-EN-

USER MANUAL
FOR THE RADIO BASE AND ITS EQUIPMENT

Translation of the French original

Medria
ELEVAGE
Solutions de monitoring

1. Preamble

Precautions to be taken 6
Radio Base 6
Sensors equipment. 6
Troubleshooting 7
Safety and responsibility 7
Disposal 7

2. Radio Base

Description - commissioning 8
Description of the Radio Base. 8
Connection of the antennae 8
Power cord with charger 8
Radio Base interface. 9
Alarms display. 10
Use of the Radio Base 10
Switching on 10
Activation of the display 10
Use of the keys 11
Navigation. 11
Data input 11
Switching off of the Radio Base 11
Radio Base configuration 11
Equipment visualisation on the display 11
Display of reported temperatures 12
Time elapsed since the last temperature reading. 12
GSM functions 13
Configuration / modification of GSM telephone numbers 13
Activation /deactivation of GSM telephone numbers. 13
Sending of a test SMS 14
Network quality 15
GSM control 16
Equipment management. 18
Synchronisation of equipment 18
Addition of equipment. 18
Deletion of equipment 20
Research of equipment. 21
Procedure to research equipment 21
Finding of a lost sensor 22
Configuration of the Radio Base 22
Time. 22
Contrast 23
Information 23

Language **24**
Temperature unit **25**
MEDRIA supervision **25**
Connection **26**
ISM control **27**
Switching off **27**
Power supply of the Radio Base 28
Battery operation 28
Battery management SMS 28
Standby on low battery 29
Battery recharge 29
Positioning of the Radio Base 31
Maintenance 31
Changing the SIM card 31
Troubleshooting 31

3. Vel'Phone®

Description of the *Vel'Phone®* kit 32
Vaginal thermometer and appendages 32
Vaginal applicator 33
The Vel'Phone® SMS services 33
SMS classification 33
Thermometer activation 34
Daily reports 34
Calving prediction 35
Message "*Possible calving in 48h*" **36**
Message "*Expected calving in 48h*" **36**
Low temperature alert 37
Absent thermometer alert 37
Thermometer expulsion 37
Configuration of the *Vel'Phone®* services on the Radio Base 38
Work day 38
Daily reports 39
Configuration/modification of daily reports **39**
Activation /deactivation of daily reports **40**
Nightly delay 40
Operating principle **41**
Adjustment of the nightly alert delay **41**
TV alert absent 42
Activation **42**
Configuration of the maximum delay **43**
Calving prediction 44

Setting up the *Vel'Phone*® thermometers 45
Recommended maintenance materials and products 45
Moment of insertion 45
Adaptation of the appendages to the animal 46
Installation of the appendages on the thermometer 47
Presentation 47
Installation of the *heifer* appendages 48
Installation of the *cow* appendages 49
Disassembly of the appendages 49
Installation of the thermometer in the applicator 50
Disinfection by pre-soaking before reuse 50
Hygiene, lubrication and insertion 51
Retrieval of the thermometer 51
Cleaning of the thermometers and appendages 52
Cleaning of the thermometer body 52
Cleaning of the appendages 52

4. HeatPhone®

Description of the *HeatPhone*® kit 53
Principles of the *HeatPhone*® 53
Use of the *HeatPhone*® 54
Components of the *HeatPhone*® 54
The Radio Base 54
The GSM mobile phone 54
***Axel*® sensors 54**
The *Daily Web Services*® or *DWS*® 54
Configuration of the *HeatPhone*® service on *Daily Web Services*® 55
The My account tab 55
The Services tab 55
The *HeatPhone*® every day 56
Installing collars on animals 56
Removal of the *Axel*® collar after the gestation report 56
Operations on the *DWS* ® 57
The *HeatPhone*® services 58
Heat detection SMSs 58
The sensor installation and removal SMS 59
The consultation of events on *DWS*® 60
Consultation of *DWS*® activity curves 60
Interpretation of *DWS*® activity curves 60
Examination of reproductive disorders 62

5. Location Device

Presentation 63
Research of sensors monitored by a *Radio Relay* 63
Description 63
Switching on 64
Equipment research session on the Radio Base 64
Operation of the Location Device..... 64
Research start-up conditions..... 65
Use 67
Starting the research of a sensor 67
When switched off – Reduction of the listening distance 67
In rotation – identification of the research direction 68
In motion – approaching the sensor 68
Reminder of the 3 research stages 69
End of research..... 69
Switching off of the Location Device..... 69
Stopping the research on the Radio Base..... 69

6. Troubleshooting 70

7. Appendices

Technical and environmental specifications 71
Radio Base 71
Sensors..... 71
Location Device..... 72
Certifications.....72
CE trademark 72
IC certification 73
Radio Base and sensors..... 73
Radio Base..... 73
Glossary 74

1 - PREAMBLE

This user manual concerns the Radio Base and the monitoring tools of the MEDRIA company.

Please read this manual carefully before using the equipment for the first time.

The **recipes** (documents provided with your monitoring equipment) remind you in a condensed manner the good practices and main points of care that we request you to follow everyday.

Keep the user manuals, recipes and all other directives that come with your monitoring tool so that you can refer to them when required.

Observe and respect all instructions described in this manual or affixed on the equipment, and in particular the following precautions.

With a view to continuous improvement of our products, we reserve the right to modify their characteristics for technical advancement.

1.1. Precautions to be taken

The equipment described in this manual is for professional use only.

1.1.1. Radio Base

- Never immerse the Radio Base in water
- Do not expose the Radio Base to a pressurised water jet
- Do not place the Radio Base close to a heat source
- Use only accessories specifically recommended by MEDRIA with the Radio Base (antennae, charger, etc).
- Connect the charger to the mains by taking into account its technical characteristics (see “Power cord with charger”, page 8). As a precaution, in case of danger, the charger serves as a power disconnecting system ; it must be located close to the device and be easily accessible
- Never dismantle or modify the Radio Base or its accessories
- Disconnect the Radio Base in case of a storm

1.1.2. Sensors

- Never expose the sensors to a temperature greater than 60° C (*140° F*)
- Only use accessories specifically recommended by MEDRIA with the MEDRIA kits.
- Store the sensors within a radius of 10 to 20 metres (32.8 to 65.6 ft) from the Radio Base to ensure regular communication between the Radio Base and the sensors. The purpose of this positioning is to limit the over-consumption of energy by the sensor, which would constantly attempt to communicate with the Radio Base, which would ultimately reduce its service life.

1.1.3. Troubleshooting

For troubleshooting, contact MEDRIA by providing as reference the item number and serial number present on your kit components.

Any repair of kit components must be carried out by a service centre authorised by MEDRIA at the risk of cancellation of the guarantee.

Also see “Troubleshooting”, page 70.

1.2. Safety and responsibility

The Radio Base must be installed by a professional.

Under no circumstances may MEDRIA be held liable to the customer, his employees, successors and beneficiaries, for any special, consequential damage or financial loss of whatsoever description, including but not limited to losses, costs, damage, loss of revenue or interests, suffered by the customer or any third-party on account of a defect or loss of use of all or part of the kit.

It is expressly mentioned that MEDRIA may not be held liable for the non-receipt of an SMS message sent by the Radio Base to a fixed or mobile phone.

The transmission of SMS messages is the responsibility of telecommunication operators, the quality of whose services cannot be guaranteed by MEDRIA.

The total and cumulative responsibility of MEDRIA as part of or in connection with the use of the current Radio Base and the sensors for any purpose whatsoever, will on no account exceed one hundred percent (100%) of the amount paid by the customer for the purchase of his monitoring tool.

Any changes or modifications not expressly approved by MEDRIA could void the user's authority to operate the equipment.

1.3. Disposal

During disposal of the equipment, its owner will have to ensure that the different components are discarded in accordance with the current legislation in the country where the equipment is destroyed.

These recommendations must be taken into account particularly for the following components:

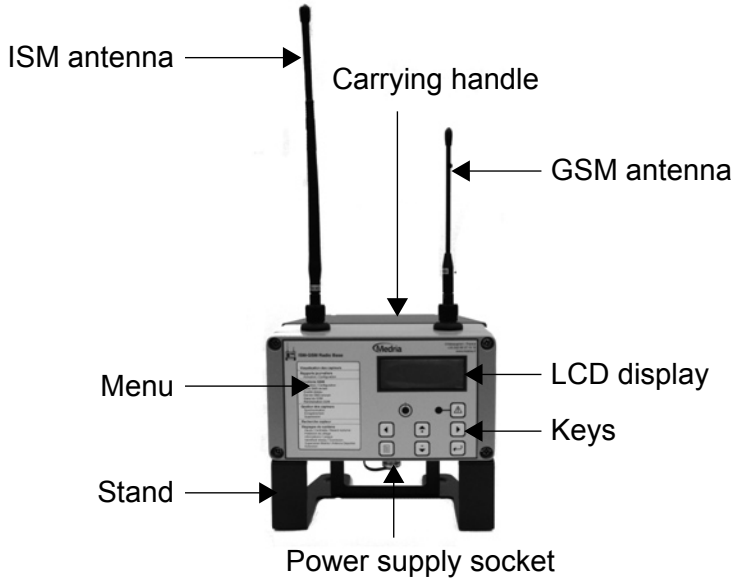
- The Radio Base battery
- Metal components (welded or otherwise, untreated or painted, etc.)
- Plastic components (applicator, appendages, etc.)
- Electronic components (boards, display, antennae, etc.)
- Electrical components (charger, etc.)

The monitoring tool is delivered in a blue shipping trunk containing:

- The Radio Base
- The sensors
- The user manual

2.1. Description - commissioning

2.1.1. Description of the Radio Base



The Radio Base manages the services and communications with the GSM network and the radio sensors of the *Vel'Phone*®, *HeatPhone*® and *San'Phone*® services supplied by MEDRIA.

2.1.2. Connection of the antennae

The Radio Base is delivered with the antennae not installed. Remove the red and black caps from the connectors and screw on the antennae:

- The ***ISM*** antenna (the longer one) on the left-hand connector
- The ***GSM*** antenna (the shorter one) on the right-hand connector

2.1.3. Power cord with charger

The low voltage charger enables to recharge the Radio Base battery (see page 29).

Main technical characteristics of the charger:

- Mains power input: 100-240 V ~ 0.5 A 50/60 Hz
- Output: 5 V⎓ 2.0 A.
- Typical charging current: 0.450 A

The average charging time is 12 hours.

You can leave the Radio Base connected to its charger for continuous recharging.

Power supply of the Radio Base

See page 28

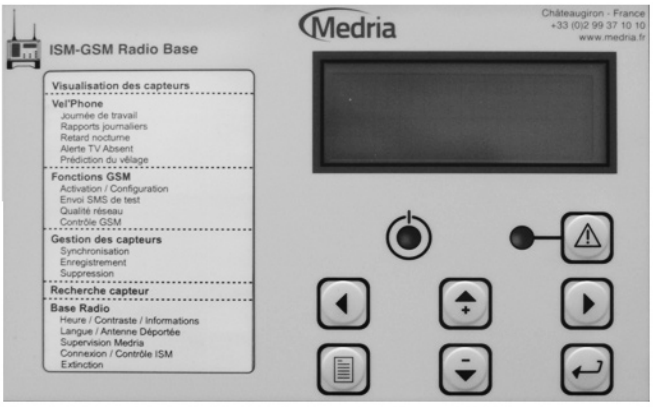
Positioning the Radio Base

See page 31

2.1.4. Radio Base interface

The menu displayed on the front panel of the Radio Base lists the functions organised into six sub-menus.

Keys below the screen enable to browse through the menu.



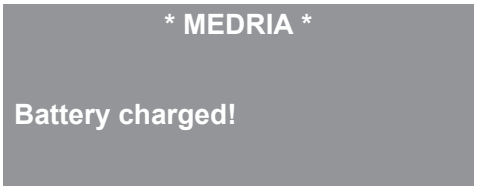
	Menu	Interrupts the modification in progress and returns to the display of the previously selected function.
	Validate	Enters the function displayed on the screen. Validates and saves the modification in progress.
	Move to the left/ to the right	Moves the blinking cursor to the ***left*** or to the ***right*** to select the value to be modified.
	Display or **Select**	Displays /selects the ***next*** or ***previous*** function. Displays /selects the ***greater*** or ***lower*** value.
	Alarm	Displays the alarms from any screen.

2.1.5. Alarms display

The screen enables to visualize the system alarms. When the ***Alarm*** key is pressed and when no alarm has occurred, the screen displays:

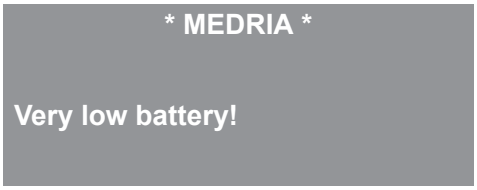
The following alarms are possible:

- Alarm ***battery charged***



- Alarm ***low battery***

- Alarm ***very low battery***



2.2. Use of the Radio Base

2.2.1. Switching on

The Radio Base is turned off when you receive your equipment. To switch it on:

1. Press the ⚠ key
2. Press the ↵ key

2.2.2. Activation of the display

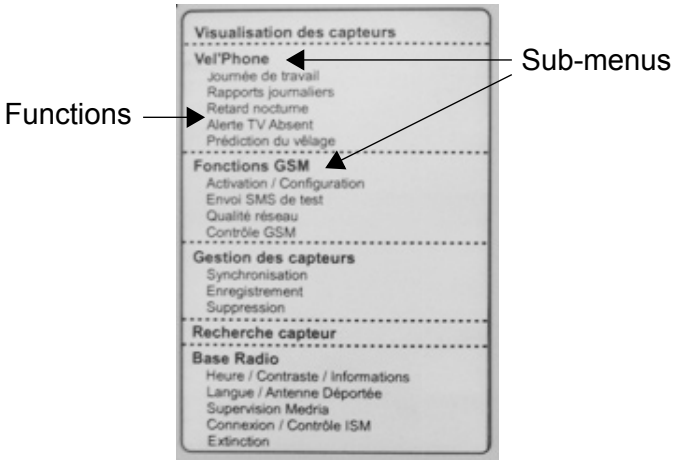
When the Radio Base display is turned off, it may be activated at any moment by pressing any key on the keyboard.

For saving energy, the display automatically goes off if no key is pressed for 30 seconds.

If the display goes off, this cancels the operations that you may be carrying out.

2.2.3. Use of the keys

Navigation



1. Press the [+] [-] keys to display the concerned sub-menu
2. Press the [↵] key to enter the function
3. Press the [+] [-] keys to display the desired function in the sub-menu
4. Press the [↵] key to validate

Data input

- Press the [◀] and [▶] keys to move the cursor on the screen
- Press the keys [+] and [-] to select a number or a letter

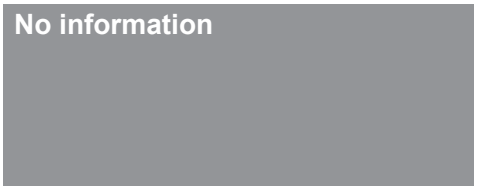
2.2.4. Switching off of the Radio Base

1. Select the ***Radio Base*** sub-menu (last in the list) then validate
2. Select the ***Switch off*** function (last in the list) then validate
3. Select ***Yes*** then validate

2.3. Radio Base configuration

2.3.1. Equipment visualisation on the display

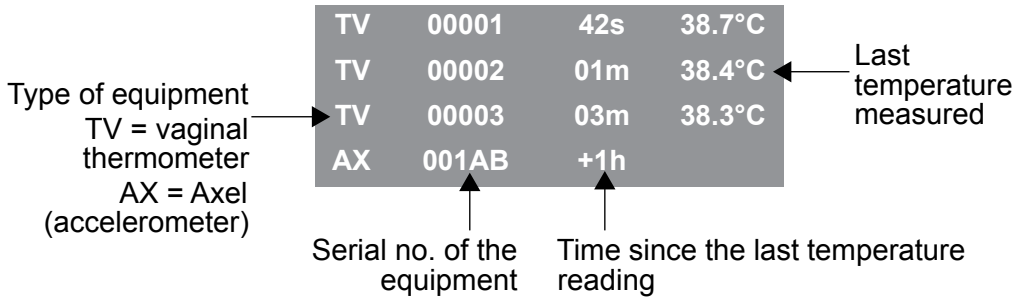
When no equipment is registered on the Radio Base, the screen displays:



To register equipement, go to the ***Addition*** function of the ***Equipment management*** sub-menu (see page 18).

1. Press the key to display *Equipment visualisation*

2. Press the key to enter the function



3. Press the or keys to display the information recorded by the other equipment

Display of reported temperatures

The Radio Base displays only the temperature values measured within the +20° C (*68° F*) to +45° C (*113° F*) range.

Outside this range, the extreme values ***20° C*** (***68° F***) or ***45° C*** (***113° F***) are displayed.

Note that the actual temperature can then be less than or greater than the displayed value (thermometer outside an animal).

Time elapsed since the last temperature reading

The vaginal thermometer measures the temperature regularly.

If the temperature from a thermometer is unchanged since the previous communication, this is communicated again to the Radio Base only once every 15 minutes.

For every thermometer, the time elapsed since the last temperature reading must remain within the two following time ranges:

- From 1 second to 5 minutes if the thermometer temperature varies beyond ± 0.2° C (*0.4° F*) with respect to the previously displayed value
- From 15 to 20 minutes if the temperature variation remains less than 0.2° C (*0.4° F*) during the last 15 minutes

If the time elapsed since the last temperature reading is more than 30 minutes, we may consider that the distance between the Radio Base and the thermometer is too great.

In this case, it is recommended to bring the Radio Base closer to the animals, until the temperature is received and automatically updated on the Radio Base's LCD screen.

2.3.2. GSM functions

The Radio Base can register three telephone numbers to which the SMS messages will be sent.

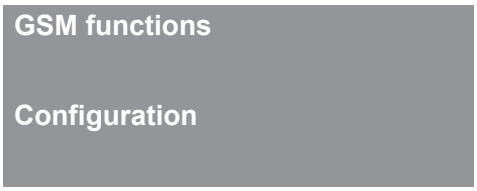
Enter *GSM* telephone numbers preferably, as only these can receive SMS messages at any time of the day and night.

Current regulations actually prohibit the transmission of SMS to fixed lines between 22h00 (10 p.m.) and 6h00 (6 a.m.).

Configuration / modification of GSM telephone numbers

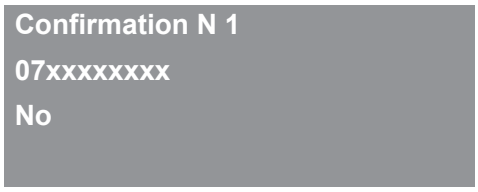
In the ***GSM functions*** sub-menu:

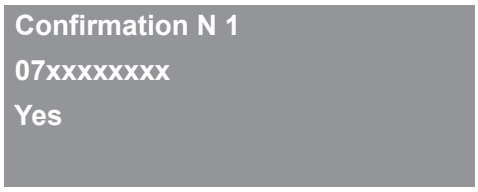
1. Press the key until ***Configuration*** is displayed



2. Press the key to enter the function

3. Press the or keys to move the cursor and the or keys to select the numbers
4. Press the key to save the number 1





By default, the confirmation is set to ***No***

5. Press the keys to select ***Yes***
6. Press the key to validate the telephone number
7. Follow the same procedure for the numbers 2 and 3

Activation /deactivation of GSM telephone numbers

In the ***GSM functions*** sub-menu:

1. Press the key until ***Activation*** is displayed
2. Press the key to enter the function

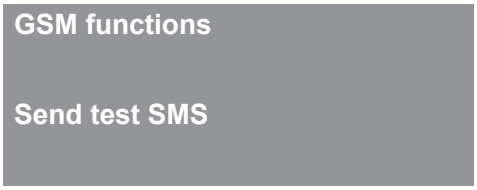
3. Press the + or - keys to activate or deactivate the telephone number 1
4. Press the ↵ key to validate the activation or deactivation of number 1
5. Follow the same procedure for numbers 2 and 3.

If no telephone number is activated, the *No active number* message is displayed when exiting the menu.

Sending of a test SMS

In the *GSM functions* sub-menu:

1. Press the - key until *Send test SMS* is displayed

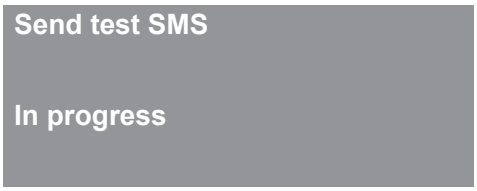


2. Press the ↵ key to validate

Pressing the *Validation* key triggers the sending of an SMS to all active numbers on the Radio Base. This SMS contains the following information:

- The Radio Base number
- Time of sending the SMS
- The network quality at the precise location from where the SMS was sent

The LCD screen then displays:



The screen and the keys are unavailable during the entire duration of the operation (about two minutes). At the end of the operation, two screens may be displayed depending on whether the test SMS has been sent successfully:

Screen	Send test SMS Operation completed	Send test SMS Impossible for the moment
Meaning	The message has been successfully sent. You will receive an SMS within the next two or three minutes, according to the display of this screen.	The GSM module was unable to send the SMS as it was handling other operations or the network quality was not sufficiently good to send the SMS.

When the screen and the keys are once again available, you can start a GSM *Network quality* test to verify that the Radio Base has sufficient GSM coverage to send an SMS. You can also consult the GMS *Status* (see page 16).

Network quality

The Radio Base can measure the GSM connection quality at the location where it is placed.

Carry out a GSM network quality measurement if you move the Radio Base, and more particularly if you use the Radio Base in a closed room or at a new site reckoned to be poorly covered by the GSM operator's network.

You will then know the coverage of the GSM network at the Radio Base's location of use.

The GSM network quality is evaluated on a scale from 0 to 9.

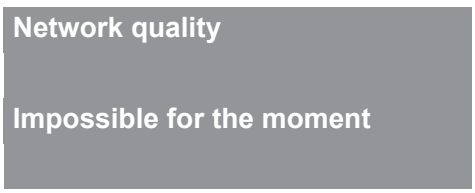
The minimum recommended network quality for proper operation of the *Vel'Phone*® service is 3/9.

In the *GSM function* sub-menu:

1. Press the key until *Network quality* is displayed

2. Press the key to test the GSM network

The screen and the keys are unavailable during the entire duration of the operation (about two minutes). At the end of the operation, two screens may be displayed depending on the test result

Screen		
Meaning	The operation was successful. In this case, the network quality is 6 on a scale from 0 to 9.	The operation could not be executed. The GSM module is already busy handling other operations. Try again later.

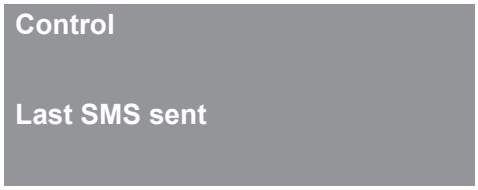
GSM control

Last SMS sent

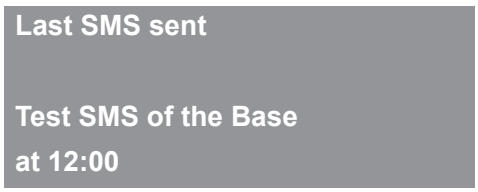
This function enables to view the last SMS sent from the Radio Base.

In the ***GSM function*** sub-menu:

1. Press the key until ***Control*** is displayed
2. Press the key to enter the function
3. Press the key until ***Last SMS sent*** is displayed

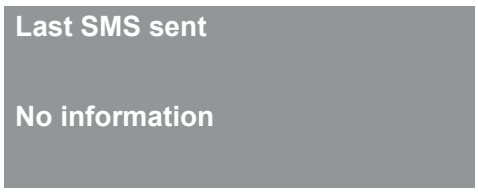


4. Press the key to view the last SMS sent



The text is located on the third line. The time at which the SMS was sent appears on the fourth line.

If no SMS was sent, the following screen is displayed:



GSM status

This function provides information on the GSM module status. This information may be useful for MEDRIA personnel who may need to know the operating state of the Radio Base.

In the ***GSM function*** sub-menu:

1. Press the key until ***Control*** is displayed
2. Press the key to enter the function
3. Press the key until ***Status*** is displayed

4. Press the key to enter the function

First screen:

In the present case, the GSM module is processing an operation.

Second screen:

The Radio Base is in the process of sending an SMS. We can read the first twenty characters of the SMS being sent.

Third and last screen:

In case of a malfunction, an error code is displayed. This code will be communicated to the MEDRIA technician so that the source of the problem may be diagnosed.

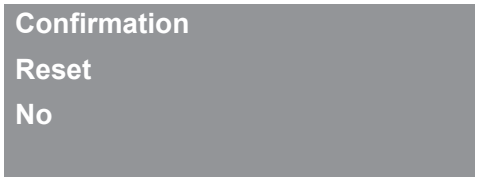
GSM reset

Generally, this is carried out by a MEDRIA technician. It is useful to eliminate certain causes of freezing.

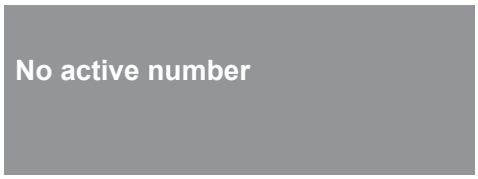
In the ***GSM function*** sub-menu:

1. Press the key until ***Control*** is displayed
2. Press the key to enter the function
3. Press the key until ***Reset*** is displayed

4. Press the key to enter the function



5. Press the key to reset
6. Press the key to validate the *Yes*



This function deactivates the telephone numbers and deletes the SMS being sent.

7. Once the resetting is done, wait for about two minutes before checking the numbers registered or modifying them if necessary (in case of incorrect number registered). Then, activate the telephone numbers of your choice.

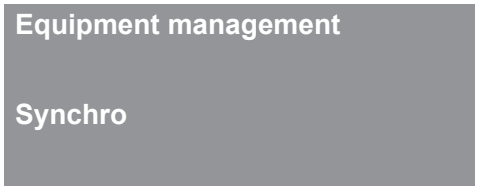
2.3.3. Equipment management

Synchronisation of equipment

This operation synchronises the equipment within the Radio Base's range.

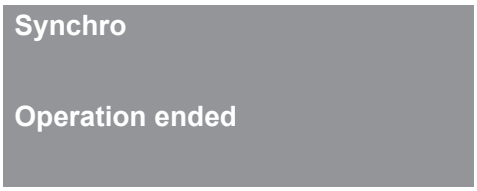
In the *Equipment management* sub-menu:

1. Press the key until *Synchro* is displayed



2. Press the key to start the synchronisation

The screen and the keys are unavailable during the duration of the operation (a few seconds).

	
The screen above is displayed during the synchronisation phase	The screen above is displayed when the synchronisation phase is complete

Addition of equipment

The Radio Base communicates only with the registered equipment. It is therefore essential to register all the new equipment on the Radio Base.

To register a sensor, it must be placed beforehand **between 5 and 10 m** (*16.4 – 32.8 ft*) from the Radio Base.

If you wish to register several sensors consecutively, make sure that they are at least 1 m (*3.3 ft*) from each other.

To register a Radio Relay, it must be placed beforehand **between 20 and 30 m** (*65.6 – 98.4 ft*) from the Radio Base.

Radio communication must occur between the equipment and Radio Base during the registration.

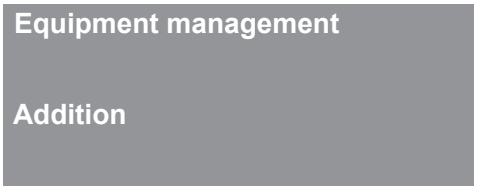
The Radio Base is capable of communicating with different types of equipment :

TV = vaginal thermometer (*Vel'Phone*®)
AX = Axel sensor® (*HeatPhone*®)
RR = Radio Relay
TS = ThermoBolus® Small (*San'Phone*®)
TM = ThermoBolus® Medium (*San'Phone*®)
TL = ThermoBolus® Large (*San'Phone*®)

Enter the type (2 letters) and the serial number of each equipment (no. consisting of 5 letters or numbers of the type "00XXX").

In the ***Equipment management*** sub-menu:

1. Press the key until ***Addition*** is displayed



2. Press the key to enter the function

3. Press the or keys to move the cursor and the or keys to select the type and then the serial number in digits or in letters.
   Enter the serial number of the equipment correctly. Differentiate, in particular, between:

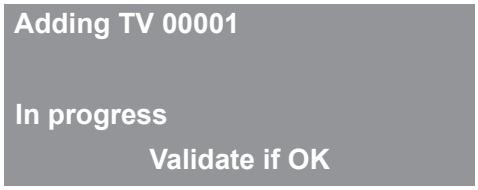
• The capital letter O and the number zero (displayed as Ø)
• The capital letter I and the number 1

4. Press the **key** to save the equipment

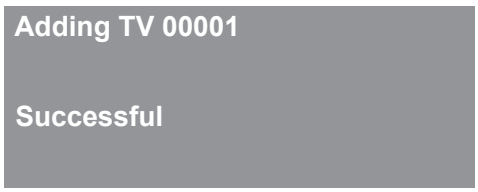
5. Press the or **keys to confirm or cancel the** registration of the equipment (TV 00001 in this case)

6. Press the key to validate the registration of the equipment

The screen and the keys are unavailable during the duration of the operation (a few seconds).



Once the operation is complete, the screen displays the result:

	
If the operation has been successful, the screen displays ***Successful***. In this case, the Radio Base knows the equipment that has been registered	If the operation has not been successful, the screen displays ***Failed***. In this case, the Radio Base was unable to communicate with the equipment designated by the number entered in the previous step. There can be several reasons for this failure. The main ones are that the equipment is not within the range of the Radio Base, too close to the Radio Base (less than 5 m (16.4 ft)) or that the number entered does not correspond to the equipment.

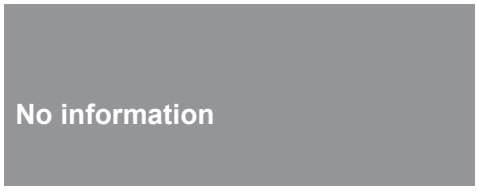
To return to the function for registering equipment and thus register other equipment, press the key.

Deletion of equipment

In the ***Equipment management*** sub-menu:

1. Press the key until ***Deletion*** is displayed

2. Press the key to enter the function
   Two displays are then possible:

	
No equipment is registered on the Radio Base	One or more equipments are registered on the Radio Base

3. Select the equipment to be deleted using the keys or
4. Press the key to confirm the selection of the equipment
   A confirmation screen is displayed:

5. Press the or **keys to confirm or cancel the** deletion of the equipment (TV 00001 in this case)
6. Press the key to validate the deletion of the equipment displayed

2.3.4. Research of equipment

This functional feature enables to identify if one of the equipment registered on the Radio Base is within its field of communication.

Procedure to research equipment

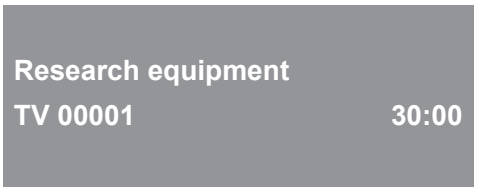
In the main menu:

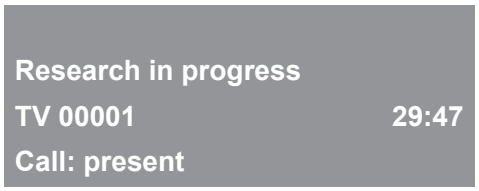
1. Press the key until *Research equipment* is displayed

2. Press the key to enter the function

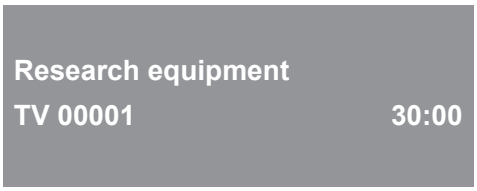
3. To start a research session, first select on the Radio Base the type and serial number of the equipment to indicate to the Radio Base what equipment to look for:
   Press the or keys to move the cursor and the or keys to select the type and then the serial number of the equipment in digits or in letters
4. Press the key to start the research session

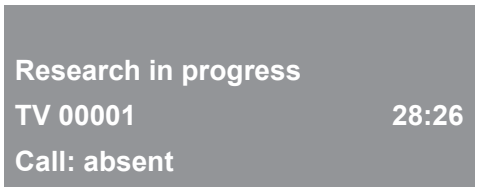
If the TV 00001 sensor is within range of the Radio Base, the following screens will be displayed alternately approximately every second:





If the TV 00001 is not within the Radio Base's range, the following screens will be displayed:





- A **counter** is displayed at the end of the second line to measure the time remaining (a research session lasts 30 minutes). You must know that so long as the Radio Base is researching equipment, it cannot perform any other action. When this counter reaches 0, the research session stops and the Radio Base automatically returns to the main menu in its standard operation.
- The start of the second line displays the **number of the equipment** researched.
- The third line displays a **flashing message** :

Call: present	Call: absent
The equipment is within the range of the Radio Base and it successfully communicates with it.	The equipment is too far from the Radio Base. It cannot communicate with it.

Finding of a lost sensor

Once the flashing message ***Call: present*** is displayed, the ***Research equipment*** function also enables to find a lost sensor (See “Location Device”, page 63), using the research box Location Device (provided by MEDRIA or its authorised distributors).

Press the key to interrupt the research session and return to the main menu.

2.3.5. Configuration of the Radio Base

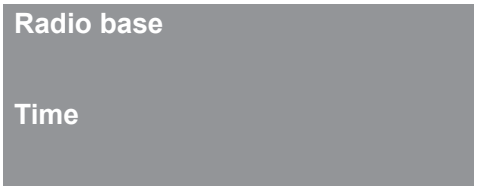
Time

You can modify or check the Radio Base's internal clock.

The winter time/summer time change is done automatically.

In the ***Radio base*** sub-menu:

1. Press the key until *Time* is displayed



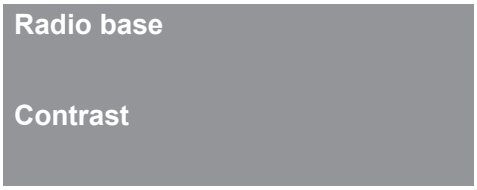
2. Press the key to enter the function

3. Press the or keys to move the cursor and the or keys to select the numbers
4. Press the key to save the new time

Contrast

You can adjust the display contrast value within the range 1 to 3.
In the *Radio base* sub-menu:

1. Press the key until *Contrast* is displayed



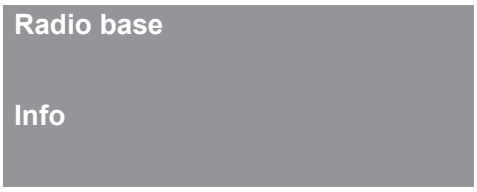
2. Press the key to enter the function

3. Press the or keys to adjust the contrast
4. Press the key to save the new contrast setting

Information

In the *Radio base* sub-menu:

1. Press the key until *Info* is displayed



2. Press the key to enter the function

You then have the following information:

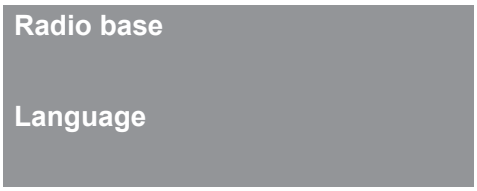
- the equipment type (*BA* = Radio BAse) followed by its serial number
- the communication network *sensors – Radio Base* (Network)
- The Radio Base software version

Language

You can configure your Radio Base in French, Dutch, German, Italian, Spanish or English.

In the *Radio base* sub-menu:

1. Press the key until *Language* is displayed



2. Press the key to enter the function.
   French is configured by default.

3. Press the key to save the desired language

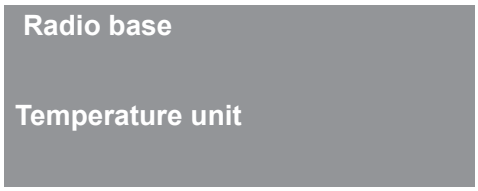
4. Press the key to save the new configuration

Temperature unit

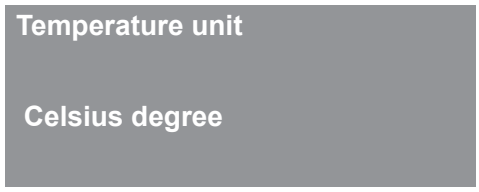
You can configure the unit of your Radio Base in Celsius degree (°C) or Fahrenheit degree (°F).

In the ***Radio base*** sub-menu:

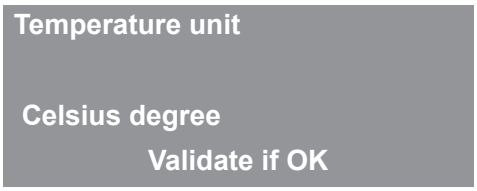
1. Press the key until ***Temperature unit*** is displayed

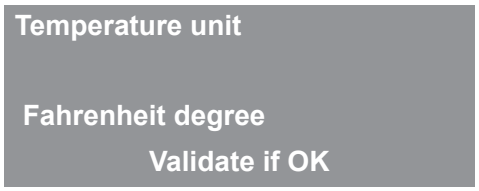


2. Press the key to enter the function
   Celsius Degree is configured by default



3. Press the key to display the desired unit

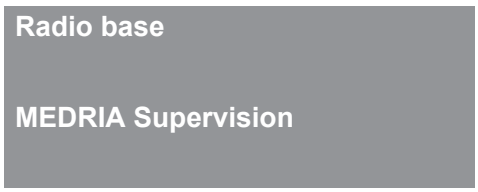




4. Press the key to save the new configuration

MEDRIA supervision

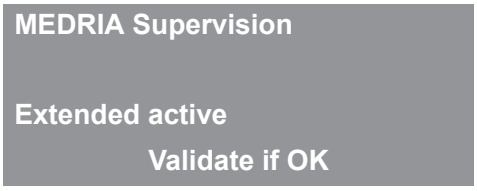
This function allows MEDRIA to remotely supervise your equipment by receiving information SMS from your Radio Base.



We have configured three supervision modes:

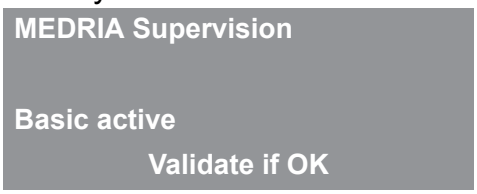
- ***Extended active***

This supervision mode is configured by default. It allows MEDRIA to receive and view all the SMS sent by your Radio Base. MEDRIA can thus remotely analyze a situation and provide first level remote maintenance.



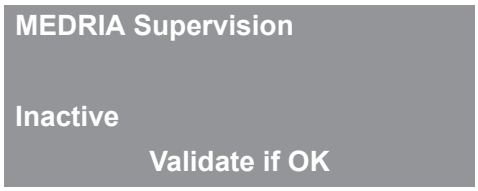
• ***Basic active***

This supervision mode reduces the number of SMS sent to the MEDRIA server. Only restarting information or information concerning certain malfunctions of the Radio Base will be remotely viewed by MEDRIA. Remote maintenance is limited.



• ***Inactive***

This supervision mode deactivates the sending of SMS to the MEDRIA server. This mode was developed to enable the deployment of equipment outside French territory to avoid incurring additional communication costs (international tariff to send SMS to France).



1. Press the + or - keys to select the supervision type
2. Press the ↵ key to validate

Connection

Configuration

The Radio Base can manage different connection types in order to transmit its data or enable maintenance operations.

The connection types available are:

- ***RS232***: activates transmission by serial port to a PC (reserved for maintenance operations)
- ***DWS®***: activates the transmission to the *Daily Web Services®* (DWS®) [requires a DWS® account in the case of certain MEDRIA services]
- ***None***: deactivates the data transmission (default configuration)

If you are not subscribed to DWS® services, keep the setting on *None*.

DWS® synchronisation

This function is exclusively reserved for MEDRIA technicians.

It enables forced recovery of data or requests sent by MEDRIA.

DWS® connection test

This function is useful only if you are subscribed to DWS® services. It enables to verify the possibility of connecting the Radio Base to DWS®.

This function returns a result from 0 to 11:

0	SIM card incorrectly inserted
1	PUK code required
2	PIN code required
3	PIN code different from '0000'
4	No GSM network found
5	Access to DWS forbidden

6	Unknown connection parameters
7	GPRS connection problem
8	Unknown DWS server
9	DWS connection forbidden
10	DWS server unreachable
11	Connection to DWS possible

ISM control

The function enables to manually activate and verify the synchronisation of Radio Bases amongst them in case several Radio Bases are nearby.

Synchronisation

Once the function is activated, the Radio Base listens for ten seconds. During this time, the Radio Base verifies if it picks up other equipment. If this the case, it synchronises at the first report. This enables the Radio Bases not to disturb each other as synchronised Radio Bases transmit and listen at the same time.

This function is automatically activated every fifteen minutes.

Synchro status

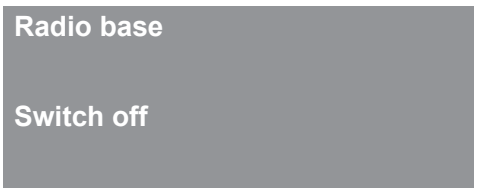
- The 1st line indicates the time of the last attempt
- The 2nd line indicates the time when the equipment listened to another Radio Base
- The 3rd line indicates the number of the Radio Base with which the equipment is synchronised.
- The 4th line indicates the time for the next attempt in minutes

Switching off

If you do not have calvings for more than a month, you can switch off the Radio Base.

In the ***Radio base*** sub-menu:

1. Press the ÷ key until ***Switch off*** is displayed



2. Press the key to enter the function
   By default, the screen displays *No*

3. Press the key to select *Yes*
4. Press the key to validate

To turn on the Radio Base:

1. Press the key
2. Press the key

2.4. Power supply of the Radio Base

2.4.1. Battery operation

The Radio Base has been designed for the greatest operating flexibility, as a result it can also operate on a battery so that it can:

- Be placed close to animals without restriction
- Enjoy greater mobility on the farm

The Radio Base can operate independently with its battery for up to two months depending on the required service.

You can leave the Radio Base connected to its charger for continuous recharging.

2.4.2. Battery management SMS

The Radio Base is equipped with a GSM module that sends SMS to active numbers registered in the Radio Base when the user must be informed regarding the battery state. These messages are sent only once to each number.

Three SMS are sent:

Battery state	Message	Concerned period
Charged	*Battery charged on the MEDRIA Radio Base BA00001, 12:56 (12:56 a.m.)*	During the work day
Low	*Low battery on the MEDRIA Radio Base BA00001, 12:56 (12:56 a.m.)*	During the work day
Very low	*Very low battery on the MEDRIA Radio Base BA00001, 12:26, possible halt in 24 h*	24 h / 24

2.4.3. Standby on low battery

If the Radio Base's battery is not recharged while the red LED flashes for several days, the voltage provided by the battery may drop below the second threshold fixed by MEDRIA.

The Radio Base then goes to standby to retain the registered data:

- the display no longer responds when a key is pressed
- No SMS may be sent

The red LED and the green LED are off.

If any key is pressed, the red LED flashes twice to indicate the standby mode.

The Radio Base's battery must be recharged.

If you connect the Radio Base to the mains while it is in *standby* mode, it may take up to two hours for it to respond. FROM this moment onwards, the green LED flashes twice every second, but no service is resumed before the battery is sufficiently charged to enter into a normal operating mode.

2.4.4. Battery recharge

To recharge the battery:

1. Take the Radio Base to the protected area dedicated to the use of the low voltage charger
2. Remove the shutter from the socket located under the Radio Base and connect the connector provided; the connector arrow must appear in front of the Radio Base

Bottom view of the Radio Base

3. Connect the low voltage charger to a mains socket (230 V)

The time for full recharging is approximately twelve hours. During the recharging, the green LED flashes twice every second.

When the battery is recharged, the Radio Base sends a ***Battery charged*** SMS.

To ensure the safety of persons and animals, the low voltage charger must be used in a protected area where it is permanently kept sheltered from water sprays and animals.

The battery charge level is indicated by the flashing of the green LED.

The green LED indicates the operating mode and the charge level of the Radio Base.

LED state	Meaning	Comments
 GREEN 1 flash per second	**Battery charged**	The Radio Base is operating normally on battery.
 GREEN  RED 1 flash every 2 seconds Both diodes may flash together or separately	**Low battery**	The Radio Base is discharged. The Radio Base sends an information SMS ***Low battery***. The Radio Base will automatically go to standby mode 48 hours after this SMS is sent.
 GREEN 1 flash every 2 seconds	**Battery very low**	The Radio Base is discharged. The Radio Base sends an information SMS ***Very low battery***. In this operating mode, all SMS are sent immediately during the day as well as at night. The Radio Base will go to standby 24 hours after this SMS is sent. It is however recommended to recharge the battery immediately in order to ensure continuity of service.
 RED 1 flash per second		
 GREEN 2 flashes per second	**Battery charging**	The Radio Base is operating on low voltage power supply.
 GREEN On continuously	**Battery completely charged**	The Radio Base is operating on low voltage power supply.
 GREEN  RED Off	**Battery completely discharged**	The red LED flashes when any key is pressed. It is mandatory to recharge the Radio Base so that the equipment can continue to operate.

2.5. Positioning of the Radio Base

The Radio Base must preferably be placed at a height of more than 1.60 m (*5.2 ft*) and at a maximum distance of 200 m (*656 ft*) from animals fitted with sensors.

In any event, it must be kept out of the reach of animals.

Thanks to its stand, the Radio Base can be:

- Placed on a wall or on a shelf
- Fixed on a wooden post or on a concrete wall using two pins

One must remain watchful about the Radio Base's environment. It is not recommended to place it close to metal sheets, metallic machines or electrical equipment.

Every time after operating the Radio Base, the user must verify the points below in order to prevent risks of injury or fall of the equipment:

- Stability of the Radio Base and its attachment on a post or on a wall
- The clearance of the Radio Base with respect to the path of persons or animals
- The GSM network quality
- The proper communication with its sensors

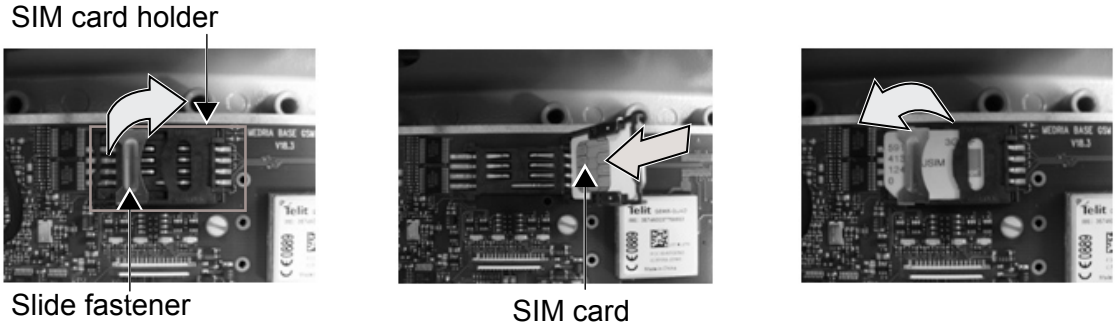
2.6. Maintenance

Before any operation, remember that the guarantee will be immediately terminated if you open the Radio Base without informing us.

When you ordered your Radio Base, MEDRIA offered you a M2M subscription for sending SMS or GPRS data.

2.6.1. Changing the SIM card

1. Switch off the Radio Base (see page 11)
2. Open the Radio Base by unscrewing the four screws on the front face



3. Unlock the SIM card holder by pushing the slide to the right
4. Insert the SIM card into the holder
5. Lock the SIM card holder by pushing the slide to the left
6. Reinstall the front face by screwing the four screws
7. Switch on the Radio Base (see page 10)

2.6.2. Troubleshooting

See page 70.

3 - VEL'PHONE®

3.1. Description of the *Vel'Phone*®

The *Vel'Phone*® kit includes:

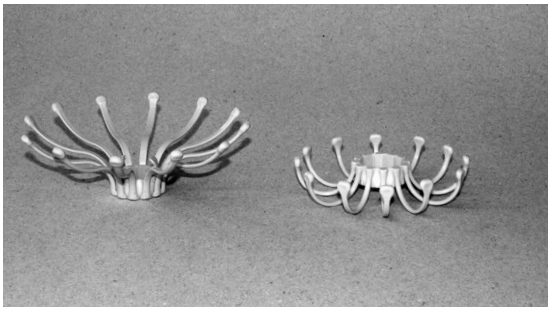
- The *Vel'Phone*® recipe;
- Vaginal thermometers
- Flexible appendages
- Thermometer applicator
- Two cleaning nets for the appendages

3.1.1. Vaginal thermometer and appendages

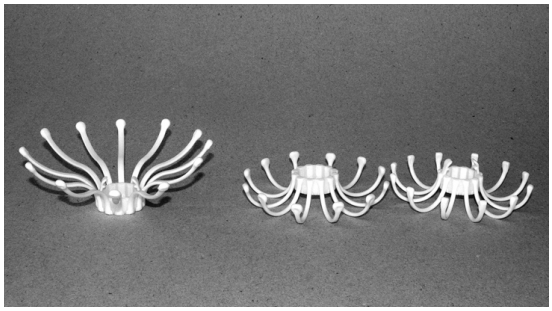
The thermometer is cylindrical (also see page 47) :

Vaginal thermometer

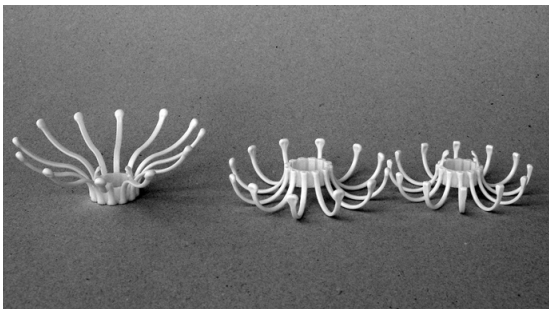
The appendages have different shapes and colours depending on their purpose (also see page 47):



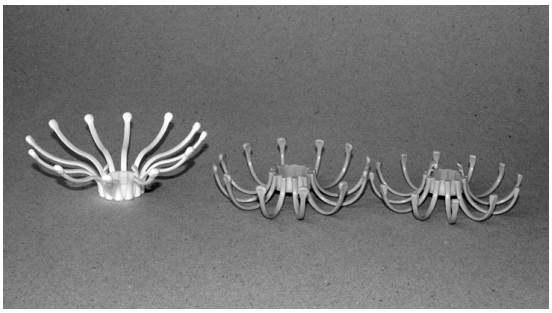
Heifer kit (turquoise)



Medium cow kit (white)



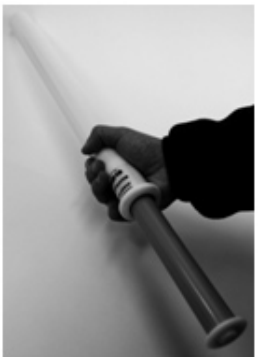
Large cow kit (yellow)



Very large cow kit (orange)

3.1.2. Vaginal applicator

The applicator is designed to facilitate the insertion of the thermometer into the animal's vaginal canal.



3.2. *The Vel'Phone*® SMS services

The services provided by the *Vel'Phone*® consist of SMS messages sent by the Radio Base after inserting a vaginal thermometer into a cow or a heifer.

The different types of messages sent are described below.

3.2.1. SMS classification

The SMS sent by the Radio Base are differentiated by their level of urgency.

There are three urgency levels:

SMS type	Definition	SMS concerned
Urgent SMS	Sent without delay during and outside the work day	Low battery
		Radio Base test (GSM coverage)
Delayed SMS	Sent without delay during the work day and depending on the nightly delay configured outside the work day	TV activation
		TV expulsion
Information SMS	Sent only during the work day	Low battery
		Battery charged
		Radio Base restart
		Daily reports
		Calving prediction (probable/expected/low temperature)

3.2.2. Thermometer activation

After every insertion of a thermometer into an animal and the time (5 to 10 min) required for the temperature to rise above 36.4° C (*97.5° F*), the Radio Base sends an *Urgent SMS* such as: ***00AB1 activation at 8h30*** where ***00AB1*** designates the number of the thermometer used and ***activation at 8h30*** (8:30 a.m.) the event that has occurred and the time of detection of the event by the Radio Base.

This SMS is sent to each mobile phone activated in the Radio Base:

- It thus recalls the number of the thermometer that just opened a monitoring session
- It confirms the proper functioning of monitoring

3.2.3. Daily reports

As soon as the ***Daily reports*** function is activated in the Radio Base after configuring the sending schedule selected by the farming supervisor, an *Information SMS* is sent every day in the morning and /or in the evening, to each activated mobile phone number.

This daily report is sent as long as a monitoring session is opened by one of the *Vel'Phone®* thermometers.

The daily report SMS provides the temperature measured in each animal during the half-hour prior to sending the SMS and enables to:

- Confirm every day the proper functioning of the monitoring
- Acquire or maintain the habit of monitoring the increase and decrease in the temperature of each cow to detect the preparation of calving then the labour phases of the animal

At the scheduled times for sending a daily temperature report, the Radio Base sends an SMS with the following information to each activated mobile phone number:

SMS			Meaning
Report	***1/1***	***18h30*** (6:30 p.m.)	Daily report time
00AB1	***38.9 (102° F)***		Thermometer number and temperature in ° C (° F)

If the last radio communication with one or more thermometers dates back to more than 30 minutes, information regarding the age of the corresponding temperature reading is provided along with the temperature, for example:

SMS			Meaning
00AB5	*39.2 (103° F)*	*46 min*	Last temperature measured 46 min ago
00AB1	*38.8 (102° F)*	*+1 h*	Last temperature measured more than an hour ago
00AB9	*38.9 (102° F)*	*+1 d*	Last temperature measured more than 24 hours ago

These thermometers find it difficult to communicate with the Radio Base and are probably at the radio's range limit. In this case, it may be necessary to move the Radio Base or the animals to improve the radio communications.

The non-receipt of the daily report when a monitoring session is open characterises an operating anomaly that requires you to get closer to the Radio Base as soon as possible.

A frequent cause of non-receipt of the daily report is the deactivation of the mobile phone number or the ***Daily reports*** function by an employee. Another cause is the momentary failure of the GSM operator's SMS service.

3.2.4. Calving prediction

The calving prediction aims to relieve the breeder of monitoring all animals by helping him focus his attention on those that require it.

The prediction has three main objectives:

- Inviting the breeder to isolate the cow and more particularly the heifer ready to calve, under the best conditions of accessibility, hygiene and safety before its waters burst; i.e. pasture or in a calving pen in the building
- Avoid moving or rushing the animal during calving to prevent any secretion of adrenaline while the animal must naturally secrete endomorphine, because "during calving, endomorphine is good, adrenaline is very bad!"
- Allow the breeder to focus his attention on the cows and heifers that are reported to be ready to calve within 48 hours

The calving prediction method used by the *Vel'Phone*® is based on the observation of the progressive rise in body temperature of each animal during the four or five days that precede the calving, then a relatively sudden lowering of the temperature in the 6 to 48 hours before calving.

Two algorithms concurrently monitor each animal after activation of the ***Calving prediction*** function which occurs within twelve hours following the insertion of the thermometer.

Activation of the ***Calving prediction*** function requires the recording of a temperature greater than the pre-programmed *model* normal circadian temperature of a cow.

The first algorithm monitors the absolute variation of the temperature that has dropped below 39° C (*102.2° F*) after having previously risen above 39° C (*102.2° F*).

The second algorithm monitors the relative variation of the temperature that has dropped close to 2° C (*3.6° F*) after having risen close to 41° C (*105.8° F*).

The combination of the two calving prediction algorithms enables the Radio Base to generate two different prediction SMS according to the amplitude of observed signals.

As shown in the SMSs texts given below, if the calving has not occurred within 48 hours, the breeder is inclined to believe that the animal is facing a calving problem.

The breeder may decide to carry out a clinical examination of the animal after 72 hours.

Message "*Possible calving in 48h*"

The first information SMS titled ***00AB1, 2h00 possible calving in 48h*** is created as soon as at least one of the two algorithms has crossed its triggering threshold :

- ***00AB1*** designates the thermometer and ***2h00*** (2 a.m) the message creation time

The message ***Possible calving in 48 h*** created outside a work day is sent only the next day by SMS, at the beginning of the work day.

The reliability of the message ***Possible calving*** is on the average greater than 75 %, but may vary depending on the breeds and environmental conditions.

Message "*Expected calving in 48h*"

The second information SMS titled 00AB1, ***8h00 expected calving in 48 h*** is created after the thresholds of both algorithms are crossed over a period of two hours :

- ***00AB1*** designates the thermometer and ***8h00*** (8 a.m) the message creation time

The message ***Expected calving in 48 h*** created outside a work day is sent only the next day by SMS, at the beginning of the work day.

The probability of receiving the message ***Expected calving in 48 h*** is on the average greater than 60 % for heifers and more than 40 % for cows.

The reliability of the message ***Expected calving in 48 h*** is on the average greater than 90 %, but may vary depending on the breeds and environmental conditions.

Clinical examination

It is recommended to carry out a clinical examination of the cow or the heifer when more than 72 hours have passed after the ***Expected calving in 48 h*** SMS is received.

3.2.5. Low temperature alert

When the Radio Base detects a body temperature lower than 37.8° C (*100.0° F*) for more than two consecutive hours, it creates an *Information SMS* titled ***00AB1, Low temperature alert < 37.8° C (100.0° F).***

This type of message is relatively rare and is mainly created in case of milk fever in dairy cows or uterine torsion in the entire breed.

Metabolic disorder and loss of appetite then favour the lowering of the temperature.

This ***Low temperature*** alert calls for a clinical examination as soon as possible.

3.2.6. Absent thermometer alert

The objective of the ***TV alert absent*** function is to inform the breeder by SMS when a thermometer inserted into an animal has not communicated with the Radio Base for a duration greater than the maximum communication time defined in the Radio Base.

The *TV alert absent* SMS can be generated by the Radio Base only if the latter has communicated with the thermometer after its insertion into an animal, in order to observe the rise in temperature of the sensor confirming the insertion.

This observation is characterised by the receipt of the ***Activation SMS***.

It is therefore recommended to always pay attention to the proper receipt of the ***Activation SMS*** in the few minutes following the insertion of a thermometer into an animal.

The *TV alert absent* SMS will be generated only once for every activation following the insertion of the thermometer into an animal.

In case of persistent absence of the thermometer, it is the ***Daily report*** that reminds the breeder regarding the absence of the thermometer in question, by replacing the indication of its temperature by the indication ***TV absent since...***

The ***TV alert absent*** SMS is sent in the following format :

00KOH TV alert absent at 13h30

where ***00KOH*** designates the thermometer number that no longer communicates with the Radio Base and ***13h30*** (1:30 p.m.) designates the time when the non-communication period exceeded the maximum delay configured beforehand in the Radio Base.

See page 42.

3.2.7. Thermometer expulsion

As soon as a thermometer activated in a monitoring session – temperature greater than 36.4° C (*97.5° F*) – is expelled by the waters and observes its temperature falling below 36.0° C (*96.8° F*), the Radio Base creates a delayed *Expulsion SMS* of the type ***00AB1 expulsion at 8h51***, where ***00AB1*** once again designates the thermometer used and ***8h51*** (8:51 a.m.) the precise time of detection of the temperature below 36.0° C (*96.8° F*).

Outside the work day, the *Delayed* ***Expulsion SMS*** is sent to the activated mobile phones only after expiry of the ***Nightly delay*** which may have been configured by the breeder on the Radio Base to between 0 minute and 2 hours.

If the nightly delay is set for a period of 45 minutes, the animal can work without being worried of a hasty arrival of the breeder.

However, the *Delayed* ***Expulsion SMS*** is sent without delay during the day.

For a heifer it is recommended to wait for about two hours between the time of expulsion of waters indicated in the SMS and the setting up of calving assistance.

For a cow, this waiting time before intervention may be reduced to less than an hour.

3.3. Configuration of the *Vel'Phone®* services on the Radio Base

3.3.1. Work day

The breeder can determine his ***Work day*** by configuring the start and end of the period. This configuration is important as it governs the sending of SMS (see page 33).

In the ***Vel'Phone®*** sub-menu:

1. Press the key until ***Work day*** is displayed

2. Press the key to enter the function

By default, the configuration of the ***Work day*** is set from 7h (7 a.m.) in the morning to 23h (11 p.m.) in the evening

1. To change the time, press the or keys
2. Press the key to save the new time
3. Do the same for the end of the work day

3.3.2. Daily reports

The Radio Base can send you every day two temperature reports from equipped animals. These temperature reports are sent as an *Information SMS*.

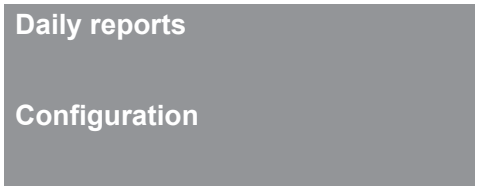
For this, it is necessary to:

- Check the time setting of the Radio Base (see page 22)
- Configure the time of sending the report (see page 39)
- Activate the ***Daily reports*** function

Configuration/modification of daily reports

In the ***Daily reports*** function:

1. Press the key until ***Configuration*** is displayed



2. Press the key to enter the function

By default, the time of the ***Morning report*** is set for ***8h00***, i.e. at 8 a.m., you will receive the SMS with the summary of temperatures from equipped animals. Similarly, the afternoon report is set for 20h (8 p.m.).

To modify the time :

1. Press the or keys.
2. Press the key to save the new time.

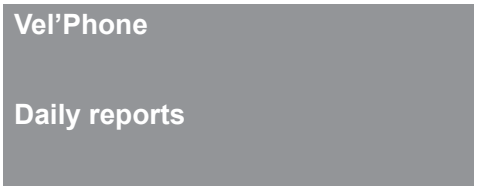
Repeat the same for the afternoon report.

The time for sending *Daily reports* is set in the time range predefined in the *Work day* sub-menu, in order to avoid receiving a *Daily report* during the night.

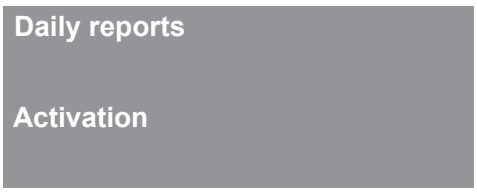
Activation /deactivation of daily reports

In the *Vel'Phone*® sub-menu:

1. Press the key until *Daily reports* is displayed



2. Press the key to enter the function
3. Press the key to access the *Activation* line



4. Press the key to view the information
   By default, the *Morning report* is inactive.

5. Press the or keys to activate the *Morning report*
6. Press the key to validate and go to the afternoon report

7. Press the or keys to activate the *Afternoon report*
8. Press the key to validate

To deactivate, press the or keys and validate.

The time of the report in the process of activation is displayed on the second line. If the time doesn't suit you, go to the *Configuration* menu.

3.3.3. Nightly delay

This function enables to manage the *Delayed SMS*.

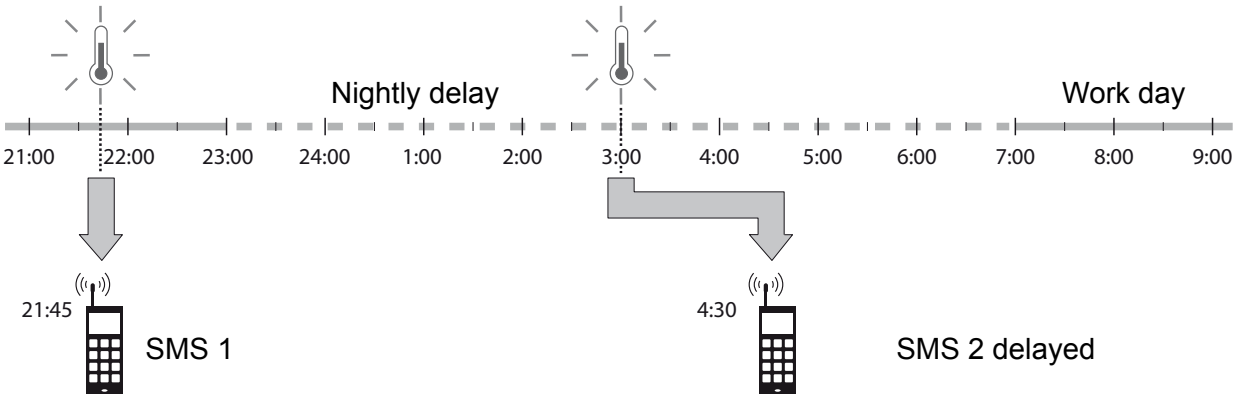
Only SMS managed outside the work day are delayed by the configured nightly time duration.

It is possible to delay an SMS by 0 minutes to 2 hours.

We recommend that the ***Nightly delay*** value must be set at 45 minutes.

This function has been developed to improve the user's comfort as well as to let the animal work without being worried about a hasty arrival of the breeder.

Operating principle



Consider that the SMS 1 and 2 are both of the *delayed type:*

- SMS 1 is sent immediately to the active numbers registered in the Radio Base as the triggering occurred during the work day.
- SMS 2 will be sent at the triggering time plus the delay time that has been input into the ***Nightly delay*** function. For example, a thermometer is expelled at 3h00 (3 a.m) in the morning. If the nightly delay value is 1h30, the ***Expulsion SMS*** will be sent at 4h30 (4:30 a.m).

Adjustment of the nightly alert delay

1. Press the key until ***Nightly delay*** is displayed

   Vel'Phone

   Nightly delay

2. Press the key to enter the function

   Nightly delay
   from 23:00 to 07:00
   01:24
   Validate if OK

3. Press the or keys to enter the desired delay
4. Press the or keys to set the number of hours and minutes
5. Press the key to validate

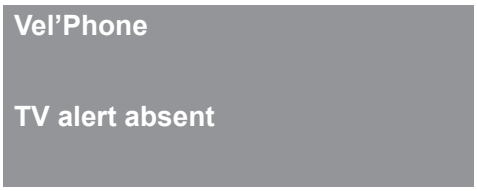
3.3.4. TV alert absent

The *TV alert absent* function enables to activate and configure the maximum non-communication delay.

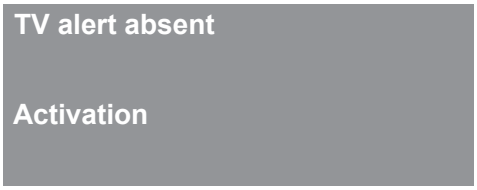
Activation

In the *Vel'Phone*® sub-menu:

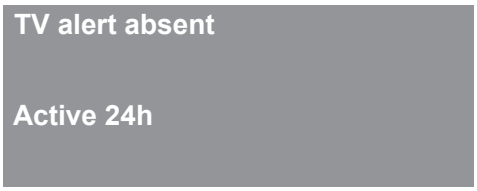
1. Press the key until *TV alert absent* is displayed



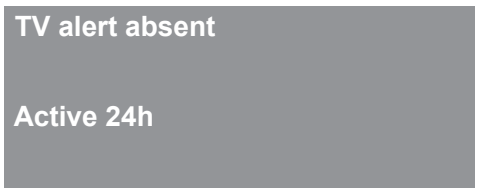
2. Press the key to enter the function

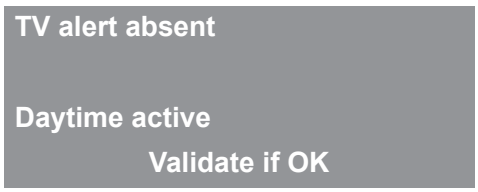


3. Press the key to display the status



4. Press the or keys to select the activation mode of the *TV alert absent function*
   You must select one of the two activation modes of the *TV alert absent* function:
   - Active 24h: the function will send the *TV alert absent* SMS without delay, 24 hours a day
   - Daytime active: the function will send the *TV alert absent* SMS only during the work day

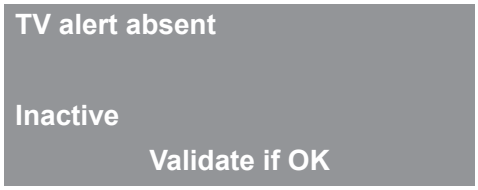




5. Press the key to validate

You can also deactivate the *TV alert absent* function:

- *Inactive*: the function will not send any *TV alert absent* SMS.



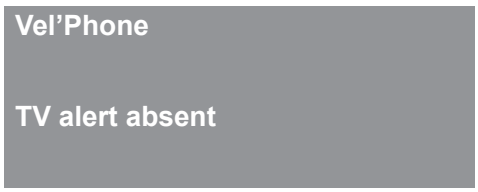
1. Validate *Inactive* to deactivate the function
2. Press the ↵ key to validate

The configuration of the *TV alert absent* function defines the maximum non-communication delay beyond which an *Alert SMS* will be generated.

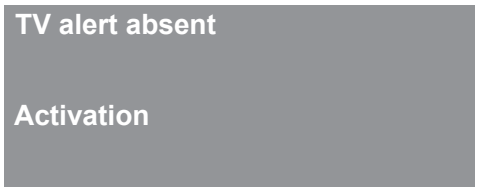
Configuration of the maximum delay

In the *Vel'Phone*® sub-menu:

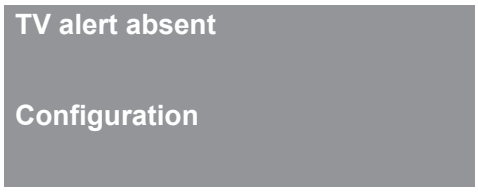
1. Press the ÷ key until *TV alert absent* is displayed



2. Press the ↵ key to enter the function



3. Press the ÷ key until *Configuration* is displayed



4. Press the ↵ key to carry out the modifications

You can set this delay from 30 minutes to maximum 12 hours in steps of 15 minutes.
The factory setting is as follows:

Daytime active with a delay of 8 hours

Configuration example:

Activation	Daytime active
Configuration	3:00 Delay fixed at maximum 3 hours

Operating example:

	1	2
Event	Receipt of a *TV alert absent* SMS	Receipt of a *Daily report* SMS
Message content	*00KOH TV alert absent at 13h30* (1:30 p.m.)	*Reported 1/1 18h00* (6 p.m.) *00KOH absent since 7h30* (7:30 a.m.)
Message type	SMS type *TV alert absent*	Indication of the absence delay
Meaning	The animal, released after 10 a.m. left for grazing with the rest of the herd. The 00KOH thermometer did not communicate with the Radio Base from 10:30 a.m. to 1:30 p.m.	The thermometer did not communicate with the Radio Base since 10:30 (6 p.m.) minus the observed delay of 7h30).

The *TV alert absent* SMS being generated only once after activation of the thermometer, it is the *Daily report* SMS that reminds the breeder about the absence of a thermometer by replacing the indication of its temperature by the indication : *00KOH absent since 7h30* (7:30 a.m.).

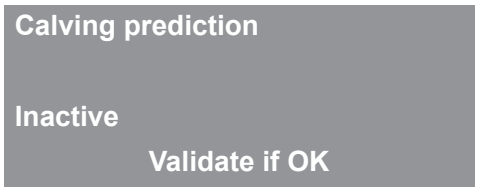
3.3.5. Calving prediction

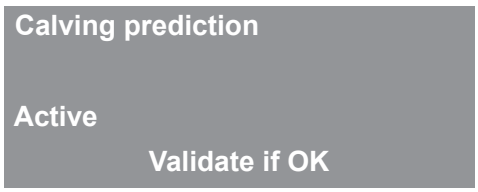
The calving prediction is based on the analysis of temperature reports from animals equipped with vaginal thermometers (see page 35).

In the *Vel'Phone*® sub-menu:

1. Press the key until *Calving prediction* is displayed

2. Press the key to enter the function





3. Press the [+] or [-] keys to activate or deactivate the function
4. Press the [↵] key to validate

3.4. Setting up the *Vel'Phone*® thermometers

3.4.1. Recommended maintenance materials and products

In addition to the *Vel'Phone*® *equipment,* we recommend that you use the following materials and products for the maintenance and disinfection of appendages, setting up thermometers, hygiene and care of animals :

- Plastic brush with soft bristles
- Disposable cloth or absorbent paper towels
- Bucket with water at a temperature of 30° C (*86° F*) to 35° C (*95° F*), if possible
- Second bucket recommended in case of multiple insertions
- Chlorhexidine solution 5 % to be diluted
- *Bovigel* or *VetGel* type lubricating gel

Never use bleach solution, detergent or any iodised product for the maintenance of thermometers and appendages.

3.4.2. Moment of insertion

The vaginal thermometer must be inserted into the cows or heifers seven to ten days before the end of gestation, the objective being to observe the expulsion within the fifteen days following the insertion.

The due date at 280 days of gestation is not accurately known for a suckling breed when the gestation results from natural service. It is also more difficult to predict the end of gestation date in a suckling breed due to the extension of the gestation by more than two to three weeks after the due date. The first criterion for assessing the proper moment to insert a thermometer must be provided by the clinical examination of the animal. Therefore we recommend that you maintain your habits of observing calving preparation signs, which may be specific to the breed of your cows.

We otherwise recommend that you insert the vaginal thermometer:

- One week before the due date for dairy breeds: Holstein, Brown Swiss, Jersey, etc.
- On the due date for mixed breeds: Normande, Montbéliarde, Abondance, Tarentaise, Simmental, etc.
- One week after the due date for suckling breeds: Charolaise, Limousine, Blonde d'Aquitaine, Rouge des Près, Parthenaise, Belgian Blue, etc.

3.4.3. Adaptation of the appendages to the animal

Take care to properly adapt the appendages to the morphology of the animal that you will equip, to ensure that the thermometer is maintained as required until the moment it has to be expelled by the waters.

The adaptation of appendages enables an essential compromise in order to:

- Limit the discomfort to animals
- Reduce the risk of injury to vaginal mucosa
- Reduce the risk of premature expulsion

Three or four types of appendages of different dimensions, materials and colours have been provided to you following the description you sent us regarding the breeds of your herd.

The turquoise /white /yellow /orange colours of appendages constitute a simple and legible code, easy to memorise to adapt the appendages to the characteristics of your cows.

Breeds		**Heifers**	**Cows**	
		Calving order **1**	Calving order **2 to 5**	Calving order **5 and above**
Milk cows	Holstein, Brown Swiss, Jersey	Turquoise	White	White
Mixed	Normande, Montbéliarde, Abondance, Tarentaise, Simmental	Turquoise / white	White	Yellow
Suckling	Belgian Blue	Turquoise	Turquoise / white	-
	Limousine, Blonde d'Aquitaine, Parthenaise,	Turquoise	White	Yellow
	Charolaise, Rouge des Près	Turquoise / white	White/yellow	Yellow/ orange

The yellow appendages must be reserved for mixed and multiparous suckling cows having the largest opening.

The orange appendages are exclusively reserved for multiparous Charolaises or Rouges des Près cows that have managed to expel an equipped yellow thermometer too early.

3.4.4. Installation of the appendages on the thermometer

Presentation

Appendages

Select the kit that is most suited to the morphology of the animal that you will equip.
There are four appendage kits depending on the size of the cow:

Appendage kit	Colour	Comments
Heifer	Turquoise	1 ring with *S* shaped arm and 2 hooks 1 ring with *C* shaped arms
Medium cow	White	1 ring with *S* shaped arms and 2 hooks 1 ring with *C* shaped arms 1 ring with *C* shaped arms and 2 hooks
Large cow	Yellow	1 ring with *S* shaped arms and 2 hooks 1 ring with *C* shaped arms 1 ring with *C* shaped arms and 2 hooks
Very large cow	Orange	1 ring with *S* shaped arms and 2 hooks 1 ring with *C* shaped arms 1 ring with *C* shaped arms and 2 hooks

- **Rings with *C* shaped arms**

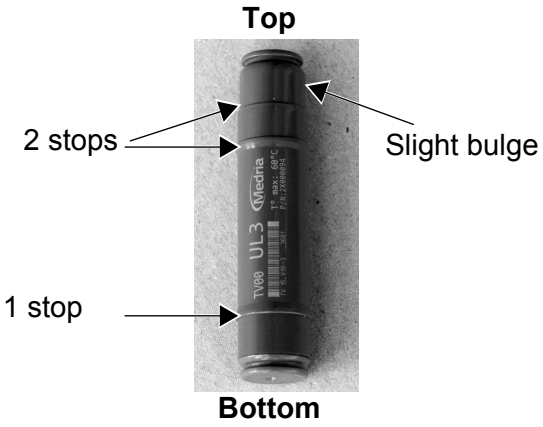
Help hold the thermometer in place.

- **Rings with *S* shaped arms**

Receive the waters at the time of expulsion.

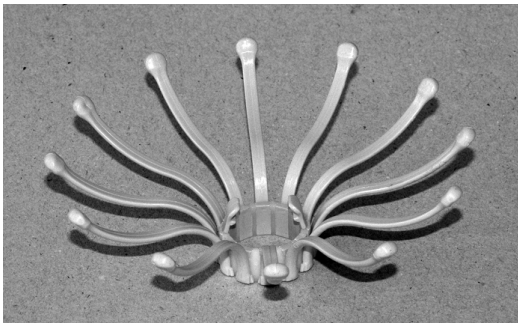
Thermometer

Identify the orientation of the thermometer to install the appendages correctly:

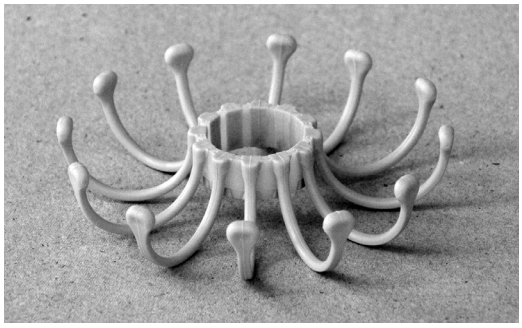


Installation of the *heifer* appendages

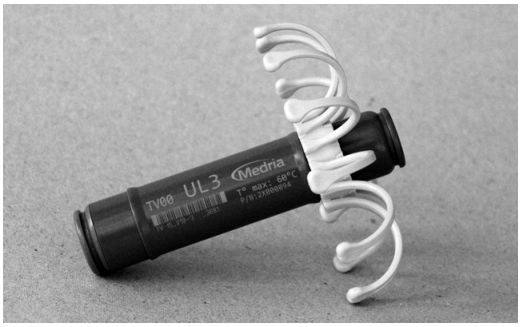
1. Identify the two turquoise appendages.



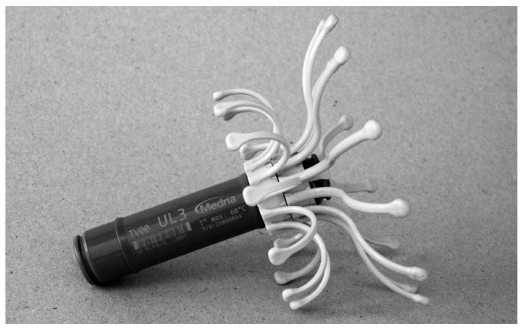
Turquoise appendage
***S* shaped arms – 2 hooks**



Turquoise appendage *C*
shaped arms



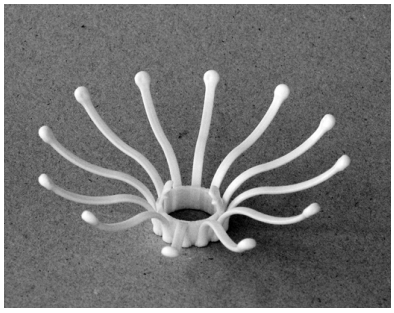
2. Slide the appendage with the ***C*** shaped arms on top of the thermometer, arms downward.



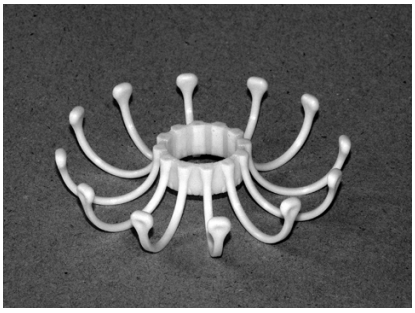
3. Slide the appendage with ***S*** shaped arms on top of the first appendage, arms upward.
4. Press on the appendage to lock the two hooks in the groove.

Installation of the *cow* appendages

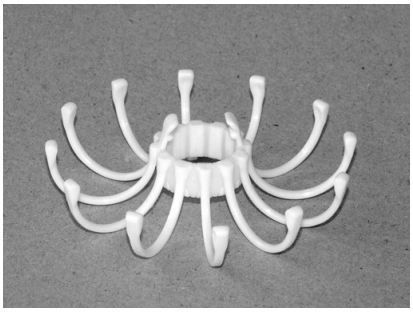
1. Identify the three white appendages.



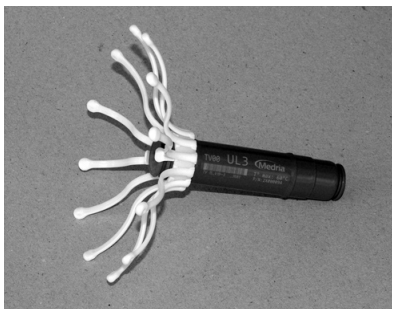
White appendage
***S* shaped arms – 2 hooks**



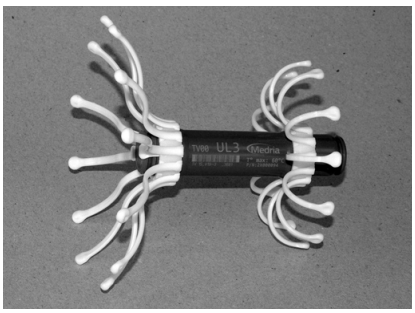
White appendage
***C* shaped arms (without hook)**



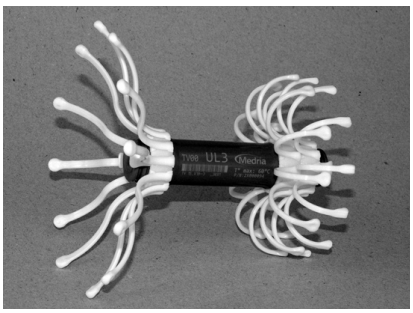
White appendage
***C* shaped arms – 2 hooks**



2. Slide the appendage with the ***S*** shaped arms at the bottom of the thermometer, arms downward.
3. Press on the appendage to lock the two hooks in the groove.



4. Slide the white appendage with the ***C*** shaped arms on top of the thermometer, arms upward.



5. Slide the last appendage with ***C*** shaped arms and hooks on top of the second appendage, arms upward.
6. Press on the appendage to lock the two hooks in the groove.

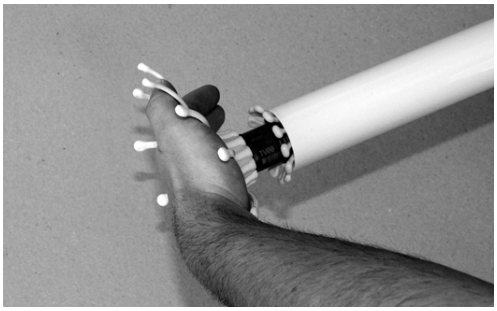
The same principle applies to the two other appendage kits (yellow and orange).

Disassembly of the appendages

Open the hooks in order to unlock the rings and slide to release the appendages from the thermometer.

3.4.5. Installation of the thermometer in the applicator

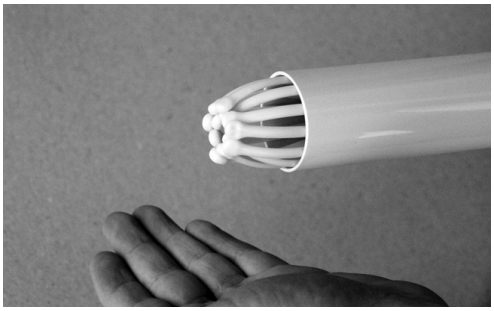
1. Insert the thermometer equipped with appendages into the tube by pushing with the flat of the hand
2. Push the thermometer into the applicator with the thumb



Step 1

Step 2-a

Step 2-b



Final appearance

3. Put the applicator back into the pre-soaking bucket

3.4.6. Disinfection by pre-soaking before reuse

The pre-soaking of thermometers and appendages is the only disinfection operation for the *Vel'Phone*® equipment.

In order for it to be effective, the disinfection by pre-soaking must be done for completely clean equipment. This is why we recommend that you clearly separate this disinfection operation from the prior cleaning operation that you have carried out after previous use.

The use of warm water adjusted to between 30° C (*86° F*) and 35° C (*95° F*) increases the effectiveness of the disinfection and significantly reduces the discomfort felt by the animals.

Disinfection by pre-soaking must be done before every new insertion.

1. Before you approach the animals to restrain them, provide for a clean bucket filled with about five litres of warm water with a temperature adjusted to between 30° C (*86° F*) and 35° C (*95° F*)
2. Pour 25 ml of 5 % chlorhexidine solution into the warm water with the dispenser, according to the dosage indicated on the dispenser.
3. Immerse the thermometers equipped with their appendages as well as the end of the applicator tube into the warm water. The time for disinfection by pre-soaking must not exceed fifteen minutes.

3.4.7. Hygiene, lubrication and insertion

Effective restraining of animals is an essential condition for proper insertion.

We request you to take all possible measures to prevent accidents and to reduce as much as possible the animal's mobility in order to avoid any risk of injury to you as well as to the animal, particularly during insertion of the applicator into the vaginal canal.

While maintaining a safe distance from the animals, take out the equipped thermometer from the bucket to insert it into the applicator before putting it back again into the pre-soaking bucket, ready for use.

With the animal restrained, carefully wash the animal's vulva using a disposable cloth or absorbent paper towelette dipped in pre-soaking water.

It is recommended to use a second bucket in case of multiple insertions in order not to contaminate the pre-soaking water.

Dry the vulva with the towelette or a new disposable absorbent paper before lubrication :

- Pour out a large knob of lubricating gel into your hand
- Spread the gel over the entire surface of the applicator tube
- Apply the rest of the gel on either side of the vulva

Insert the applicator into the vaginal canal by gently parting the labia and by tilting it upward to get around the urinary meatus. Straighten it up horizontally to continue the insertion.

You will have to push gently to rupture the hymen in heifers having undergone artificial insemination.

Place the thermometer after the pelvic passage by pulling the white tube of the applicator towards you.

3.4.8. Retrieval of the thermometer

The vaginal thermometer must be retrieved in two cases:

- After receiving an SMS about the ***Expulsion*** of waters.
  The thermometer equipped with its appendages must be retrieved as soon as possible after the expulsion during calving. It is then relatively easy to locate - close to the area where the animal has settled down to give birth - and find it in the litter.
- When you wish to interrupt the monitoring of an animal that you have equipped to monitor its temperature.

Proceed as follows :

1. Clean the vulva
2. Lubricate the examination glove
3. Search the vagina to extract the vaginal thermometer

3.4.9. Cleaning of the thermometers and appendages

We request you to clearly distinguish between the two following operations in order to perform them separately:

- **Mechanical cleaning with clean water** of the equipment after its last use
- **Disinfection of equipment by pre-soaking** before new insertion into an animal. After retrieving the thermometer, separate the appendages from the thermometer body by parting the clips with the thumbs, then remove the large particles by a first rinsing with clean water. Do not soak.

Cleaning of the thermometer body

This mechanical cleaning can be done with clean water or with neutral soap using a soft bristle brush or a cloth towelette. Rinse the thermometer thoroughly.

Cleaning of the appendages

The appendages are also cleaned mechanically and this can be done in two different ways:

- Cleaning in a linen washing machine [max 40° C (*104° F*)] in one of the nets provided for the purpose
- Cleaning with clean water with a soft bristle brush

Make sure that the cleaned equipment is stored in the blue trunk.

Never use bleach solution, acidic or alkaline detergent or any iodised product for cleaning and disinfecting thermometers and appendages.

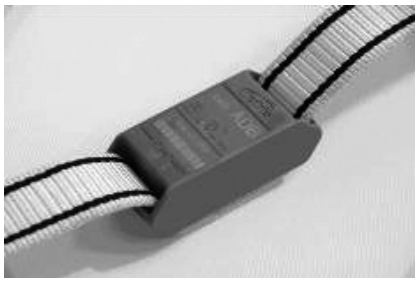
4 - HEATPHONE®

4.1. Description of the *HeatPhone*®

The *HeatPhone*® kit includes:

- The *HeatPhone*® recipe;
- *Axel*® sensors
- Straps

The *Axel*® sensor comes in the form of a sturdy box placed on the animal's collar using a strap provided with the *HeatPhone*® kit:



Axel sensor

4.2. Principles of the *HeatPhone*®

The *HeatPhone*® detects heat in heifers, dairy cows and suckling cows. It informs you about the detection of heat by SMS on your mobile phone and asks you to approach your animals or to observe their activity reports on the *Daily Web Services*® (DWS®) when you consider it necessary.

The *HeatPhone*® operates in 4 stages:

- *Axel* ® sensors constantly measure and record the activity of animals.
- The GSM Radio Base collects the reports and sends them to remote servers every 30 minutes.
- The servers archive the data, analyse them, then detect the heat.
- *DWS* ® updates the information in your account and sends SMSs.

4.3. Use of the *HeatPhone*®

4.3.1. Components of the *HeatPhone*®.

The operation of the *HeatPhone*® service relies on the use of the 4 following components:

The Radio Base

The Radio Base is the main equipment of the MEDRIA infrastructure, it communicates with all types of sensors. It must be placed in the middle of the stock and constantly powered by the low voltage charger or by a solar panel.

The Radio Base collects the data recorded by the *Axel*® sensors and then transmits them every 30 minutes by the GSM network to the computer servers of *DWS*® to feed the stock's database.

The Radio Base must be configured in *DWS*® mode in its ***Radio base / Connection*** menu.

The GSM mobile phone

An SMS on the user's mobile phone indicates the beginning of the heat.

Axel® sensors

The *Axel*® sensor placed in the animal's collar includes a 3-axis accelerometer that measures and records every 5 minutes - 9 statistical data of its activity, such as the angles, vertical and lateral accelerations.

This box is placed during the fertility period to detect the heat. It may remain continually on the animals to monitor all events relating to reproduction, health and performance. These other detection services will complete MEDRIA's offer in the course of time.

The *Axel*® sensor works for more than 6 years independently, records data of the last 7 days and can communicate with the Radio Base from more than 200 metres away depending on the environment. It is provided with the collar adapted to the morphology of your animals. It can also be installed on standard Automatic Feeding Station collars.

The *Daily Web Services*® or *DWS*®

DWS® is the internet application that provides monitoring and detection services designed by MEDRIA. The operation of *DWS*® relies on the use of a secure computer infrastructure to store and process stock data.

Its positioning on an externalised computer infrastructure enables it to be accessed from any location via the Internet and it is continuously updated without intervention on the user's personal computer equipment.

The processing of *Axel*® data enables to characterise and detect the behaviour of heat. It also enables to monitor rest, feeding behaviour and ingestion and rumination times. A password-protected personal account is created at the address ***http://dws.medria.fr*** to provide access to services, data, curves and logs of the farm.

4.3.2. Configuration of the *HeatPhone*® service. on *Daily Web Services*®

The My account tab

The ***My account*** tab enables to configure the *DWS*® according to the user's wishes:

- Registration of his contact details;
- Modification of the password;
- Modification of the language used;
- Modification of the time zone of the farm;
- Choice of the temperature unit (degree Celsius or Fahrenheit);
- Registration of an unlimited number of users authorised to access the *DWS*® account with their controlled rights.

The Services tab

The ***Services*** tab enables to configure the *HeatPhone service*®:

- Registration of employees who can receive SMSs and their telephone numbers;
  → In ***SMS recipient*** click on the ***Add a recipient*** button;
  → Enter the name and the telephone number in international format (+336...);
  → Indicate the time zone;
  → Check ***HeatPhone*** ® and ***System*** in the proposed services;
  → Then click on ***Save*** at the bottom of the page;
- Choice of the identification mode of animals included in the SMSs, work number, name, etc.;
- Choice of the SMS sending mode: ***instant*** or ***reports*** (at the selected times) for each recipient;
- Definition of hours of the work day during which SMSs will be sent;
- Adjust the sensitivity (if necessary) of heat detection for heifers and for cows. The heifer/cow categorisation is determined according to the age of the first calving. By default, *DWS*® considers that a milk heifer will calve at 26 months and that a suckling cow will have its first calving at 35 months.

4.3.3. The *HeatPhone*® every day

Installing collars on animals

1. Place the *Axel* ® sensors 4 to 5 weeks before AI on the heifers and 3 weeks after calving on the cows;
2. Check the installation of the sensor on the collar: the inscriptions will be against the animal's neck;
3. Note down the sensor number and the number of the animal on which it will be placed;
4. Direct the arrow marked on the *Axel* ® sensor towards the animal's head;
5. Place the collar on the narrowest portion of the neck just behind the ears;
6. Tighten the collar so that it is properly adjusted to the neck's morphology. It is recommended to correctly adjust the tightening of the collar in order to allow at least the thickness of the hand to pass.;
7. Remove the collar once the cow is confirmed pregnant, i.e. approximately 3 months after installation.

After installing the *Axel*® collar on the animal, it is recommended to create its assignment to an animal by identifying the latter in the ***Equipment*** tab of *DWS*®.

If the sensor is not assigned to an animal, the events detected by the *HeatPhone*® will be sent to the user but will refer to the sensor number and not the identification mode of animals selected by the user (name, work no., etc.).

The *HeatPhone*® automatically detects the installation and removal of *Axel*® collars on animals:

***Axel*® collar**

- It detects the installation of the *Axel*® collar after 2h30 of measuring the activity,
- Generates the installation event, then reinitialises the heat detection algorithm of the *Axel*® collar.

Removal of the *Axel*® collar after the gestation report

The *DWS*® automatically detects the removal when the *Axel*® collar is maintained immobile on the ground, or hooked on for more than 1 hour. It generates a removal event and stops its heat detection algorithm.

If a new animal is equipped immediately after removal of an *Axel*® collar, it is mandatory to delete as soon as possible the existing assignment on the *DWS*® in favour of the new assignment to correctly reinitialise the detection algorithm.

Operations on the *DWS* ®

Connection to the *DWS*® interface

1. On the *DWS*® site ***http://dws.medria.fr***;
2. Enter the user id (farm no.) and the password;
3. Click on ***OK***.

It is recommended to use Mozilla Firefox as web browser (avoid Internet Explorer for *DWS*®).

Registration of the animals in *DWS* ®

1. Go to the ***Animals*** tab;
2. Click on the ***+ Add an animal*** button;
3. Complete all the fields accurately: particularly the date of birth, the breed and the group (to be created, with a minimum of 5 animals in a group) which are determining elements for detections;
4. Click on ***Save***.

The registration of animals can be done automatically and daily if your *DWS*® application accesses the stock database of the stock establishment that provides the MEDRIA solution.

Assignment of a sensor to an animal

It is strongly recommended to assign the *Axel*® collar with an animal to:

- Identify the animal in the SMSs, for every event generated on the *DWS*®, and for the archival of data;
- Reinitialise correctly the heat detection algorithm after installing the *Axel*® collar;
- Activate the group activity compensation on this *Axel*® collar.

If the *Axel*® collar is not assigned to an animal:

- The SMSs will indicate only the *Axel*® sensor number;
- The algorithm will not be able to take advantage of the group activity compensation.

Procedure

1. Go to the ***Equipment*** tab
2. Select the concerned sensor (AX for *Axel*® sensor);
3. Click on the ***Create an assignment*** button
4. Select the concerned animal from the drop-down list
5. Enter the precise date and time when the collar was installed
6. Click on ***Create an assignment***.

The assignment on *DWS* ® must be done within a maximum period of 5 days after installing the collars on the animals.

Deletion of an assignment between sensor/animal

1. Go to the ***Equipment*** tab
2. Select the row of the concerned sensor (AX for *Axel*®);
3. Click on the ***Delete an assignment*** button
4. Click on ***Delete the assignment between sensor/animal***.

Constitution of animal groups

The constitution of animal groups on the *DWS*® enables to reserve a digital processing specific to every animal group to differentiate, for example, the group activity compensation of heifers and cows.

The compensation of the group activity operates from a minimum of 5 equipped animals onwards in a group. The movement of animals and the creation of groups are done very simply from the Groups tab of *DWS*®.

4.4. The *HeatPhone*® services

The services provided by the *HeatPhone*® consist in SMS messages sent by the MEDRIA servers and the availability of information analysed by the servers during consultation on the *Daily Web Services*® (*DWS*®).

These services follow on from the installation of an *Axel*® sensor on the neck of a cow or a heifer and the configuration of the generation of these messages by the user on the *DWS*®.

4.4.1. Heat detection SMSs

The SMSs sent by the MEDRIA server differ by their content. They inform the user about a specific event detected following the analysis of data acquired by the *Axel*® sensor.

Example of an SMS:

"*2988 (Fault), 28/05/2013 02h30, confirmed heat*"

SMS	Meaning
2988	Designation of the animal according to the identification mode selected by the user on the *DWS*®. Here it is the cow's work number
(Default)	Name of the group to which the animal belongs
28/05/2013 02h30	Date and time of the detected event
confirmed heat	Event type detected by the *HeatPhone*®

Event types that can be detected

Event	Meaning
Probable heat	This event is detected if the animal has shown, within the 3 to 5 previous hours, an activity different from the last 5 days that the *HeatPhone*® probably attributes to heat. **Probable** means that the heat signals are low or that the animal is beginning to indicate heat. Often followed by **Confirmed heat** within a variable period depending on the animal's activity. The minimum generation time between the two events **Probable heat** and **Confirmed heat** is 30 minutes.
Confirmed heat	Often preceded by **Probable heat**. Occurs if the animal has shown, within the 3 to 5 previous hours, an activity different from the last 5 days and strongly attributed to heat. Artificial insemination is recommended within 12 to 24 hours after the detection time indicated in the SMS.
Probable cycled heat	It is an event of **Probable heat** detected that is compared with a previous **Confirmed heat** or **Confirmed cycled heat** event at 22+/- 4 days. (The average heat cycle is considered as 22+/-4 days).
Confirmed cycled heat	It is an event of **Confirmed heat** that was compared with a previous **Confirmed heat** or **Confirmed cycled heat** event at 22+/- 4 days. (The average heat cycle is considered as 22+/-4 days).

Two heat events may not be generated at an interval of less than 72 hours, except for a confirmation preceded by a prediction (= probable).

4.4.2. The sensor installation and removal SMS

Sensor placed on the animal

This event is generated approximately 2h30 after installing the sensor on the animal, depending on the latter's activity.

Sensor not placed on the animal

This event is generated approximately 1h30 after removal of the sensor from the animal, provided that the *Axel*® sensor is motionless during this period.

4.4.3. The consultation of events on *DWS*®

The *DWS*® lists the events (that correspond to the SMS messages sent) sorted by Service, Animal or by Group.

It is possible at any time to print the list of events, as well as to add and record new events or observations that you wish keep a track of.

The list of events generated by the *HeatPhone*® can be consulted on the *DWS*® from the ***Events*** tab.

Furthermore, each event is placed on an activity curve specific to each animal, which can also be observed on the *DWS*®.

Consultation of *DWS*® activity curves

The activity curve that you observe in *DWS* ® is the summary of several different algorithms whose data is processed on MEDRIA servers.

In order to detect heat, the *HeatPhone* ® relies on the measurement and analysis of many criteria specific to each animal such as its age, its group, its daily activity outside the heat period, its rumination time, its behavioural variations, etc.

This complete algorithm generates SMS alerts to inform you about detected events.

Observing the curves on *DWS*® allows you to view these events and to assist you in your decision to inseminate.

How to consult the curves

1. In the ***Events*** tab
2. Select the concerned animal
3. Click on the ***See curve*** button

A period of 6 days is required after installing the collars to be able to observe the first curves.

Interpretation of *DWS*® activity curves

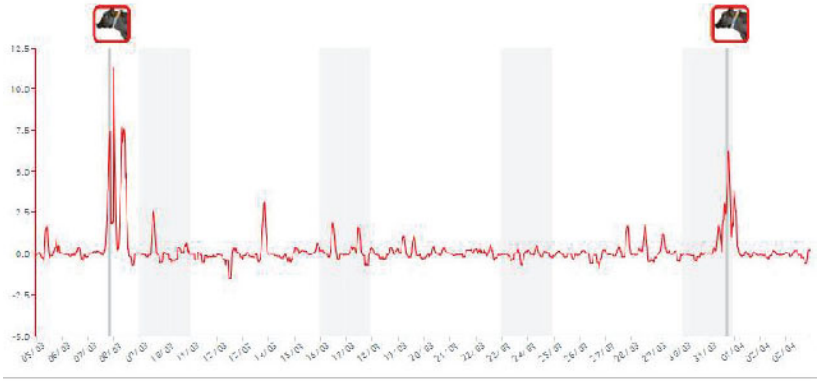
The interpretation is done according to 3 observation criteria:

- **The amplitude of the activity peak:** it must be significantly higher than the peaks that can be observed every day;
- **The hyperactivity duration**: it must be greater than 6 hours;
- **The cyclicity of 2 hyperactivities:** a heat cycle is considered to be between 18 and 26 days.

In general, we can visually confirm the heat when at least 2 of these criteria are observed on the *DWS* ® activity curve.

Examples of *DWS* ® activity curves

Example 1: Heat detected on a correctly cycled cow



- The 3 interpretation criteria are observed.
- The 2 hyperactivities observed are indeed heat.

We remark that for the same cow, 2 consecutive heats may be expressed differently.

Example 2: Heat detected on a non cycled cow

- 2 interpretation criteria are observed: the amplitude of the curve and the hyperactivity duration.
- The hyperactivity observed corresponds indeed to heat.

Example 3: Hyperactivity detected not linked to heat

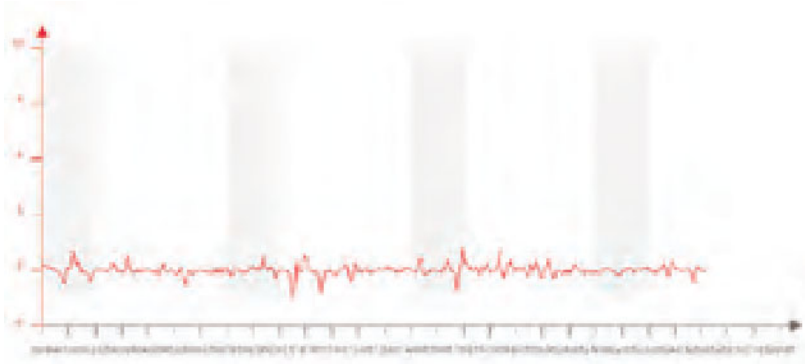
- Concerning this correctly cycled animal, the third event identified as a prediction does not correspond to its heat, only the curve amplitude criteria is observed.

Examination of reproductive disorders

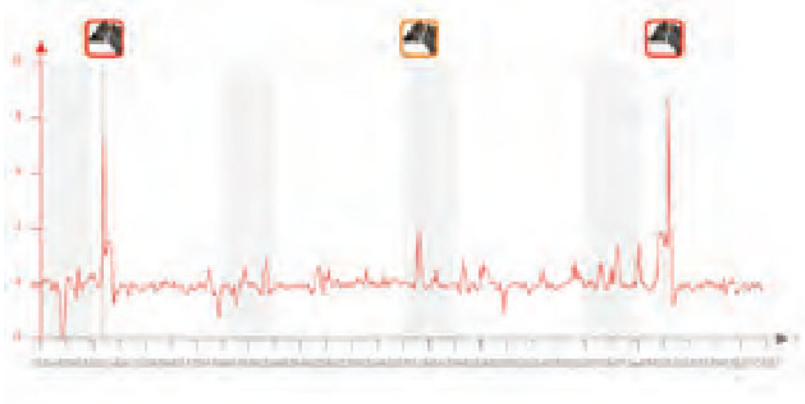
Observing activity curves may reveal certain problems that the animals are suffering from.

The consultants (inseminators, technicians, vets, etc.) may assist the user in finding the most suitable solutions for the various reproductive disorders observed.

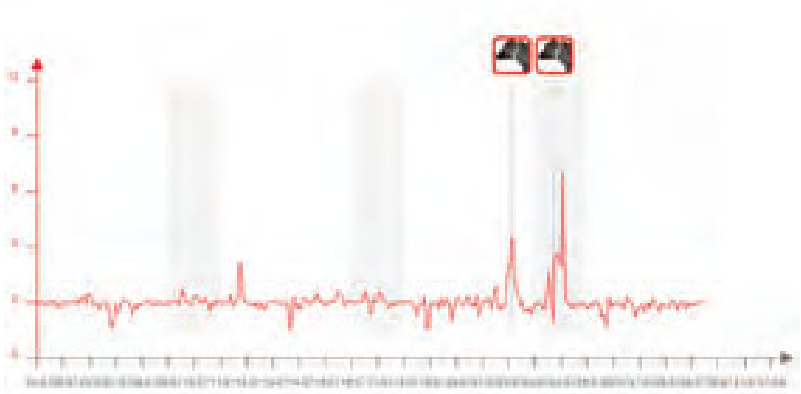
Example 1: Extended luteal phases



Example 2: Follicular waves



Example 3: Double heat



5 - LOCATION DEVICE

5.1. Presentation

The *Location Device* enables to detect or find any sensor of the MEDRIA range:

- Vaginal thermometer,
- *Axel*® sensor
- Thermo-Bolus,
- Cardio-Bolus, etc.

Using the *Location Device* requires the combined use of the Radio Base as the research using the device can only be done once the ***Research equipment*** function of the Radio Base is activated.

Research of sensors monitored by a *Radio Relay*

In the case where the sensor that we wish to find is being monitored by a MEDRIA Radio Relay, the research procedure will be executed using the Radio Base. To do this:

1. Turn off the Radio Relay so that it does not disturb the radio communication between the Radio Base and the sensor.
2. Move the Radio Base closer to the research area
3. Perform the research procedure as indicated below.

5.2. Description

The top face of the *Location Device* includes:

- 7 LEDs noted as D1 to D7 below;
- 2 keys: + and −;

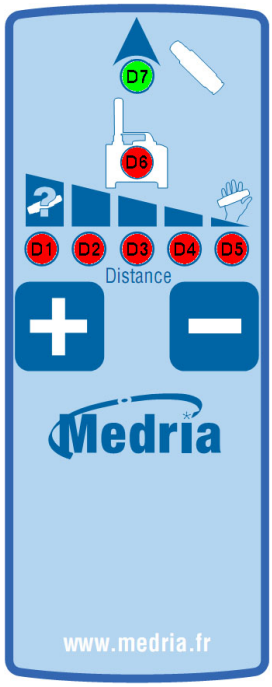
The 5 red LEDs D1 to D5 (Distance) indicate the range or the distance within which the Location Device will be able to communicate with the researched sensor.

When the LED D1 is continuously illuminated, the Location Device is at maximum capacity and can communicate with a sensor from a distance of 30 to 50 metres.

When the LED D5 is continuously illuminated, the Location Device is at minimum capacity and can communicate with a sensor from a distance in the order of 20 to 30 centimetres.

Starting with LED D1 continuously illuminated, every time the **-** key is pressed, the communication distance of the Location Device reduces, until the LED D5 is continuously illuminated.

The intermediate communication distances are indicated by one of the flashing LEDs D1 to D5, at the rate of 7 successive distance levels generated on each of the LEDs.



The red LED D6 (Base), flashes if the Location Device correctly receives the query broadcast by the Radio Base at the rate of one new signal every 2 seconds.

The green LED D7 (Sensor) flashes if the Location Device receives the response from the researched sensor.

Simultaneously with the lighting of LED D7, the device transmits an audible signal (Beep).

The 2 keys + and − perform 3 distinct functions:

- Starting the Location Device;
- Reducing **-** or respectively increasing **+** the communication distance with the researched sensor;
- Stopping the Location Device.

5.3. Switching on

5.3.1. Equipment research session on the Radio Base

See *Procedure to research equipment*, page 21

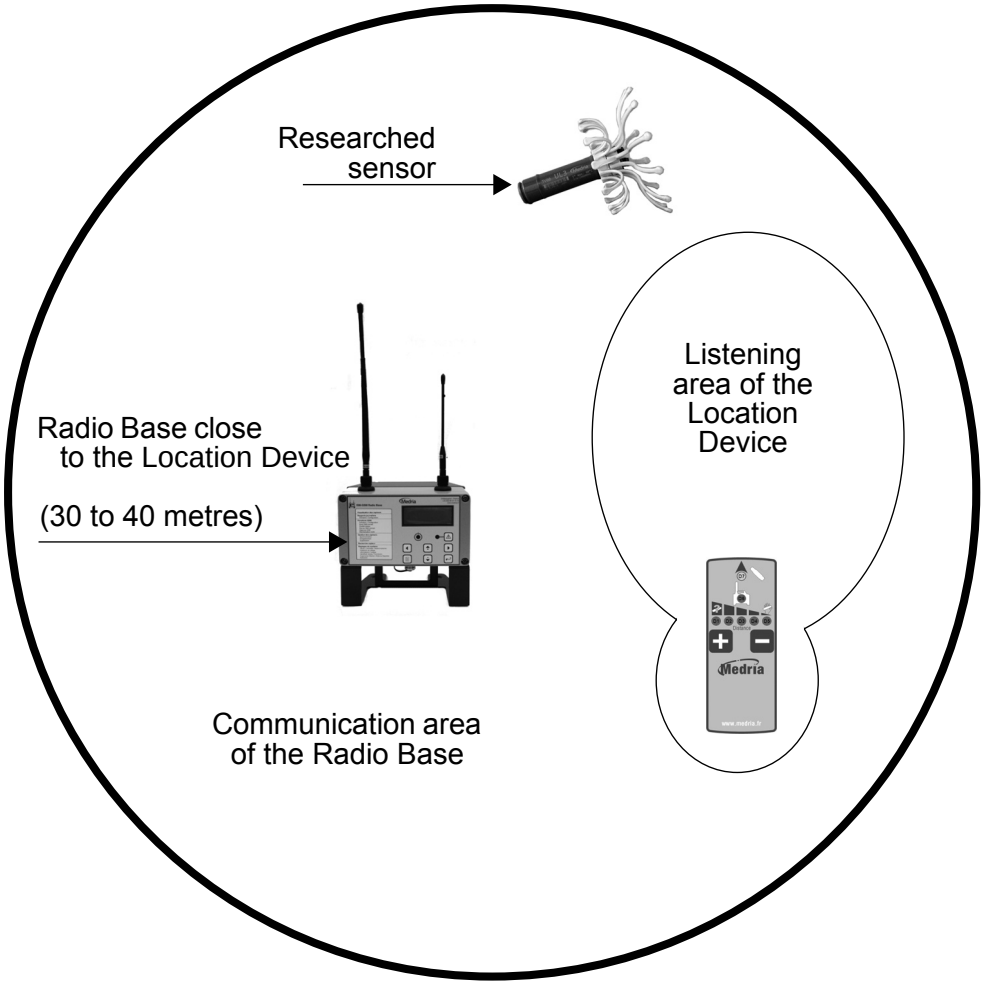
5.3.2. Operation of the Location Device.

Once the Radio Base systematically displays ***Signal: present***, the actual research can begin.

1. Switch on the *Location Device* by simultaneously pressing the 2 keys + and − for 3 seconds.
2. The 7 LEDs of the device come on simultaneously and the device emits an audible signal (Beep) for 1 second then all LEDs go off thereby confirming the start-up of the device.
3. The left-most LED D1, is continuously illuminated.
   The device uses its maximum listening capacity and can detect the presence of the researched sensor within a radius of 30 metres to 60 metres, depending on the respective orientations of the casings of the Location Device and the researched sensor.

5.3.3. Research start-up conditions

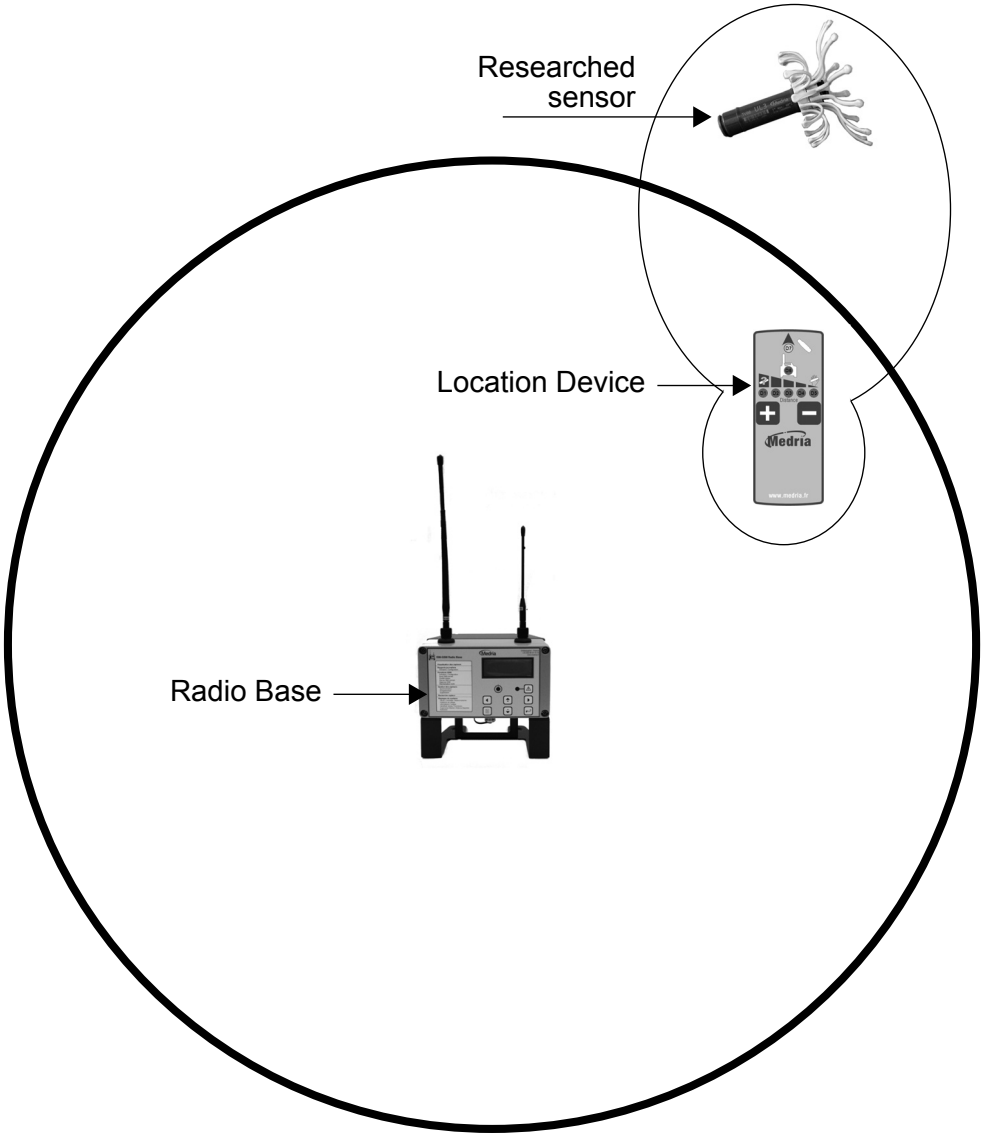
The Location Device, like the researched sensor, can communicate with the Radio Base from a distance of up to 150 metres.



On the diagram above: the LED D6 (Base) of the Location Device flashes in red, as it receives the signals emitted by the Radio Base, at the rate of one new signal approximately every 2 seconds.

The researched sensor being outside the communication area of the Location Device, the LED D7 (Sensor) of the Location Device does not flash and the latter does not emit any sound.

Rotate around the Radio Base in concentric circles by moving away a little at every revolution until the **Beep** is obtained and the LED D7 (Sensor) flashes on the Location Device.



The research then proceeds in 3 stages, which may be repeated several times.

Starting with LED D1 (Distance) that comes on when the Location Device is switched on, every time [−] is pressed, the communication distance of the device reduces.

The following communication distances being indicated by one of the flashing LEDs D1 to D5 (7 distance levels per diode).

The red LED D6 (Base) flashes only if the Location Device has received the signal emitted by the Radio Base at the rate of one new signal approximately every 2 seconds.

The green LED D7 (Sensor) flashes only if the Location Device has received the response from the researched sensor.

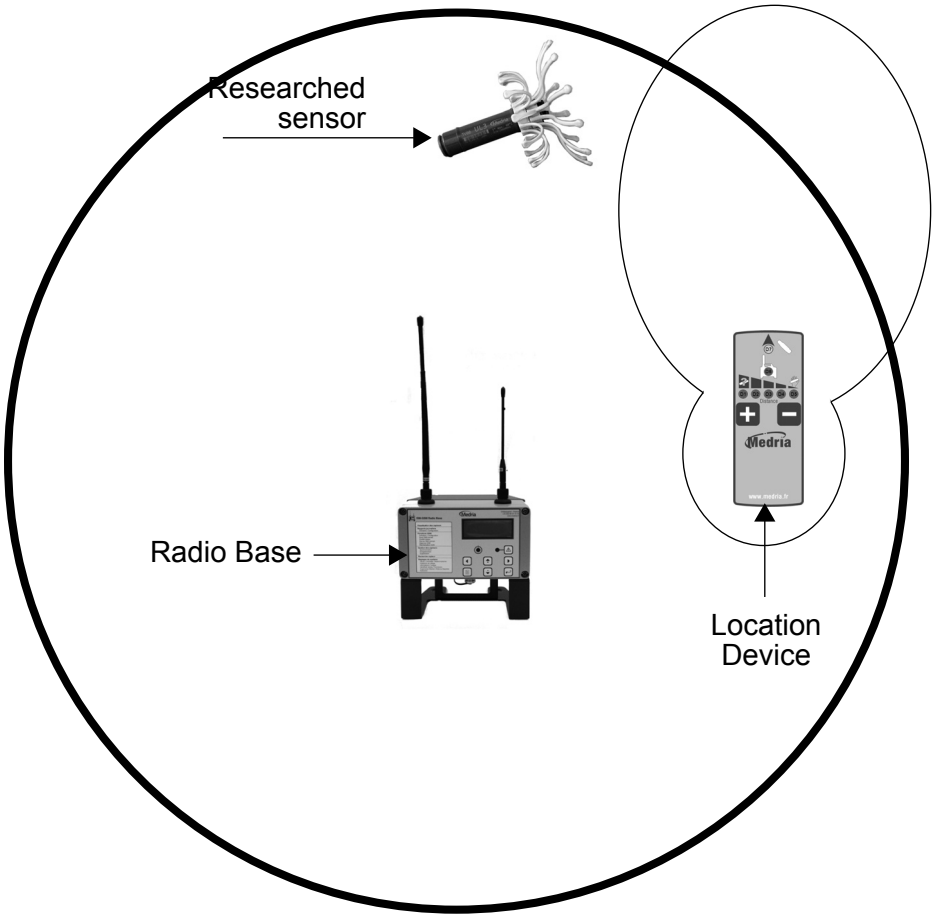
5.4. Use

5.4.1. Starting the research of a sensor

When switched off – Reduction of the listening distance

When switched off, the first objective is to reduce the listening distance of the Location Device as much as possible by regularly pressing the − key at the rate of once every 5 to 10 seconds.

The first objective is attained when the last time the − **key is pressed, the flashing of the green LED** D7 and the **Beep** stop. The device no longer emits any sound.



The sensor researched is currently outside the listening area of the Location Device.

The research sequence may be disrupted every 5 minutes for almost 11 seconds, by an automatic synchronisation operation of sensors launched by the Radio Base. During these 11 seconds, the Radio Base suspends all research signals. No flashing of the LED D6 (Base) or LED D7 (Sensor), or Beep are noted on the device any more.

During this interruption period, the user is requested to momentarily stop pressing the keys, rotating the device or moving it towards the researched sensors.

As soon as the research automatically restarts and the LED D6 (Base) flashes, the user can resume the current operation.

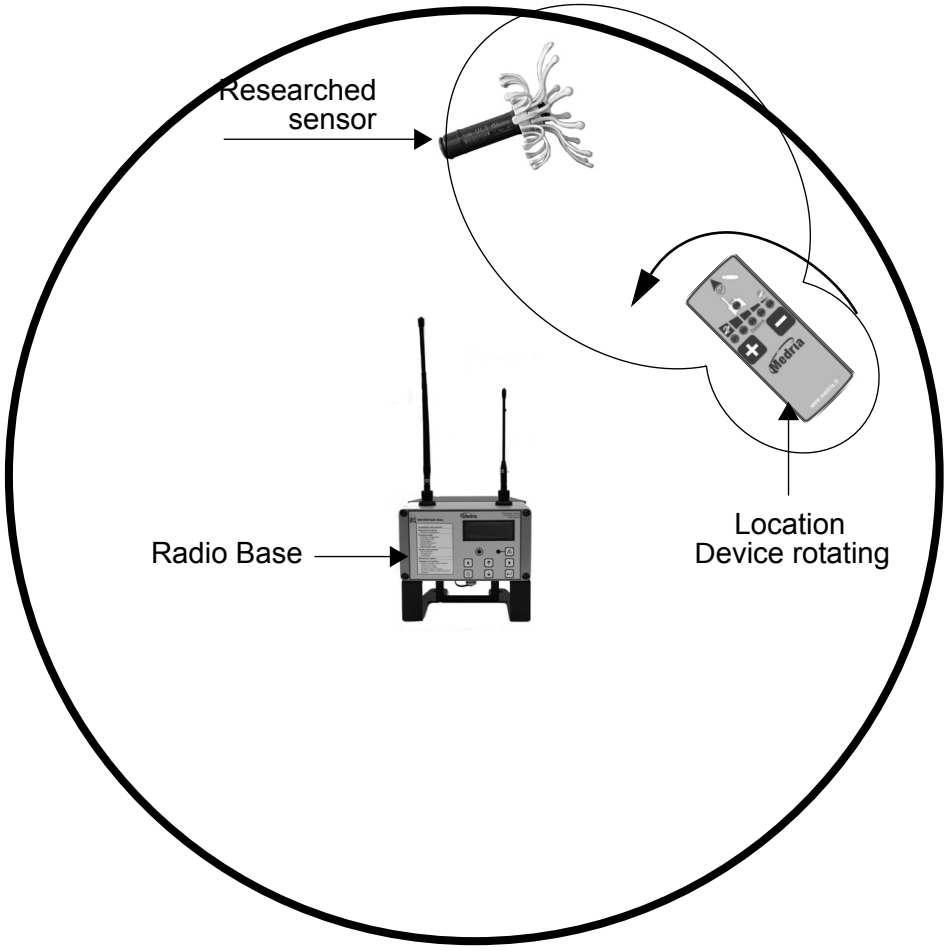
In rotation – identification of the research direction

The second stage of the research is carried out when switched off by rotating around yourself and enables to determine the direction in which the sensor must be researched.

Rotate the device with the arm extended in order to navigate slowly towards the sensor researched.

When the device **Beeps** and the LED D7 (Sensor) flashes again, the direction is found.

This operation, performed carefully from the second stage onwards, while the user is still quite away from the sensor, provides the most accurate indication of the research direction to be followed.



Once the research direction has been determined, gradually reduce the listening distance of the Location Device by successively pressing the − key until the **Beeping** and the flashing of the LED D7 (Sensor) stop.

In motion – approaching the sensor

In this third stage, move ahead step by step in the identified direction until you once again receive a response emitted by the sensor, a **Beep** and flashing of D7 (Sensor).

Reminder of the 3 research stages

- When switched off – Reducing the listening distance:
- In rotation – identifying the research direction;
- In motion – approaching the sensor.

Advice

- When the research direction has been correctly identified and he is still more than 5 metres from the sensor, the user can simply alternate between the 2 stages **Immobile** and **In motion**.
- Do not move and reduce the listening distance at the same time.
- From the 5th level (D5 flashing or constant) onwards, point the Location Device towards the ground.
- During the research, if LED D6 (Base) no longer flashes conclusively, ensure that the allocated 30 minutes for research have not already elapsed.
- When LED D5 is continuously illuminated, the Location Device is in minimum listening capacity. It communicates with a researched sensor only at a distance of 20 to 30 centimetres.

5.4.2. End of research

Switching off of the Location Device

Simultaneously press the 2 keys  and  for 3 seconds to switch off the Location Device. The 7 LEDs of the device come on simultaneously and the device emits an audible signal (Beep) for 1 second then all LEDs go off thereby confirming the switching off of the device.

Stopping the research on the Radio Base

Interrupt the ***Research Equipment*** on the Radio Base by pressing the  key.

6 - TROUBLESHOOTING

Malfunction	Possible cause	Recommendation
You do not receive any SMS after a GSM coverage test	The GSM telephone number is not activated	Activate your GSM telephone number
	The GSM telephone number is incorrect	Check that the number is correct
	The Radio Base is unable to access the GSM network	Find a better location for the Radio Base
The Radio Base tries to continuously send an SMS	The Radio Base is unable to access the GSM network	Find a better location for the Radio Base
	The Radio Base is not powered	Reconnect the Radio Base
You do not receive *Activation* and *Expulsion* SMS	The Radio Base is not capable of sending an SMS	Perform the coverage test
	The Radio Base is not capable of sending an SMS	Recharge the Radio Base
	The thermometer is no longer within the Radio Base's range	Check on the Radio Base that it is receiving temperatures from thermometers
You do not receive any *Daily report* SMS	Sending the report is not configured	Configure sending of the report
	The ***Daily report*** function is not activated	Activate the function
The *Daily reports* SMS arrive after a delay	The Radio Base clock is incorrectly set	Check the time setting
The data displayed on the Radio Base is old (> 30 min.)	The thermometer is not within the Radio Base's range	Bring the Radio Base closer to the thermometers
	The thermometer is unable to communicate with the Radio Base	Carry out a synchronisation of sensors
You are unable to turn off the Radio Base	The Radio Base is currently processing other operations	Wait for a few minutes

For any technical question, contact MEDRIA by e-mail: support@MEDRIA.fr or by telephone +33 (0)2 99 37 10 10.

7 - APPENDICES

7.1. Technical and environmental specifications

7.1.1. Radio Base

Feature		Description
RF interfaces (ISM and GSM)	Connector	Type N
	Impedance	50 Ω
Power requirement (with power adaptor)	Power consumption	< 4 Watts
	Input (Power adaptor)	100-240 V ~ 0.5 A 50/60 Hz
	Input (Base)	5 V⎓ 2.0 A
Environmental conditions	Operating temperature range	– 20 ~ 55 °C
	Altitude	< 2 000 m
	IP protection class	IP 64
	Pollution degree	1
Size	Without antenna	L : 8.66'' – D : 5.9'' H : 8.27''
	With antennas	L : 8.66'' – D : 5.9'' H : 28.35''
Weight	Without antenna	2,70 kg
	With antennas	2,83 kg

7.1.2. Sensors

Feature		Description
RF interface		Internal antenna
Power requirement		Non removable lithium battery
Environmental conditions	Operating temperature range	– 20 ~ 55 °C
	Altitude	< 2 000 m
	IP protection class	IP 67
	Pollution degree	1

Feature		Description
Size	Vel'Phone® (TV)	Ø : 1.04'' L : 4.57''(without appendage)
	HeatPhone® (AX)	L : 3.94'' – W : 1.89'' H : 1.18''(without collar)
Weight	Vel'Phone® (TV)	87 g (without appendage)
	HeatPhone® (AX)	160 g (without collar)

7.1.3. *Location Device*

Feature		Description
RF interface		Internal antenna
Power requirement		Non removable lithium battery
Environmental conditions	Operating temperature range	– 20 ~ 55 °C
	Altitude	< 2 000 m
	IP protection class	IP 40
	Pollution degree	1
Size		L : 4.72'' – W : 2.56'' H : 1.06''
Weight		106 g

7.2. Certifications

Any changes or modifications not expressly approved by MEDRIA could void the user's authority to operate the equipment.

7.2.1. CE trademark

MEDRIA hereby declares that this equipment complies with the essential requirements and other pertinent provisions of the directive 1999/5/CE.

A compliance declaration is available on the website www.MEDRIA.fr.

MEDRIA pursues a continuous development and improvement policy for its equipment and it is possible that some information in this document may not be up to date. Please contact your distributor to obtain all the updated product information.

7.2.2. IC certification

Radio Base and sensors

This device complies with Industry Canada licence-exempt RSS standard(s). 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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Radio Base

This radio transmitter (IC: 10703A-2X000087) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antenna references	Gain	Impedance
PROCOM GA 27 1/4-FME	–14 dBi	50 Ω
MEDRIA Balun Antenna	–12 dBi	50 Ω

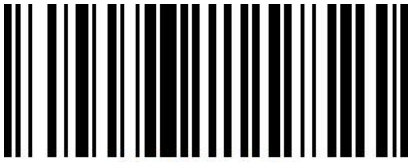
This equipment complies with IC's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment must be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

7.3. Glossary

Sensor	Device that enables to observe and record different signals
GPRS	*General Packet Radio Service* Mobile telephony standard associated with GSM to enable data transmission
GSM	*Group System Mobile* Mobile telephony standard ideal for *voice* communications
ISM	Signifies *Industrial, scientific and medical.* Narrow frequency band used for the transmission of data *via* the antenna.
LCD	*Liquid Crystal Display* Technology used for the display
Monitoring	Surveillance method to measure the activity of a system, a component, etc.
SIM	*Subscriber Identity Module* Chip used in mobile telephony to store information specific to the subscriber of a mobile network
SMS	*Short Message Service* Enables to transmit short text messages via mobile telephony (among others)

4E000127 - Ed 02 rev 03 EN Technical Editing and Translation – **www.cabinet-martinez.com**



Medria ELEVAGE
Solutions de monitoring

16 rue Sainte-Croix
35410 Châteaugiron - FRANCE
Tél. : +33 (0)2 99 37 10 10
Fax : +33 (0)2 99 37 10 15
www.medria.fr
support@MEDRIA.fr