VECTRONIC Aerospace

Handheld Terminal

User Manual

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Handheld Terminal

User Manual

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1 Product Overview

The UHF Handheld Terminal provides a radio link to devices with enabled UHF communication. Using the Terminal with a connected Yagi antenna you are able to manage your collars in all manners and find the animal in the field. The range depends on many parameters (Yagi Antenna, humidity, vegetation of surrounding area, topography) and vary between several hundred meters to several kilometers.

Figure 1: Handheld Terminal

The Terminal enables you to download following data from your collar:

- GPS Data
- Activity Data
- Mortality Data
- Sensor Data
- Telemetry
- Distance between Collar and Terminal (according to the last fix)

You can send following configurations or commands to the collar:

- Schedules (GPS, VHF Beacon, Communication, Proximity, UHF, Sensor receiver, Virtual Fence, Camera, Activity)
- Virtual Fence Collections
- Collar User configurations
- Force GPS Fix
- Set UTC Time
- Collar update

You also can:

- locate your own position (GPS module)
- check ID-tag signals
- release Drop Offs
- navigate in the field (GPS, magnetic compass)

2 Terminal Equipment

The Handheld Terminal is delivered with a protection bag and an USB cable to connect the Terminal to your computer.

Figure 2: Bag, USB cable

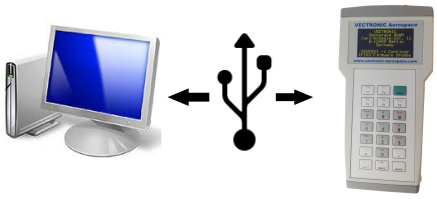
To communicate with the collar via UHF-radio-communication a Yagi Antenna is required. Please do not use small antennas for communication, they might damage the terminal. Connect the antenna to the Antenna Plug on the top of the Terminal.

Figure:3: Yagi Antenna

To recharge battery or to load configurations for your collar from your computer remove the Base cap of the Terminal and connect it to your PC using the USB cable. Please remember to put the cap back on the collar to protect the electronic components.

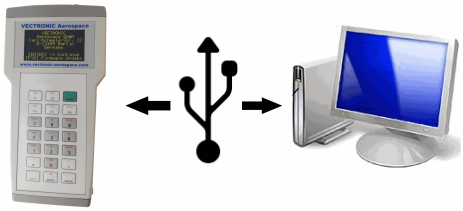
Figure 4: Remove Base Cap

3 Short Guide



- Setup your Terminal in GPS Plus X
- Register your Collars/ Drop Offs on the Terminal
- Upload configurations and schedules to the Terminal

- Track your collar
- (Release Drop Off)
- Search and select Collars for communication
- Up- or Download data/ configurations



- Copy data from Terminal to Computer
- Export Data
- Select or remove collar ID's

Note: When you remove your collar ID from the Handheld Terminal, all data attached to it will be erased

4 Set-up

To send configurations and schedules from the Terminal to the Collar you first have to load these data from GPS Plus X to your Terminal. Therefore you have to follow the steps in this set up.

4.1 Install Drivers

Before you connect your Terminal to the PC or open GPS Plus X, please install the drivers for your Terminal.

You can download the driver from our website.

www.vectronic-aerospace.com\Wildlife-Monitoring\Downloads\Driver\Handheld Terminal Driver Setup

- Execute the driver application
- Answer with "Yes" if you get asked to allow the program to make changes
- Installation is completed when you see a frame like below

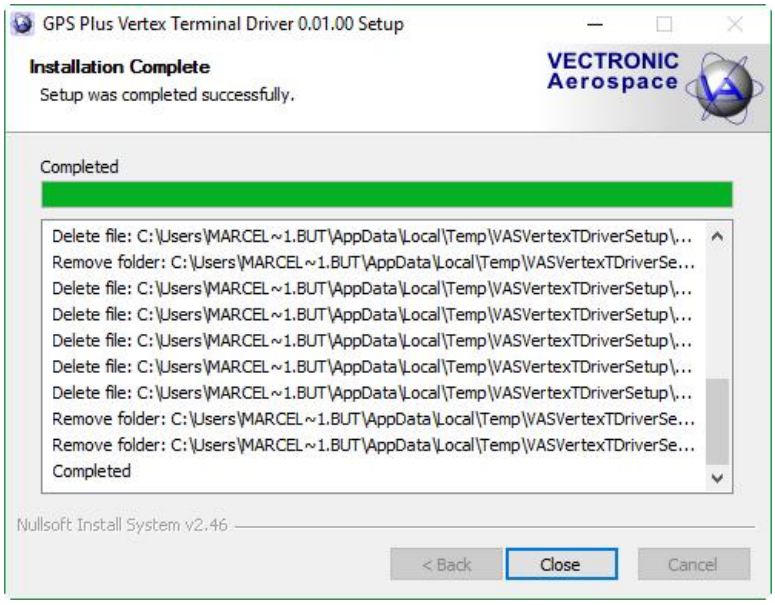
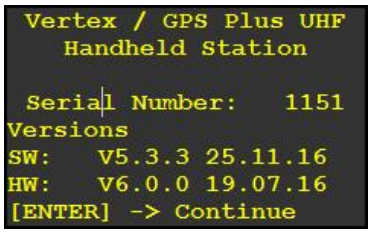


Figure 5: Installation complete

4.2 Connect Terminal to PC

- To connect the Terminal to a PC remove the Base Cap on the bottom of the Terminal and plug in the USB cable which is delivered with the Terminal.
- Press 'Start' on the Terminal to see the Startscreen.

- Press 'Enter' on the Terminal to continue to an overview about Terminal Information.



- Now Open GPS Plus X and you will see the Terminal in your Device List.

You only can see the Terminal in GPS Plus X if you pressed 'Start' and 'Enter' to continue.

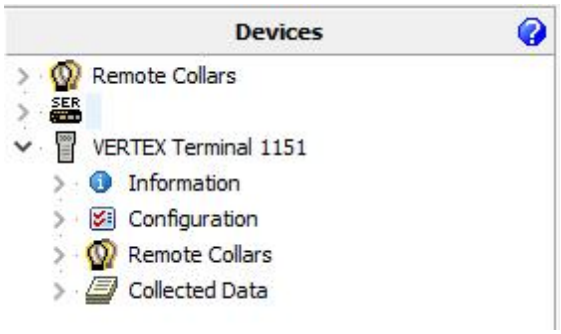


Figure 6 Handheld Terminal in GPS Plus X

To be able to communicate with a collar in the field you have to register the collar to the Terminal via GPS Plus X. Refer to Collar Registration

5 Handheld Terminal in GPS Plus X

In GPS Plus X you can manage your Terminal in all manners. You can see all Information according the Terminal and load configurations and schedules you want to have on your collar later on.

Note: You have to register your Collars / Drop Offs to GPS Plus X and to the Terminal to ensure communication in the field. This chapter deals with all interfaces between GPS Plus X and the Terminal.

GPS Plus X is also the tool to download data from the Terminal after it communicated with a collar.

5.1 Information

Devices → ***Handheld Terminal*** → ***Information*** → ***Telemetry***

→ ***Info File***

In the collar's Telemetry and Info File you can see Information about the components of the Terminal.

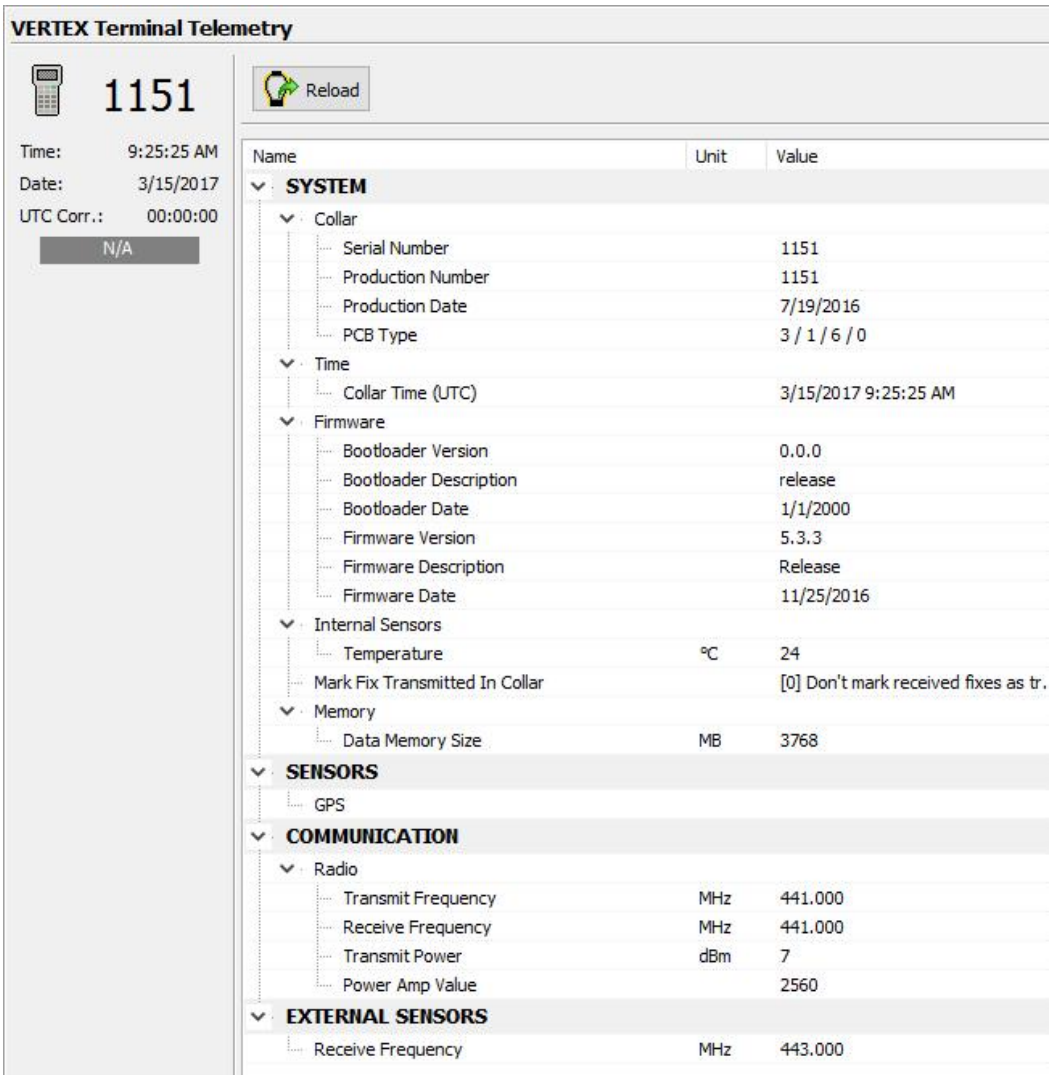


Figure 7: Handheld Terminal Telemetry

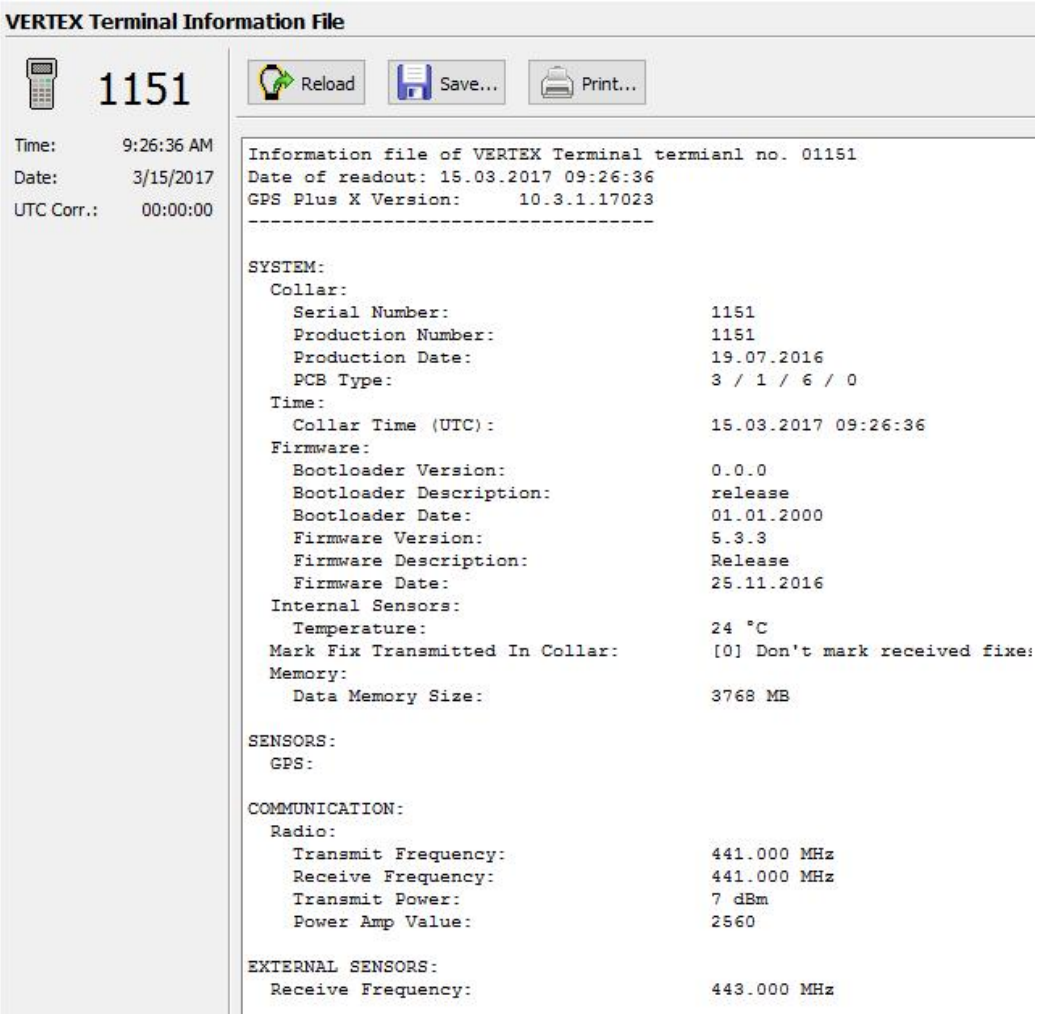


Figure 8: Handheld Terminal Info File

5.2 Configuration

Devices → Handheld Terminal → Configuration

Following Configurations can be set with GPS Plus X:

Collar Registration- To be able to communicate with a collar in the field you have to register the collar to the Terminal.

Drop Off Registration- To be able to release a Drop Off from the collar via UHF communication you have to register the Drop Off to the Terminal.

Time- To set and configure time of the Terminal.

5.2.1 Collar Registration

Devices → Handheld Terminal → Configuration → Collar Registration

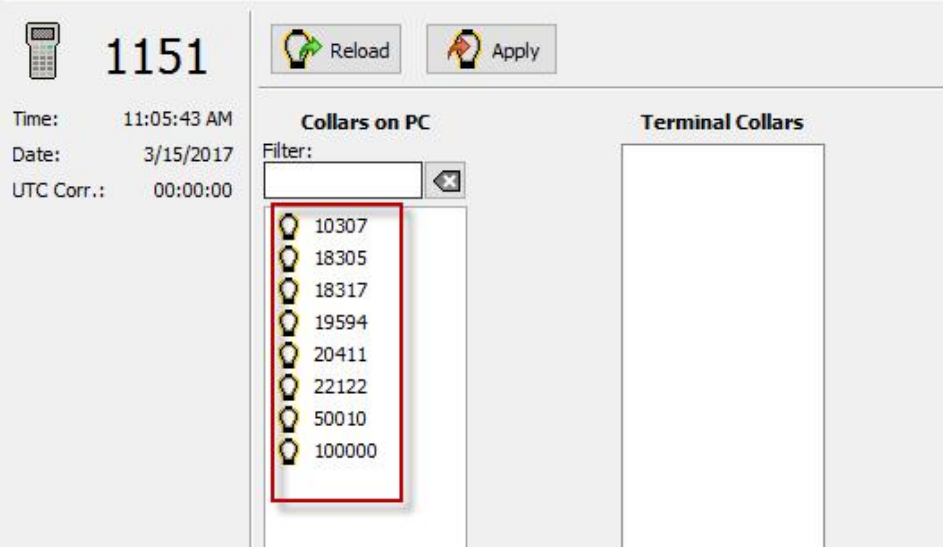


Figure 9: Collar Registration1

In 'Collars on PC' you can see all collars which are registered in your GPS Plus X System.
(If you do not know how to register collars in GPS Plus X or if your list is empty, refer to the GPS Plus X software manual (Collar Registration).) During the registration process you may have to title the collar as Vertex or GPS Plus collar. If you do not know the type of your collar go to GPS Plus X and check the Info File of your collar.

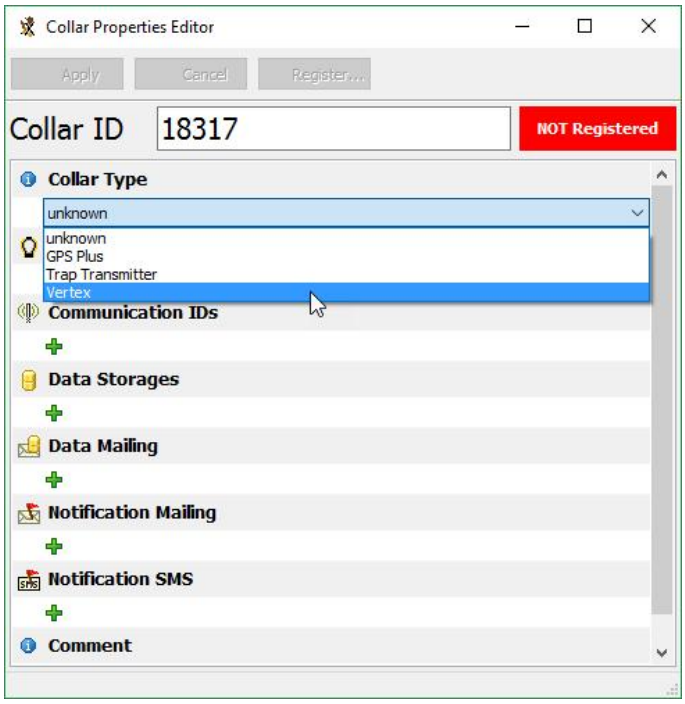


Figure 10: Collar Type

Choose your collar from the list and press 

to register it to your Terminal.

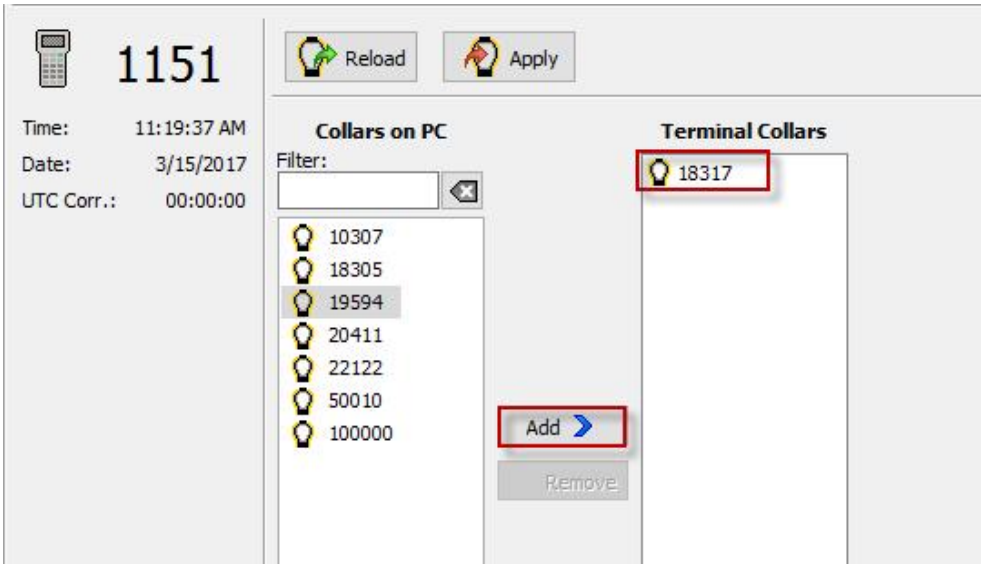
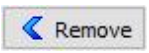


Figure11: Collar Registration2

Press 

to remove a collar from the Terminal List. After you added all collars which you want to manage with your Terminal to the list, press 

to send the

new list to the Terminal. Press 

to see current settings of your Terminal. Please check if your collar registration was successful. For this go to Collar Registry on your Terminal and check if your collar is in the list.

5.2.2 Drop Off Registration

Devices → Handheld Terminal → Configuration → Drop Off Registration

In 'Loaded Drop Off IDs' you can see all collars which are registered in your GPS Plus X System.

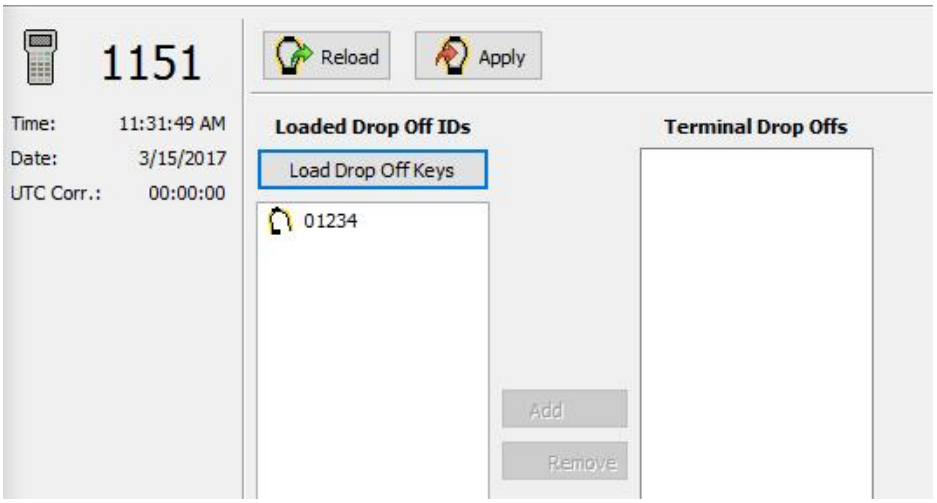
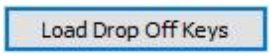


Figure: 12: Drop Off Registration

Press 

to load your Drop Off Key File sent by us, either on your CD or via email.

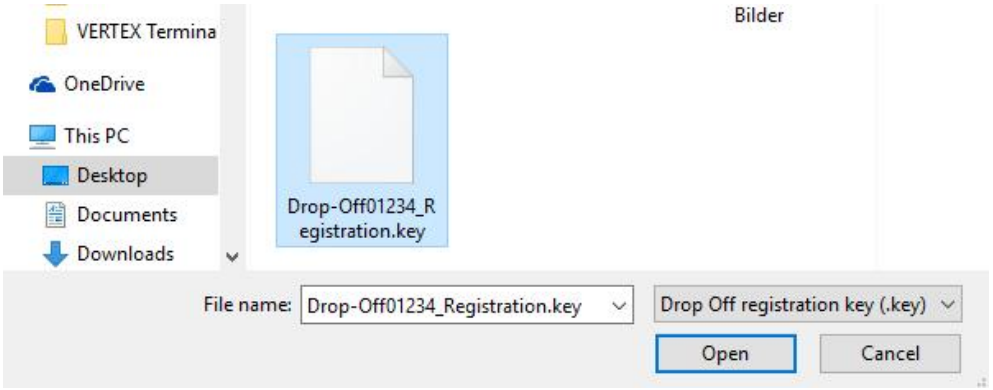


Figure 13: Search Drop Off Key File

Choose your Drop Off from the list and press 

to register it to your Terminal.

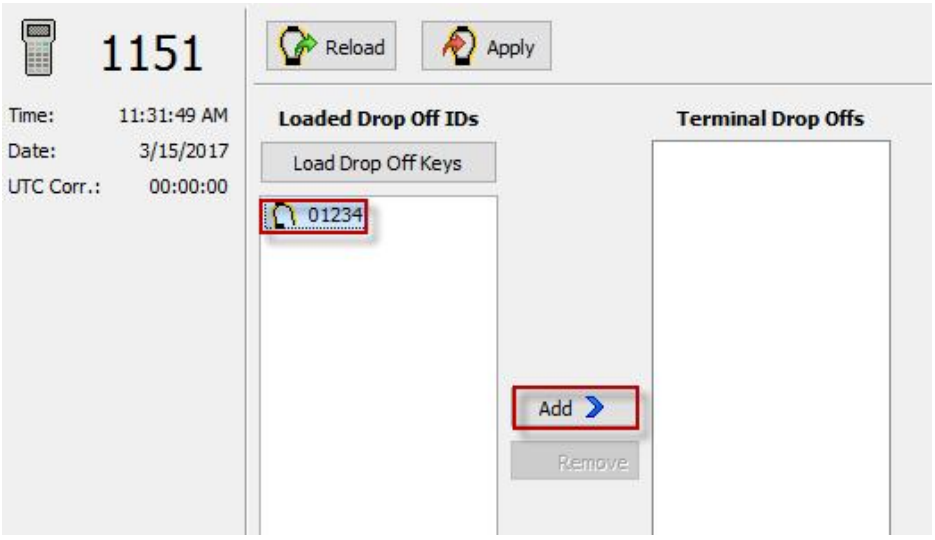


Figure 14: Drop Off Registration

Press Remove to remove a Drop Off from the Terminal List. After you added all Drop Offs which you want to manage with your Terminal to the list, press Apply to send the new list to the Terminal. Press Reload to see current settings of your Terminal.

Note: Do not forget to remove a Drop Off ID from the list after you fired it. After some time your Terminal might get storage problems due to too many dead Drop Offs.

5.2.3 Time

Devices → ***Handheld Terminal*** → ***Configuration*** → ***Time***

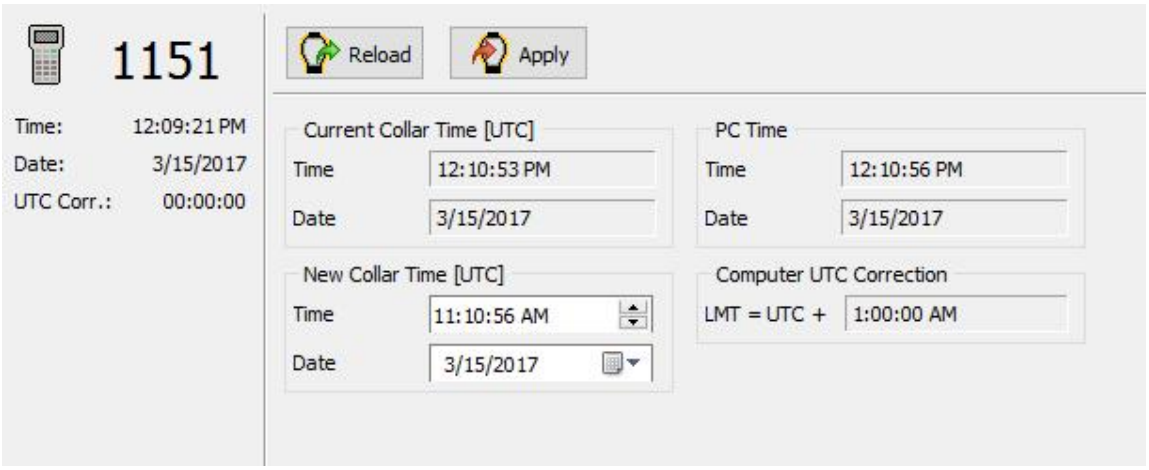


Figure 15: Time

Two times are displayed, the Current Terminal Time [UTC] and the PC Time. The frame

also displays the Computer UTC Correction. If there are differences between PC time and the time you want to set in the Terminal, use the up- and down arrows and the calendar function or type in the new time. Press Apply to send the new time to the Terminal. With Reload you can reload the configuration from the Terminal.

5.3 Remote Collars

Devices → Handheld Terminal → Remote Collars

In this node you can create and load configurations and schedules to the Terminal. Later in the field you will be able to send these configurations and schedules via UHF communication to your registered collar(s).

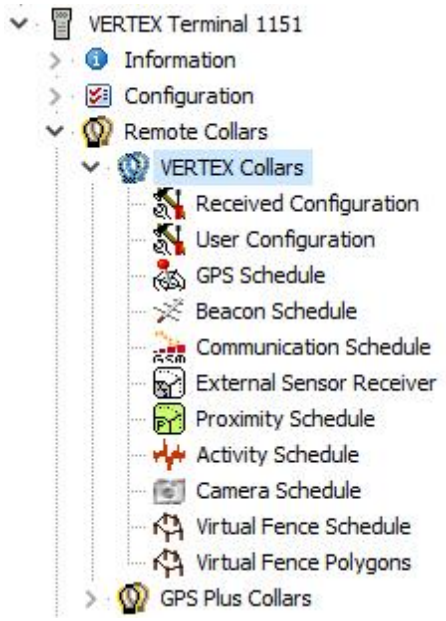


Figure 16: Remote VERTEX Collars

Here you can see all possible configurations and schedules you can create and upload to your Terminal and later on via UHF communication to your VERTEX Collar / GPS Plus Collar. For explanations of User Configurations and how to create Schedules and Virtual Fences refer to the software manual of GPS Plus X.

After you did some changes in Configuration or Schedules please safe them and upload them to the Terminal. For this press , choose your collar ID(s) and press Write Schedules to send your schedule. For sending Configurations the procedure is

the same only the name of the button differs. 

In the following screen as an example a Beacon Schedule gets uploaded to the Terminal.

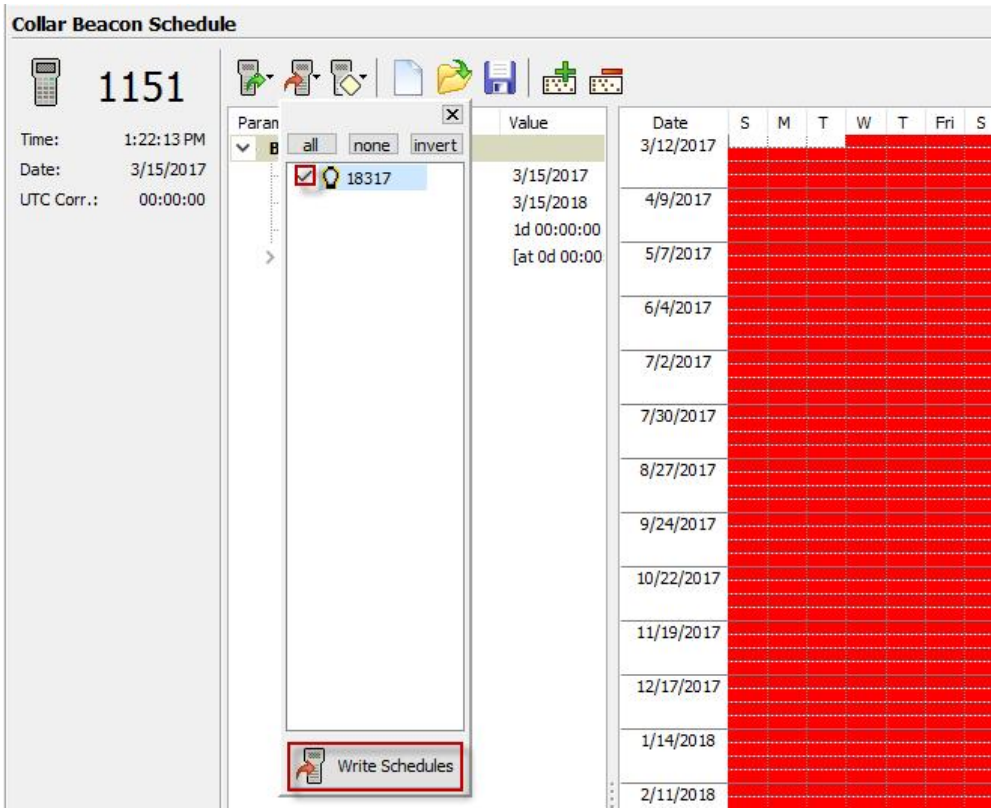


Figure 17: Upload Schedule

5.4 Collected Data

Devices → Handheld Terminal → Collected Data

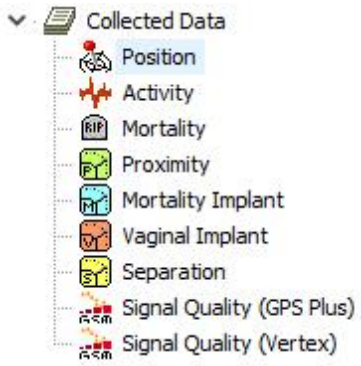


Figure 18: Collected Data Node

This frame shows the data retrieval options of the Terminal after downloading data from the collar. The main function of this node is to download these data to your computer. The output window and functions differ but the main functions are identical for all different data. In each Data frame there is an option to filter and to export the data. You can download Position, Activity, Mortality, Proximity, MIT, VIT, Separation and Signal Quality data.

 Reads data from a collar of your choice in the list. 

 Saves data to the storage module; we advise to save all data from the collar, even if you export them as data files.

 This command erases the collar's data stored on the Terminal. Please make sure that you have stored the data before you use this command. Data cannot be restored once deleted.

Recommendation: Please transfer the data to the GPS Plus X storage before you export it or change any settings for the next collaring session.

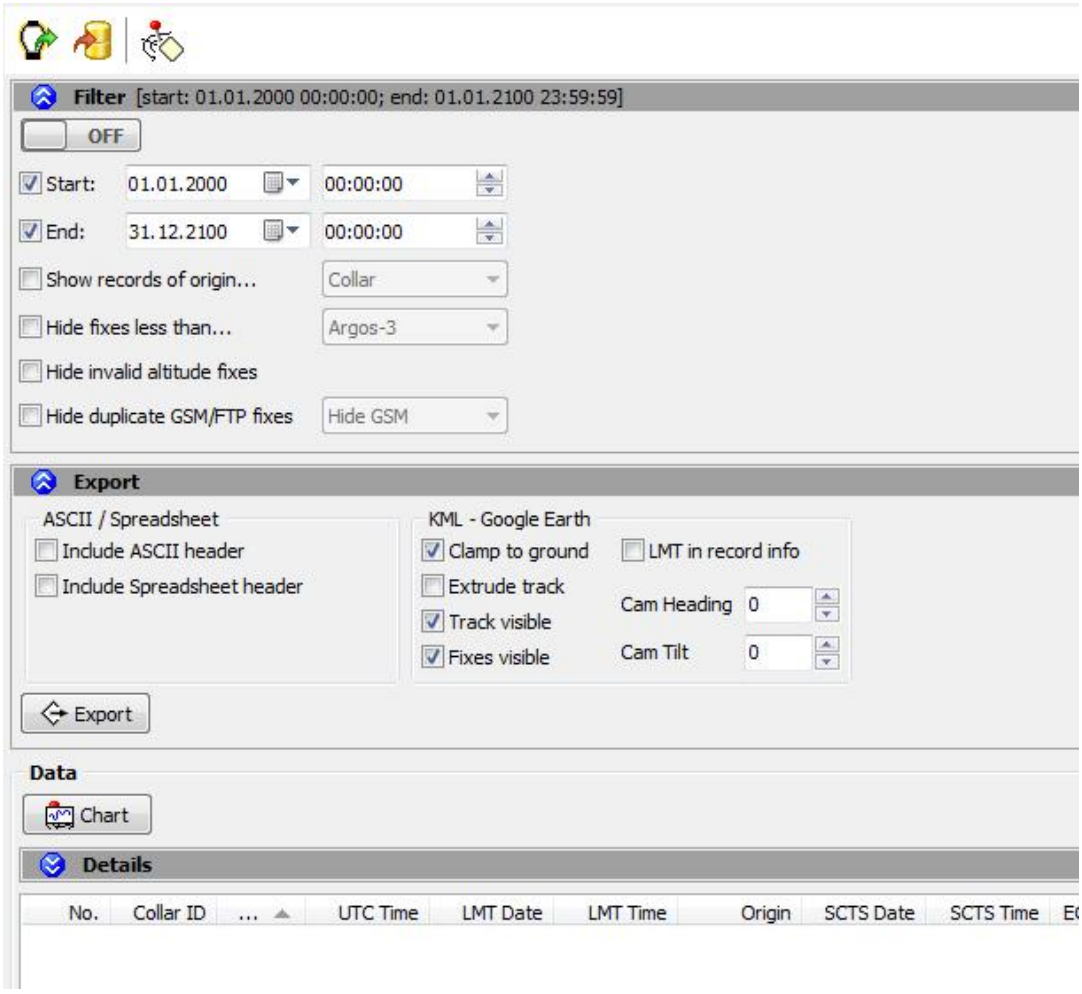


Figure 19: Collected Data Output

All output windows include a filter rider to restrict the output file to a certain period and/or also to certain data value attributes. You have to check each parameter to set in filter parameters.
Some output frames differ as they offer less parameters (no quality parameters, no KML-Export function and no chart option). Filter, Export and Data Parameter options will be explained in the following.

NOTE: This is an output and export frame only. Changes (e.g date filter) effect the exported files only, nothing is changed with the original data-set stored in the Terminal.

Filter:

Start and End	Defines the period for which GPS fixes will be shown. Other fixes are invisible. That way you

	can exclude for example the testing phase.
Hide fixes less than	Defines a quality parameter for the GPS fixes whereas 3D. Val. (Validated) refers to the best possible GPS fix (number of satellites used, satellite signal quality etc). Please refer to the main GPS Plus X manual for details.
Hide invalid altitude fixes	Check if you want to exclude GPS fixes with values below -1000 or above 10000meters height as this positions are impossible. The height is the least secure value as it strongly depends on referent points (geoid maps) which can vary in quality and accuracy.

Export:

ASCII	has equal sized (number of characters) fields for every row and thus can be easily read by humans (as a table). File: *.txt
Spreadsheet	is machine readable, which means table entries are separated by a freely definable character (e.g. comma) that can be defined in the options form. File: *.csv
KML-Google Earth	is a XML format used in Google Earth and some other mapping software to display tracks, points of interest, etc.
Clamp to ground	if checked, the path displayed in Google Earth is always shown as anchored to the ground, regardless of its altitude or if terrain is enabled or not
Extrude Pat	if checked, the path displayed in Google Earth is always shown as anchored to the ground, regardless of its altitude or if terrain is enabled or not
Track visible	if checked, the track will be visible in Google Earth as coloured line
Fixes visible	if checked, all fixes will be visible in Google Earth as coloured icons
LMT in record info	if checked, the local mean time according to

	the UTC correction of GPS Plus X will be shown in Google Earth
Cam Heading	viewing direction of 0 – North, 90 – West, 180 – South, 270 - East
Cam Tilt	inclination of the camera, 0 – straight downwards, 90 – horizontal into viewing, direction, 180 – straight upwards, 270 - horizontal into opposite viewing direction

Data:

No.	line index, dependent on time stamp; this index number is created when data are read out of the collar and will not be changed when data are filtered (this way, “data gaps” caused by filtering are easily detectable)
Collar ID	ID of the collar from which the positions have been downloaded
UTC date and time	time in Universal Time Coordinated (UTC, equivalent to GMT, without daylight saving time/ summer time)
LMT date and time	local mean time, depending on the value set in UTC Correction (see System UTC Correction)
Origin	shows where the the message originates from
SCTS Date/Time	the date/time when the message receives the provider
ECEF X, Y, and Z	coordinates in the Earth Centred Earth Fixed coordinate system
Latitude, Longitude, Height	geographical position based on WGS84

Chart:

The Chart function plots the GPS data in a basic graph. A nice feature to get a first overview about distribution and migration pattern. You can zoom in by drawing a square with your mouse or use the option riders within (File, View) which includes a save option as well.

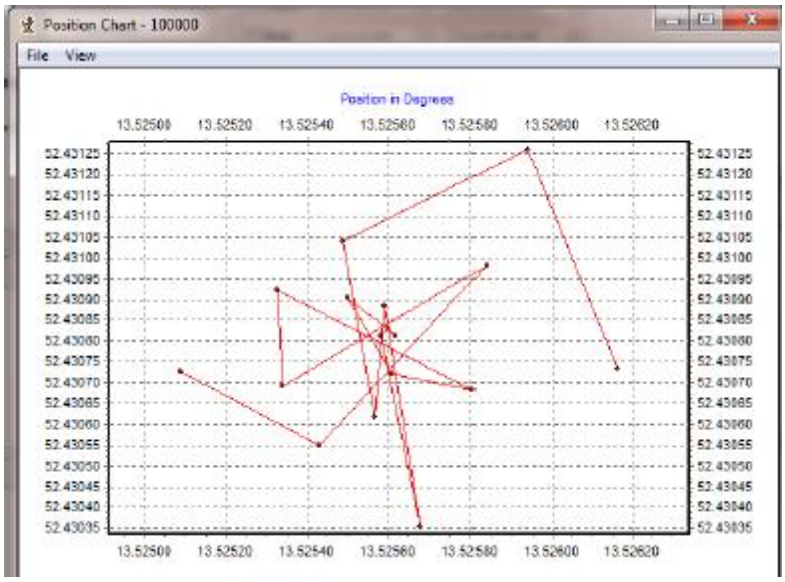


Figure 20: Position Chart

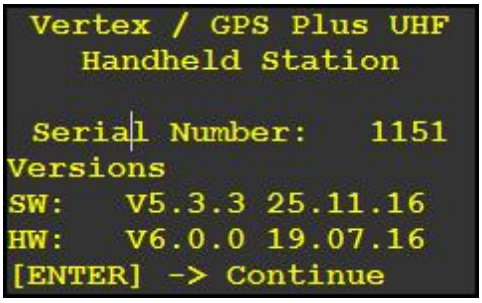
No.	line index, dependent on time stamp; this index number is created when data are read out of the collar and will not be changed when data are filtered (this way, “data gaps” caused by filtering are easily detectable)
Collar ID	ID of the collar from which the positions have been downloaded
UTC data and time	time in Universal Time Coordinated (UTC, equivalent to GMT, without daylight saving time/summer time)
LMT date and time	local mean time, depending on the value set in UTC Correction
Origin	shows where the message originates from
SCTS Date/Time	the date/time when the collar has been read out
ECEF X, Y and Z	coordinates in the Earth Centred Earth Fixed coordinate system
Latitude, Longitude and Height	geographical position based on WGS84
DOP	(Dilution of Precision) value for the geometric constellation of the received GPS satellites
Fix Type	quality of fix obtained
3D Error	shows the difference [m] between the real position and the transmitted position
Sats used	number of satellites used for the fix.
Sat No/ C/NO [dBHz]	channels of the GPS receiver with two columns each containing the received

	satellite number and the carrier to noise ratio in dBHz
Main [V]	voltage of the main battery in Volts
Mortality Status	shows if the animal was deemed alive or dead
Beacon [V]	voltage of the beacon battery in Volts
Temp [°C]	Ambient temperature
Activity (Survey collars)	Value for internal usage only. Not connected to any kind of activity generated by the VERTEX Plus or GPS Plus collars

6 Basic Operations

The Handheld Terminal is switched on when the key [START] is pressed. You can interrupt the software at any time and return to the Start-up Display by pressing [START]. If the screen stays black, the Terminal is completely discharged and you have to connect it to a computer. The Start-up Display will appear, followed by the Handheld Terminal Info Screen pressing Continue.

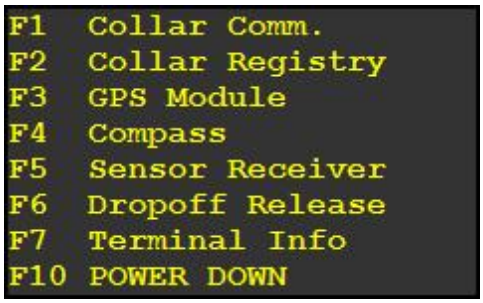
Display 1: Start Screen



Display 2: Info Screen

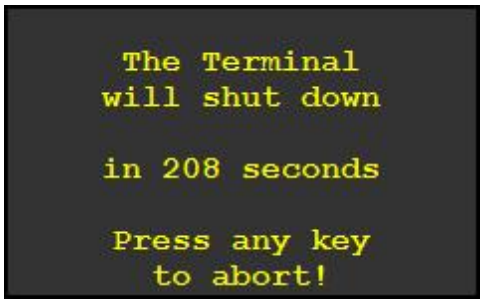
Note: The Handheld Terminal will only appear in the Device List of GPS Plus X if you start it and continue to the Info Screen.

To access the Main Menu continue with [ENTER].



Display 3: Menu

Ten minutes after the last communication or after the last key has been pressed, the Handheld Terminal displays a shutdown warning. After five further minutes, the Handheld Terminal will be switched off automatically. The Handheld Terminal can be switched off manually via the Main Menu with the key [F10] ([SHIFT] + [F5]).



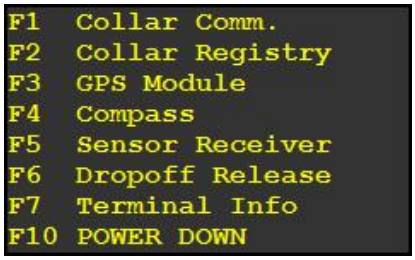
Display 4: Shut down warning

7 Update Terminal Firmware

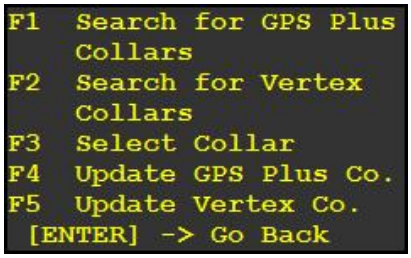
Please contact our customer service to support you doing the Firmware update for your Terminal. You need an additional software application to do the update. (Handheld Terminal Firmware Update.exe) If you want to know how the update works, refer to the Handheld Terminal Quickstart Guide.

8 Collar Communication

In the Main Menu (Display 3), press F1 to enter the Collar Communication Menu (Display 5). Here, you can search for registered collars in communication range and select collar IDs to up- and download data.



Display 3 : Main Menu

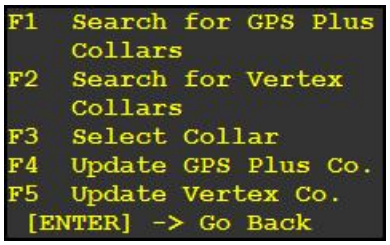


Display 5: Collar Communication Menu

Note: Remember to connect a Yagi-antenna to the Terminal before executing any commands in the communication menu. Transmitting without antenna may cause serious damage to the Terminal.

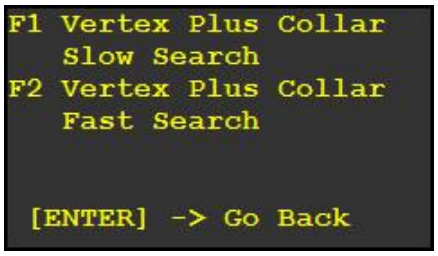
8.1 Search for Collars

You can search either for GPS Plus collars or VERTEX Plus collars. To establish communication the Terminal transmits a wakeup code and then receives the collar IDs. If you want to search for GPS Collars press F1, for VERTEX Collars press F2.



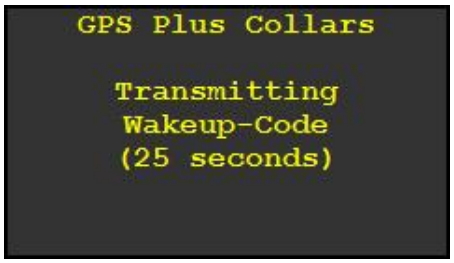
Display 6: Communication Display

If you search for VERTEX Plus collars there are two different alternatives, Slow- and Fast Search.

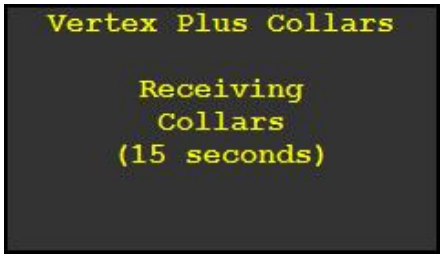


Display 7: Slow and Fast Search

If you have a collar firmware version 2.7.46 (Nov. 2016) or later you will find your collar via Fast Search in about 10 seconds. The older collars are reachable via Slow Search in about 1 minute.

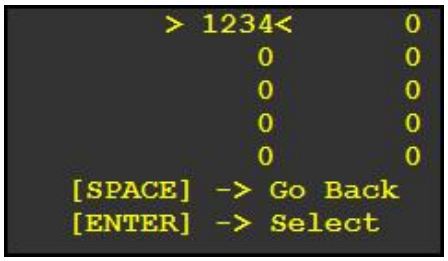


Display 8: Transmitting code for GPS Plus Collars



Display 9: Receiving Vertex Plus IDs

After the reception of the collar IDs is completed, the received collar IDs are shown on a list. You will only be able to contact collars that are registered on your Handheld Terminal. All other collars, even if in range, will not be displayed.



Display 10: Received Collar IDs after Wake-up Code has been transmitted

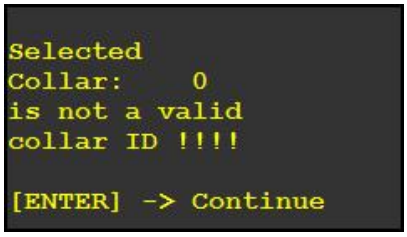
8.2 Select Collars

All received collars are now shown on the display. To select the desired collar, you can navigate with the number keys 1 - 4 and 6 - 9. To select a collar for communication, move the two markers with the cursor keys to the desired collar ID and press [ENTER] .

The selected collar is now valid for communication for 2 minutes. After each successful data transfer this time will be reset to 2 minutes again. After 2 minutes without further

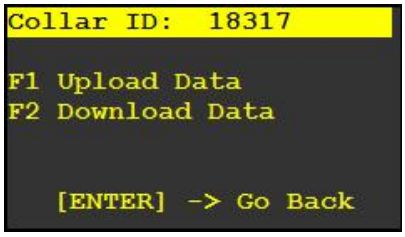
command from the handheld, the collar will switch off the radio unit automatically.

For new access to the collar, you need to wake up the collar again (see Search for collars). To return to the Collar Communication Menu, press ENTER several times until the menu appears. If you have selected collar ID 00000, the following message will be displayed:



Display 11: Invalid Collar ID

Once you have selected a valid collar ID the Up- and Download Menu will appear



Display 12: Up- and Download Menu

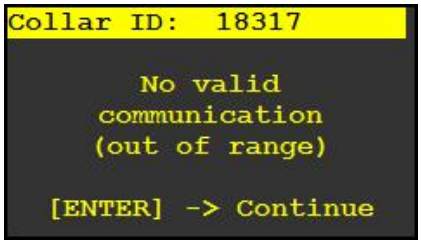
You can now decide whether you want to up- or download data. Upload data means to transfer data from the Terminal to the collar (e.g. a new GPS schedule), download means to transfer data from the collar to the Terminal (e.g. GPS data).

8.2.1 Upload Data

To upload schedules or configurations from the Terminal to the collar you first need to upload the data via USB cable from your computer to the Terminal (Remote Collars). If no valid schedule or Virtual Fence is available for this collar on the Handheld Terminal, following Display will appear.

Display 13: No valid schedule

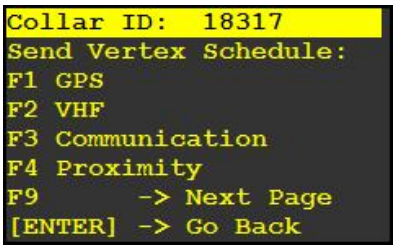
If communication can not be set up during two minutes following display will appear and you need to search for the collar again. (Search for Collars)



Display 14: Unsuccessful communication

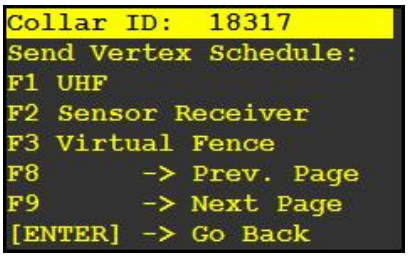
In the Upload Menu you are able to upload following data:

- Upload a GPS schedule
- Upload a VHF Beacon schedule
- Upload a Communication schedule
- Upload a Proximity schedule



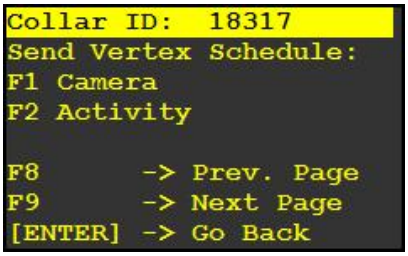
Display 15: Upload Vertex Data1

- Upload UHF schedule (F1)
- Upload Sensor Receiver schedule (F2)
- Upload a Virtual Fence (F3)



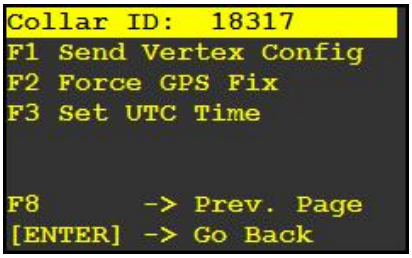
Display 16: Upload Vertex Data2

- Upload Camera schedule
- Upload Activity schedule



Display 17: Upload Vertex Data3

- Upload Configurations
- Force GPS Fix
- Set UTC Time

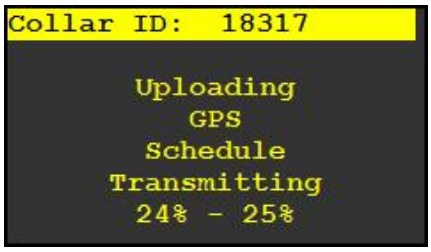


Display 18: Upload Vertex Data4

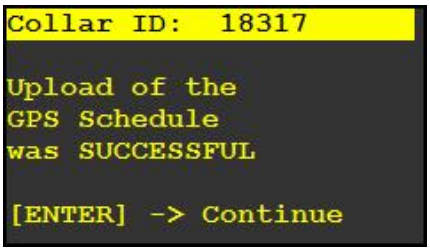
To navigate through the menu use F8 ([SHIFT]+ F3) and F9 ([SHIFT]+ F4) and [ENTER]

8.2.1.1 Upload Schedules

If a valid schedule for this collar ID is stored on the Handheld Terminal, the upload process starts immediately. Press the button for the chosen schedule in the Communication Display (see Upload Data) Another display appears after finishing the upload. Upload process for all schedules is similar. After finishing the upload press [ENTER] to continue.



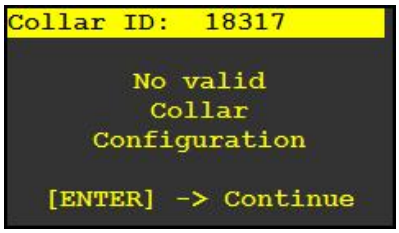
Display 19: Upload Process



Display 20: Upload Successful

8.2.1.2 Send Configurations

Collar configuration files can be created with the GPS Plus X software as described before in Remote Collars. To start the upload of a collar configuration, go to the upload menu. Here you will find the menu point Send Vertex Configuration / Send Configuration, depending on your collar type. If no valid collar configuration is stored on the Handheld Terminal for the specified collar, an error message will appear.



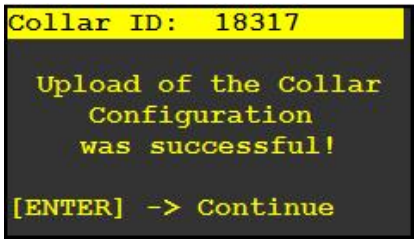
Display 21: No valid Collar Configuration available

If there is at least one valid configuration for the selected collar stored on the Handheld Terminal you are able to send it to the Terminal.

Note: If you upload new configurations to the Terminal, the configurations already stored on the Terminal will be overwritten in the Terminal, but not in the collar.

- Handling GPS Plus collars you have to select single configurations and send them separately. Select configuration with the number keys 2 and 8 and press F10 to transmit the configuration to the collar. Press ENTER to abort and return to the Upload Menu.
- For VERTEX Collars you just have to press F1 'Send Vertex Config' and all configurations will be sent to the collar.

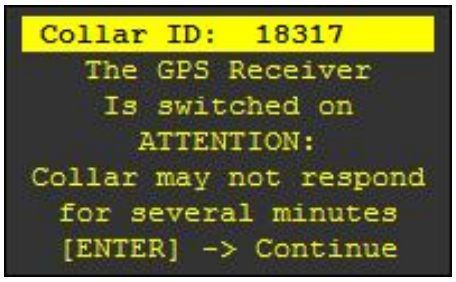
If the Collar Configuration was received without errors, a success message will be displayed. In case of transmission errors, the process will be repeated automatically several times. If no successful upload was possible, a Display will inform you that no valid communication was possible. Press ENTER to return to the Upload Menu.



Display 22: Acknowledgment of successful Collar Configuration transmission

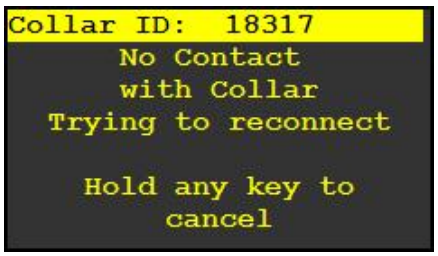
8.2.1.3 Force GPS Fix

The Handheld Terminal can send a command to the collar to switch on the collar's GPS receiver immediately. This is very helpful in combination with the Range Checker Mode to find the current position of the collar. To switch on the GPS receiver, press F2, Force GPS Fix. If succeeded, following display will appear.



Display 23: GPS Transmit 'Switch GPS On' command

After several seconds to minutes the GPS module performed a fix. During this time you are not able to communicate with the collar via UHF Radio communication. If you try to build up communication when the GPS module is performing you will see the following display.



Display 24: No Collar Contact

Then you know the collar is still performing the GPS fix. If you can reach it again via the Terminal, the fix is done and you can track it with the Range Checker mode.

8.2.1.4 Set UTC Time

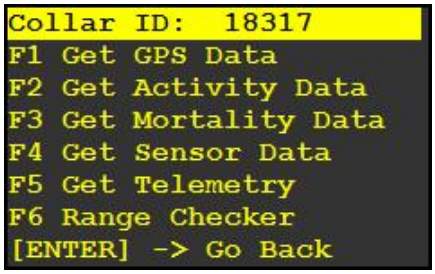
The UTC time and date of the Handheld Terminal will be updated by the GPS satellite system every time the on-board GPS receiver can solve a valid fix. The current time and date of the Handheld Terminal is shown on the display (Display 22); press F10 to start the upload

Display 25: Upload Time and Date Menu

8.2.2 Download Data

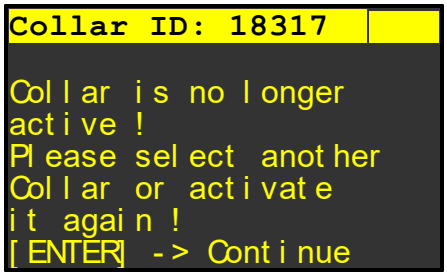
Press F2 in the Up- and Download Menu for either Vertex Plus or GPS Plus collars to reach the Download Menu. This menu allows you to:

- Get GPS data (F1)
- Get Activity data (F2)
- Get Mortality data (F3)
- Download data from the proximity sensor or external sensors linked to the collar (F4, if sensors are available)
- Get Signal Quality data
- Get Telemetry (status) information of the collar (F5)
- Download the last valid position and then navigate towards the collar with the assistance of the built-in electronic compass (Range Checker) (F6 (SHIFT + F1))



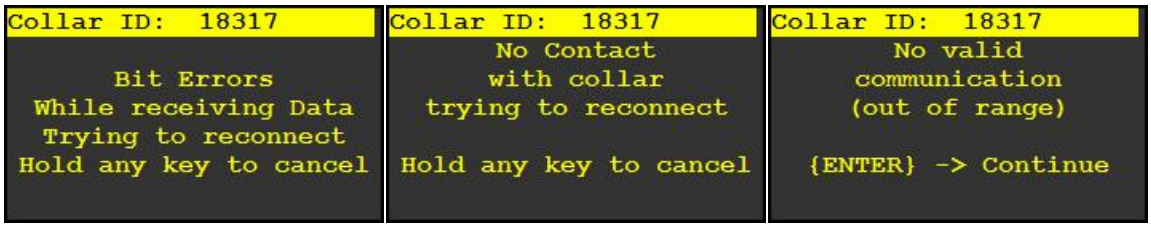
Display 26: Download Menu

If you build up communication to download data, the connection between Terminal and Collar will last 2 minutes. After 2 minutes without any commands to the collar, you will have to build up communication anew. Following screen will appear:



Display 27: Collar is no longer active

If transmissions errors occur data will automatically be requested again. If no answer from collar is received, the collar will automatically try to re-establish radio connection to the collar.
To interrupt the transmission, press any key.



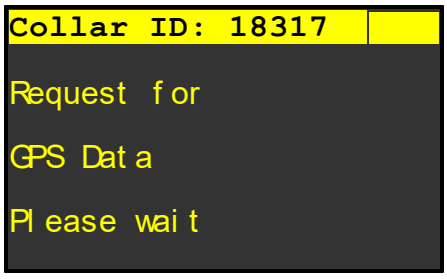
Display 28: Download Error Messages

The downloaded data cannot be viewed on the Handheld Terminal's display, but need to be downloaded to a PC with the GPS Plus X software.

Note: If there are more data on the Terminal than on the collar, the Terminal will not download any data. The Terminal just check if there are more data on the collar than on the Terminal and load these data. If you stored an old data set from a previous collaring session of the same collar on the Terminal but not on the collar, you are not able to download the new ones. **Erase the old data on your Terminal after you saved them with your GPS Plus X software.**

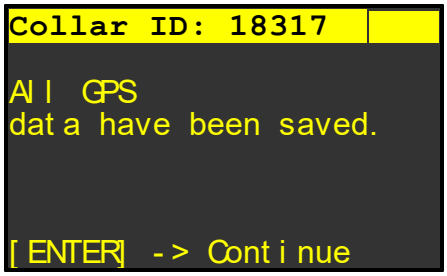
8.2.2.1 Get GPS Data

If you hit F1 in the download menu and communication can be established, following screens will appear.



Display 29: Request GPS Data

If your download was successful, you will see the following screen and the download process is finished.

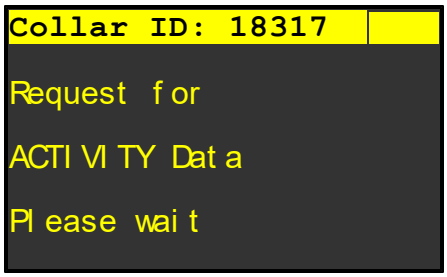


Display 30: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

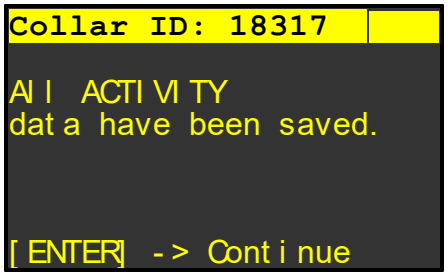
8.2.2.2 Get Activity Data

If you hit F2 in the download menu and communication can be established, following screens will appear.



Display 31: Request Activity Data

If your download was successful, you will see the following screen and the download process is finished.

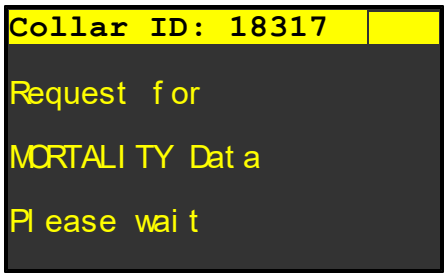


Display 32: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

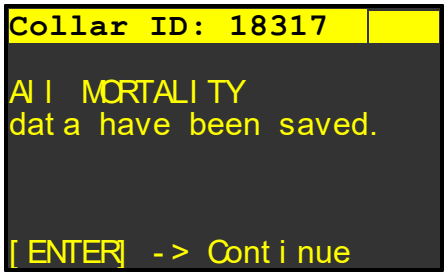
8.2.2.3 Get Mortality Data

If you hit F3 in the download menu and communication can be established, following screens will appear.



Display 33: Request mortality data

If your download was successful, you will see the following screen and the download process is finished.

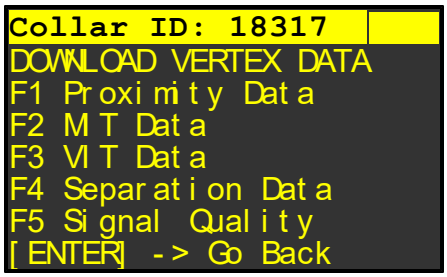


Display 34: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

8.2.2.4 Get Sensor Data

If you hit F4 in the Download menu you will enter the following menu.



Display 35: Download VERTEX data

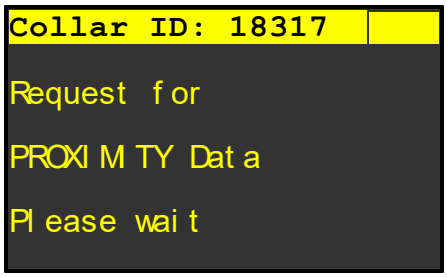
Here you can download all external sensor data:

Proximity data, MIT data, VIT data, Separation sensor data and signal quality.

For general information and possible error messages according data download refer to the main topic Download Data.

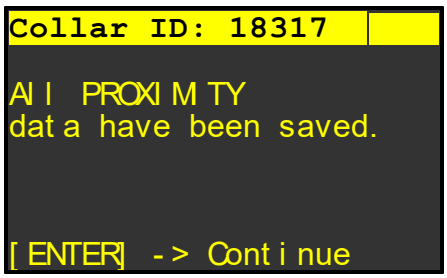
8.2.2.4.1 Proximity Data

If you hit F1 in the sensor data menu and communication can be established, following screens will appear.



Display 36: Request proximity data

If your download was successful, you will see the following screen and the download process is finished.

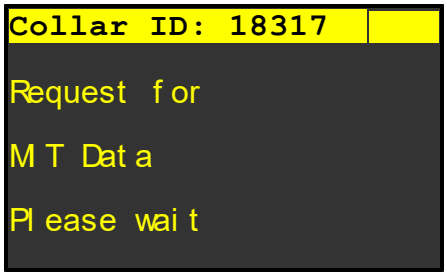


Display 37: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

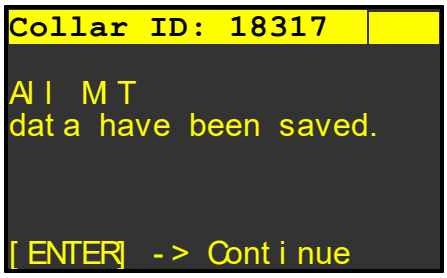
8.2.2.4.2 MIT Data

If you hit F2 in the sensor data menu and communication can be established, following screens will appear.



Display 38: Request MIT data

If your download was successful, you will see the following screen and the download process is finished.

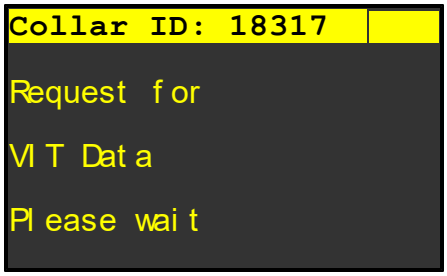


Display 39: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

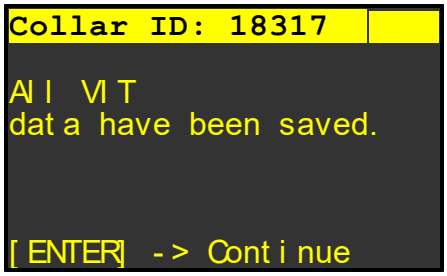
8.2.2.4.3 VIT Data

If you hit F3 in the sensor data menu and communication can be established, following screens will appear.



Display 40: Request VIT data

If your download was successful, you will see the following screen and the download process is finished.

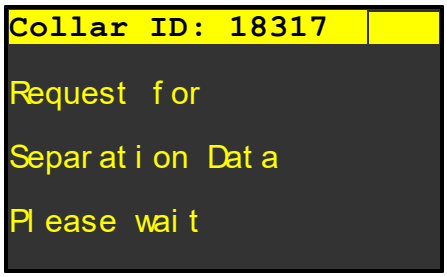


Display 41: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

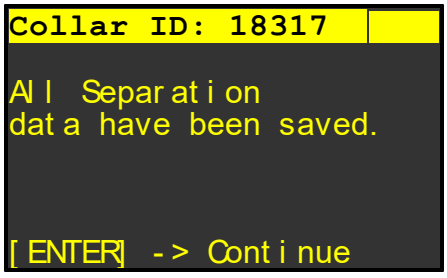
8.2.2.4.4 Separation Data

If you hit F4 in the sensor data menu and communication can be established, following screens will appear.



Display 42: Request Separation data

If your download was successful, you will see the following screen and the download process is finished.

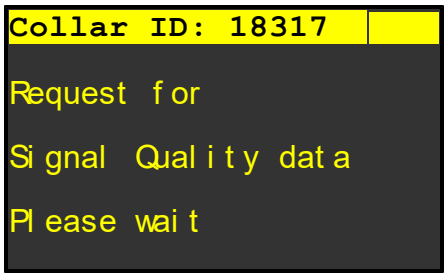


Display 43: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

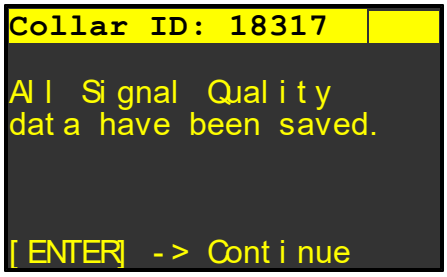
8.2.2.4.5 Signal Quality

If you hit F5 in the sensor data menu and communication can be established, following screens will appear.



Display 44: Request Signal Quality data

If your download was successful, you will see the following screen and the download process is finished.

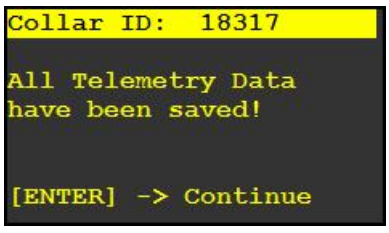


Display 45: data have been saved

For general information and possible error messages according data download refer to the main topic Download Data.

8.2.2.5 Get Telemetry

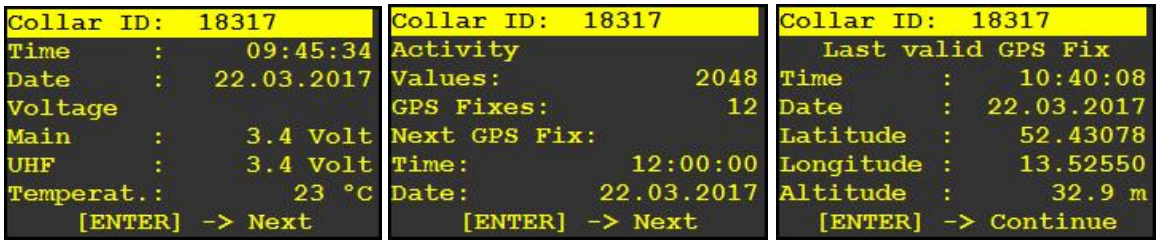
After requesting Telemetry data following display will appear when data is received and saved on the Terminal.



Display 46: Telemetry Saved

After this message you will see the Telemetry data of the collar. If no last valid fix (3rd screen) is available, the two letters N/A (not available) will be shown on the screen. The

last valid position is not available after a battery replacement.



Display47: Collar Telemetry Data

8.2.2.6 Range Checker

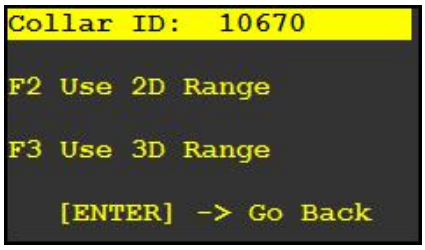
Press F6 (SHIFT + F1) in the Download Menu to go to the Range Checker Mode. In this mode you are able to track your collar in the field. The mode uses both GPS modules, Terminal and collar, to show you distance and direction to your collar.
If you try to execute the Range Checker mode without any valid fix on the collar, you will receive the following error message. Go to Force GPS Fix and get the position.

Display 48: No Valid Fix

How to track your collar:

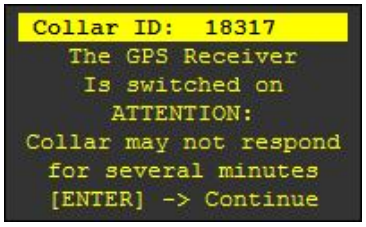
- get current position of the collar (Go to the Upload Menu to Force GPS Fix)
- go back to Download Menu → Range Checker (F6)
- after receiving a valid fix choose 2D or 3D range checking (3D also includes height data)

(Use 2D to get the distance between you and the collar without height data (useful when you track your collar on the plane to know the distance between your point on the ground and the collar. Use 3D if you are for example in mountainous terrain to know the distance including height differences).



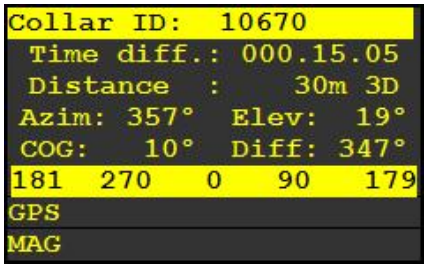
Display 49: Choose Data Range

- GPS Receiver of the Terminal switches on, wait until communication is established



Display 50: Terminal Modem On

- Track your collar.



Display 51: Collar Tracker

Time diff.: Shows the time difference between the last fix of the collar and the Terminal time. (In the example above: The collar was at the shown position 15min and 5s ago.

Distance: Shows distance in meter in either 3D or 2D distance. (3D also includes height data)

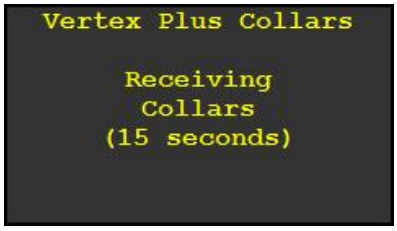
Azimuth: running from 0° to 359°, like a compass rose. Direction north is referred to as 0°, direction east is referred to as 90°, direction south is referred to as 180° and direction west is referred to as 270°.
Elevation: runs from 0° to 90°. An elevation of 0° indicates directly above the horizon, an elevation of 90° indicates vertically into the sky.
CoG: (Course over ground) shows your movement running from 0° to 359°, like a compass rose.
Diff: shows difference between your own movement direction and the collar. If the value is close to 0° or close to 359° you are on the right way to your collar!

Below the GPS and Magnetic compass is shown. The GPS compass works well if you are able to walk fast and receive satellite signals. To find the collar , move the direction finder to the centre of the bar graph.

You also can use the VHF Beacon Transmitter to track your collar but this has nothing to do with the Handheld Terminal. Refer to your collar's manual.

8.3 Update Collar

If the collars are still in receptive mode and the terminal has been switched off or the user has canceled collar communication, it is possible to establish the radio link between Handheld Terminal and collar again without transmitting the wake-up code by pressing F4 (GPS Plus Collar) / F5 (VERTEX Plus Collar) .



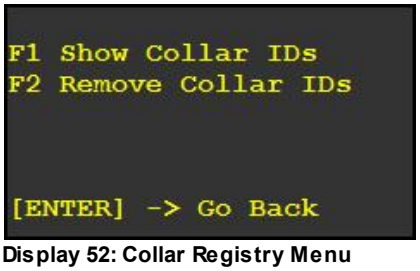
Display 46: Display during reception of collar IDs

Note: Remember to connect a Yagi-antenna to the Terminal before executing any commands in the communication menu. Transmitting without antenna may cause serious damage to the Terminal.

After the reception of the collar IDs is completed, the received collar IDs are shown as list and you can select collars for communication.

9 Collar Registry

To establish communication between Collar and Terminal you have to register your collars to the Terminal in GPS Plus X.
Press F2 in the Main Menu to enter the Collar Registry.



Display 52: Collar Registry Menu

Here you have the possibility to view a list of currently registered collars or to remove

collar IDs from the list.

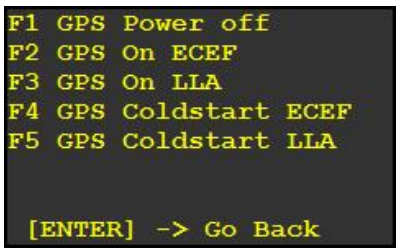
Note: Removing a collar from the list will remove the collar data from the Handheld Terminal as well. Please remove the ID only when you saved all data to GPS Plus X.

Press F1 in the Collar Registration Menu to view a list of all collars currently registered on the Handheld Terminal.

To remove a collar from the ID list, press F2 in the Collar Registration Menu. All registered collars are highlighted. To remove a collar from the Handheld Terminal, select the desired ID and press *. You will get asked if you really want to delete the ID and all its data. Continue to execute the process.

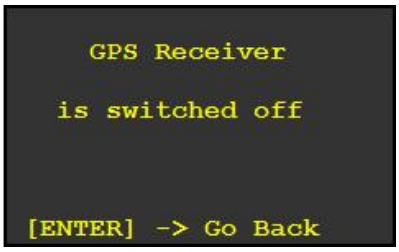
10 GPS Module

The Handheld Terminal is equipped with a GPS receiver. You can use the information of this receiver to determine your position in the field or to navigate. Press F3 in the Main Menu to reach the GPS Menu.



Display 53: GPS Menu

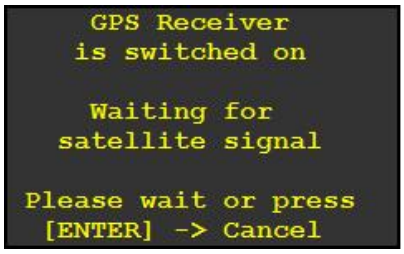
Press F1 in the GPS Menu to switch off the GPS receiver in the Handheld Terminal.



Display 54: Switch off GPS Receiver

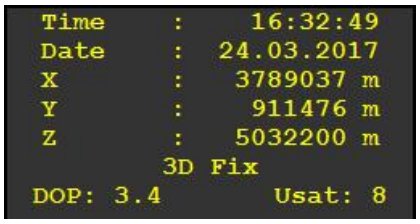
Note: The GPS receiver will only be in off-state if you switch it off manually or if the Handheld Terminal is switched off. The receiver will not be switched off when you leave the GPS Menu.

To start the GPS receiver in Earth Centre Earth Fixed mode press F2 in the GPS Menu. Following display will appear while the receiver is searching for GPS satellite signals.



Display 55: GPS receiver on

If you start the receiver indoors and it is not able to receive GPS satellite signals, you need to wait for several seconds until the screen changes, if you have open access to the sky it should take a maximum of one second.



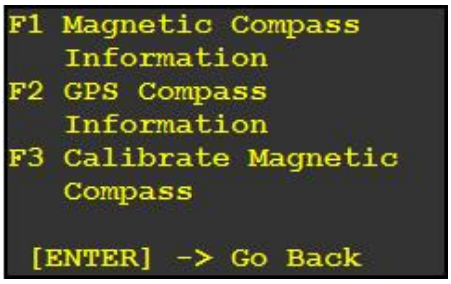
Display : GPS Receiver in ECEF Mode

To start the GPS receiver in LLA Mode Press F3 in the GPS Menu. The Position Data are given as latitude, longitude and altitude.

If the GPS receiver has not been able to track any satellite for several minutes, it is sometimes useful to perform a reset or coldstart. For this, press F4 in the GPS Menu.

11 Compass Module

The Handheld Terminal is equipped with an electronic compass and with a GPS compass. You can use the information of this compass to work with it in the field or to navigate. Press F4 to go to the Compass Menu from Main Menu.



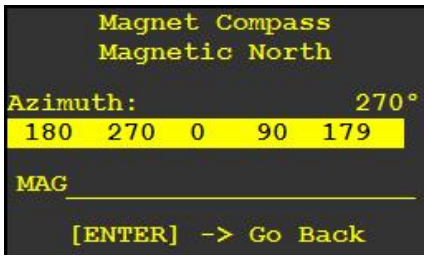
Display 56: Compass Module

11.1 Magnetic Compass

To read out the direction to “Magnetic North”, press F1 in the Compass Menu. The Handheld Terminal is designed to be held horizontally when using the magnetic compass. First you have to calibrate the compass, rotating the Terminal in all 3 axis.

Display 57: Compass calibration

Now you can see the Magnetic North direction on your screen.

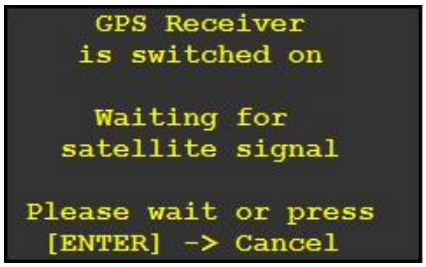


Display 58: Magnetic Compass information

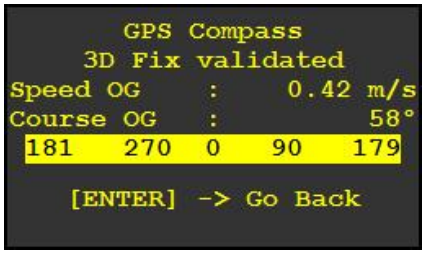
The azimuth is running from 0° to 359°, like a compass rose, in which north equals 0°, east equals 90°, south equals 180° and west equals 270°. The azimuth information is given as number in line 2 and underneath as bar graph. The left edge of the graphic equals 180° South, the next vertical line equals 270° West, the middle line equals 0° North (360°), the next vertical line to the right equals 90° East and the right edge equals 180° South again.

11.2 GPS Compass

In addition to the magnetic compass module, the Handheld Terminal has the possibility to calculate direction with the built in GPS receiver. In contrast to the magnetic compass, the GPS compass is able to calculate the 'True North' direction. Press F5 in the Compass Menu to start the GPS compass. For technical reasons, the compass will only work outdoors with an open access to the sky. The GPS compass calculates the direction under consideration of the velocity. If your movement speed is too slow, you will get a message on the screen.



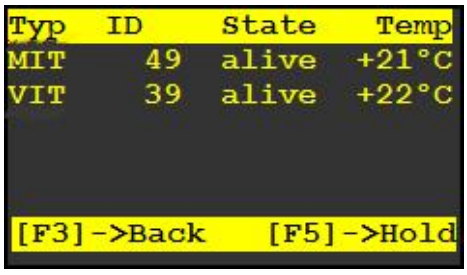
Display 59: Magnetic Compass information



Display 60: GPS Compass

12 Sensor Receiver

Press F5 to receive the IDs of UHF ID-tags in range of the Handheld Terminal
The Typ, ID, Sate and temperature are displayed.



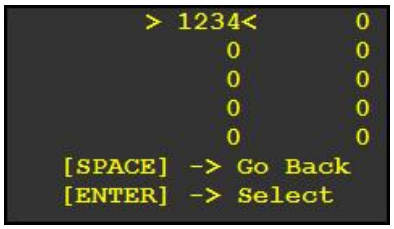
Display 61: Received ID-Tags

13 Drop Off Release

This menu allows you to release a radio-and-timer-controlled VECTRONIC Drop Off on demand. You can only trigger Drop Offs that are registered on your Handheld Terminal and in the GPS Plus X software. Refer to Drop Off Registration.

Up to 256 Drop Offs can be registered on the Handheld Terminal using GPS Plus X. The maximum transmission range of the release signal is 500m. Ideally, you should have eye-contact with the collared animal before you send the release command.

Press F6 (SHIFT + F1) in the Main Menu. A list of all registered Drop Offs will appear. Select the desired Drop Off by moving the two black arrows with the number keys 1 - 4 and 6 - 9 and press ENTER. Press SPACE to return to the Main Menu.



Display 62: List of registered Drop Offs

Display 46 will appear. If you are sure that you want to release the selected Drop Off, press F5. The Handheld Terminal will now send the release signal to the Drop Off. The Drop Off wakes up every 32 seconds to listen to commands. As soon as the Drop Off receives the signal, the release process will be started. The process takes several seconds. Display 47 will be shown as long as the release command is sent. During this time, the transmission can be stopped by pressing START. However, if the Drop Off has already received the signal, the Drop Off will be released. After 40 seconds, the display will return to Display 45.

Note: There will be no confirmation from the Drop Off if the signal was received and the Drop Off triggered. If you are not sure whether the collar has been released, you can resend the release command.

Display 63: Drop Off release stand-by

Display 64: Drop Off release command transmission

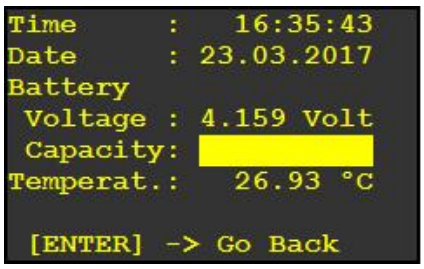
14 Access Terminal Info

Press F7 (SHIFT + F2) to access status information on the Handheld Terminal (Display 48).

Display 65: Terminal Info Menu

Press F1 in the Terminal Info Menu to access the status information (Display 49). In the top part, you will receive the UTC time and date programmed into the Handheld Terminal. UTC time and date information will be updated automatically whenever the GPS receiver solves a valid navigation solution.

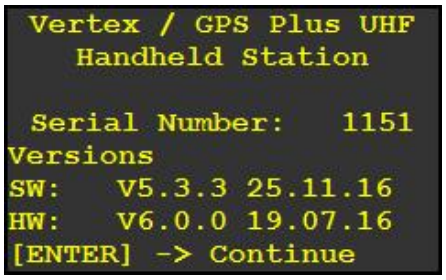
On this display, you can also check the battery voltage and capacity. Below the capacity bar, you can see the temperature inside the Handheld Terminal. This temperature can increase during data communication, when the GPS receiver is switched on or when the battery is being charged. Press ENTER to return to the Terminal Info Menu (Display 48).



Display 66: Handheld Terminal status information

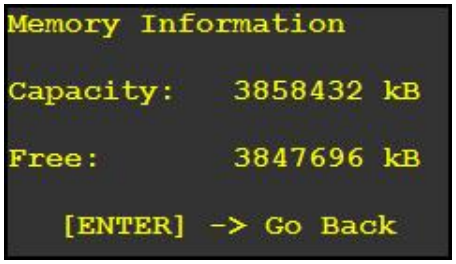
Press F2 to view information on serial number of the Handheld Terminal, software and

hardware version (Display 50). The same information is displayed each time you switch on the Handheld Terminal. If you encounter problems with your Handheld Terminal, please report software version, hardware version to help us supporting you. Press ENTER to return to the Terminal Menu.



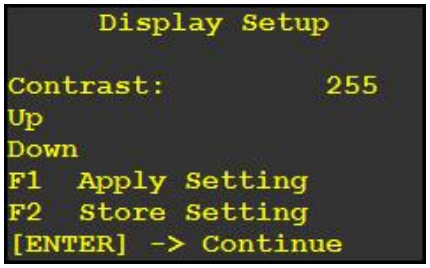
Display 67: Handheld Terminal Info Screen

Press F3 to see Memory Information. You can see the total Capacity and free memory in kilo Byte.



Display 68: Handheld Terminal memory information

Press F4 in the Info Menu to see the Display Setup. With buttons 8 and 2 you can change the contrast settings, make the display lighter or darker. Press F1 to apply your changes. Press F2 to store your changes for the future. Press [ENTER] to return to the Info Menu.



Display 69: Display Setup

Note: If you download data from a collar, all data sets not currently stored on the Handheld Terminal will be downloaded. Therefore, it is only useful to remove data of collars which will either not be accessed with the Handheld Terminal or from which all data has been downloaded and erased.