THE WEB PANEL MANUAL

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Introduction

Telemetry panel enables access to the data collected by Ecotone GPS-GSM loggers as well as changing their settings, activating remotely the drop-off system, check finances of your panel, preview current loggers' status, etc. Each user's profile is secured by the password.
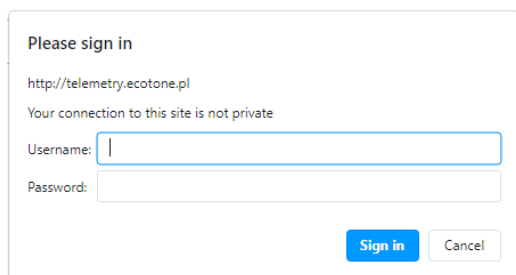
Getting access to the panel

Each customer gets from us an e-mail with link, username and the password.

The address structure is:
http://telemetry.ecotone.pl/**username**/panel/

When logging in, you will be asked to fill user name and password. Some Web browsers may ask for that twice.

Figure 1. Logging window

Guest access

Each panel has also a **guest** access option. In guest mode there is full access to the collected data, maps, logger's status, etc., but without privileges to change the settings.
The guest username and password come together with the main password by the e-mail.

Panel functioning

The communication between logger and panel, as well settings change for the logger, goes thru the SMS messages. Any commands saved by the user are stored in the queue on the panel. Logger periodically sends SMS messages to the server - each SMS consists of a four GPS positions and some diagnostic details about logger functioning. Such message received by the server triggers sending commands which are in the queue.

The GPS data which come in communication SMS messages are only sketchy, the detailed data collected by loggers are transmitted periodically via GPRS/3G to the server. Access to detailed data, decoding them, conversion to different formats, visualisation on maps and graphs are possible due to the NGA free software. Download it from:
http://telemetry.ecotone.pl/public/NGAnalyzer/
The loggers' sections on the panel may differ depending on the logger version and available functions. Current manual describes the most common version "CREX-2019", which applies to almost all loggers produced after 2019.

Panel layout

The panel is divided into three main sections and map window:

Figure 2. General panel layout & sections

Logger status & settings change section

The Web panel consists of as many logger sections as the number of loggers belonging to this user. Single logger window is divided into 5 columns: ITEM, CURRENT STARUS, NEW SETTINGS, SETTING STATUS & DESCRIPTION.

Figure 3.   Single logger section

ITEM

- Press the SAVE button each time, when any changes have been applied to this particular logger's settings, added or modified description or checked or un-checked boxes in this section.

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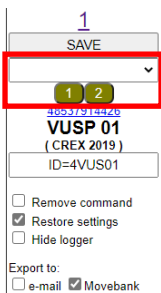
- The settings prepared for one logger can be saved as a set that can be easily repeated and applied to any logger from this user panel. It is possible to save 5 different sets of settings which will be available through specific colour buttons for all loggers with the same firmware and hardware version.
  When the settings have been prepared, choose from the list the set number and press SAVE.

SAVE to SET 1
SAVE to SET 2
SAVE to SET 3
SAVE to SET 4
SAVE to SET 5
DELETE SET 1
DELETE SET 2
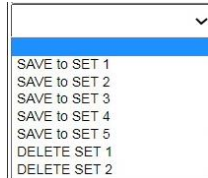
  After refreshing the whole panel by clicking HOME, a new button will appear.
  Each set can be deleted or overwritten, select the action from the list and press SAVE.
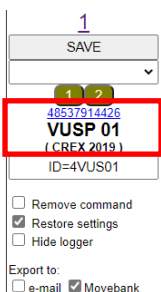
- The telephone number is the unchangeable identification of each logger. The link under the number activates fast preview of last known location of this logger – the map appears in the left down section of the screen.
- The Id number like "VUSP 01" is the name added by the admin, for easier identification of loggers or their groups.
- The name in brackets e.g. (CREX 2019) describes the panel version for this particular logger. Different panel versions can be used depending on the logger functionality or generation.
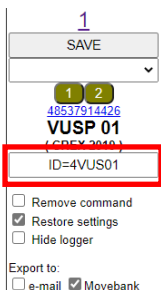
- The "ID= "describes the firmware version and Id used in data downloaded via GPRS or UHF. The firmware is marked by the first character, e.g., "4" in this example ID=4VUS01.
  Due to transmission requirements via UHF and compatibility with older loggers, in the GPRS/UHF data only 3-letters+2 digits of the Id codes are used. Usually, admin ensure the names that can be easily paired with each other e.g., VUSP 01 on the panel and VUS01 in UHF or GPRS data.
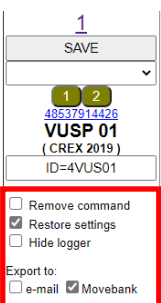
- "Remove command" - enables to remove new logger's settings saved on the server. Check the box and SAVE to execute. It works until the command waits in the queue on the server and has not been transmitted to the logger – when the "Status command" column is yellow. When it is green or red - it is too late to remove the command.
- "Restore settings" – repeats sending the last known settings after manual or automatic monthly reboot the logger.
- "Hide logger" – enables temporal hiding all selected loggers from the panel view. Marked loggers can be hidden or unhidden from the SETTINGS menu.
- "Export to e-mail" – old (not commonly used) feature to resend data received via SMS to the given e-mail address in SETTINGS menu.
- "Movebank" – enables automatic export of the GPS data received via SMS. Transmission to Movebank of mass data, received via GPRS, will be added soon to the NGA software.

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- "RESTART [LOC]" – the timestamp of last known (manual or automatic) logger restart. The time is given according to the UTC-1 time zone of the GSM operator.
- "SMS [LOC] - the timestamp of last SMS communication from the logger. The time is given according to the UTC-1 time zone of the GSM operator.
- "GPS [UTC] – the timestamp of last known GPS logger's position. The time is given according to the UTC time zone used by the GPS system.
- "GPRS [LOC] - the timestamp of last data download via GPRS. The time is given according to the UTC-1 time zone of the GSM operator.

Parameters listed below describe some important diagnostic parameters received in the last SMS:

- "GPS INTERVAL" – GPS interval for the GPS-GSM.
- "BATTERY [V]" – battery voltage, recorded when completing data for SMS.
- "TEMP [C]" – internal temperature.
- "ACTIVITY" – diagnostic activity index that helps determinate whether the unit is on alive animal. It reflects a number of moves over the threshold in a period, when data have been collected for the SMS. It is not dedicated for analyses of the real animal activity.

In this section, the GSM contract validity, paid fee and its use are described:

- "GSM FEE" – amount in EUR paid to Operator for annual contract.
- "Valid from" & "Valid to" – validity of the GSM contract.
- "MONTH QUOTA" – it is quota for one month (GSM FEE divided into 12).
- The progress bar visualises usage of quota in a current month, when logger is over the quota - bar turns into red.

NEW SETTINGS

It is the most important section. Proper settings ensure success of the project and constant, regular data records. Improper configuration will cause chaotic records with gaps, because of too fast battery discharging.

When you have any doubts about proper settings for your species - contact us. Even if you are pretty sure what you are doing - contact us as well. We will be happy to check your settings, discuss possible optimisations and take care of how your trackers work.

GPS-GSM SETTINGS (Communication & coarse data)

Settings in this section determine communication interval between the logger and the server. In addition - some global settings that affect logger work - have to be chosen here.

- **GPS INTERVAL** – This parameter determinates communication frequency via SMS, between the tracker and the server. Logger sends to the server SMS, when four GPS positions are collected. The last position shows current animal location. In each SMS, except the GPS positions, important information about the system functioning is also transmitted. The GPS positions received via SMS are useful but they are rather a "by-catch", which comes together with the communication messages. All GPS positions sent by SMS will be recorded anyway in a detailed data files for download via UHF or GPRS. The most typical and recommended choice for this parameter is 6h – it means that communication take place once a day (4 GPS positions x 6h= 24h).

- **ON/OFF HOURS** – sets the duty time for GPS positions, affects only coarse data collection for SMS transmission. In typical conditions, when 6h interval is chosen, leave them 00/OFF – it means that positions for SMS will be collected 24h/day. Those settings do not affect duty hours for detailed data collected by UHF or GPRS transfer.

- **SENSORS** – in typical use the settings refer to only the light sensor. "OFF" – positions will be collected 24h, "DAY" – GPS positions will be collected only from dawn to dusk. **The DAY function is strongly recommended for diurnal animals, to save the energy**, as it allows to detect time in burrow and disable GPS, when animal is inside. Please contact us before use other settings than "OFF" or "DAY".

The DAY function is global and affects work of the GPS, when it collects data for communication by SMS-es as well as for detailed data, transmitted via UHF/GPRS.

- **ACC REPORT** – triggers the activity report, based on accelerometer data. OFF-disables report collection, UHF – enables "Activity report **480**" for UHF and GPRS data. It is recommended to choose "UHF".
Additional options "GSM" and "GSM+UHF" run simplified "Activity report **48**" for transmission via SMS. It increases power consumption as well the communication charges – consult us before using it.

- **SMS BUFFER** – it enables energy save, when very frequent GPS sampling (short GPS INTERVAL) is chosen. This function works only within 1 day and after midnight all pending SMS-es will be send anyway, according to typical communication timetable. **Before use of frequent GPS sampling or/and SMS BUFFER - consult us please.**

There are important parameters, which determinate data collection. This section reflects most features of the Tracker application, used for the UHF communication.

Before choosing the parameters, activate this section by selecting "change" in the main box.

This box is active only, when GPS-GSM (SMS communication interval) in previous section has been selected.

Change the settings carefully - when the settings are too intense comparing to the solar charging level, data might be fragmented and collected not regularly, making them less valuable and difficult to analyse.


- GPS INTERVAL –determines number of positions collected daily. In most cases - for loggers with a single solar charger - 15 minutes interval is a safe choice. For loggers with double or triple solar charger, when DAY or/and MOTION function has been activated, usually shorter intervals are possible, without the risk of too fast battery discharging.
- ON/OFF HOURS – sets the duty time for collection of the GPS positions collection. Leave those boxes 00/OFF, when the setting of the duty hours is not needed. This function can work together with a DAY sensor, activated in previous section.
- GPS BURST – enables collection of series of GPS positions in short intervals. E.g.: choice of 15 minutes GPS interval and burst 15/4s lets to collect series of 15 GPS positions in 4s interval, instead of a single position every 15 minutes. The "GPS burst" function significantly increases power consumption – use it only, when the logger has a very good charging and rather only for limited period, when very precise tracking is necessary.
- GPS TIMEOUT – Timeout for GPS, when position cannot be calculated. Typical for most projects is 90 seconds. For animals, which may stay in burrows, caves, buildings, nest boxes, deep valleys or canyons - everywhere the GPS signal might be weak or not present - use the NoSat function. The NoSat function is safe for the battery and recommended for all projects.
- UHF INTERVAL – Important only for customers which use UHF data transmission to the base station. Typical and recommended is 5 minutes interval. Do not use 1 minute without important reasons – it may lead to fast battery discharging. When the UHF download is not in use or you are not sure if it is active or not, choose just in case 60 minutes to save the energy.
- STOPS IN BASE – Important only for customers which use UHF data transmission to the base station. When it is active, GPS stops when the logger is in the base station range. This feature is crucial to save energy when the animals use for roosts or for breeding places without GPS signal –burrows, caves, inside buildings, etc. The base station located in such place stops the GPS but still the presence of the animal is recorded in the base station memory.
- ADDED DATA – Typically (except the GPS BURST mode) logger registers only speed "SP" of the object. It is possible to add the GPS based altitude "AL" and/or parameters HDOP, VDOP, PDOP which potentially may describe the GPS accuracy and heading calculated by the GPS. Because the altitude based on GPS - which not works continuously - is not precise, we suggest to use the +AL only, when your logger is equipped with the barometric sensor. Additionally, turning on "+AL" increases the power consumption, because system adds some extra time to GPS acquisition, to calculate the altitude more precisely.

- VHF/UHF – it turns on the VHF beacon, when it is present, or activates the "UHF" telemetry mode. Do not use the UHF telemetry function without consulting us – it is designed for very specific conditions.

  "OFF" - deactivates the VHF or UHF telemetry, "ON" – turns it on for continuous work. Mode "Auto" is for VHF beacon only and it is the most recommended choice, when the VHF is present. It turns on the VHF for two days after sending the command, then it goes into a "stand-by" mode and activates automatically after "no motion" detection.

- ACCURACY/MOTION – there are two functions in this drop-down list.

  ACCURACY - For most cases ECO mode is recommended, MED and HIGH add extra time to GPS acquisition, which may improve the accuracy, but generates significantly higher power consumption.

  MOTION – very useful functionality to save energy and collect much more precise tracking data from objects, only when they are active. Very effective for most species e.g., exclude power consumption during sleep, roosting, perching, incubating, etc. Start adjusting the motion sensor to your species from 3s and 30% sensitivity, consult us anyway to get support.

GPS-GPRS & GPS-UHF SETTINGS (CREX-dive profile)

It is additional section, which appears on the panel only for loggers equipped with dry/wet diving sensor or with TDR functionality.
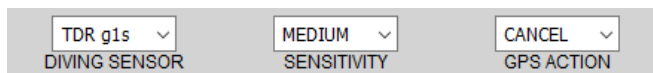
- DIVING SENSOR – OFF – not active; Wet/Dry – activates the immersion sensor; TDR g1s – activates the Wet/Dry and TDR in the most recommended mode. More settings are available for UHF programming via Tracker application.
- SENSITIVITY – adjusts the sensitivity detection of the submersion. Usually, MEDIUM is recommended. For birds which splash often, sometimes LOW can be used to avoid false diving records. HIGH – very rarely used, for example on animals, which do not dive but splash only, to detect contact with water.
- GPS ACTION – determinates the GPS behaviour after diving detection. "CANCEL"- diving switches off the GPS for one interval. It is the most recommended choice. "IGNORE" – no influence to GPS work. Not recommended without very special reasons – GPS work under the water may cause much faster battery discharging. "FREEZE" – each diving pauses the GPS work; every time logger is again on the surface - GPS continues work, until reaches TIMEOUT limit.

ACCELEROMETER SETTINGS

All loggers produced after 2018, can record programmable bursts of the acceleration data. If You do not plan, to analyse the acceleration data, turn-off this section.

When raw acceleration data are needed in your project - set the burst parameters according to your requirements.

Recording acceleration data increases the power consumption a little, but transmission of the files (which might be very big) can increase power consumption and reduce the battery life significantly.

When only the UHF download is used, logger's system automatically limits the space in the memory for the raw acceleration data to avoid problems with too long downloading time to the base station. Depends on settings, accelerometer bursts can be recorded for 1-3 days and recording stops till the data will be downloaded. For GPRS download, there are no such limitations.

- INTREVAL – choose the interval between bursts (data series). Bursts are also recorded together with each GPS position - consider that, when deciding about the interval.
- SAMPLING – interval between samples of the accelerometer readings.
- N SAMPLES – number of samples in each burst - determinates how long burst will be recorded. E.g. 5 minutes, 10Hz & 32 samples = ~3 seconds burst every 5 minutes, 10 minutes, 1Hz & 32 samples = ~30 seconds burst every 10 minutes.

GPRS DOWNLOAD

Data stored in the memory can be send to the server via GPRS and when the logger communicates via SMS to the server and when chosen file size is reached. This parameter decides about the data transfer intervals – it is not necessary - and not recommended - to send the data via GPRS together with each SMS communication. The frequent GPRS transfer increases power consumption and may generate higher charges. Many GSM operators charge for each started 50 or 100 KB - so sending small files can be more expensive.

At the beginning, set 5 or 10KB to calculate how big files are coming from the logger and then adjust this parameter according to your requirements.

SETTINGS STATUS

In this section are shown lastly used settings for the logger, command delivery status, sending command date, etc.

- SET DATE – the date and time, when the command has been saved on the server. The time is given according to UTC-1 time zone of the GSM operator.
- SENDING DATE – date and time of sending the command to the logger. The server sends the command immediately, when any SMS comes from logger. Until the confirmation of the logger being "on-line" is received, the command waits in the queue on the server.
- SET DATE – a timestamp, when server gets confirmation from the logger, that new settings have been delivered and accepted.
- COMMAND= - shows the commands' source: "MR"- automatically generated after logger rebooting, "USER" – manually sent by the user, "Set" – manually sent from the Set.
- GPS-UHF/GPRS SETTINGS – shows the string, which has been transmitted to the logger. Users, which use the UHF download and the Tracker application, can copy and decode it.

The colour informs about the command delivery status:
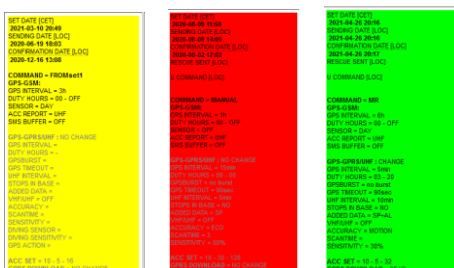
Yellow – the command waiting in the queue on the server. Until it is not sent - can be removed from the queue.

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Red – the command has been sent but not confirmed by the logger. Sometimes it is delivered and accepted but due to signal strength or local GSM operator the confirmation cannot be sent. In such case repeat the command manually.

Green – the SMS with new settings command has been delivered and confirmed by the logger.

DESCRIPTION

In this section there is a place for customer and admin notes and descriptions, as well as information about the GSM contract validity. Write the message into the text box and press SAVE.
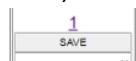
DAYS LEFT TO FEE EXPIRY – the GSM contract validity (in days).

ECOTONE DESCRIPTION – information about model, firmware, VHF frequency, etc., can be written here by admin.

ADMIN DESCRIPTION – the text box for the panel user. Write the note and save by SAVE button in ITEM section. The whole description column, when not needed, can be hidden from SETTINGS menu in main panel section.

MAIN PANEL SECTION
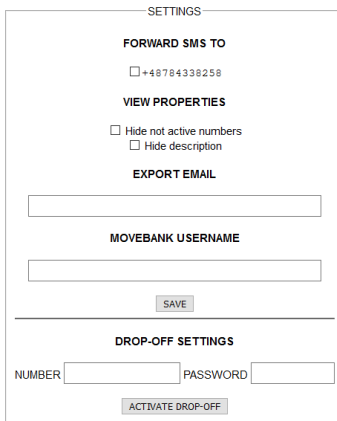
The UTC time clock – helps to recalculate between GPS (UTC) time and your local time for setting the duty hours.

HOME – refreshes the whole panel. Use this button each time after saving commands, notes or any changes on the panel to get the updated view.

Do not use the F5 or browser refresh button! It can cause repeating any action that was performed earlier – it is a feature of most browsers. Usually, the browser warns user about it:
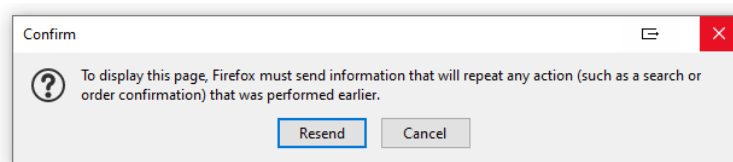
SETTINGS

FORWARD SMS TO – admin can add your phone or phones numbers to the menu, to get any SMS messages, which are send by your loggers. It is very rarely used option, due to charges for each forwarded SMS. It may be useful in a very specific conditions, when in the study area exists GSM coverage, but without access to the internet.

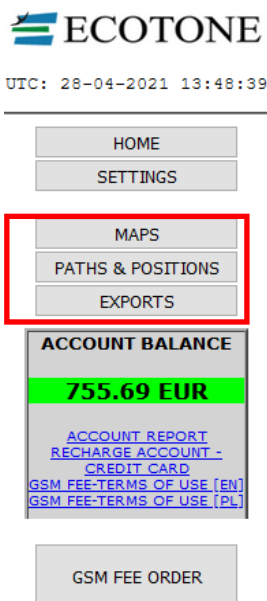**HIDE NOT ACTIVE NUMBERS** – check the box and press SAVE (below) to activate this function. It hides all marked loggers from the panel view. It is very helpful when many not active loggers are on your panel – hide all loggers, which are not on animals yet and loggers, which have stopped to get more clear view. Hidden loggers still may send data & accept settings from the queue – it doesn't affect their proper work.

HIDE DESCRIPTION - check the box and press SAVE (below) to activate this function. It hides the whole description column from the main panel view. Helpful, when panel is operated from tablets or smartphones.

EXPORT EMAIIL – write and save your email address to get raw data (in txt format) from each SMS transmitted by the logger. This function works only with loggers, which have marked e-mail box. It is rather rarely used function, because in communication SMS-es only a small number of GPS positions are transmitted. Sometimes, when the last known logger's position is important to find the animal or to visualize "on-line" the simplified animal migration progress – this function might be helpful.

DROP-OFF SETTINGS – input the complete phone number of the collar, which has to be released, the password for this collar and press "ACTIVATE DROP-OFF" to place this command in the queue. When logger will be on-line, the command - activating the drop-off mechanism will be sent. The default password is: 12345678.

DATA & MAPS ACCESS

MAPS – access to folders containing maps of one day tracking history of each logger. On maps are included only GPS positions, transmitted together with communication SMS messages, thus the maps are not so detailed but still can be used to find the tracked animal.

PATHS & POSITIONS – GOOGLE EARTH KML - the same GPS data, as shown on maps, but converted into .kml Google Earth format. They are grouped for each logger separately in a daily and monthly sets.

EXPORTS – opens a folder containing several data subfolders:

stats/	2021-04-29 11:38
positions/	2021-04-29 11:35
gpsdata/	2021-04-01 08:30
account_balance/	2021-04-29 01:27
acc/	2021-04-29 06:38

- **STATS** – contains csv files about settings changes as well about rebooting of each logger. Those data are rather for admin diagnostics purposes.
- **POSITIONS** – monthly csv files with data received via SMS communication . Comparing to detailed data received via UHF or GPRS, those data are cursory, but sometimes useful for Web presentations, basic migration analyses, etc.
- **GPSDATA** – monthly packages of detailed data transmitted via GPRS. Although the files are in txt format, they are not decoded and may contain binary data. They are designed to be used by the NGA program, which downloads data from this folder automatically.
- **ACCOUNT BALANCE** – data about your panel finances. The same files are also accessible from the link in "ACCOUNT BALANCE" section.
- **ACC** – the activity "report48", which is collected in some cases due to SMS communication. This kind of data is not commonly collected – only, when the GPRS communication doesn't work.

ACCOUNT BALANCE

Shows everything about your panel finances.

- **Panel Account** - The amount presents the balance, available for the "Panel Account Balance". The amount paid to "Panel Account" depends only on the customer's decision. Money stored here still belong to the customer, are automatically used to cover charges generated by the loggers, which exceed the month quota. Customer can pay from this account/level any logger's GSM contracts, use them for any orders from Ecotone or just ask for return to Your account.
- **Account report** –leads to documents describing monthly charges, generated by any logger from the panel. There are also links to manuals, describing how the account works and how to pay by the credit card.

- **GSM FEE ORDER** – press to get access to the on-line form to extend the GSM contract of your loggers, recharge the "Panel Account Balance" or deactivate selected loggers.

LAST LOCATION PREVIEW MAP

The link under the logger's phone number opens preview map with last known animal's location.

Figure 4.   Preview map.

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