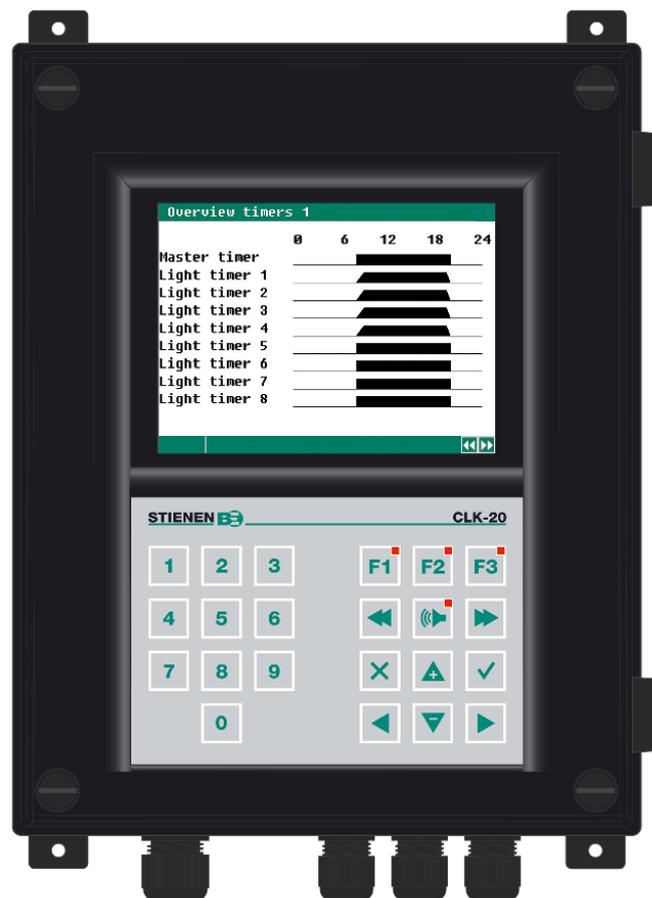


USER MANUAL

CLK-20(-i) CLOCK CONTROLLER



Shut down power before opening the clock controller!

The clock controller contains exposed live parts!

Only to be opened by authorized personnel!



WARNING

Although utmost care has been given to the quality of this equipment during the design and manufacturing stages, technical malfunctions can never be ruled out. ***The user should ensure that an adequate alarm system and/or emergency provisions is/are in place to prevent any technical failure of the equipment and peripheral facilities leading to danger to people, animals or property.***

IN THE EVENT OF AN EMERGENCY, NOTE DOWN THE FOLLOWING

- **Hardware and DIP switch settings**
- **Circumstances in which the emergency occurred**
- **Possible causes**
- **Software version number**



Please contact our Customer Service Department, if you have any questions. Be sure to have all necessary data at hand. To ensure a speedy solution to the malfunction and to avoid any misunderstandings, it is advisable to note down the cause and the circumstances in which the malfunction occurred before contacting us.

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StienenBE does not accept any liability for the contents of this manual and explicitly waives all implicit guarantees of merchantability or fitness for a certain use. StienenBE also reserves the right to improve or change this manual without being under the obligation to inform any person or organisation of any such improvement or change.

StienenBE cannot be held liable for any damage, loss or injury resulting from improper use or from use not in accordance with the instructions in this manual.

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Application notes

Data communication

A_{Note}-DataCom-N-ENxxxxx

Remote control

A_{Note}-Remote-N-ENxxxxx

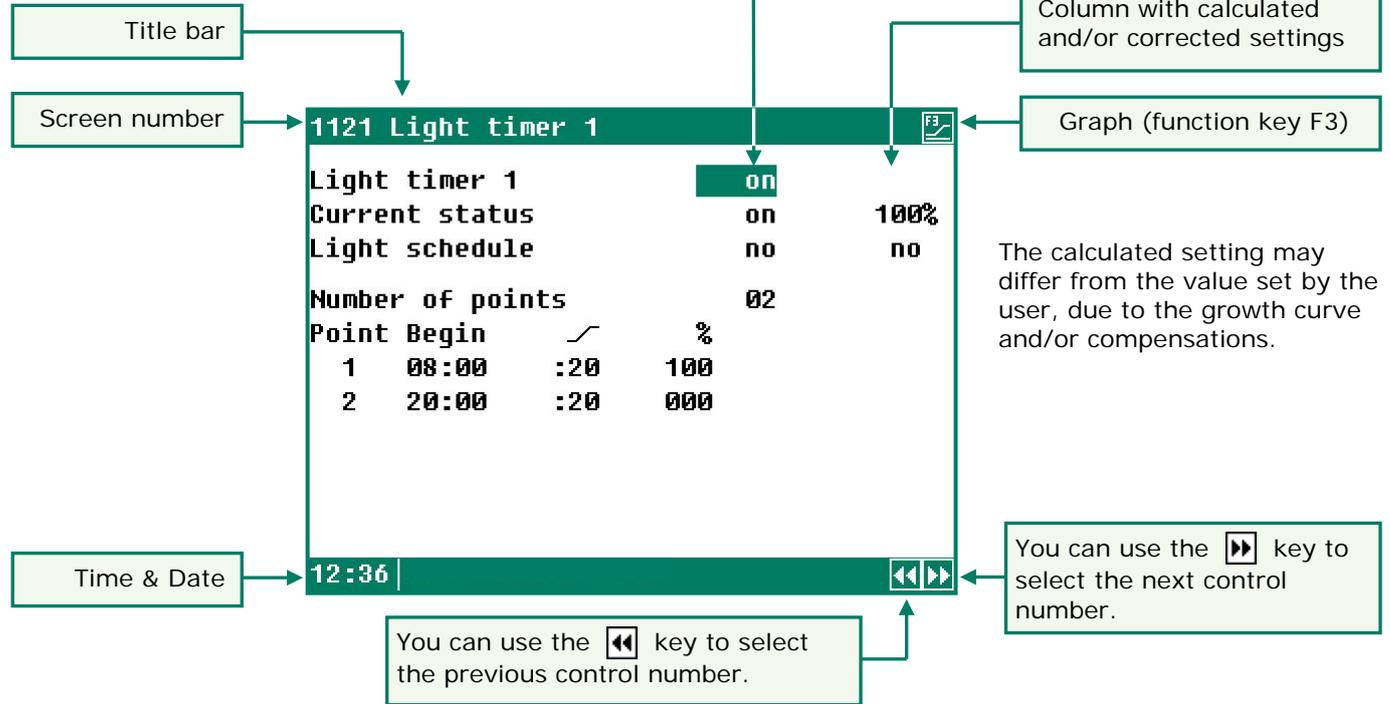
Skylights

A_{Note}-Skylights-N-ENxxxxx

xxxxx = application note version number.

INTRODUCTION

SCREEN

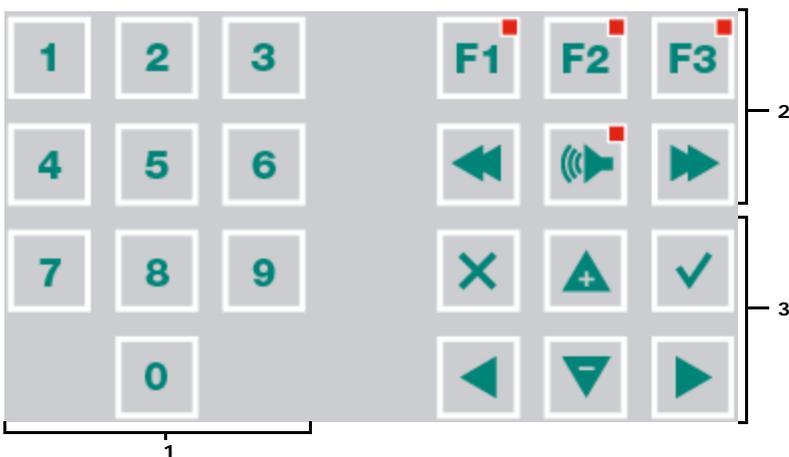


When the **F3** symbol is shown in the title bar and you press function key F3, the settings are displayed graphically. Press F3 again to switch off the graphic display. Whenever a key is pressed, the screen will be lit for a couple of minutes so that you can also see the settings and measurements in a dark animal house.

SCROLL WINDOW

If a window contains more lines than the screen can display, the title bar will show the **⏮** symbol. This symbol indicates that you can call up the remaining settings and/or measurements using the up and down cursor keys (**⬆** **⬇**).

OPERATION



Note!

Only press the keys with the tip of your finger. Sharp objects can damage the keyboard!

The keyboard can be divided into three basic groups:

1. Numerical keys
2. Function keys
3. Navigation keys

Adding or removing a period

1. Press the [Enter] key (edit mode)
2. Press and hold the [F1] function key and then press the:
3. [+] key to add a breakpoint/period (provided that the maximum value for periods/breakpoints has not been reached)
4. [-] key to remove a breakpoint/period (provided that there is at least one period/breakpoint)

The number of breakpoints/periods is adjusted automatically.

The main alarm is switched off for 30 minutes (the LED will blink irregularly). The main alarm is switched on automatically again after 30 minutes. The alarm relay will de-energize again, causing an alarm, if the cause of the alarm has not been removed.

You can clear the temporary alarm deactivation time by setting "no" in the  OFF line.

If no access code has been installed on the CLK-20, or if you have already entered the correct access code, you can switch off the main alarm.

Attention NEVER FORGET TO SWITCH THE ALARM BACK "ON" when you have switched this feature off 'temporarily', e.g. to solve a problem. Failing to switch it back on may have adverse effects for people, animals, equipment or property.
Preferably use the  OFF (alarm temporarily off) function to solve a fault.

3 NAVIGATION KEYS (MENU, CURSOR, MODE)

Cancel



This key cancels changes or menu option selections.

Press and hold this key to select the main menu.

Move cursor



Move cursor

Pressing and holding the key: move cursor to the first/last setting on the screen.



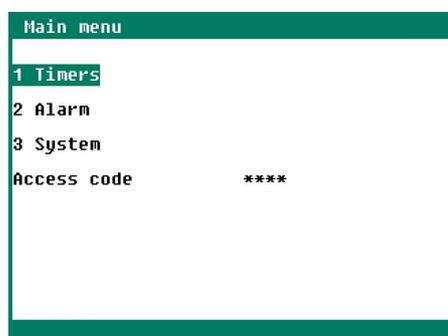
Move cursor or change value

Confirm



- Menu option
- Start change
- Confirm change
- The cursor is displayed as a green rectangle, e.g. **08:00**.
- While a change is being made, the cursor is displayed as a black border, e.g. **08:00**.

MAIN MENU



If you use an access code, it is advisable to write the code down and store it somewhere safe. If you forget the access code, you can no longer change any settings. As soon as one access code is active, you can only change the setting by entering the correct access code. As soon as one access code is active, you can only change the setting by entering the correct access code. The access code remains active until you select the "Overview" screen.

ACCESS CODE

You can use access codes, e.g. to protect your computer against unauthorized access. If you want to prevent non-authorized users from changing the settings on your clock controller, you can have an access code set. An access code consists of a combination of 4 digits. You can have a maximum of 2 access codes set by your installer.

TIMERS

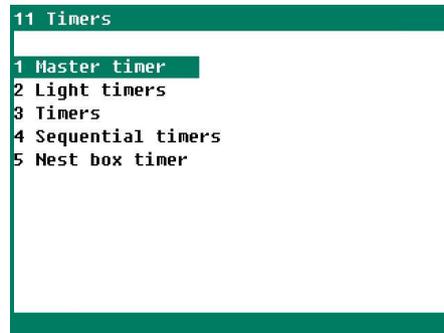


A maximum of 24 periods can be set on a timer. All times have to be consecutive times. The difference in time between any two times should be at least 1 minute. If you are using a growth curve ("growth curve schedule"), you can automatically activate another schedule, depending on the ages of the animals. You can also link the timer to the "master timer".

The master timer is a timer that *synchronises* the slave timers. If you set "on" for a timer, instead of setting "slave", the times will be related to the *master timer* (however, you can still correct the start ('Begin') and end times locally for the individual timers then).

Linked lighting schedules are used with light timers whose settings are interrelated. In that case, the master timer is used in order to be able to quickly synchronise the timers. If, for example, the feed and water times vary within a short period of time (some days/weeks), different time schedules can be used. Preprogramming the different time schedules enables a quick change-over between schedules.

TIMERS



You can choose from the following timers:

- "**Standard timer**" (with its own local times, not linked to a time schedule) or
- "**Master timer**" (you are using time schedules; the times are linked to a time schedule).

Standard timer

The number of periods and the times are set locally (in the timer's "own" screen).

Master timer

Fixed

time schedule number

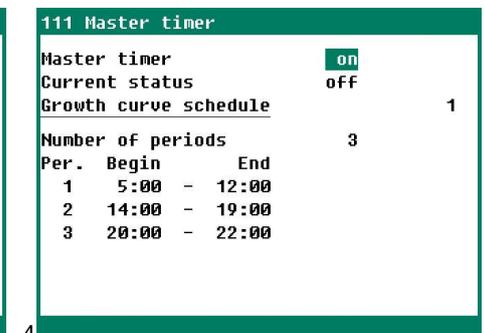
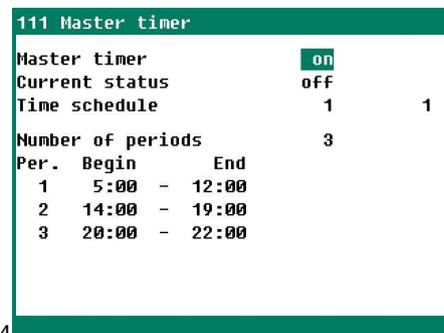
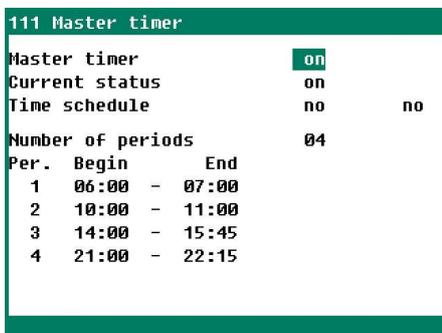
You cannot change either the number of periods or the period times locally; these settings are copies of the schedule number entered (time, light or dosing schedule). You can choose from a maximum of 6 different schedules

Variable

time schedule number

You cannot change either the number of periods or the period times locally; these settings are copies of the current schedule number resulting from the growth curve (time, light or dosing schedule). However, if "none" has been set under *Schedule* in the growth curve, the **local times will be used**.

MASTER TIMER



Standard timer (not linked to a time schedule number) With a **fixed** time schedule number

With a **variable** time schedule number

STANDARD TIMER

111 Master timer			
Master timer			<input checked="" type="checkbox"/> on
Current status			on
Time schedule			no no
Number of periods			04
Per.	Begin	End	
1	06:00	07:00	
2	10:00	11:00	
3	14:00	15:45	
4	21:00	22:15	

FIXED TIME SCHEDULE NUMBER

111 Master timer				121 Time schedule 1			
Master timer			<input checked="" type="checkbox"/> on	Number of periods			03
Current status			on	Per.	Begin	End	
Time schedule			1 1	1	05:00	12:00	
Number of periods			3	2	14:00	19:00	
Per.	Begin	End		3	20:00	22:00	
1	5:00	12:00					
2	14:00	19:00					
3	20:00	22:00					

You cannot change either the number of periods or the period times locally (these settings are copies of the preset time schedule number).

You can only change the number of periods and the period times in the preset time schedule number (in this example this is "Time schedule 1").

VARIABLE TIME SCHEDULE NUMBER.

111 Master timer				1231 Growth curve Master timer				121 Time schedule 1			
Master timer			<input checked="" type="checkbox"/> on	Growth curve Master timer			<input checked="" type="checkbox"/> on	Number of periods			03
Current status			on	Number of points			02	Per.	Begin	End	
Growth curve schedule			2 2	Point	Day (1)	Schedule		1	05:00	12:00	
Number of periods			8	1	001	1		2	14:00	19:00	
Per.	Begin	End		2	007	2		3	20:00	22:00	
1	5:00	6:00									
2	7:00	8:00									
3	9:00	10:00									
4	11:00	12:00									
5	13:00	14:00									
6	15:00	16:00									

111 Master timer				1231 Growth curve Master timer				121 Time schedule 2			
Master timer			<input checked="" type="checkbox"/> on	Growth curve Master timer			<input checked="" type="checkbox"/> on	Number of periods			08
Current status			on	Number of points			03	Per.	Begin	End	
Growth curve schedule			2 2	Point	Day (6)	Schedule		1	05:00	06:00	
Number of periods			8	1	001	1		2	07:00	08:00	
Per.	Begin	End		2	007	2		3	09:00	10:00	
1	5:00	6:00		3	014	no		4	11:00	12:00	
2	7:00	8:00						5	13:00	14:00	
3	9:00	10:00						6	15:00	16:00	
4	11:00	12:00						7	17:00	18:00	
5	13:00	14:00						8	19:00	20:00	
6	15:00	16:00									

The settings in the two examples above are copies of the central time schedule resulting from the curve. **Note!** However, if "no" has been set under *Schedule* in the growth curve, the *local times will be used*.

111 Master timer				1231 Growth curve Master timer			
Master timer			on	Growth curve Master timer			<input checked="" type="checkbox"/> on
Current status			off	Number of points			03
Growth curve schedule			no no	Point	Day (12)	Schedule	
Number of periods			04	1	001	1	
Per.	Begin	End		2	007	2	
1	05:00	09:00		3	014	no	
2	18:00	22:00					
3	14:00	15:45					
4	21:00	22:15					

Local times

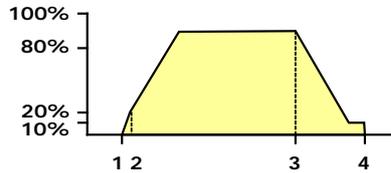
LIGHT TIMERS+

Light control

Light timers enable the use of light control to gradually switch the lights on/off. A light control enables you to create optimum day and night conditions (dawn switch).

Standard light schedule

1121 Light timer 1			
Light timer 1		on	
Current status		on	80%
Light schedule		no	no
Number of points			04
Point	Begin	↗	%
1	05:00	:04	020
2	05:20	:20	080
3	19:50	:30	010
4	20:30	:00	000



1. The lights will go on at the time set for point 1 (05:00) and the light intensity will be controlled to 20% within a period of 4 minutes (↗ :04).
2. The light intensity will be controlled to 80% within a period of 20 minutes (↗ :20) at the time set for point 2 (05:20).
3. The lights start to dim at the time set for point 3; the lighting intensity is lowered to 10% within a period of 30 minutes (↘ :30) and the lag time starts.
4. The lights switch off at the time set for point 4.

Fixed light schedule number

1121 Light timer 1			
Light timer 1		on	
Current status		on	80%
Light schedule		1	1
Number of points			3
Point	Begin	↗	%
1	5:00	:4	80
2	19:50	:4	10
3	20:00	:0	0

1121 Light schedule 1			
Number of points			03
Point	Begin	↗	%
1	05:00	:04	080
2	19:50	:04	010
3	20:00	:00	000

Variable light schedule number

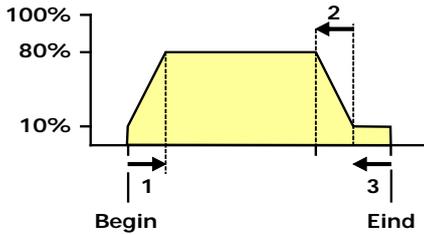
1121 Light timer 1			
Light timer 1		on	
Current status		on	80%
Growth curve schedule		1	1
Number of points			3
Point	Begin	↗	%
1	5:00	:4	80
2	19:50	:4	10
3	20:00	:0	0

12321 Growth curve Light timer 1			
Growth curve Light timer 1		on	
Number of points			03
Point	Day (3)	Schedule	
1	001	1	
2	007	2	
3	014	no	

1121 Light schedule 1			
Number of points			03
Point	Begin	↗	%
1	05:00	:04	080
2	19:50	:04	010
3	20:00	:00	000

Light control in combination with the master timer

1121 Light timer 1					11210 Light intensity Light timer 1					111 Master timer				
Light timer 1			Slave	on	Light intensity			010%	Master timer			on		
Current status			on	80%	Minimum			010%	Current status			off		
Light intensity					Maximum			080%	Growth curve schedule			no	no	
Number of periods					Dimming time light on					Number of periods				
2					20 minutes					02				
Per.	Begin	End	Begin	End	Dimming time light off					Per.	Begin	End		
1	+0:00	- +0:00	5:00	9:00	20 minutes					1	05:00	09:00		
2	+0:00	- +0:00	18:00	22:00	Off-delay					2	18:00	22:00		



- 1 Dimtijd licht aan
- 2 Dimtijd licht uit
- 3 Nabrandtijd

If you set more than 1 period for the master timer, the "Light intensity" settings will apply to all periods of the master timer.

Begin/End times correction

1121 Light timer 1				
Light timer 1			Slave	on
Current status			on	80%
Light intensity				
Number of periods				
2				
Per.	Begin	End	Begin	End
1	+0:00	- +0:00	5:00	9:00
2	+0:00	- +0:00	18:00	22:00

You can correct the actual "Begin" and "End" times (last column) by entering a correction under the "Begin" and "End" times (first column). The maximum correction allowed is *+ or - 8:00 hours*. This may be necessary, for example, to use the master timer for several time processes with the same number of periods.

Inspection light

112 Light timers		
1	Light timer 1	
2	Light timer 2	
3	Light timer 3	
4	Light timer 4	
5	Light timer 5	
6	Light timer 6	
7	Light timer 7	
8	Light timer 8	
9	Skylights	
Inspection light		active
Cycle time on		29m43s 30 min

The light can be switched on manually, using a pushbutton, in order to inspect the houses. The light will then be switched on for a certain time (this can be set by the installer). If the pushbutton is pressed again during the "On period", the lights will switch off again immediately.

TIMERS

These timers are "On/Off" timers. If a master timer has been installed, you can *link* these timers to the master timer (slave mode timer). If the timer has not been linked to the master timer, you can use time schedules (or a growth curve consisting of time schedules).

```

113 Timers
1 Timer 1
2 Timer 2
3 Timer 3
4 Timer 4
5 Timer 5
6 Timer 6
7 Timer 7
8 Timer 8
    
```

```

1131 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

```

1131 Timer 1
Timer 1          slave  on
Current status   off
Number of periods 2
Per.  Begin      End  Begin      End
  1   +0:00 - +0:00  5:00 - 9:00
  2   +0:00 - +0:00  18:00 - 22:00
    
```

The timer is linked to the "Master timer"

You can correct the actual "Begin" and "End" times (last column) by entering a correction under the "Begin" and "End" times (first column). The maximum correction allowed is *+ or - 8:00 hours*. This may be necessary for example to use the master timer for several time processes with the same number of periods.

SEQUENTIAL TIMERS

These timers are used for such procedures as controlling feed chains or rinsing water pipes. You can only set the start time (Begin) for a sequential timer; the end time is determined by the total pulse/pause time and the number of outputs.

```

114 Sequential timers
1 Feed chain
2 Rinse timer
    
```

```

1141 Feed chain
Feed chain       on
Current status   off
Time schedule    no    no
Number of periods 01
Per.  Begin      End
  1   08:00 - 8:03
    
```

```

11410 Feed chain
Outputs
Pulse           02m00s
Pause           00m30s
Current status   off
Output          0
External input   off
    
```

In case of a sequential timer, the different outputs assigned to the timer are activated in sequence, after each other. An output is not activated until the previous output is no longer active. The different actions that are carried out in sequence are also called phases or steps.

NEST BOX TIMER

```

115 Nest box timer
Nest box timer   on
Current status   on
Time schedule    no    no
Number of periods 01
Per.  Begin      End
  1   08:00 - 20:00
    
```

The CLK-20 has a timer with on/off times for opening or closing the nest boxes. The nest box can even be opened and closed with intervals (according to a pulse/pause principle). Your installer sets the pulse/pause times, so that the nest box will open or close at the speed you require.

The nest box timer is set according to a standard timer, see "Timers".

TIME SCHEDULES

TIME SCHEDULES

12 Time schedules 1 Time schedules 2 Light schedules 3 Growth curves	121 Time schedules 1 Time schedule 1 2 Time schedule 2 3 Time schedule 3 4 Time schedule 4 5 Time schedule 5 6 Time schedule 6 7 Time schedule 7 8 Time schedule 8 9 Time schedule 9	1211 Time schedule 1 Number of periods <input type="text" value="03"/> <table border="1"> <thead> <tr> <th>Per.</th> <th>Begin</th> <th>End</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>05:00</td> <td>12:00</td> </tr> <tr> <td>2</td> <td>14:00</td> <td>19:00</td> </tr> <tr> <td>3</td> <td>20:00</td> <td>22:00</td> </tr> </tbody> </table>	Per.	Begin	End	1	05:00	12:00	2	14:00	19:00	3	20:00	22:00
Per.	Begin	End												
1	05:00	12:00												
2	14:00	19:00												
3	20:00	22:00												

You can set a maximum of 9 different time schedules. Every time schedule can have a maximum of 24 periods.

LIGHT SCHEDULES

12 Time schedules 1 Time schedules 2 Light schedules 3 Growth curves	122 Light schedules 1 Light schedule 1 2 Light schedule 2 3 Light schedule 3 4 Light schedule 4 5 Light schedule 5 6 Light schedule 6 7 Light schedule 7 8 Light schedule 8 9 Light schedule 9	1221 Light schedule 1 Number of points <input type="text" value="03"/> <table border="1"> <thead> <tr> <th>Point</th> <th>Begin</th> <th>End</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>05:00</td> <td>:04</td> <td>000</td> </tr> <tr> <td>2</td> <td>19:50</td> <td>:04</td> <td>010</td> </tr> <tr> <td>3</td> <td>20:00</td> <td>:00</td> <td>000</td> </tr> </tbody> </table>	Point	Begin	End	%	1	05:00	:04	000	2	19:50	:04	010	3	20:00	:00	000
Point	Begin	End	%															
1	05:00	:04	000															
2	19:50	:04	010															
3	20:00	:00	000															

You can set a maximum of 9 different light schedules. Every light schedule can have a maximum of 48 periods.

GROWTH CURVES

12 Time schedules 1 Time schedules 2 Light schedules 3 Growth curves	123 Growth curves time schedules Growth curves Day 003 1 Master timer 2 Light timers 3 Timers 4 Sequential timers 5 Nest box timer	1231 Growth curve Master timer Growth curve Master timer <input type="text" value="on"/> Number of points <input type="text" value="03"/> <table border="1"> <thead> <tr> <th>Point</th> <th>Day (3)</th> <th>Schedule</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>001</td> <td>1</td> </tr> <tr> <td>2</td> <td>007</td> <td>2</td> </tr> <tr> <td>3</td> <td>014</td> <td>no</td> </tr> </tbody> </table>	Point	Day (3)	Schedule	1	001	1	2	007	2	3	014	no
Point	Day (3)	Schedule												
1	001	1												
2	007	2												
3	014	no												

You can include the time schedules in a growth curve. When the day number is reached, another time schedule will be selected. If **no** has been entered for a breakpoint, the times of the original timer will be used.

Note!

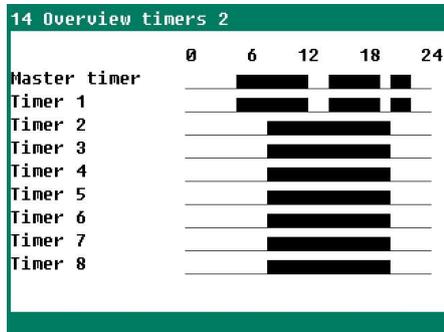
- The day numbers in the curve have to be consecutive numbers.
- If the day number of the first breakpoint is greater than 1, the setting for the first breakpoint will be maintained until the preset day number.

DATE/TIME

In addition to the date and time, you can set the time when a new day starts at "Beginning new day".

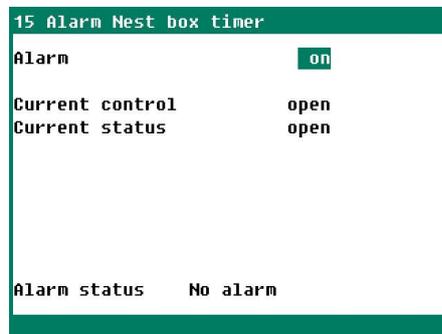
Be careful when changing the "Beginning new day" setting; if this time is in a dosing period the "Conflicting periods" error message will be generated.

TIMER OVERVIEW



Graphic view of the timers.

ALARM

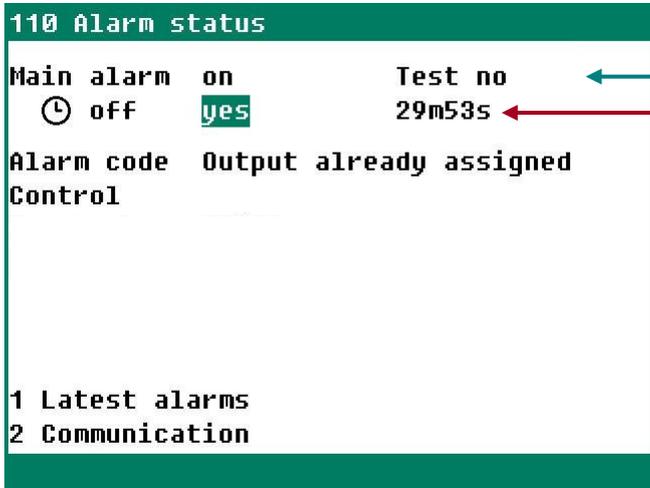


Besides the alarm status, the current control signal sent to the nest box and the nest box status are displayed.

Menu 5 ("Alarm") will show only if a nest box timer has been installed.

ALARM

You can switch the main alarm on or off in this screen. The LED will blink at a steady frequency if the main alarm is off. No alarms will be generated then.



Test (*alarm test*)

Test "yes": This enables you to test the operation of the alarm relay (siren). If you enter "yes" in the **Test** line, the alarm relay (siren) will be switched on for 10 seconds.

You can clear the alarm test time by setting "no" in the **Test** line.

⌚ OFF (*alarm temporarily off*)

Off "yes": This enables you to temporarily switch off the alarm (siren). This does not apply to the hardware alarms; they cannot be switched off temporarily. The main alarm is switched off for 30 minutes (the LED will blink irregularly). The main alarm is switched on automatically again after 30 minutes. The alarm relay will de-energize again, causing an alarm, if the cause of the alarm has not been removed.

You can clear the temporary alarm deactivation time by setting "no" in the ⌚ **OFF** line.

Note NEVER FORGET TO SWITCH THE ALARM BACK "ON" when you have switched this feature off 'temporarily', e.g. to solve a problem. Failing to switch it back on may have adverse effects for people, animals, equipment or property.
Preferably use the ⌚ **OFF** (*alarm temporarily off*) function to solve a problem.

Installation errors such as "Output already assigned", "Incorrect output type", "Input already assigned" etc. have to be solved first before putting the system into operation.

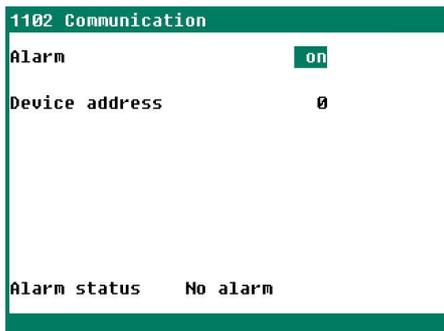
LATEST ALARMS

The last 5 alarm causes which caused the alarm relay to de-energize are stored. The dates and times of the alarms are displayed in addition to their causes.

Alarm 0: The cause of the *most recent alarm* is displayed at "Alarm 0", in addition to the time until which the alarm has been/was active.

Press the down arrow key to display the data of the previous alarms.

COMMUNICATION ALARM



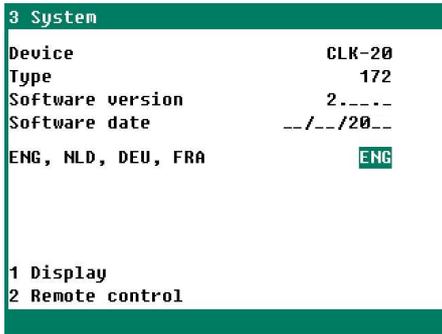
You can switch the communication alarm on or off in this screen. This screen is displayed only with a master device.

"Device address" is followed by the address from which the master device has not received any data.

ALARM CODES

Alarm code	Description
Alarm unknown (xxx)	This alarm code cannot be translated into a text. Note down the number that is displayed and contact your supplier.
Beginning day in period	The "Beginning new day" time is in a period; this is not allowed. The "Beginning new day" time MUST be BEFORE the first period.
Module x changed	Module configuration (inputs/outputs etc.) changed. Read in the module number again.
Wrong input type	The input type set does not match the input type based on which the control can control.
Wrong output type	The output type set does not match the output type that the control can control.
Unknown terminal type	Faulty assignment. The function that you assign to the terminal is not supported by the module.
No communication address	Device address CLK-20 is missing.
Invalid period	<ul style="list-style-type: none"> The times set for a timer must be ascending and the difference between "Begin" and "End" must be at least 1 minute. The following applies to a light control: the begin time + the run time must not be after the next begin time (but the time is allowed to be <i>at the same time</i> as the next begin time).
No input assigned	No input terminal number entered.
No info from houses	<ul style="list-style-type: none"> Software version in CLK-20 is not up to date, update software. The house is not in use.
No output assigned	No output terminal number entered.
Input already assigned"	The input has been assigned to two or more controls.
Module not found	The module number set for the terminal does not exist.
Module not found	Module address not found, check the settings on the module.
Module x reset alarm	Module continues to reset due to a fault, check the module.
Unknown terminal type	The selected type of terminal does not exist.
Invalid input	The input number does not exist on the module.
Invalid output	The output number does not exist on the module.
Conflicting periods	The 'Conflicting periods' error message occurs if 1 or more feed dosing timers have to be active at the same time.
Output already assigned	The output has been assigned to two or more controls.

SYSTEM



This screen shows the device name, the device type (172=CLK-20), the program version, program date and other information.

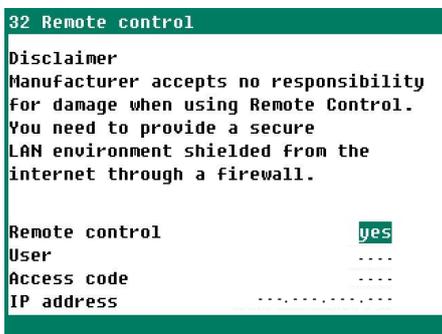
Set the language to ENG (English) for this manual. You can also change the language by pressing and holding functional key F1 while simultaneously pressing the left or right cursor key.

DISPLAY



- Brightness** To set the brightness of the background lighting
- on** To set the brightness of the active situation (operating mode).
 - off** To set the sleep mode brightness.
 - On-time** Number of seconds during which the screen is lit after the last time a key is pressed. Setting 0 seconds does not switch off the screen lighting.
- Cursor left** "Yes": when changing a setting, the cursor is placed on the digit which is the furthest to the left.
"No": when changing a setting, the cursor is placed on the digit which is the furthest to the right.

REMOTE CONTROL



Remote control: See "Application note Remote control: ANote-Remote-N-ENxxxxx"