User manual

For operation and maintenance

Getting started InTime and RealTime Heat detection

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nedap®

Nedap Agri - P.O. Box 104 - 7140 AC Groenlo - The Netherlands - T (+31) 544 471 444
F (+31) 544 466 839 - info@nedap-agri.com - www.nedap-agri.com

Preface

This manual describes the operation and maintenance of the Heat detection system.

Conventions

Abbreviations used in this manual:

IT	InTime (used for lactivator type)
RT	RealTime (used for lactivator type)
VP	V-pack

Pictograms

This pictogram indicates an important subject. Please pay extra attention here.

More information

- Later versions of this document will be posted to the Nedap Agri Website, as required. Please visit our website (http://www.nedap-agri.com) for more information or to find related manuals.

Version overview

Manual version 1.0 / August 2011	First release.
Manual version 1.1 / October 2011	RealTime FCC and IC warning

For RealTime lactivators only: FCC ID: CGDRTLACT
IC: 1444A-RTLACT and IC: 1444A-VP4101

Complance statements (part15.19)
This device complies with part 15 of the FCC Rules and to RSS210 of Industry Canada.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareil se conforme aux normes RSS210 exemptés de license du Industry Canada. L'opération est soumis aux deux conditions suivantes:
(1) cet appareil ne doit causer aucune interférence, et
(2) cet appareil doit accepter n'importe quelle interférence, y inclus interférence qui peut causer une opération non pas voulu de cet appareil.

Warning (part15.21)
Changes or modifications not expressly approved by party responsible for compliance could void the user's authority to operate the equipment.
This in particular is applicable for the antenna which can be delivered with the XQMKII System.

RF Exposure (OET Bulletin 65)
To comply with FCC RF exposure requirements for mobile transmitting devices, this transmitter should only be used or installed at locations where there is at least 20cm separation distance between the antenna and all persons.

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1. Introduction and description

The behaviour of an animal in heat is quite different from the normal behaviour. The lactivator activity measurement monitors the changes in the behaviour of the individual animals day and night and it will detect animals that are in heat.

The activity of the animals can be with measured with **InTime** or **RealTime** lactivators. The different types of lactivators are used with different types of antennas. The antenna in the barn receives the activity information from the InTime or RealTime lactivator of the individual animals. The Velos program determines the activity increase of an animal. If an animal is a lot more active than usual it will get an activity attention. The red light on the process unit will indicate this attention. The Velos program displays overviews of animals with a clear increased activity on a PC screen or on a mobile phone.

1.1. The InTime Lactivator system

The InTime Lactivator system consists of one or more antennas and a process unit connected to a PC or network. This system works with InTime lactivators only.

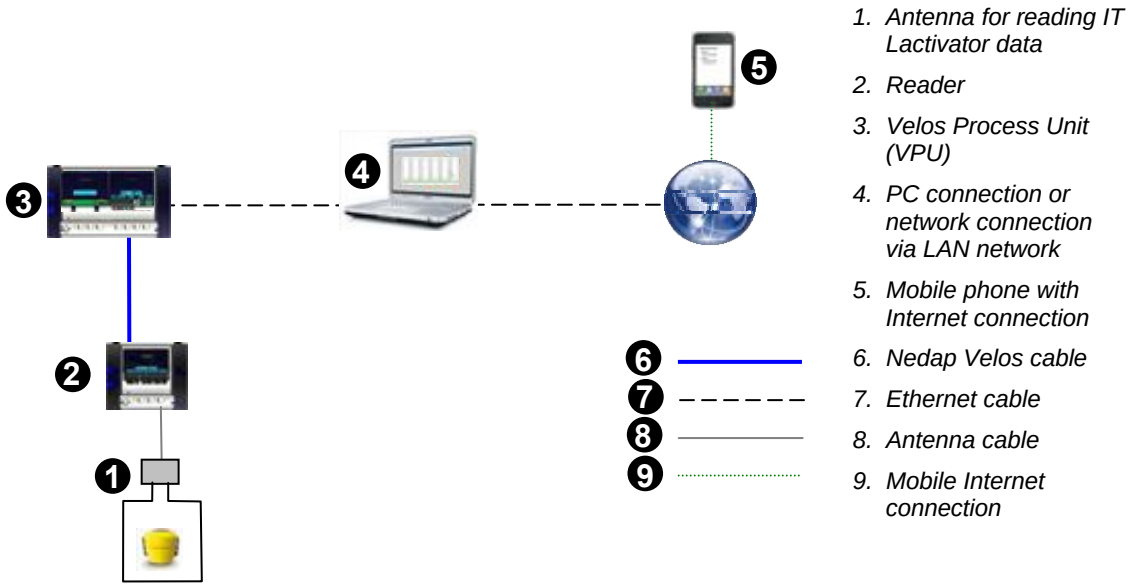


Figure 1. Overview InTime Lactivator system

1.2. The RealTime Lactivator system

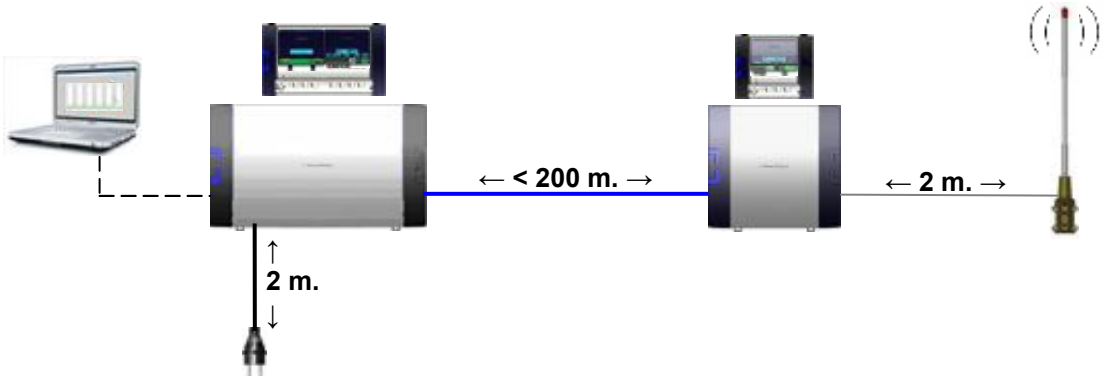
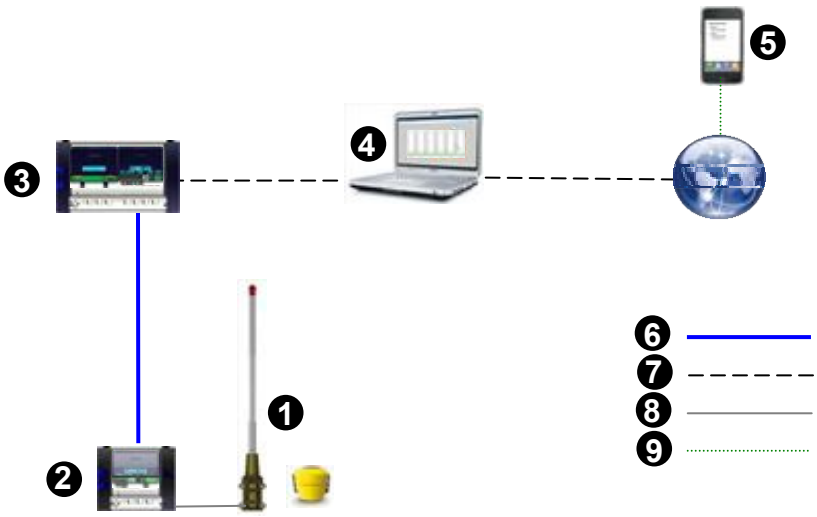


Figure 2. Overview RealTime Lactivator system with cable distances

The RealTime Lactivator system consists of one or more antennas and a process unit connected to a PC or network. This system works with RealTime lactivators only.



1. *Antenna for reading RT Lactivator data*
2. *Reader*
3. *Velos Process Unit (VPU)*
4. *PC connection or Network connection via LAN network*
5. *Mobile phone with Internet connection*
6. *Nedap Velos cable*
7. *Ethernet cable*
8. *Antenna cable*
9. *Mobile Internet connection*

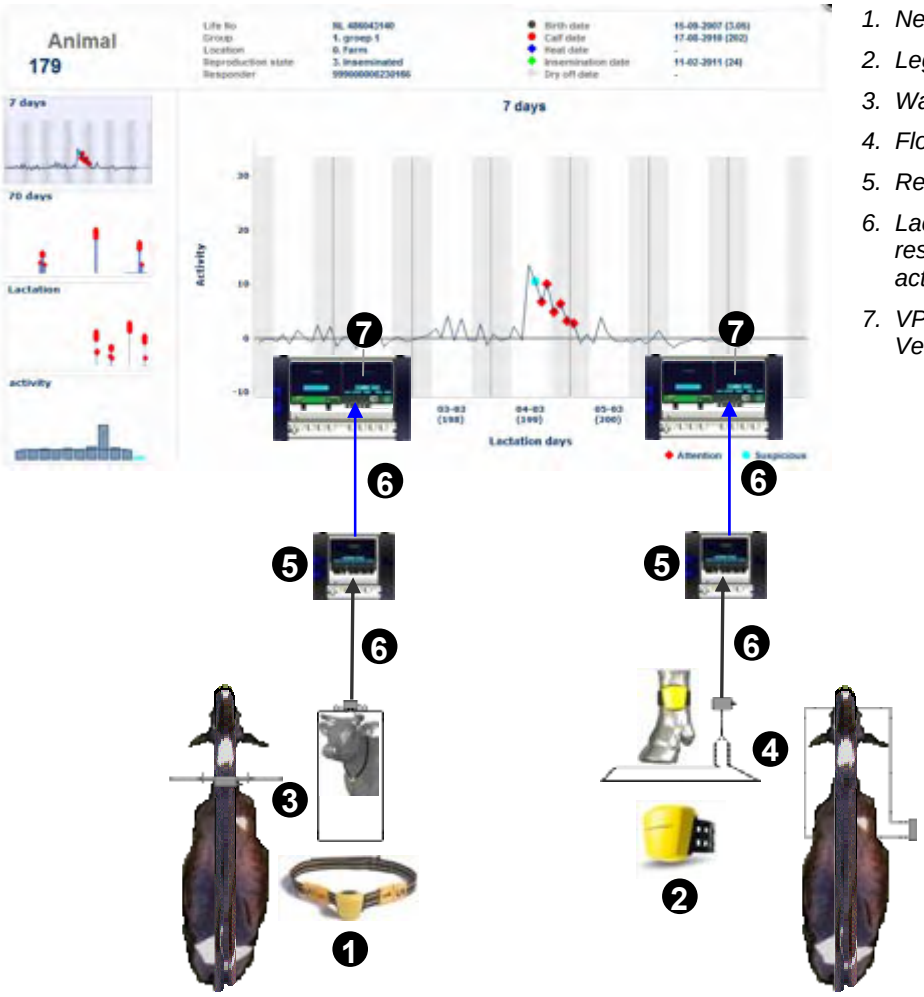
Figure 3. Overview RealTime Lactivator system with cable types used

2. Working

The lactivator activity measurement can work with **InTime** lactivators and InTime antennas or with **RealTime** lactivators and RealTime antennas.

2.1. Working InTime Lactivator system

The antenna identifies animals with an **InTime** lactivator that walk through the antenna field. When an animal is identified in the antenna, the reader sends the animal responder number and the activity information to the Velos program.

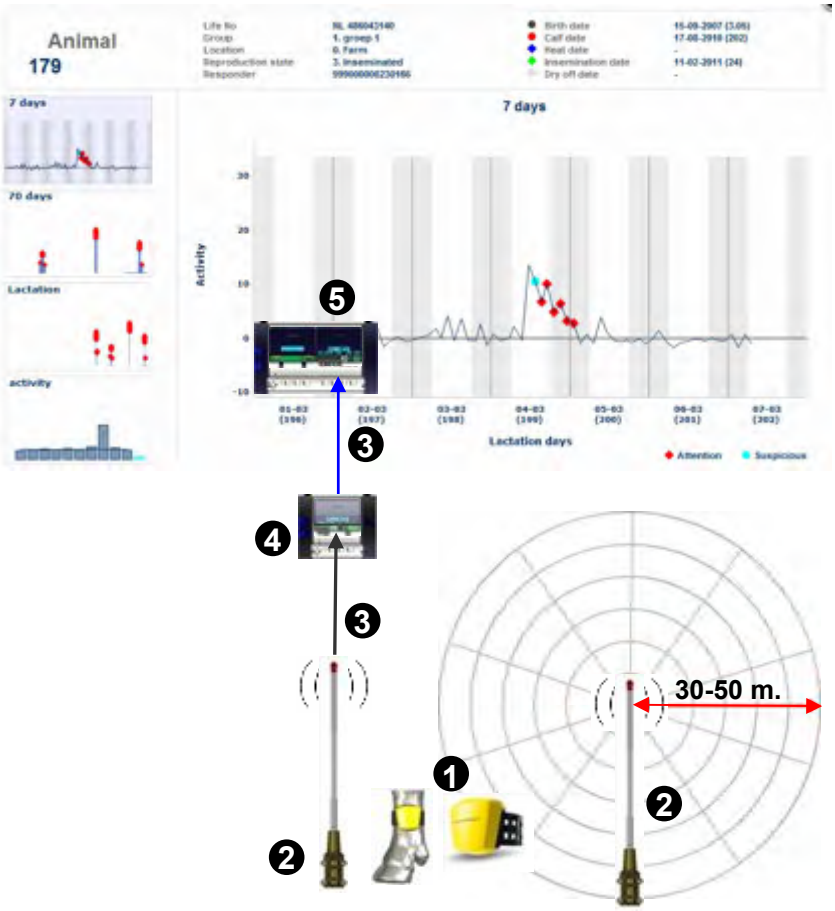


1. *Neck IT Lactivator*
2. *Leg IT Lactivator*
3. *Walkthrough antenna*
4. *Floor antenna*
5. *Reader*
6. *Lactivator info with responder number and activity data*
7. *VPU controller with Velos program*

Figure 4. Connection between Velos program and InTime antenna

2.2. Working RealTime Lactivator system

The antenna will often receive the activity information and the animal responder number from every **RealTime** Lactivator in the antenna field. The antenna reader collects these data and sends them to the Velos program every 2 hours. An animal should be in the antenna field at least once every 24 hours for complete activity data but more frequent is advisable for accurate attentions. The size of the antenna field is 30 to 50 meters depending on the housing environment materials. More than one antenna can be used to reach a larger detection area.



1. *Leg RT Lactivator*
2. *Antenna*
3. *Lactivator info with responder number and activity data*
4. *Reader*
5. *VPU controller with Velos program*

Figure 5. Connection between Velos program and RealTime antenna

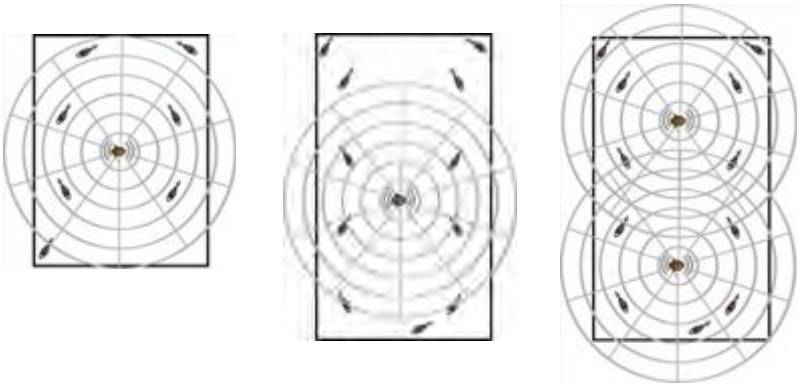


Figure 6. Examples of possible detection areas of 1 or 2 antennas

3. Animal welfare and safety

The automated actions of the Nedap Velos Livestock Management System do never discharge the user of the system from his/her responsibility to assure **and** to take care of the well-being of the animals.

4. Start up operation VPU program

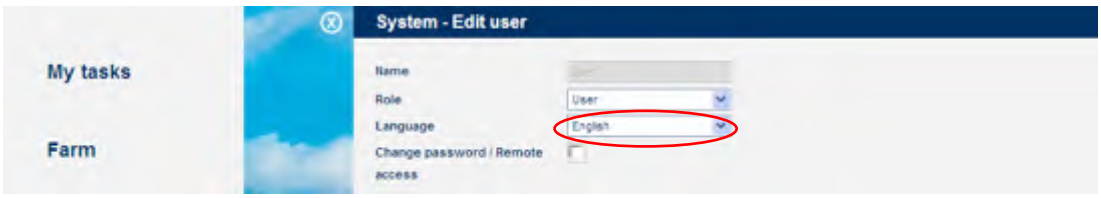
Enter the animal and responder numbers and the heat detection settings.

4.1. First settings

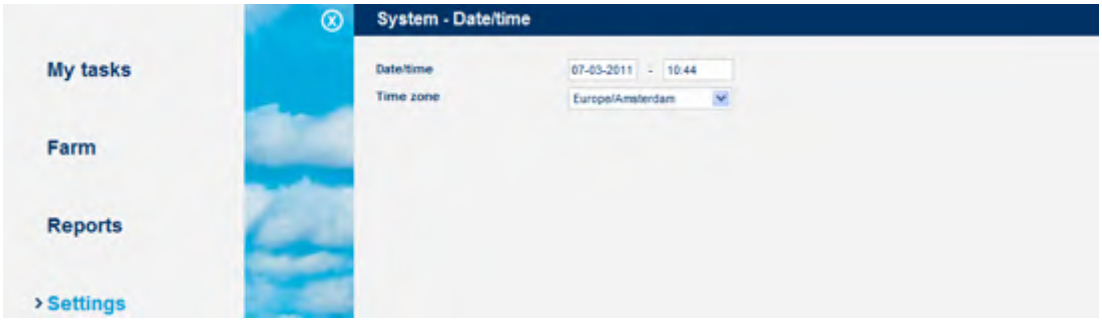
Enter the password and make the first settings.

1. Click on the VPU program shortcut on the desktop to start the program on the VPU controller. Enter the user password in the login page and press *Login.* The default *User* password is *1234*.

2. Enter a unique user password in the English page *Settings* >*System – Users*. Click on the left hand side of the page on *Settings* and then on *Users* (under the *System* heading). Click on **User** to change the default password in a new password and to change the language from English to another language. Optionally add more users.



3. Check the date and time (zone) in the page *Settings* >*System – Date/time*. The VPU will restart after adjustment. Press *Submit* to save the changes.



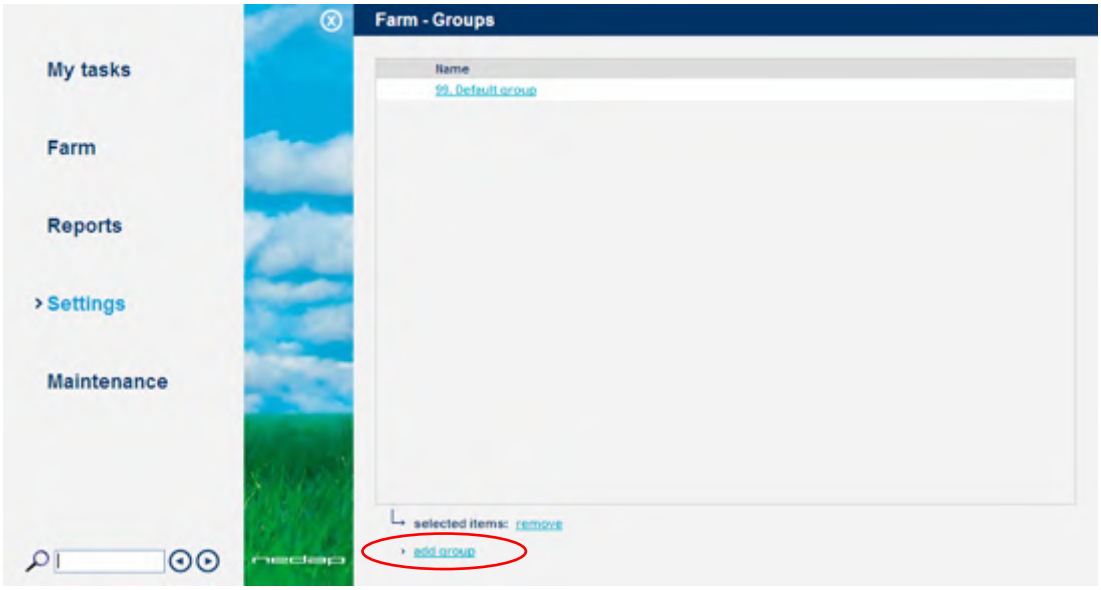
4. Optionally adjust the calendar attention settings in the page *Settings* > *Farm – Calendar.* See chapter 5.4, 5.5 and 5.6 for more information about the calendar.

4.2. Entering new animal numbers (and groups)

4.2.1. Entering new groups

There is one default group: group number 99.

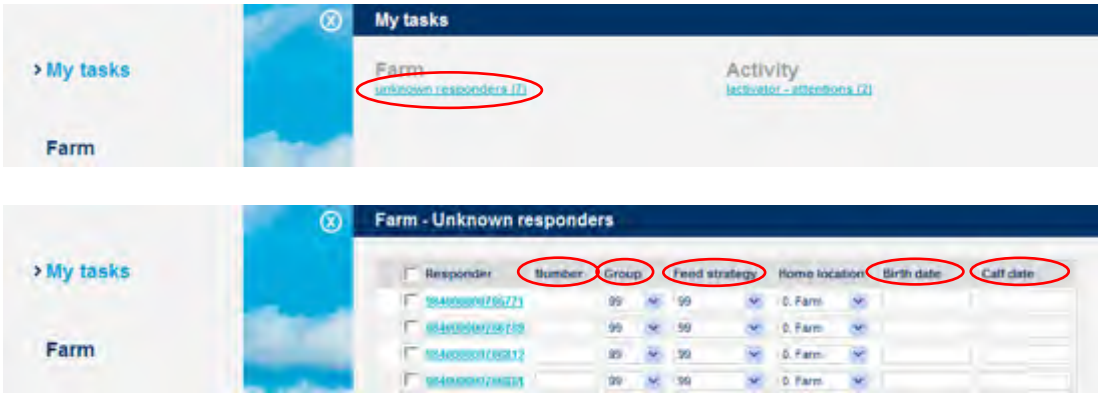
Optionally add one or more new group(s) in the page *Settings* > *Farm - Groups* to be able to put animals in different groups.



4.2.2. Entering new animal numbers in the InTime Lactivator system

Add the animal numbers and the other animal data in the VPU program after the responders from the animals were identified at an antenna.

The responder number of animals with a Lactivator, identified at an antenna for the first time, will appear in the page *My tasks* > *Farm – Unknown responders*.

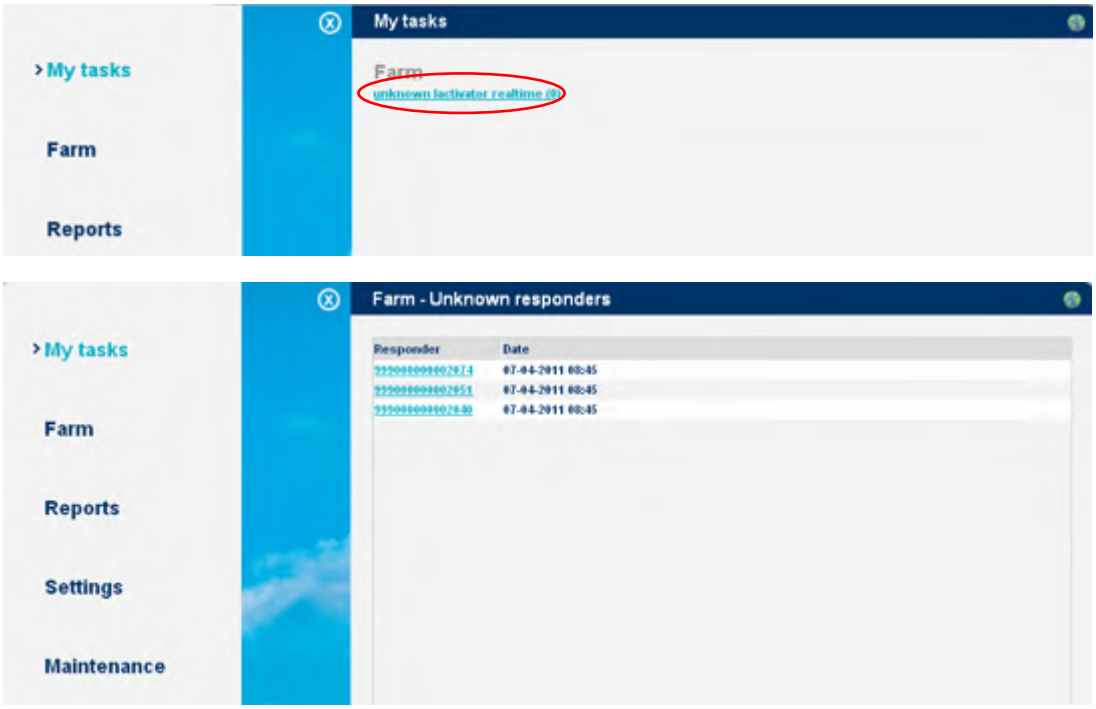


Enter the data from the animals with the unknown responder numbers and adjust the group number and the feed strategy if necessary. Change the default group number 99 and the default feed strategy 99 in the screen *Settings* > *Farm – responders* if necessary.

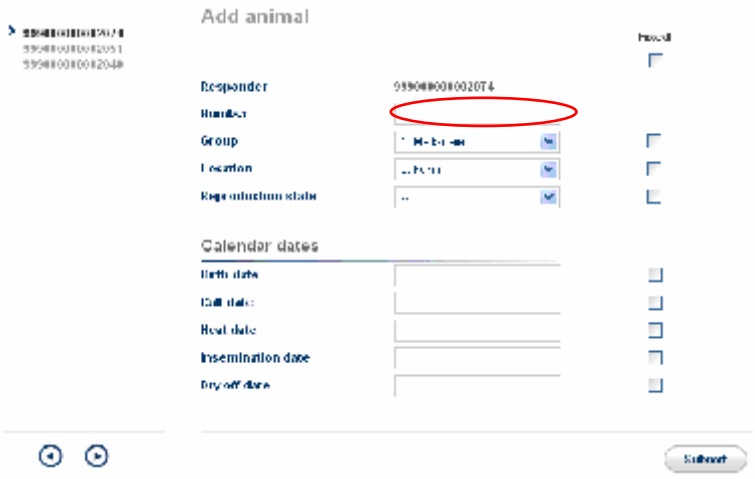
4.2.3. Entering new animal numbers in the RealTime Lactivator system

Add the animal numbers and the other animal data in the VPU program after the responders from the animals were identified at an antenna.

The responder number of animals with a Lactivator, identified at the antenna for the first time, will appear in the page My tasks > Farm – Unknown responders-realtime.



Click on a responder number to enter the animal number from this lactivator in the program.

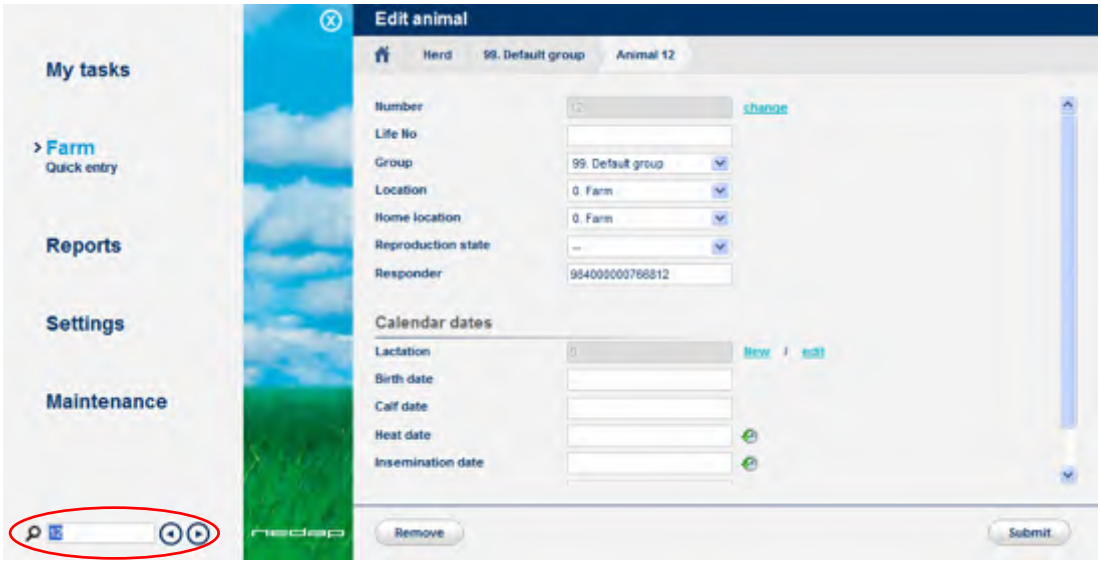


Enter the animal number from the animals with the unknown responder numbers and optionally adjust the group number and the other data. Click on Submit to store the data. Use the option Fixed ☑ if a date should keep this same value when entering the data for the next lactivator.

4.2.4. Changing the responder number and/or basic data

Adding a responder number and data from new animals manually is possible in the page *Farm > Herd or Group overview* (see screenshot below) but not advisable. It is easier to identify the responder number at the antenna first and enter the animal data via the Unknown responder page as described in the previous pages.

To change the responder number or to add or change other basic data after an animal was entered for the first time, select the link Basic data in the page *Farm > Animal* (enter the number behind the magnifying glass at the bottom of the page an press enter). The responder number can not be changed when using synchronisation with a Nedap server (see Appendix B for more information about this).

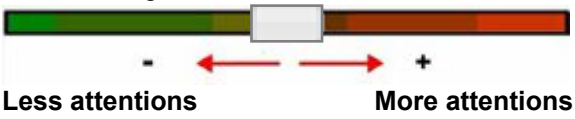


Enter the heat and calving dates in this page later on also or use the *Farm > Quick entry* page.

4.3. Heat detection settings

Optionally adjust the Lactivator settings in the page *Settings* > *Activity - Lactivator*. The first days after calving and insemination NO attentions will be given because the averages are not reliable yet. This first period of no attentions will only work if the calving date and the last insemination date of an animal is always entered. Turn off the *Show pregnant animals* check box ☐ to ignore the activity attentions of animals with state pregnant. Turn on the *Show decreased activity* check box ☑ to see the animals with a decreased activity attention. The activity attentions will disappear after the *Show attentions* set hours. Press *Submit* to save any changes.

Adjust the sensitivity of the Lactivator activity attentions if necessary. Animals will get an attention when the activity is higher than the level set for several following 2-hour periods. In case of a lower sensitivity less animals will get an attention.



5. Operation VPU program

5.1. Viewing animals in heat

The behaviour of an animal in heat is quite different from her normal behaviour. She is restless, tries to mount other animals, gets mounted by other animals and shows a standing reflex.

sniffing, chin resting / ± 12 hours

mounting other cows (attempt) / ± 8 hours

standing heat / ± 5 hours

InTime heat detection: The antenna(s) on the farm will often receive the activity data and the animal responder number from the Lactivator(s) in the antenna field. The antenna reader collects the activity data of each animal and sends them to the Velos program every 2 hours.

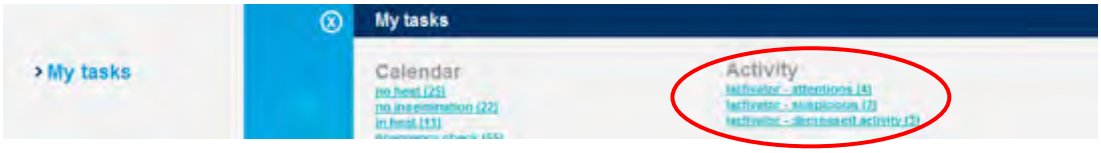
RealTime heat detection: The antenna will often receive the activity information and the animal responder number from every RT Lactivator in the antenna field. The antenna reader collects these data and sends them to the Velos program every 2 hours. An animal does not need to be in the antenna field all the time, at least once every 24 hours is the minimum to store the complete 24 hour activity data but more frequent readings is necessary for accurate attentions.

The activity measurement monitors the changes in the active behaviour of the individual animals because the activity in a period is compared to the activity in the same period on the previous days. An activity attention is generated if necessary. The program displays overviews of animals with an activity attention on a PC screen or on a mobile phone.

The red attention light of the process unit will warn if there is an activity attention.

There are 2 types of activity attentions: **Activity attention animals** that are most likely in heat and **Suspicious animals** that may be in heat but do not have an attention (yet).

Highly increased activity	**Suspicious**	**Attention**
Nr. of following 2-hour periods	2	3 or more
In Heat	Maybe	Probably



View animals with an activity attention in the page *My tasks* > *Activity - Lactivator – attentions*. View suspicious animals in the page *My tasks* > *Activity - Lactivator – suspicious*.

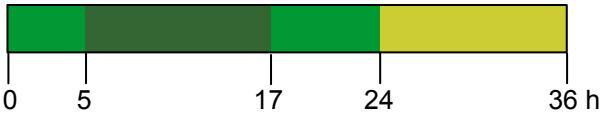
View animals with a decreased activity in the page *My tasks* > *Activity - Lactivator – decreased activity*. Optionally check other data from these animals (e.g. decreased activity details, milk yield and feed balance) and check the animals for e.g. lameness if necessary.

Check animals with a clear activity attention in the page *My Tasks* > *Activity - Lactivator – attentions*. Check the optimum insemination moment, the number of days in lactation, the number of days since the last heat and the number of days since the last insemination. The dark green colour in the coloured bar indicates the optimum insemination moment.

Click on an animal number to view the activity details from the past days.

Tick off the checkbox ☑ for the attention animals that were seen or checked and press **Seen** to mark them as seen on the attention list. The red attention light of the process unit will now be off.

The green coloured bar is shown for animals with an activity attention. The dark green optimum insemination moment is based on the first attention. The real ovulation moment will vary per animal, breed and herd.

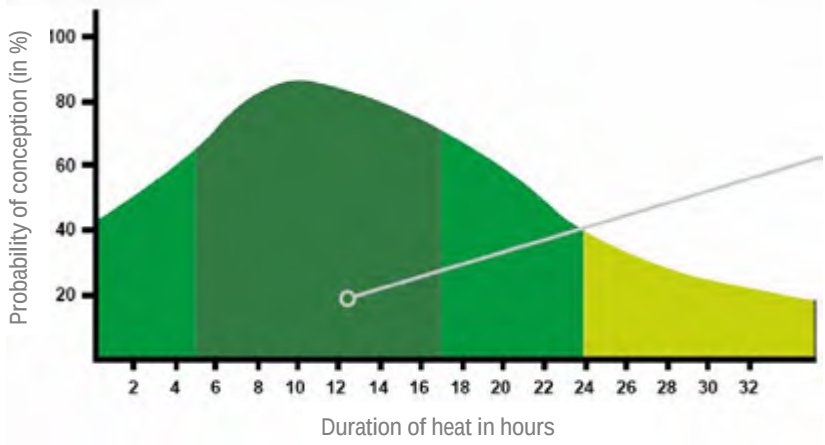


0 = first 2h period attention for a clear increased activity

An insemination should occur 5 – 17 hours after the first activity attention or 0 – 12 hours after the first standing heat.

Inseminate directly after the first activity attention or the first standing heat.

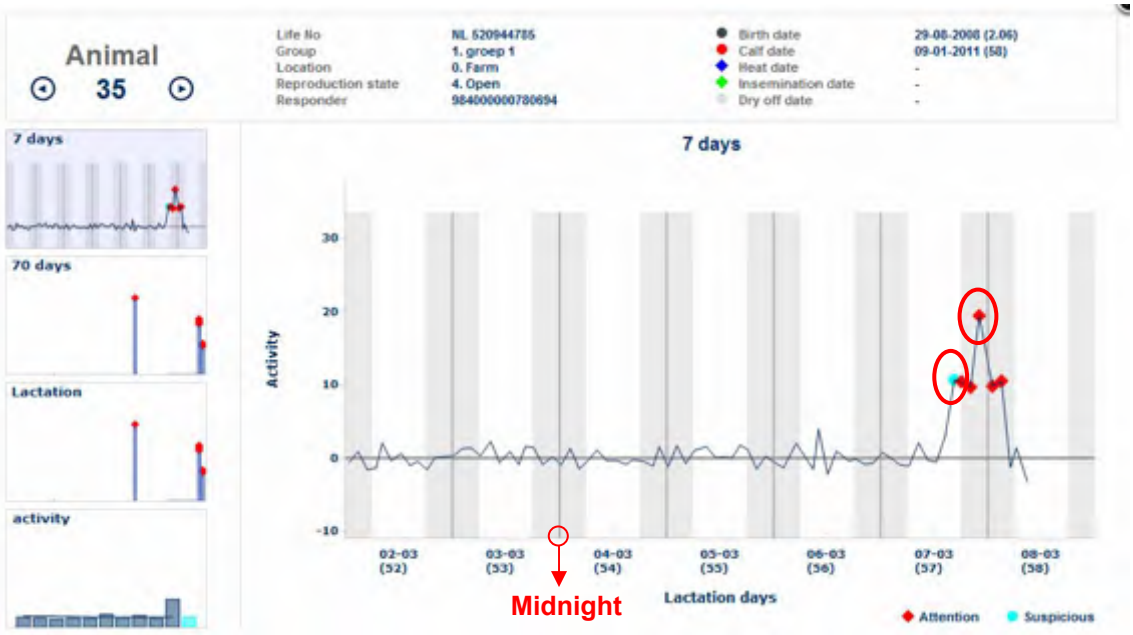
It may generally be assumed that, if an animal is actually in heat, she should be inseminated directly after the first activity attention. This gives the best chance of conception as the injected sperm cells are then able to reach the egg at the optimum moment.

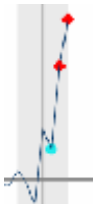


Optimum insemination moment

Night	Day

View the animal activity details from the past days (light column with noon in the centre) and nights (dark column with midnight in the centre). The diamonds in the activity line indicate the activity attentions.





A light blue dot ● is a suspicious high 4 hour activity and a red colour diamond ♦ is a clear 6 hour activity attention. The activity line shows the measured activity compared to the activity in the same period on the previous days.

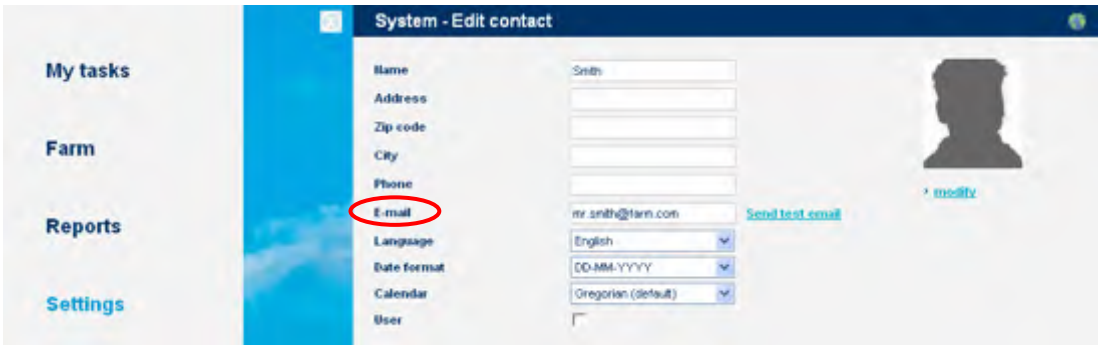
Select the 70 day graph to view the interval since last activity attention(s) (e.g. 19 day heat cycle).

Put the mouse cursor on ● ● ♦ ♦ ● to view the exact calendar date entered by the farmer.

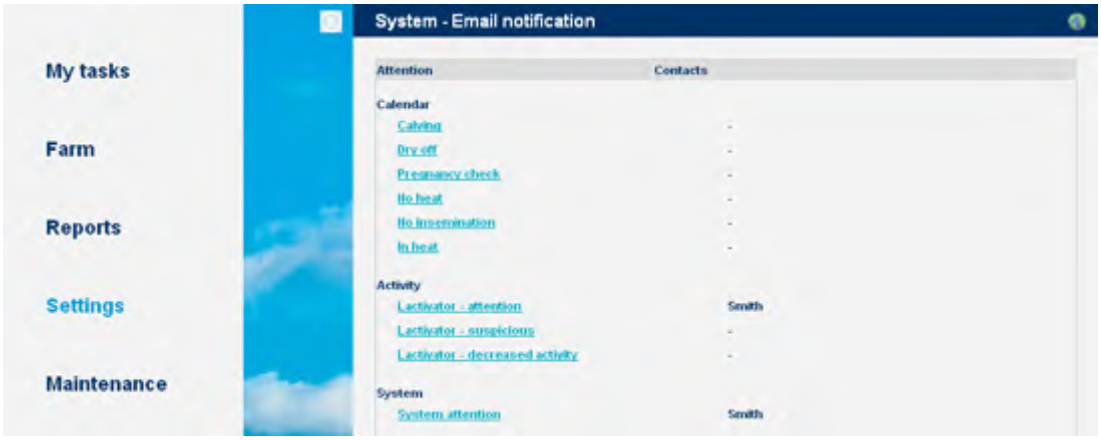
It is also possible to view animals with an activity attention in the Heat detection attentions report in the page *Reports > Lactivator - attentions*.

5.2. Using e-mail notification

Enter the e-mail address in the page *Settings > Contacts – contact/users (edit contact)*.



Enter what type of attentions should be send in the page *Settings > Contacts – email notification*.



5.3. Using a mobile phone with Internet connection

The Velos mobile program is available in the Heat detection system. It can display an overview of animals with an activity attention on a mobile phone. Ask your dealer how to get mobile access for this purpose.

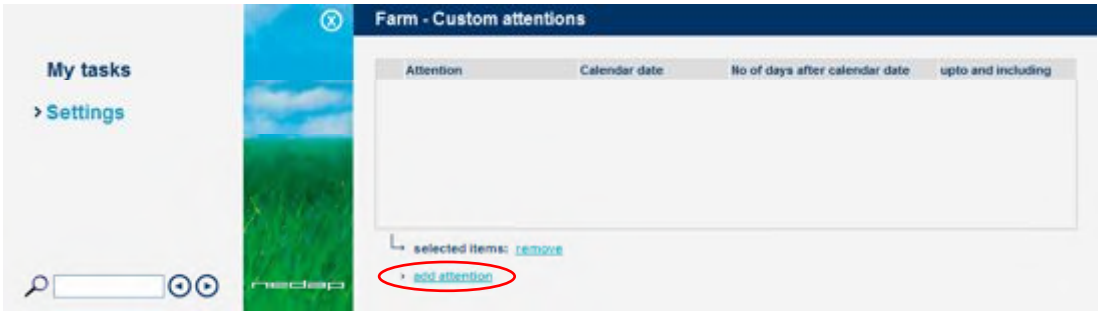
5.4. Setting up the calendar attentions

1. Optionally adjust the calendar attention settings in the page *Settings* > *Farm – Calendar*. A calendar attention will be given a certain number of days after a calendar event (a calving, heat or insemination). Optionally adjust the number of days of a first attention or switch off a check box ☐ to turn off an attention.

Attention	BEGIN	Days since	+ Reprod. State	-	END
No Heat	30 - 60	Calving	Open	-	Ins date + state Ins.
No Insemination	≥ 60	Calving	Open	-	Ins date + state Ins.
In Heat*	19 -23	Heat or Insem.	Open/Insemination	-	State pregnant
Pregnancy check	≥ 42	Insemination	Insemination	-	State pregnant
Dry off	215 - 275	Insemination	Pregnant	-	Dry off date
Calving	≥ 275	Insemination	Pregnant	-	Calving date

* The In Heat attention will be given for five days and for five 21 day cycles starting on the set number of days after the last heat or insemination.

2. Optionally create one or more additional new calendar attentions in the page *Settings* > *Farm - Custom attentions*. Such custom attentions can be given a certain number of days after a calendar event (a birth, calving, heat, insemination or dry off date).



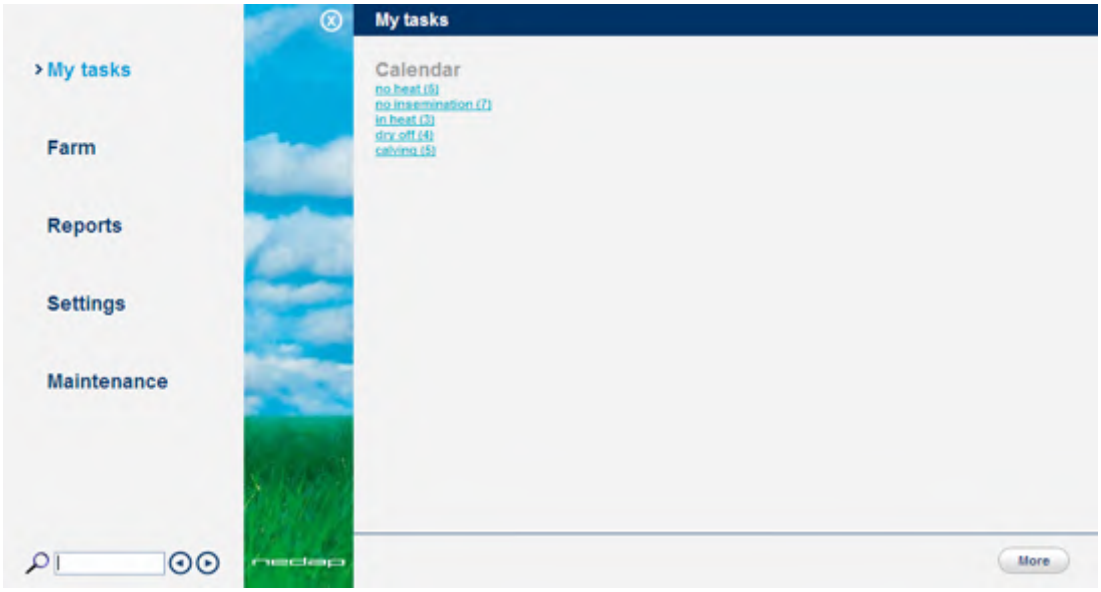
Click on *Add attention* to enter one or more custom attentions.

A few examples:

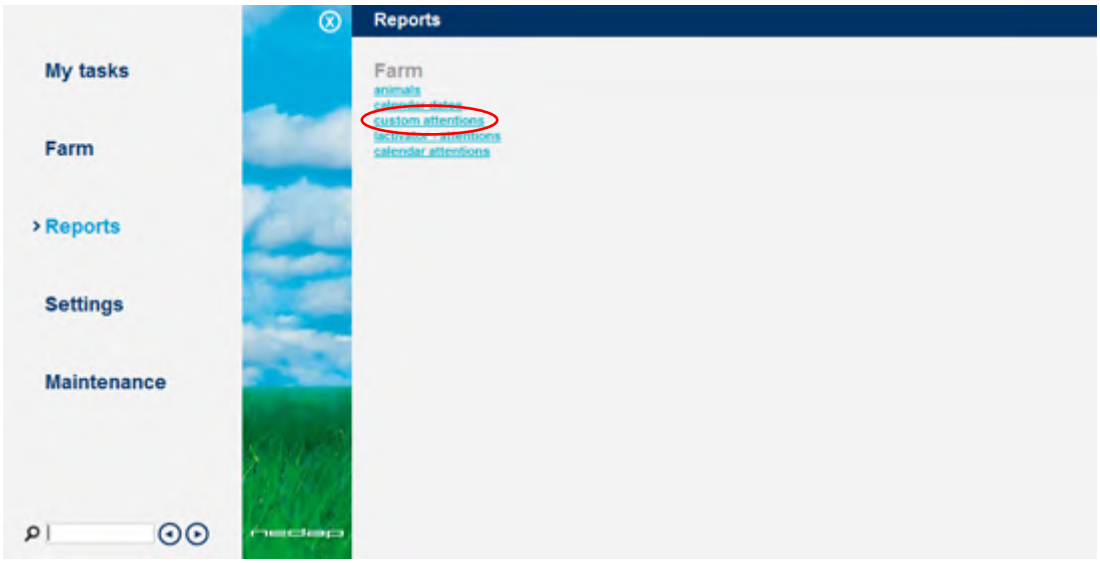
Custom attention	BEGIN	-	END	Days since
Insemination yearling	395	-	500	Birth date
Separate for calving	265	-	275	Insemination date
Colostrum	0	-	5	Calving date

5.5. Viewing calendar attentions

1. View the calendar attentions in the page *My tasks* > *Calendar*. Click on a type of calendar attention to view the animals with an attention and click on an animal number to view the basic animal data.



2. View the custom attentions in the page *Reports* > *Farm – Custom attentions* e.g the *Separate for calving* report.



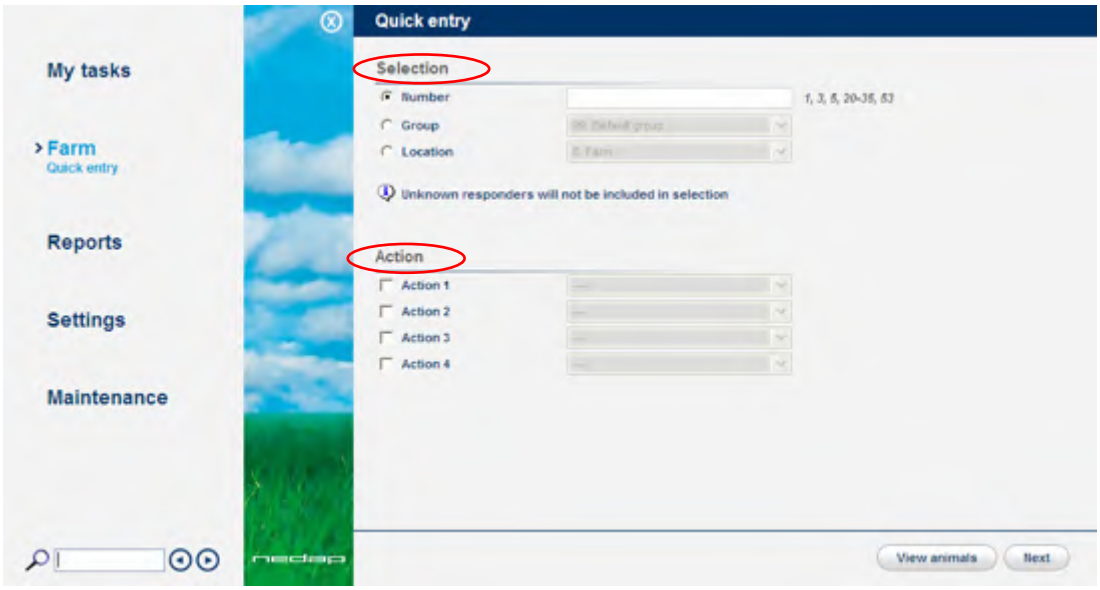
5.6. Entering calendar data

Enter new calendar events in the page *Farm* > *Quick Entry* or in the page *Farm* > *Edit animal* and adjust the reproduction status if necessary.

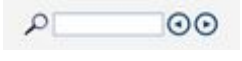
Event	Enter calendar data	Adjust reproduction state
Calving today	New lactation (= calving date today)	- (automatically adjusted to Open)
Calving before	New lactation + correct calving date	- (automatically adjusted to Open)
Heat	Heat date	-
Insemination	Insemination date (+ Sire data)	Insemination
Pregnancy check	-	Pregnant
Dry off	Dry off date	-
Keep Open	-	Keep Open
Birth	Birth date	-

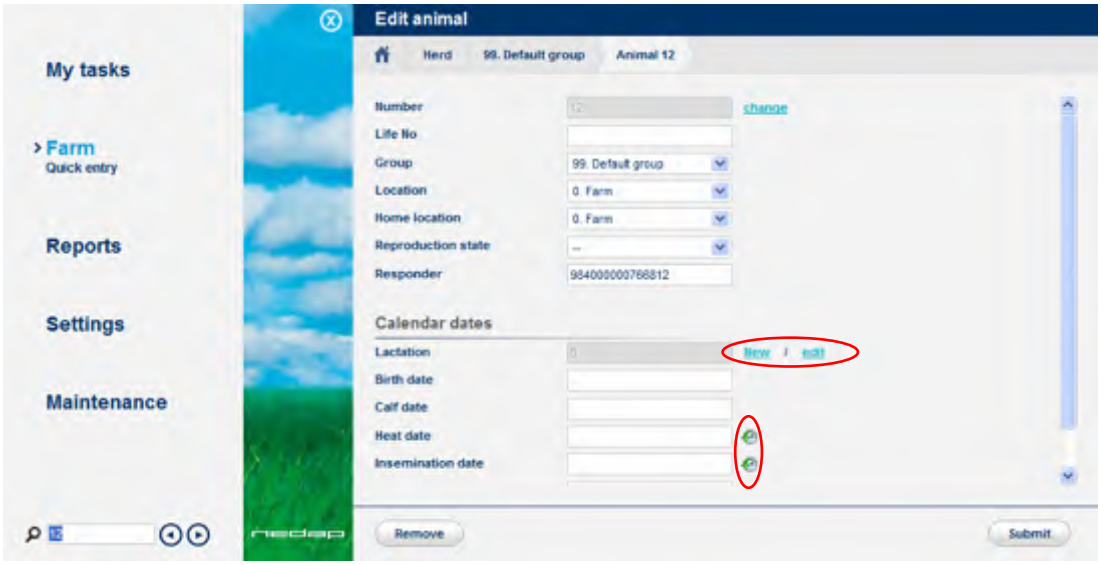
Method 1 to enter calendar data is via the page *Farm* > *Quick Entry*. Enter the Animal number(s) under *Selection* and select an *action* (e.g. an calendar date or reproduction state).

When a new lactation is started all totals and calendar data from the previous lactation will be deleted.



Method 2 to enter calendar data is in the page *Farm* > *Edit animal* via the page *Farm* > *Animal overview.* Enter an animal number behind the magnifying glass at the bottom of the page or click on an animal number in the page *My tasks* > *Calendar* to view the Basic data in the page *Farm* > *Animal overview.* Select the link *Basic data* in this page to view more details or to enter calendar data.





Click on the image behind the heat or insemination date to view the previous heat and insemination dates. Click on *New* to start a new lactation with the calving date today.

When a new lactation is started all totals and calendar data from the previous lactation will be deleted.

6. Maintenance, malfunctions and disposal

6.1. Maintenance

Check the operation of the antennas regularly by testing the identification with a lactivator that is not used on an animal and by checking the registered activity data.

Carry out maintenance of the **InTime** antennas according to the table below.

Item to check	After 1st week	Every week	Every month	Every 6 months	What/How to check	
All bolts and nuts	X			X	Tighten.	
Damaged or worn parts		X			Replace.	
Floor antenna		X			Antenna environment should not stay wet all the time.	
Neck and Leg lactivators			X		Check the attachment at the animal's neck or leg.	

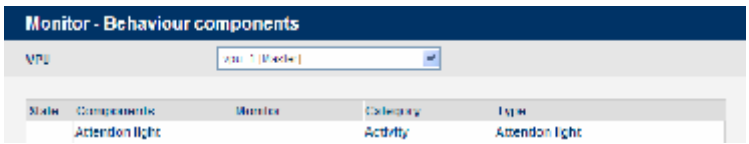
Carry out maintenance of the **RealTime** antennas according to the table below.

Item to check	After 1st week	Every week	Every month	Every 6 months	What/How to check	
Lactivators			X		Check the attachment at the animal's leg.	

6.2. Malfunctions

The webpage **My tasks > System - System attentions** will show if there are any malfunctions. If the system is not working correctly, an alarm will occur. The blue light on the process unit will blink. Check the cause of the alarm, solve it and remove the system attention.

Click in the page **Maintenance > Monitor - Behaviour components** on the button **View** to see the actual state of the Antenna.



6.3. Disposal

At discard dispose of materials from the Heat detection system in accordance with the current environmental rules of the state or local governing authorities.

Appendix A Technical specifications

Specifications for transport / installation

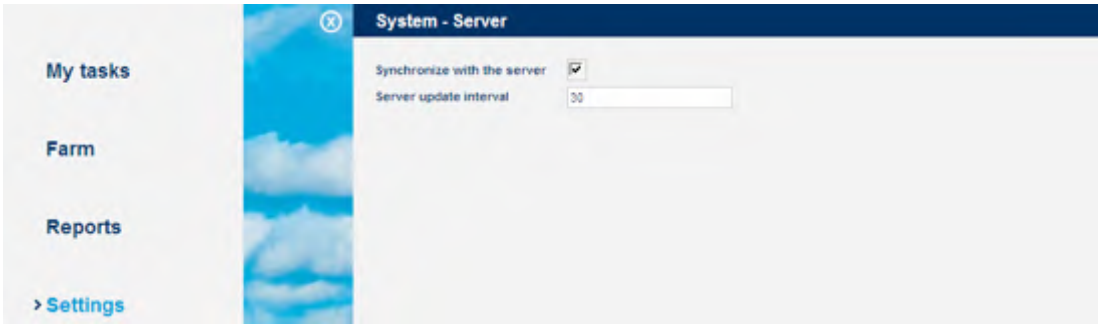
Electrical supply	
Main supply	100V - 240V
Frequency	50 – 60 Hz
Input voltage (use Nedap power supply)	24-28V DC
Environmental	
Operating temperatures	0°C / +45°C
Transport / storage temperatures	-25°C / +70°C
Humidity (rh)	45°C / 85%
Enclosure protection class (when cover and cables installed correctly)	IP65
Enclosures of electronics may not be exposed to direct sunlight.	

The identification of the Nedap Velos system is compatible with the ISO standard (ISO 11784 and 11785).

Check if electronic equipment from manufacturers other than Nedap is used on the farm. If the other system is not compatible to the ISO system this can have a negative influence on the ID performance of the Nedap Velos system. Please contact your Nedap Velos dealer.

Appendix B Using synchronisation with a Nedap server

Optionally adjust the Server settings in the page *Settings* > *System - Server* e.g. when using synchronisation with a Nedap server. Press *Submit* to save the changes.



Nedap Agri - P.O. Box 104 - 7140 AC Groenlo - The Netherlands - T (+31) 544 471 444
F (+31) 544 466 839 - info@nedap-agri.com - www.nedap-agri.com