



Heatime



The new automatic

heat-detection system



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1. Overview

1.1 Introduction – What is Heatime?

Welcome to Heatime - SCR's heat detection system.

Heatime is an advanced system, simple to operate and does not require any previous knowledge of computers.

With Heatime you can detect and keep track of your farm's heat information and save time on observations for heat detection. By tracking your cows 24 hours a day and increasing the percentage of detected cows, Heatime will help you to improve your breeding.

Throughout this manual, you will learn how to efficiently operate & use your Heatime.

We highly recommend you to read this manual in order to use the system at its best performance.

1.2 How Does Heatime Operate?

The Heatime system is based on a continuous monitoring of cow activity and identification of changes in the normal behavior to detect activity patterns related to heat (estrus).

The activity is monitored by a neck tag with unique features. The tag records the cow movements and stores them separately every two hours. When the cow passes underneath the ID Unit, the tag is triggered to send the data to the Heatime Control Box.

The Heatime Control Box consists of a display and keypad to enable the user to retrieve information and control the system functionality. The activity data of each cow is stored in the unit database. Each time new data is received, it is compared with the cow's history in order to detect if any changes occurred.

If the results show that the cow is likely to be in heat, the system will alert the user, and if a sorting gate is installed the cow can be automatically diverted to a treatment yard.

The system enables the user to view the activity history of each cow in a graphical display up to 60 days back. This sufficiently gives the user a good picture of the cow behavior in the last two cycles.

The Heatime system includes the following units:

- Heatime Control Box
- ID Unit
- ID & Activity Tag
- 220V AC/24VDC 2.5A Power Adapter
- Heatime.exe Software & RS232 Cable
- External Indication Light (optional)
- HD10 Sorting Unit (optional)

1.3 Detecting Cows in Heat with Heatime

Once Heatime (HT) is properly installed and all cows (or at least the open ones) are mounted with tags and registered in the system, detecting becomes truly effortless.

The main requirement is to monitor the Heatime's red light and verify that it's blinking. To monitor Heatime efficiently it is important to remember how the system works; the activity data is stored in the tag and once the cow passes beneath the ID Unit (usually when entering the milking parlour) the data is transmitted from the tag to Heatime. This means that you can view a cow in heat, but if the heat had started after the last milking and the cow did not visit the parlour, the heat will still not be detected.

Therefore, the Heatime should be monitored during and after milking to see if there are new cows in heat. When the light is blinking, it signals that there are new cows in heat that can be viewed in the "cows in heat" list. When the threshold is not very high (below 6), it is recommended to view the graphs in order to see the patterns and look for the previous cycle before deciding to inseminate the cow.

1.4 Insemination Timing

Extensive research has been done regarding insemination timing. The most common knowledge today is that the optimal timing for artificial insemination is 6-18 hours from the first signs of standing heat. Our experience shows that the peak of activity has solid correlation with the standing heat. The time from peak activity is indicated in the cows in heat list.

However, in each farm the conditions are different and many other factors influence the timing. We recommend each farmer to use his own experience and consult with the veterinarian for an optimal decision.

1.5 Heatime System Units Diagram

2. Getting to Know Heatime

In order to get the outmost of your Heatime system, the following section introduces the different units and their mode of operation.

2.1 ID Unit

Note! The Id Unit should be installed above a narrow passage (approx 80cm).
To ensure proper reading of the tags the cows should pass under the ID Unit one after the other and not as a group.

The ID Unit is designed to detect the cow, receive and transfer all of its activity data to the Heatime control box. This unit is located at the entrance, exit or any other location in the milking parlor in which cows follow each other at least twice a day. In case the Heatime is used for heifers, a passage which "forces" the heifers to go through at least twice a day must be created for the ID Unit.

Optic Communication - IR

The wireless communication between the ID Units and the tags is optic (IR) as similar to a TV set remote control. All of the other systems in the market use radio frequency (RF) that can be affected by external interference.

The optic communication does not require calibrations and adaptations to changing environmental conditions. The ID unit is simple and ready to install and has a long-term functional reliability.

ID Unit Components

The ID Unit includes a cow sensor, a flashlight and a reception array.

Once the cow passes under the ID Unit, its movement is detected and triggered by a short flash (filtered and almost unseen) to the tag on the cow's neck. This flash stimulates the tag to transmit the activity data to the reception array. The data is then transferred to the Heatime Control Box .

2.2 ID and Activity Tag

The electronic tag is attached with a belt, buckle and weight to the upper side of the cow's neck. This position prevents swinging movements that are possible in other tags that are usually positioned under the cow's neck.

Activity Measurement

Research shows that the cow's steps in the cowshed are not the sole factor for indication of heat. Rubbing movements amongst the cows, body movements and unusual behavior of the cows, are also indicators of the Heatime, especially when cow steps in the yards are affected by the size of the sheds, the topographic conditions, slippery surfaces, amounts of manure accumulated on the ground, and other external factors that undoubtedly affect the cow movements.

SCR tag enables measurement of the activity by a unique sensor, accurately measuring the cow's body movements and its intensity (Activity Meter). This feature is a great advantage over other tags which only count steps (pedometer). This measurement guarantees that the SCR tag keeps track and measures the cow's activity under any condition throughout the entire day.

Activity Data

The activity data is recorded in the tag on a time basis and every 2 hours the activity is measured separately.

This time-based activity data measurement enables to gather much more information on the cow's behaviors and detect cows with relatively weak signs of activity during heat. It also gives the farmer valuable information on peak activity timing in order to inseminate the cow at an optimal time.

The tag is powered by a lithium battery and guaranteed for at least 6 years of operation.








2.3 Heatime Control Unit

Note! The Heatime control box should be located in the milking parlour or at a nearby office. This enables easy access for the farmer to receive the necessary information of the cow's activity & behavior.

The Heatime control box processes, stores & displays all of the data collected in the field and includes a user friendly display for convenient tracking of all of the herd information.

The control panel is easy to use and includes a simple keypad:

The Heatime control panel includes the following keys & functions:

| KEY | FUNCTION |
|---|--|
|  | → Changing contrast of the display. → Scrolling through the cow list. |
|  | → Scrolling forward/ backward through the cow data. |
|  | → Confirming data. |
|  | → Moving back to previous menu. |
|  | → Toggling between graphs |
|  | → Canceling registration of tag or cow number. |
|  | → Zooming in/out on graph. → Quick search of specific cow number |

2.4 Indication Light

On top of the Heatime Control Box, there is a red indication light.

Note! In situations when the office is not near the milking parlour, it is optional to connect an external indication light inside the parlour for indication of deviations in activity.

The indication light will operate when a cow in heat is detected according to the following modes:

| Indication Light Mode | Indicates |
|------------------------|---|
| 1) OFF | → No cow with irregular activity |
| 2) BLINKING | → At least one new cow with irregular activity. |
| 3) ON (after blinking) | → At least one cow with irregular activity after keypad was touched. |

Note! The indication light will shut off when no cows with irregular activity are identified (*approx 24 hours from first identification*).

2.5 Optional HD10 Sorting Unit

There is an option to install the HD10 sorting unit to the Heatime for automatic or manual separation of cows in heat.

The sorting gate enables automatic sorting of cows in heat. With use of the HT menus, it is possible to control in which milking shifts the gate will be active and to set the sorting status for each cow; i.e. to enable or disable the sorting of a specific cow. This feature enables to mark a cow to be separated even when the cow is not in heat.

Since the gate control includes two ID Units and the Heatime is capable of analyzing the activity in realtime if a sorting gate is used, there is usually no need for additional ID Units in the parlour entrance.

Note!

The Heatime can be connected to only one gate

Gate Location

In general, the gate should be located on the cow trail from the milking parlour to the shade. If the parlour is two-sided, then the location should be designed in such a way that cows from both sides will pass through the gate.

Gate Layout

SCR provides general measurements of the gate.

Warning!

The customer is fully responsible for the mechanical design of the sorting gate including safety precautions for both animals & workers.

The sorting gate is constructed from 2 gates:

1. cutting gate (sometime called Texas or Bar gates)
2. diversion gate.

The role of the cutting gate's is to prevent the cow following the diverted cow from following the diverted cow until the diversion is ended. The cutting gate is closed when a cow to be diverted is identified. However, if the following cow is to be diverted as well, the gate will stay open to enable a smooth and fast diversion.

The diverting gate's role is as its name suggests: to divert the cow from the straight path to a special holding area.

Sorting Gate modules

HD10 Control Box: should be located near the gate enabling manual control of the gate if needed. In normal conditions, the switches on the HD10 are set to auto and the control is done automatically by the HT.

ID Units: The ID Units detect the cow that passes through the gate and based on the data received from the HT decide whether to divert the cow. The gate uses two ID Units and in this way the

system can receive information about the next cow before it actually enters the gate. In this manner, if one cow is diverted and the next one should be diverted as well, the gate will stay open and the diversion will be smoother and faster.

Photo Cells: 4 Photo Cells (PHC) are used in the gate, one PHC is used to detect the presence of a cow before the cutting gate and the other 3 are monitoring the presence of the cow in the diversion process.

3. Setting-Up Heatime

This chapter presents the set-up requirements and initial preparations needed before operating your Heatime system.

Note! The Heatime should be installed by a trained technician.
Installation is elaborated in a separate installation guide.

3.1 Power & Electrical Requirements

- 100-240AC outlet
- The system is normally supplied with Power Supply for 24VDC 2.5A (3A if sorting gate is connected)

Note! The Heatime system must be turned on 24 hours a day.

3.2 Operating Environment

- Maximum 600 tags.
- Operating Temperature Range: 0°C (32F) to 40°C (104F).
- Humidity: 10-90 % RH non-condensing
- Shielded from direct rain, splashes and sunlight.
- Storage temperature: -20°C (-4F) to 70°C (158F)

3.3 Attaching the Tags

It is important to correctly attach the tags to the cow's neck in a secure manner in order to avoid them from turning or falling off.

Note! Due to the fact that the tags can be easily transferred, it is possible to attach tags only to "open cows". In such case and if breeding is not seasonal the amount of Tags needed is only about 40% of the herd.

To securely attach the tag to the cow's neck:

- Ensure that your tag assembly kit includes the following parts:
 1. ID & Activity Tag

2. Belt, Weight & Buckle
3. Rectangular Ring & Rubbers
4. Buckle Opener (optional)

- Open the outside locker of buckle using the buckle opener or a large flat screw driver.
- Mount the belt in such way that the tag located on the upper left side of the neck and in vertical (the head of the tag is facing straight up).
The weight should be directly under the neck (see Pic. 2).
- Fasten the belt around the cow's neck; leave a 2.5 cm gap between the belt and the neck.
- Lock the buckle with your fingers. Make sure the buckle is properly locked on both sides.

The easiest way to check that the gap is right is to place 2 fingers on top of the cow's neck and under the belt.

3.4 Adding Tags to the System

Each tag has a unique number printed on the front side of the tag (for example BF12345). This number includes the manufacturing datecode printed as a 2 letter combination (BF) followed by the tag number (12345).

For keeping track of the tag numbers:



Keep an updated records of all tag numbers and cows wearing them. By fill in the datasheet (see appendix 10- Tag Attachment Sheet) and update it when tags are transferred.


For deleting/transferring tags, see chapter 4.

Note! When entering the tag numbers into the system, use only the number and disregard the date code letters.

To add tags to the system:

1) Attach the tag to the cow and release the cow. Once the cow passes under the ID unit for the first time, the tag will be automatically entered into the system. When the system identified a new tag it received "0" (Zero) as cow number.

2) Enter the cow list by pressing  →  from the main menu. All the new tags will appear with 0 (zero) as cow number, on the top of the list. Now you can browse in the list and add the cow number to each of the tags.

3) When the cursor (the * on the left side of the list) is pointing to a cow with 0 number press  for updating the cow number.







4) Enter the cow number, press  and you will return to the cow list.

5) An additional option is to follow the procedure in section 6.2.

3.5 Operating Heatime for the First Time

1. Plug in the power supply after assembly of the entire system.

The system has no ON/OFF switch and is constantly connected to power.

2. Immediately after connection to power, the system will beep a few times and a BAD DATE message will appear on the screen.
3. Press .
A warning message - "changing the date can erase the activity data" will appear on screen.
4. Press  again to confirm.
5. Enter the password **6285** and press .
6. If required, press  to update the time and date and press  to confirm. (info on updating date will follow)
The SCR logo will appear on the screen.
7. Press  again to go back to the main menu.
8. To check if the system is functioning, it is recommended to take one tag and pass it under the ID Unit.
The ID unit should flash.
9. If the system is installed properly, the tag number should be automatically added to the system.

4. Starting to Use Heatime

After Heatime is set-up and all of the tags are entered into the system,

it must be running it for at least one week in order for it to collect data before it can start to detect cows in heat.

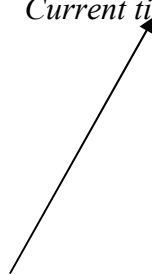
The following sections will present the basic operation of the Heatime display.

4.1 Using the Heatime Display

Once the system is installed and the power supply operated, the date & time that is saved in the system will appear on the opening display:

Current date in system

Current time in system



Note! In case the Heatime system was disconnected to power for more than 24 hours, an incorrect date & time may appear on the opening display.
See how to correct the date & time in section 6.1.2- Setting the Time & Date.

4.2 Entering the Main Menu

To enter the Main Menu Display, press any key.

Note! The keyboard is automatically self-locked in order to prevent accidental changes by untrained people.
To release the keyboard, press **9**.

The main menu has 4 options:

1. Heat Information
2. Tags & Cow Problems
3. List Cows
4. Utilities

The general herd information appears above the main options as of the following:

no. of cows in the system

Gate status - separated
(active) or not separated

no. of cows in heat

no. of cows
with low
activity

no. of cows that
were not identified
for over 25 hours

no. of bad tags
(malfunctioned)


5. Using Heatime Efficiently on a Daily Basis

For using the Heatime efficiently, you should follow the red light on the top of the Heatime control box. If the red light blinks, it means that there is at least one new cow in heat since you last entered the "Heat Information" option from the main menu. As long as at least one cow is in heat, the red light will be constantly on and the graphs can be viewed.

Viewing the "Heat Information" enables you to look at the cow activity in details and decide whether to inseminate the cow or not.

If a sorting gate is installed and the settings are matched, than a cow in heat will be automatically sorted.

Verifying if a Cow is in Heat

If the red light is blinking, simply press  from the main menu to scroll through all cows with high activity.

For each cow you will see the STD-8 60 days graph and additional info on the top of the screen (see 5.1 for details)

If activity is very high ($\text{STD-8} > 7$), than the cow is most likely in heat and usually no further analysis is needed, simply right down the cow no. and press the right arrow to scroll to the next cow.

However, if the indication is weaker and closer to the threshold or if there are other reasons for doubt (like if the cow was already positively tested for pregnancy), than it is useful to take the following steps before take the decision:

(for a detailed explanation of using the graphs, see 5.1)

- View the STD-8 graph in 60 or 30 days and try to see if the cow had a previous cycle approximately 21 days before – if yes, than this is a good indication.
- View the STD-2 graph in a 4 days resolution to verify that the cow was more active then usual for at least 6 hours (3 bars in the relevant hours should be significantly high). High activity that lasted less then 6 hours is usually not related to estrus.
- Check the average herd activity (see the figure below) and if it is high than it may indicate that the entire herd went through some rapid change that may have triggered a false alarm.

Transferring a Tag from One Cow to Another

One of the useful advantages of the Heatime in herds that breed all year round is the possibility to purchase tags to monitor only the open cows. This requires transferring the tags amongst cows on a regular basis.

It is important to follow a few simple guidelines for ensuring proper functioning of the Heatime:

- Attach a tag to a cow as early as possible after calving. This will allow you to track the first cycles and decide when to inseminate or to detect a problem that requires veterinarian intervention. Remember that the Heatime requires at least one week of monitoring the cow activity before any changes can be detected
- Remove the tag from the cow after it was positively tested for pregnancy.

There are two ways to transfer a tag:

- a. Look at the cow list and write down the cow & tag you want to transfer. Then physically transfer the tag to the new cow and update the cow number according to the steps described in 6.2






Delete the cow (or tag) from the system as explained in 6.2 and then physically transfer the tag to a new cow. When the cow will go under the ID Unit for the first time the tag will be added back to the system with 0 (zero) as a cow number. Then you can simply update the cow number directly from the cows list as described in 5.3.1

5.1 Displaying Heat Information Graphs

To view the list of all cows in heat, press **1** .
The data of the first cow will appear:

| | |
|----------|----------------------------|
| Cow No. | Tag No. |
| Activity | |
| | Herd activity |
| | No. of hours since last ID |

Once the graph of the first cow is shown number of option are available:

| KEY | FUNCTION |
|---|---|
|  | → Changing contrast of the display. |
|  | → Scrolling between cows in heat |
|  | → change type of graph (8 STD, 2STD and raw data) |
|  | → Change the time scale of a graph (Zooming in/out) |
|  | → Moving back to previous menu. |

5.1.1 Viewing Different Graphs

There are 3 different types of graphs that can be viewed in three different time scales of presentation and they are:

1) The 8 hours graph:


This graph is the main tool to detect cow in heat. The graphs shows the cow's irregular activity calculated over an 8 hour period in the 24 hour cycle.

When activity is displayed on this graph that is equal, higher than the threshold value, the system will alert for a cow in heat.

Note! While viewing the 8 or 2 hours graph, press  to receive the upper & lower threshold lines.
Press  again to erase the lines.

2) The 2 hours graph:


This graph is similar to the 8 hours graph, but here the deviation is calculated over a 2 hour period in the 24 hour cycle. In this graph we can see the duration of the deviation in the cow's activity. This graph assists in disqualifying cows for insemination that showed irregular activity over the 8 hours graph, but in the 2 hours graph there appeared to be a high level of activity for a short period of time.

Note! While viewing a graph, continuously press  to receive the 2 hours graph in the past 4 days.
This graph can help you to evaluate the duration of the heat and when it started.

3) The raw activity graph:

This graph presents the data as it was received from the activity tag with no calculations of the standard deviation. In this graph you can check the cow's activity level and tag's proper operation. This graph is usually helpful to ensure that the data is normal and not for detecting heats.

The graphs can be viewed in different time frames (and resolution):

Press  to scroll the different options:

- last 60 days (8h STD, 2h STD and Raw Data)
- last 30 days (8h STD 2h STD and Raw Data)
- last 10 days (8h STD and Raw Data)
- last 4 days (2h STD)

5.2 Listing Cow & Tag Problems

This menu provides the user with useful information for resolving 4 situations of cow & tag problems:

- 1) Unidentified cows.
- 2) Low activity of cows.
- 3) Tags with Irregular Activity
- 4) ID Units Statistics

For the display of cow & tag problems, press .

5.2.1 Viewing Unidentified Cows

In these lists the system keeps track of the time since the last identification of tags. . This option can assist in detecting faulty tags or malfunctioned ID Units.

To view the options of unidentified cows, press  → .

The 3 optional time spans menu that will open up in which a cow was **NOT** identified are:

- 6 hours
- 12 hours
- 24 hours

For example: if your cows are milked three times a day with 8 hours between milkings, than immediately after milking and if there aren't any dry cows in the system all three lists should be empty. However, if you check the lists just before the next milking (more than 6 hours from the end of the last milking), than all cows will appear in the 6 hours list but the 12 and 24 h lists will be empty.

Note! Pay attention to the current time & the last time of identification before you select the time span.

5.2.2 Viewing Cows with Low Activity

This menu displays information on cows with a low level of activity and should be entered if one exits.

To view information of cows with low activity, press **2** → **2**.

Note! When a cow show low activity Check out the reason for it, and if necessary consult your veterinarian.

5.2.3 Detecting Malfunctioning Tags

In order to detect malfunctioned tags, this menu displays tags with irregular activity caused by an internal failure in the tag.

To view tags with irregular activity,

- 1) To view the graph, press **2** → **3**.
- 2) To switch to the raw activity graph, press **FUNC** twice.
- 3) Check the raw activity graph for:
 - very raw activity (close to zero)
 - period of zero activity

In such cases the tag should be replaced. If you have any doubts, consult with your dealer.

5.2.4 ID Units Statistics

If your system includes more than one ID unit, this option can assist in determining whether there is a problem with one of them.

To view the ID Unit Statistics, press **2** → **4**.

We can see all of the identifications at every unit from 24:00 and until the current time.

You may suspect a malfunction in your ID unit when:

- No heat indications occur.
- Many cows were not identified.
- One ID unit identifies a very small amount of cows compared to the second ID unit.

This is based on the assumption that the two stands usually identify the same amount of cows, meaning the stand with the small amount malfunctions.

5.3 Viewing Cow & Tag Lists

This menu enables the user to view, sort and select heat information about the herd.

To view the Cow & Tag Lists options, press **3** on the main menu.

5.3.1 Listing All Cows

This option enables you to view & examine the entire cow list and the specific activity of each cow by the display of activity graphs according to the following:

- To view the entire cow list, press **3** → **1**.
- The * on the left hand side serves as a curser and points to the current cow.
- To scroll through the pages of the cow list, use the right/left arrows
- To shift back & forth to a cow listing, use the up/down arrows and the curser will move accordingly.
- To reach a specific cow directly, press **SGR**, type in a cow number and press **ENTER** to **confirm**.
- If there is a tag with 0 as a cow number (tags that are not associated with a cow) you can associate a cow to this tag by moving the cursor to the tag and press **FUNC**. Type in the cow number and press **ENTER** to confirm. (available from s/w ver. 1.36)
- To enter the graph of a cow marked by the curser, press **ENTER**.
Once a graph is displayed of a specific cow the options are similar to the options described in paragraph 5

5.3.2 Blocking Cows

The block cow feature enables you to filter out certain cows from the list of cows in heat even if the activity will be high. This is useful for cows that are not in interest for any reason like cows for culling for example.

To change the block status (Y/N):

- 1) Press **3** → **1** to enter the list all cows options.
- 2) Shift to the cow listing you want to block by using **up/down arrows**.
- 3) Press **0** and select **Y** (yes) or **N** (no) for the block mode.

The block status appears in the UseA column and is divided to:

- Non Blocked Cows- represented by N and will not appear on the blocked cows list.
 - Blocked Cows- represented by Y and will appear on the blocked cows list.
- 4) To view the blocked cows list, press **3** → **2**.
 - 5) To view the activity graph of each cow, follow the instructions above in section 3.1.

5.3.3 Selecting a Tag Number

To select a specific tag number and view its information and activity graph, press

3 → **3**.

5.3.4 Displaying a Group Activity Graph


To enter the group activity graph option, press  →  . And then  for the group No. (always one group)

To scroll through the different graphs, press  .

- Num: displays the number of cows in the system for the last 60 days. The bar height represents the number of cows in the system on that day.


The next 4 options show the average activity of all cows in the system. This information can be useful to detect changes in the group activity for identifying changes that are not relevant to heat of a specific cow.

- Raw: presents the average raw activity of the group.
- Prcnt8: presents the deviation of the group average activity in percents over 8 hour window.
- Prcnt2: presents the percentage deviation of the group average activity in percents over 2 hour window.
- STD-2: presents the deviation of the group average activity in standard deviation over 2 hour window.



As in other graphs it is possible to zoom in and view shorter periods of each graph by pressing the  button.

6. Utilities

This menu includes all of the necessary tools for you to maintain & update your Heatime system for proper and convenient operation.

To view the Utilities menu, press  on the main menu.

6.1 Setting Advanced Parameters

To change the advanced parameters of your Heatime system, press  →  .
The following options will appear:

6.1.1 Setting the Activity Thresholds

The deviations in the cows activity are compared to a define thresholds in order to determine if a cow is likely to be in heat. Another threshold (negative) for activity below average is used to determine if a cow is sick.

This option enables you to change the thresholds.

Note! The default activity threshold is 5.5, and for low activity is (-) 4.0.

To set/change the activity threshold value:

- 1) To access the set activity thresholds option, press **4** → **1** → **1**.
- 2) Type in the Heat Alarm Threshold value and press **ENTER**. (or just press **ENTER** to leave current value)
- 3) Enter the Low Activity Threshold value and press **ENTER**.
- 4) Set the level of group effect and press **ENTER**.
The group effect value will determine the influence of the group (herd) activity on the standard deviation of the single cow (do not change this value without consulting with SCR).
- 5) Press **ENTER** to confirm value 4 in the heifer Station.
Do not change this number!!
- 6) To delete/change an incorrect value, press **DEL**.

Note! To insert a heat alarm threshold value with a decimal point such as 4.8, press 4 and then 8.

In software versions older than 1.36, press **SCR** for inserting decimal point

6.1.2 Setting the Time & Date

If the system is not connected to power for more than 24 hours, the date & time may change. This menu enables you to access and change the time & date of the Heatime system.


Note! It is important to occasionally check that the time & date are correct.



To change the date & time of the system:


- 1) Enter the Time & Date menu, press **4** → **1** → **2**.
- 2) To change the date & time, press **ENTER**.
You will be asked - "Change Time or Date"

3) To confirm enter the password **6285** and select one of the following options:

- 1) Change Time of Day
- 2) Change Date

To return to the previous menu at any time, press  or:

4) Press  to change the date or time or  to confirm the exiting time & date.

To return to the previous menu at any time, press .

6.1.3 Selecting the Alarm Buzzer Mode

This option includes a selection of alarm buzzer modes of the Heatime system.

To select your appropriate buzzer, press  →  → , and the following options will be displayed:

| Option No. | Buzzer Mode | Function |
|------------|------------------------------|---|
| 1 | Only Keyboard (default) | Buzzer occurs only when pressing the keys. |
| 2 | Any Identified Cow | Buzzer occurs every time a cow is identified. |
| 3 | Heat Alarm | Buzzer occurs only when a cow in heat is identified (the buzzer will be different than in option no. 2) |
| 4 | Any ID Cow + Heat Alarm | Options no. 2 and 3 |
| 5 | Any ID Cow + Long Heat Alarm | Identical to option no. 4, but the buzzer will be stronger and longer. |

6.1.4 Groups and ID Units

In this option you can associate the exit number of the ID unit to a specific group number. This option is for special cases and normally should not be changed.



6.2 Updating Cow & Tag Numbers

You can add new cows/tags or change the cow number of an existing tag by entering the following menu:

To enter new cow & tag numbers into the system:

1) Press  → .

2) Enter the tag number and press .

- 3) Enter the cow number and press .
- 4) If you change the cow number of an existing tag, you will receive a message: "Cow number exists, press SCR to erase previous data."
- 5) If you enter a new tag and cow you will receive a message "Tag not found, press SCR to confirm".
- 6) To confirm, press . An "OK" message will appear on the screen

Note! Changing the cow number of an existing tag will erase all of the history associated to that tag.

6.3 Advanced Options

This menu enables you to change parameters of the Heatime interface and data.

To view the advanced options, press  → , and the following options will be displayed:




- 1) Change Language
- 2) Delete Cow
- 3) Delete Tag
- 4) Setting Activity Status
- 5) Technician Options

6.3.1 Changing a Language

It is possible to select the language of the Heatime's menu.

Note! Changing the menu language, will not affect the data




To change the language:

- 1) Press  →  → .
- 2) Select the appropriate language

6.3.2 Deleting a Cow

When a cow is transferred out of the herd or in other situations such as illness etc., you may want to delete a cow from the system. This is also useful if you want to replace a malfunctioning tag. In this case, delete the cow, enter a new tag and associate it with the cow.

To delete a cow from the system:






- 1) Press  →  → .
- 2) Enter the cow number and you will receive a message: "To confirm delete press SCR. To cancel, press ESC."

- 3) Press  to confirm deletion or  to cancel and return to the main menu.

6.3.3 Deleting a Tag

This function is identical to the "Delete a Cow" function (6.3.2). It is useful when you know the tag number rather than the cow number.

To delete a tag from the system:







- 4) Press  →  → .
- 5) Enter the tag number and you will receive a message: "To confirm delete press SCR. To cancel, press ESC."
- 6) Press  to confirm deletion or  to cancel and return to the main menu.

Note! To transfer a tag from one cow to another, add the new cow number and relate it to the tag. This will delete the old cow number from the system.

6.3.4 Resetting the Heat Alert Status

If you would like to reset the heat alert status of enable or block activity for all of the cows in the Heatime system, you may do so in this option.

To reset the heat alert status:

- 1) Press  →  →  and you will receive 2 options:
- a) Enable alert of activity for all cows.
b) Block alert of activity for all cows.
- 2) Select **a)** or **b)**.
You will receive a message: "Do you want to enable/block alert for all cows."
- 3) Press  to confirm.
- 4) To check if the new status has been updated, enter the blocked cows list by pressing  →  from the main menu.

6.3.5 Technician Options

This menu is for use of technicians for configuration of the system.

Note! This menu is mainly for technician use and in order to access it a password is needed. Do not attempt to make any changes unless you know what you are doing !

One exception is option 6 which enables to eliminate the beep when a keypad is pressed.

6.4 Sorting Gate (Optional)

The Heatime has an optional sorting (separation or darting) gate.

The gate enables to automatically sort cows in heat to prevent late detection or sort cows as needed for other purposes like veterinarian treatments. The gate's functionality enables the operator to set a for each (or all cows) and determine the way the cow will be treated when passing the sorting status gate. It is also possible to set a general rule for the gate activity period (such as only during morning milking but not on Sundays). Therefore, a cow will be sorted only if the cow meets the criteria according to its status and if the gate is enabled.

A manual operation is also possible using the HD-10 control box.

6.4.1 Sorting Status



The sorting statuses are relevant only if the optional sorting gate is installed.


There are different sorting (separate) modes that can be applied to each cow.

- **Activity** - A cow with High activity will be sorted automatically
- **Once** – The cow will be sorted next time she will go through the gate.
- **Always** – The cow will always be sorted.
- **Never** – The cow will never be sorted.
- **Specific Day** – The cow will be sorted on a given day and shift.

To set the sorting status of a specific cow :

1) Press  →  to enter the cow list.




2) Use the  arrows to reach the requested cow.


3) Press shortly on  and select the requested method of sorting.

Once you have determined which cows are to be separated and according to which status, you may view the following lists:

6.4.2 Viewing Separated Cows

Once you have determined which cows are to be separated, you may view a list of separated cows.

To view the list of cows, press  →  → .

To view the list of cows that are never separated, press  →  → .

6.4.3 Setting Sorting Dates

It is possible to separate the cows according to specific days of the week and at certain times.

To set the separation days/time, press **4** → **4** → **3**

6.4.4 Setting Sorting Status to All cows

If you would like to set the sorting status for all of the cows in the Heatime system, you may do so in this menu.

To reset the sorting status:

1) Press **4** → **4** → **4** and you will receive 4 options:

- 1) Activity
- 2) Once
- 3) Always
- 4) Never

2) Select the preferred option.

You will receive a message: "Press SCR to confirm for all cows".


3) Press  to confirm.

4) To check if the new sorting status has been updated, enter the cows list by pressing **3** → **1** from the main menu.

6.4.5 Gate Control

The gate control defines the operational mode of the sorting gate. In order to enter the gate control menu:

1) Press **4** → **4** → **5**.

2) Enter the password 6285 and press .

You will receive the following 6 options:

- 1) Automatic gate + activity
- 2) Manual: Sorting
- 3) Manual: Not Sorting
- 4) Manual: Entrance Open
- 5) Manual: Entrance Close
- 6) No Gate

Option 1 is used in a normal working mode and option 6 is selected when no gate exists.







Options 2-5 are used in order to control the gate manually for debugging purposes only. For actual manual operation, there is a control unit near the gate.


Warning! Do not operate the gate control if there is no eye contact with the gate!

7. Troubleshooting & Problem Solving

There are a few problems that you may encounter when using your Heatime system and HD10 Sorting Unit. The following troubleshooting table will assist you in resolving these problems yourself or will refer you to a service technician:

7.1 Heatime System





| No | Symptom | Possible Causes | Solutions |
|----|--|---|---|
| 1 | Display shut off | → No voltage | ! Check 220/110V. ! Check power supply. ! Check 24V connections. |
| 2 | Display keys locked + loud buzzer sound. Display light off. | → No key pressed for over 5 minutes. | ! Press  to unlock keyboard. |
| 3 | Incorrect display date. | → Heatime was disconnected from power. | ! Press  →  →  to change date. |
| 4 | ID Unit constantly attempting to ID. | → Malfunction in ID Unit | ! Call technician.  |
| 5 | Indication light doesn't blink with detection of irregular activity. | → Faulty led. | ! Call technician.  |
| 6 | Display contrast too light/dark. | → Temperature changes affect display. | ! Short presses on up/down arrows till contrast is adjusted. |
| 7 | Tag fell off of cow. | → Buckle is not fastened correctly. | ! Ensure proper fastening of buckle. |
| 8 | Tag not identified. | → Tag not attached properly to cow. → Tag is not properly coupled to cow. → Malfunction in tag. | ! Check tag positioning. ! Check coupling of tag. Replace tag |
| 9 | Cows in heat were not identified by system. | → The activity threshold value is | ! set the activity threshold at a |

| | | | |
|--------|---|--|---|
| | | too high. | lower value. For example 4.8 instead of 5.0 |
| | | → Tag is mount on the cow for less then a week | |
| 1 0 | Cows not in heat were identified by system. | → The activity threshold value is too low. | ! set the activity threshold at a higher value. |
| 1 1 | Bad date message displayed. | → Incorrect date in system. → 1/3 of the cows or more are not identified. | ! Update date and time. ! Check the tags/ID unit. ! Delete cows that are not identified by the ID unit (dry-offs, taken out) |
| 1 2 | Over-alert of buzzer. | → The buzzer is configured for every ID of cow. | ! Reselect the alarm buzzer mode. |
| 1 3 | Many cows are not identified for more then 24 hours. | → Improper installation of ID unit. → Malfunction in ID unit. | ! ID unit is positioned too high. ! The passage for cows is too wide. ! Call technician.  |

7.2 Heatime.exe Software

| No | Symptom | Possible Causes | Solutions |
|----|-----------------------------|--|--|
| 1 | Communication error. | → Cable not connected. → Damaged Cable. → Wrong serial port. → Damaged serial port. → Incorrect Baud rate. | ! Connect RS232 cable. ! Select correct serial port. ! Reset the baud rate according to the serial port settings. |

7.3 HD10 Sorting Unit

| No | Symptom | Possible Causes | Solutions |
|----|--|--|--|
| 1 | Cows in heat but are not separated. | <p>→ Cow alert status blocked.</p> <p>→ The separation dates are not defined properly.</p> | <p>! Change alert status from N (block) to Y (enable).</p> <p>! Check power supply.</p> <p>! Check 24V connections.</p> |
| 2 | Unwanted cows are separated. | <p>→ Wrong positioning of ID unit.</p> <p>→ Entrance gate is too far off from separation gate.</p> | <p>! Call technician. </p> |
| 3 | Entrance & separation gate work only in manual mode. | <p>→ The gate is not defined as active.</p> <p>→ Cable between control unit and separation control is disconnected.</p> <p>→ Improper connections.</p> | <p>! Call technician. </p> |
| 4 | ID unit at gates does not work | <p>→ Malfunction in ID unit.</p> <p>→ Cow detector not connected properly.</p> <p>→ Malfunction in cow detector.</p> | <p>! Call technician. </p> |
| 5 | The sorting unit shuts off and turns on while working. | <p>→ Improper power supply.</p> | <p>! Call technician. </p> |

8. Heatime.exe Software

8.1 Introduction

The Heatime is supplied with a RS232 cable and software for PC equipped with the Windows Operating System 98 or XP .

This software module provides the user with additional functionality and enables to:

- Download data from the Heatime control and use a PC in the office on a regular basis instead of the Heatime display.
- Download all of the information onto your PC temporarily, and afterwards upload the data back to your Heatime control unit in case of repair.
- Update new software versions and patches for your Heatime.
- View, sort and print cow lists and graphs at the ease of your Windows O/S.

8.2 Setting-Up the Heatime.exe

In order to operate your Heatime.exe software, you must first follow the steps below to connect your Heatime control unit with the RS232 Serial cable to the serial port of your PC:

- 1) Turn on your PC and plug in the RS232 cable into the serial port of your PC and into the RS232 connector of your Heatime.

The default of your serial port is COM1.

Note! If your PC does not include a Serial port, it is possible to purchase a USB to RS232 serial interface adapter.

- 2) Run the Heatime.exe software. If the communication is OK, than the Heatime database will appear on the screen. If not, you will receive a message "communication err".

- 3) If the connection cable is connected to a serial port different than COM1, change the serial port by selecting:

Settings→ Advanced Settings→ Password→ Settings→ correct serial port.

- 4) Select Utilities→ Check Communication in order to verify the communication between the Heatime control and the PC.

- *You will receive the message: "Communication OK"*
- *If you receive a "communication error" message, see the **troubleshooting** section above.*

8.2.1 Changing the Baud Rate

The Heatime has two different PCB versions:

- Old version – 38k
- New version (software versions 1.xx) – 115k

The baud rate of the RS232 serial port must be set according to the PCB version. **To change the baud rate select:**

Settings→ Advanced Settings→ Password→ Settings→38k or 115k

8.2.2 Updating the Heatime with the Heatime.exe

It is possible to use the Heatime.exe to update your Heatime with new software versions or patches.

To install the software update:

- 1) Click Settings→Advanced Settings→Password→Settings 38k/115k.
- 2) Select the requested file and confirm by Open.

The update will be installed and the Heatime will restart with the new version.

8.2.3 Backing-up Data from the Heatime to a PC

It is possible to back-up the Heatime's database onto a file in your PC.

To backup the database:

- 1) Click Backup & Restore→Backup.
- 2) The file will be saved in C:/Heat/ in accordance to the date of backup.

8.2.4 Restoring Data

It is possible to restore the data to Heatime. File can be also from another Heatime device.

Note! Restore Data should be done by a certified technician only.

To restore data:

- 1) Click Backup & Restore→Restore
- 2) Select the intended data file for restoring.

9. Wiring Diagrams

9.1 Heatime External Wiring Connections

Heatime External Wiring Connections with Gate Switch

Heatime Drafting Separation Gate Control Connection up to 20m

Heatime Drafting Separation Gate Control Connection up to 200m

