% (fully open).*Current flap opening*

Actual pop-hole opening. 0% = closed.

Minimum alarm limit

Calculated pop-hole opening – 10% (minimal 0%)

Maximum alarm limit

Calculated pop-hole opening +10% (maximal 100%)

Limit switch close

Actual status of the limit switch close.

Limit switch open

Actual status of the limit switch open.

Alarm status

Actual alarm status.

¹Alarm*on*

Alarms are transmitted to the poultry computer.

*off*Alarms are not transmitted to the poultry computer.*time*Only when the *Alarm schedule* is active, alarms are transmitted to the poultry computer. Alarms that occur when the *Alarm schedule* is off, are not transmitted.

11 Info

11.1 Overviews

6 Info	61 Overviews
1 Climate controls	1 House temperature
2 Counters	2 Heating
3 Timers	3 Cooling
4 Animal data	4 Outside temperature
5 Feed system	5 Miscellaneous
6 Animal weighing	6 Growth curves
7 Heat exchanger	
8 USB Logging	
	Reset min/max no

The screens of menu options *Climate Controls*, *Counters*, *Timers*, *Animal Data* and *Feed System* are identical to those of menu options 17 *Overviews*, 48 *Overview counters* and 54 *Overview timers* (see pages 22, 30 and 41).

Reset min/max temp. Here you can clear the min/max readings in all temperature views. The current value then appears at *Today*.

11.2 Animal data

64 Animal data
1 To mutate
2 Overview mutations
3 Overview present animals
4 Entry data
5 Configuration lost

Mutations

641 To mutate Animals 1	641 To mutate Animals 1	6410 To mutate Animals 1
Loss	Today	Total
Dead	000 000,000	0
Selection	000 000,000	0
Lost 3	000 000,000	0
Lost 4	000 000,000	0
Lost 5	000 000,000	0
Out	000,000	0
In	000,000	0
Check performed	no	
Animals present		30,000
Number at entry		30,000
	◀◀▶▶	◀◀▶▶

Number of dropout categories ≤ 5

Number of dropout categories > 5

If there are several animal groups, the data below can be entered per animal group.

Use the buttons ◀▶ to select the previous/next animal group.

Lost You can set up to five loss categories.

Dead Enter the number of animals which have lost at this moment (per group of animals). *Dead: Today* (today's mortality) is increased automatically by the value entered, after which the entry is erased.

<i>Dead: Today</i>	Today's total mortality. If you have entered an incorrect value you can correct this by changing the value below <i>Today</i> .
<i>Dead: Total</i>	The total mortality calculated using the mortality of the previous days and today's mortality.
<i>Lost 3,4,5</i>	See description under <i>Dead</i> .
<i>In/Out: today</i>	Entry of the number of animals added/removed today.
<i>In/Out: total</i>	The total number of animals added/removed.
<i>Animals present</i>	$\text{Number at entry} - \text{Total lost} - \text{Total out} + \text{Total in}$.
<i>Number at entry</i>	The number of animals set-up in the house.

Check performed

If it is necessary to record the mortality in two periods per day, you can use the function *Check performed*.
00:00 = not checked.

641 To mutate Animals 1				6410 To mutate Animals 1		
Loss		Today	Total	Check performed		
Dead	000	000,000	0		First	Last
Selection	000	000,000	0	Today	0:00	0:00
Lost 3	000	000,000	0	Saturday	0:00	0:00
Lost 4	000	000,000	0	Friday	0:00	0:00
Lost 5	000	000,000	0	Thursday	0:00	0:00
Out		000,000	0	Wednesday	0:00	0:00
In		000,000	0	Tuesday	0:00	0:00
Check performed		no		Monday	0:00	0:00
Animals present			30,000	Sunday	0:00	0:00
Number at entry			30,000			

Check performed Change *no* to *yes*: the table is filled.
If you have not pressed the button today, the time is shown in the *First* column.
If you have pressed the button several times today, the time is shown in the *Last* column.

Mutations overview

642 Overview mutations Animals 1			
	Loss	Out	In
Today	0	0	0
Saturday	0	0	0
Friday	0	0	0
Thursday	0	0	0
Wednesday	0	0	0
Tuesday	0	0	0
Monday	0	0	0
Sunday	0	0	0
Week	0	0	0
Total	0	0	0

Displayed are the mortality, the number of animals unloaded (*Out*) and number of animals added (*In*), per day per animal group.

Overview of animals present

643 Overview present animals		
	Animals 1	Animals 2
Today	30,000	30,000
Monday	30,000	30,000
Sunday	30,000	30,000
Saturday	30,000	30,000
Friday	30,000	30,000
Thursday	30,000	30,000
Wednesday	30,000	30,000
Tuesday	30,000	30,000

Display of the current number of animals in the barn per day by animal group.

Setting-up data

644 Entry data	
Entry date	--/--/----
Year	----
Month	--
Day	--
Animals 1	
Number at entry	012,092
Animals 2	
Number at entry	010,216
New entry	<input type="button" value="no"/>

This data is entered at the beginning of each new round. The PL-9400 poultry computer uses this data to calculate the current number of birds, feed dosage, etc.

For two or more animal groups, the fill ratio depends on the sum of the total number of animals of all animal groups added together.

Entry date The poultry computer uses the set-up date to calculate the animal age. Beside that the *Entry date* is used to fill in the mutation table. The can store the data of the past seven days.

Year, month, day Here you can enter/modify the set-up date.

Number at entry The number of animals (per animal group) set-up in the house.

New entry When setting up the animals, *New entry* has to be set to Yes. After that:

- the setup date is given today's date;
- mortality tables are cleared;
- the corrections entered at *growth curve min/max main ventilation* and *auxiliary ventilation* are cleared;
- the *house temperature, min/max main ventilation* and *auxiliary ventilation* are recalculated from the growth curve;
- the occupancy rate is recalculated, if it depends on the setup data;
- the feed dosing will be started, if a feeding cycle is active.



The day number is not automatically updated.

Configuration of the mortality categories

645 Configuration loss	
Animals 1	Animals 2
Number <input type="text" value="10"/>	Number 10
Dead	Dead
Selection	Selection
Lost 3	Lost 3
Lost 4	Lost 4
Lost 5	Lost 5
Lost 6	Lost 6
Lost 7	Lost 7
Lost 8	Lost 8
Lost 9	Lost 9
Lost 10	Lost 10

In this screen you set the number of failure categories (maximum 10) per animal group. These mortality categories appear in the mutation screen. For each category you enter the number of animals that have dropped out.

11.3 Weekly animal weighting overviews

66 Overview Scale 1						66 Overview Scale 2					
Day	Weight	Std.	Growth	Numb.	Uni.	Day	Weight	Std.	Growth	Numb.	Uni.
Today	0g	1,006g	0g	0	0%	Today	0g	1,006g	0g	0	0%
Mon	0g	0g	0g	0	0%	Mon	0g	0g	0g	0	0%
Sun	0g	0g	0g	0	0%	Sun	0g	0g	0g	0	0%
Sat	0g	0g	0g	0	0%	Sat	0g	0g	0g	0	0%
Fri	0g	0g	0g	0	0%	Fri	0g	0g	0g	0	0%
Thu	0g	0g	0g	0	0%	Thu	0g	0g	0g	0	0%
Wed	0g	0g	0g	0	0%	Wed	0g	0g	0g	0	0%
Tue	0g	0g	0g	0	0%	Tue	0g	0g	0g	0	0%

You can view the data per scale. Use the   keys to select the previous/next scale.

11.4 Heat exchanger overview screen

67 Heat exchanger	
Hour counter	1
Temperature setpoint	20.6°C
Current temperature	20.1°C
Intake outside	20.0°C
Exhaust house	20.0°C
Intake house	20.0°C
Exhaust outside	20.2°C
Current ventilation	
Heat exchanger	11%

Some authorities require proof of proper functioning of the heat exchanger. Therefore, the temperatures of the heat exchanger must be recorded. The data is stored on USB.



The USB logging of the heat exchanger must therefore be on (installer setting).



*A*Note-HeatExcP-N-ENxxxxx

11.5 USB logging

68 USB Logging		68 USB Logging	
USB Logging	on	USB Logging	off
Alarm status	No alarm	Alarm status	No USB stick present

If you turn off the USB logging alarm (no USB stick present), no more data will be saved from the poultry house, heat exchanger, manure belt, mixed air control and heating (heating control with fan).

12 Alarm

12.1 General

```

7 Alarm status
Main alarm on      Reset no
⌚ off no          Test no
Snooze no
Alarm code No alarm
Control
Alarm external house 2
1 Options
2 External alarms    3 Communication
  
```

Main Alarm Here you can switch the main alarm off. The alarm cause and the control concerned (possibly with the terminal number or address) appear on the screen.

12.2 Latest alarms

71 Options alarm	711 Latest alarms
1 Latest alarms	Alarm 0
2 Alarm schedule	Alarm code
	Control
	Alarm 1
	Alarm code
	Control
	Alarm 2
	Alarm code
	Control

Alarm 0 The cause of the latest alarm with the time until when the alarm is/was active.

Alarm code The poultry computer stores the latest five alarm causes that have de-energized the alarm relay. Next to the alarm cause are displayed the corresponding date and time.

Press ▼ to display previous alarm data.

12.3 Alarm schedule

```

712 Alarm schedule
Alarm active Begin End
              ..:- -:-:
Status        active
  
```

Alarm active With *Begin* and *End* you enter the period, during which the time-dependant alarms should be active.

Status Only when the *Status* is active, time-dependant alarms will be transmitted to the poultry computer. Alarms that occur during the off-status will no longer be transmitted.

12.4 External alarms

Your installer can change the names of the *External alarms* (max. 15 characters per name).

72 External alarms		721 External alarms 1-10		7211 Extern.alarm 1	
1 External alarms 1-10		1 Extern.alarm 1	on	Alarm	on
2 External alarms 11-20		2 Extern.alarm 2	on		
		3 Extern.alarm 3	on	Input	closed
		4 Extern.alarm 4	on		
		5 Extern.alarm 5	on		
		6 Extern.alarm 6	on		
		7 Extern.alarm 7	on		
		8 Extern.alarm 8	on		
		9 Extern.alarm 9	on	Alarm status	No alarm
		10 Extern.alarm 10	on		

You can enable and disable the external alarms (up to 20). The follow-up screen shows the current alarm status and current input status.

Alarm *on* Alarms are transmitted to the poultry computer.
 off Alarms are not transmitted to the poultry computer.
 time Only if the *Alarm Schedule* is active, alarms will be transmitted to the poultry computer.

12.5 Communications

3 Communication	
Alarm	on
Device address	0
Date	--/--/----
Time	..:..4h
Alarm status	No alarm

Here you can activate and deactivate the communication alarm. This screen will only appear for a main station. *Device address* shows the address from which the main station did not receive data. When communication alarms occur, the current *Date* and *Time* appear.



Remember to turn the alarm back *on* after it has been turned off for troubleshooting. Preferably use the function ⌚ *off* (*temporarily disable alarm*) to solve a malfunction.



Installation errors such as *Output already assigned*, *Wrong output type*, *Input already assigned* must be eliminated before putting the system into operation.

12.6 Alarm codes

Alarm code	Description
<i>Alarm unknown (xxx)</i>	This alarm code cannot be translated into text. Please note the number displayed and contact your supplier.
<i>CO2 too high</i>	Measured CO2 exceeds the calculated maximum alarm limit
<i>CO2 too low</i>	The measured CO2 is lower than the calculated minimum alarm limit
<i>CO2 sensor faulty</i>	Measurement of CO2 sensor is outside the set limits.
<i>Communication address x</i>	The master device has not received data from the displayed device address.
<i>Configuration changed</i>	The module configuration (inputs/outputs etc.) has been changed. Read in the module number again.
<i>Counter already assigned</i>	The counter has been assigned to two or more controls.
<i>Dosage too low</i>	Dosed water/feed volume is lower than minimum dosing amount, page 39.
<i>External alarm</i>	An external alarm has occurred, see screen 72.
<i>Input already assigned</i>	The input has been assigned to two or more controls.
<i>Invalid combination</i>	Dosage timer and animal group are both set to communication. This is not allowed. You can either set only dosing timers via communication (augers) or you can send the animal data via communication (valves).
<i>Invalid component</i>	In the silo assignment, a component has a silo number that does not contain the correct component. The component in one of the silos has changed.
<i>Invalid counter</i>	If you have two animal groups and the feed weigher is a PFV-9xxx, you need to assign each animal group to a separate counter.
<i>Invalid input</i>	The input number does not exist on the module.
<i>Invalid mixing percentage</i>	The set mixing percentages where the mixer is active for a short time should be increasing. Check the mixing percentages.
<i>Invalid output</i>	This output number does not exist on this module.
<i>Invalid period (x)</i> <i>x = period number</i>	<ul style="list-style-type: none"> ▪ The times of a timer must be incremental. The difference between <i>Start</i> and <i>End</i> and between two periods must be at least 1 minute. ▪ With a lighting control, starting time + running time may not fall after the next starting time. However, the time may coincide with next start time.
<i>Minimum supply alarm</i>	The counter remains, within the set time frame, below the specified minimum.
<i>Maximum supply alarm</i>	The counter exceeds the specified maximum within the set time frame.
<i>Module not found</i>	<ul style="list-style-type: none"> ▪ The module number set for the terminal does not exist. ▪ Poor or no connection between PL-9400-MODULE and module. ▪ The connection cable between the PL-9400-MODULE and the PL-9400 bottom PCB is missing or is loose.
<i>Module does not respond</i>	Module address not found. Check the settings on the module.
<i>Module reset alarm</i>	Module keeps resetting due to a fault. Check the module.
<i>No communication address</i>	Device address poultry computer missing.
<i>No input assigned</i>	No input terminal number has been entered.
<i>No pressure control</i>	The control installed requires a pressure control but no pressure control has been installed.
<i>No USB stick available</i>	USB logging is on, but the USB stick on the RTCPU board is missing.
<i>No output assigned</i>	No output terminal number has been entered.
<i>No outside sensor</i>	A controller has been installed that requires an outside sensor which has not been installed.
<i>No pressure control</i>	The control installed requires a pressure control which has not been installed.

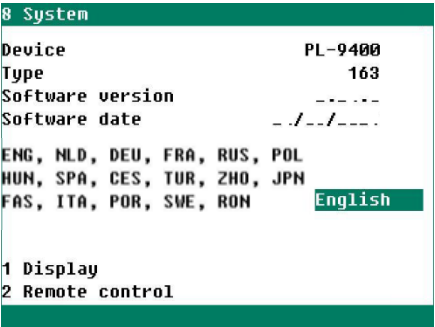
Alarm code	Description
<i>No USB stick available</i>	USB logging is on, but the USB stick on the RTCPU board is missing.
<i>No output assigned</i>	No output terminal number has been entered.
<i>No outside sensor</i>	You have installed a controller that requires an outside sensor. However, the outside temperature sensor has not been installed.
<i>Not closed</i>	Laying nest is still open after the runtime has been expired.
<i>Not open</i>	Laying nest is still not open after the runtime has been expired.
<i>NH3 too high</i>	Measured NH3 exceeds the calculated maximum alarm limit
<i>NH3 too low</i>	The measured NH3 is lower than the calculated minimum alarm limit
<i>NH3 sensor faulty</i>	Measurement of NH3 sensor is outside the set limits.
<i>Output already assigned</i>	Output is already used for another control.
<i>Outside sensor faulty</i>	Outside temperature sensor measurement is < -50.0°C or > +50.0°C
<i>Overlapping periods¹</i>	Several dosage timers are active at the same time.
<i>Potentiometer faulty</i>	The value measured by the potentiometer is outside the limits (EGM 100P, winch motors etc.).
<i>Pressure too high</i>	The measured pressure is higher than the calculated maximum alarm limit.
<i>Pressure too low</i>	The measured pressure is lower than the calculated minimum alarm limit.
<i>Pressure sensor faulty</i>	Pressure sensor measurement is outside set limits.
<i>RH too high</i>	The measured RH is higher than the calculated maximum alarm limit.
<i>RH too low</i>	The measured RH is lower than the calculated minimum alarm limit.
<i>RH sensor faulty</i>	The RH sensor value measured is outside the preset limits.
<i>Sensor detects feed</i>	When opening the unloading valve, the feed sensor is covered with feed.
<i>Sensor faulty</i>	The values measured by the sensor (temperature, RH, CO2, pressure, etc.) are outside preset limits. Both limit switches of the laying nest and/or pop-hole timer are enabled.
<i>Start day in period</i>	<i>Start new day</i> falls within a period. This is not permitted. The <i>Start New Day</i> time must be before the first period.
<i>Temperature too high</i>	The measured temperature is higher than the calculated maximum alarm limit.
<i>Temperature too low</i>	The measured temperature is lower than the calculated minimum alarm limit.
<i>Temperature sensor faulty</i>	The value measured by the temperature sensor is lower than -50.0°C or higher than +100.0°C
<i>Thermo-differential Sensor x</i>	The temperature difference between the last two readings from the sensor exceeds the maximum permissible difference or the sensor temperature is above the absolute limit, see pages 20 and 26.
<i>Unknown terminal type</i>	The selected terminal type does not exist.
<i>Ventilation too high²</i>	The ventilation measured is higher than the calculated maximum alarm limit.
<i>Ventilation too low²</i>	The ventilation measured is lower than the calculated minimum alarm limit.
<i>Wrong input type</i>	The set input type does not comply with the input type based on which the controller is controlling.
<i>Wrong output type</i>	The set output type does not comply with the output type which activates the control.
<i>Wrong RTCPU version(x)</i>	Insufficient memory present on the current RTCPU_DEKx board to perform a software update. Replace the RTCPU_DEKx board with an RTCPU_DEK3 board or a more recent version.

1 If all feed_dosage timers function on the basis of release contacts, the periods may overlap.

2 When controlling a valve, always check first that the valve is not in manual mode.




13 System

13.1 General



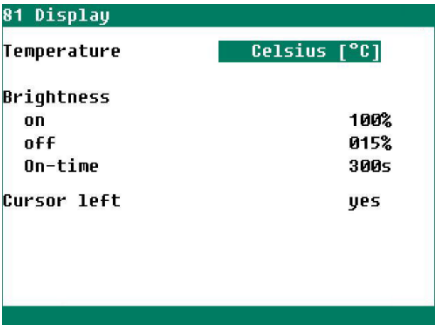
Device Type name of the device. In this example PL-9400.



Shortcut keys for changing language: Press and hold  and use   to select the previous/next language.

<i>Type</i>	The type number of the device. The PL-9400 has type number 163.
<i>Program version</i>	The version number of the software in the PL-9400.
<i>Program date</i>	The date of the software.
<i>ENG, NLD, DEU,</i>	Setting of the language required of the screen texts: NLD=Dutch, ENG=English, DEU-Deutsch, etc.

13.2 Display

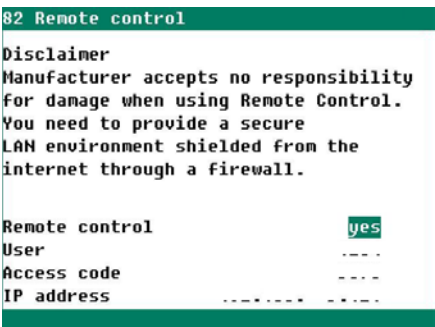


Temperature

- Fahrenheit (°F)* Temperatures are displayed in degrees Fahrenheit.
- Celsius (°C)* Temperatures are displayed in degrees Celsius.

<i>Brightness</i>	<i>on</i>	Setting of the display's brightness in operation mode.
	<i>off</i>	Setting of the display's brightness in sleep mode.
	<i>On-time</i>	Number of seconds that the backlight stays on after the last time a key was pressed. 0 seconds = backlight stays on forever
<i>Cursor left</i>	<i>yes</i>	Place the cursor to the far left when changing.
	<i>no</i>	Move cursor to the far right when changing.


13.3 Remote control



*A*Note-Remote-N-ENxxxxx

14 Maintenance and check-up

Good climate control is indispensable for good farm business. Prevention of diseases starts with optimizing the climate in the poultry house. A responsible and regular inspection and cleaning of fans, valves, measuring fans, ventilation chimneys, sensors and is therefore necessary of fans, valves, measuring fans, ventilation chimneys, sensors and climate controllers is therefore necessary.

What	When	Action
<i>Alarm system</i>	Monthly	Check the alarm system for proper functioning.
<i>Air leaks</i>	Regular	Air leaks can lead to draughts and - in summer - they can result in unwanted heating due to hot air being drawn in from between the roof and the insulating materials for example. This will require the fans to work extra hard to enable the preset house temperature to be reached, causing the energy costs to increase unnecessarily.
<i>Measuring fans and settings</i>	Regular	Air leaks can lead to draughts and - in summer - they can result in unwanted heating due to hot air being drawn in from between the roof and the insulating materials for example. This will require the fans to work extra hard to enable the preset house temperature to be reached, causing the energy costs to increase unnecessarily.
<i>Negative pressure in the house</i>	Regular	Clogged filters or air inlet valves which are still in the 'winter mode' may cause an unnoticed increase in the counter-pressure in the ventilation system in combination with a rising temperature. This will result in the fans having to run much faster than is usually required. When opening or closing doors of the poultry house, be alert to any resistance, which you may feel. If you can feel the negative pressure, we advise you to check the operation of the filters and valves.
<i>Temperature sensors</i>	Monthly	Clean the temperature sensors with a damp cloth.
<i>Ventilation chimneys</i>	Annual	Cleaning at least once a year
<i>Cleaning ventilation system</i>	When cleaning the house	<p>Keep (measuring) fans, valves and ventilation chimneys clean in order to keep energy consumption low. Dust and dirt can affect the operation of the equipment. Clean the fans with a soft hand brush. Use a damp cloth to clean the poultry computer, measuring fan and valves. The ventilation duct may be cleaned with a high-pressure hose.</p> <p> <u>Do not</u> use the high-pressure jet to clean the climate controller, measuring fan, valves and other electrical equipment. When cleaning the ventilation chimney, do not point the jet at these sensitive parts.</p>
<i>Fans</i>	Weekly	Switch on the fans at least one time every week, even in winter, to prevent it from getting stuck.