NATRAS
LSVA · RPLP · TTPCP

Vehicle recording system (VRS)
Operating instructions Vers. 1.2

Documentation version 1.2 / date 09 april 2025

VRS operating instructions

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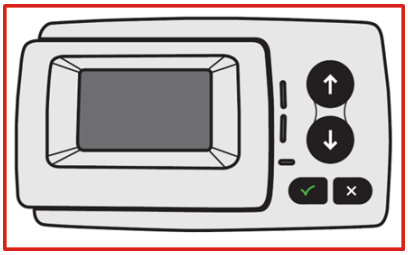
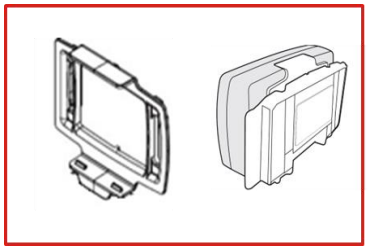
1 Assembly and commissioning

1.1 Scope of delivery VRS

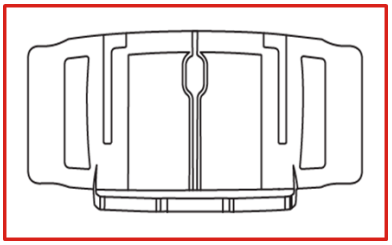


Vehicle recording system VRS

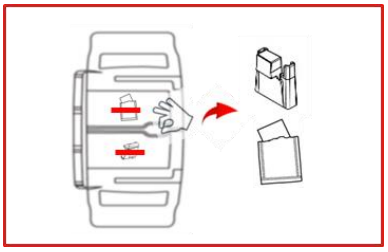


VRS bracket:

is pre-assembled on the VRS



Bracket for installation in existing emotach mounting rails or directly on the windscreen.



Cable fastener and cleaning cloth are attached with a red (removable) adhesive strip.

Only supplied in the event of:

a. an emotach replacement is needed
b. with a pre-installed HVC-II cable (NAT-A0102)

1.2 Information - HVC - cabling options

1.2.1 Vehicles with existing cabling (emotach)

On vehicles with a built-in emotach, the existing emotach wiring and emotach holder rails can continue to be used. Rewiring is not necessary.

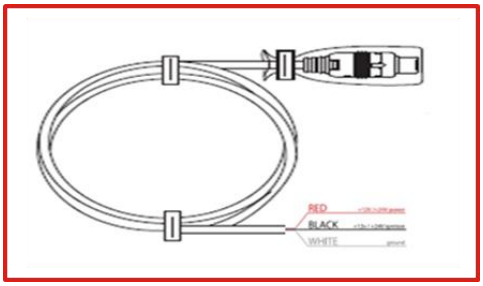
The scope of delivery of the VRS (HVC III/NATRAS vehicle recording system) includes both a connection cable for connection to the existing emotach supply cable and a bracket for attachment to the existing emotach holder rails.

1.2.2 New vehicles (delivery from 1 January 2025)

NATRAS offers all vehicle manufacturers and interested parties the following HVC cabling options (https://natras.ch/shop):

1.2.2.1 Connection cable "open-end vehicle to NATRAS VRS" (order number NAT-A0104)

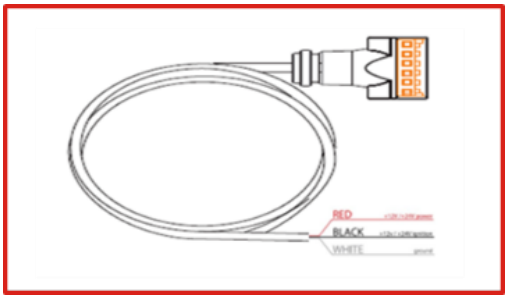
The standard cabling variant offers direct (adapterless) access to the NATRAS VRS and is intended for vehicle owners who have opted for the HVC basic supply and wish to work exclusively with NATRAS AG.



Connection cable "open-end vehicle to NATRAS VRS" (order number NAT-A0104)

1.2.2.2 Connection cable "open-end vehicle to adapter HVCIII (multiple use)" (order number NAT-A0102)

This cable corresponds to the plug variant of the existing HVC cabling and only needs to be connected to the vehicle's power supply in future. This variant enables the vehicle owner to use devices from authorised providers (e.g. EETS, ZNA, NATRAS) in addition to the NATRAS VRS if required.



Connection cable "open-end vehicle to HVCIII adapter (multiple use)"
(order number NAT-A0102)

1.3 Assignment of the VRS to a vehicle

On delivery, the VRS is not yet assigned to a vehicle. As the barcode / QR code on the back of the VRS is required for assignment, this step must be carried out first, **before** the VRS is installed in the vehicle.

An VRS can only be assigned to a vehicle registered with NATRAS.

The **NATRAS app** can be used to easily assign the VRS to the vehicle. The NATRAS app is available to download from the Google Store and Apple Store. Please follow the instructions in this app to complete the assignment correctly.

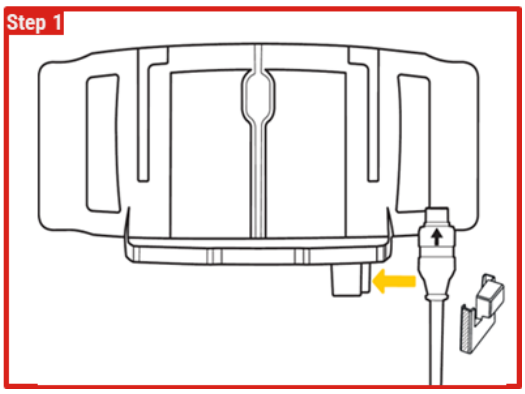
Assignment via the online-service-desk (OSD) is also possible.

1.4 Assembly of the VRS

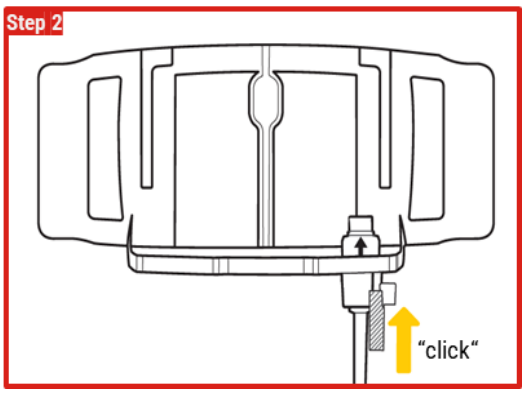
1.4.1 Installation in the vehicle with existing emotach mounting rails

This variant can be carried out under the following conditions:

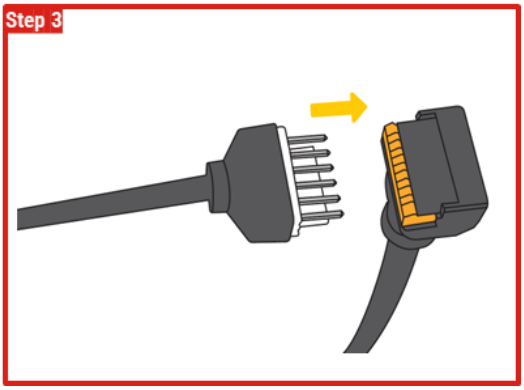
- There is a holding device for an emotach (HVC II VRS) on the windscreen of the vehicle. The emotach must first be removed and disposed of in accordance with the law (**see chapter** 4).



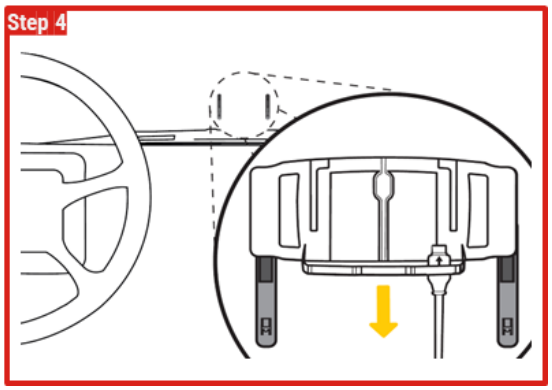
The connection cable is fed into the cable opening on the side of the VRS holder. The black arrow on the cable connector must point upwards and towards the driver and be pushed as far as it will go in the provided guide.



The connection cable is attached to the holder with the cable fastener. The cable fastener must be placed with its protrusion pointing outwards on the right at both guide grooves of the holder and pushed upwards. The cable fastener engages when you apply further sustained pressure. You will hear a click.

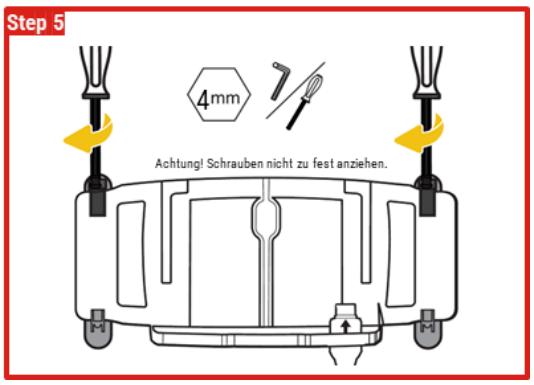


The connection cable is connected to the existing emotach cabling.



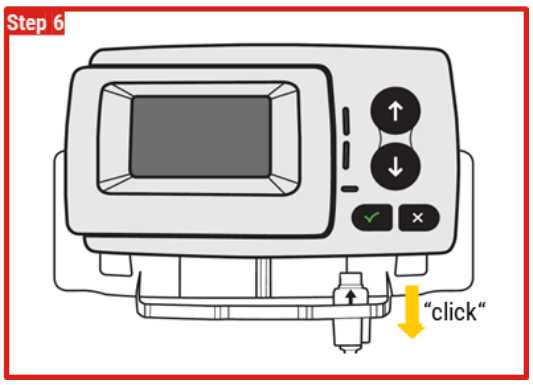
The screws on the two emotach retaining rails are loosened using a suitable tool (4 mm hexagon).

The VRS bracket is inserted into the existing emotach mounting rails.



Tighten the screws on the two retaining rails.

Caution: do not overtighten the screws.



VRS is inserted into the VRS holder from above. You will hear a click.

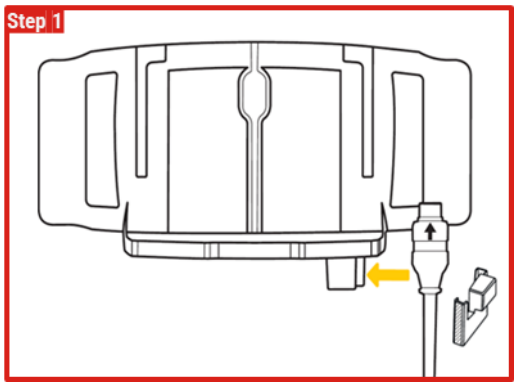
1.4.2 Installation in the vehicle without emotach mounting rails

If there are no emotach mounting rails in the vehicle or the existing mounting rails are not suitable for mounting the VRS, the VRS must be attached directly to the windscreen.

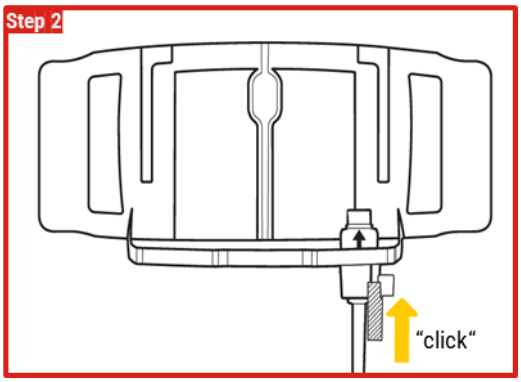
On vehicles with a metal-coated windscreen, the VRS must be fitted in an uncoated area.

The VRS must be installed in an area where the driver's visibility is not impaired.

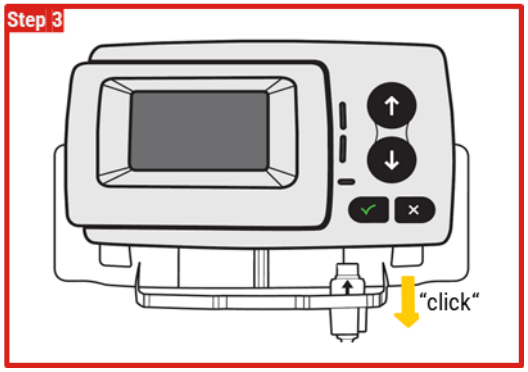
1.4.2.1 Installation in the vehicle with "open-end vehicle to NATRAS VRS" cabling



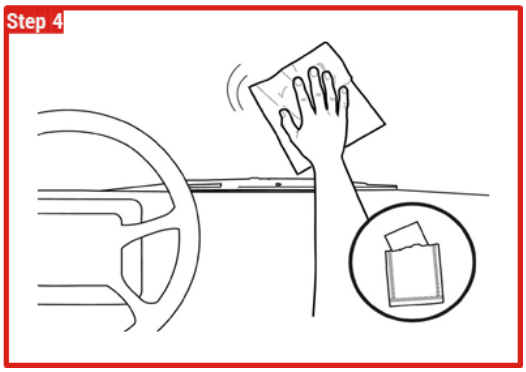
The existing cable for option 1 is fed into the cable opening on the side of the VRS bracket. The black arrow on the cable connector must point upwards and towards the driver and be pushed as far as it will go in the provided guide.



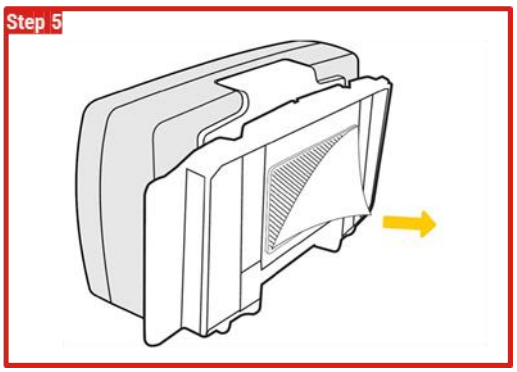
The existing cable of option 1 is attached to the bracket with the cable fastener. The cable fastener must be placed with its protrusion pointing outwards to the right on both guide grooves of the bracket and pushed upwards. The cable fastener engages when you apply a little more pressure. You will hear a click.



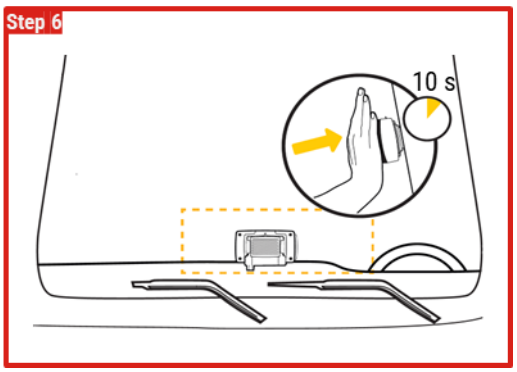
VRS is inserted into the VRS holder from above. You will hear a click.



The windscreen is cleaned in the intended mounting area using the cleaning cloth supplied. The installation area must be clean, dry and free of grease.

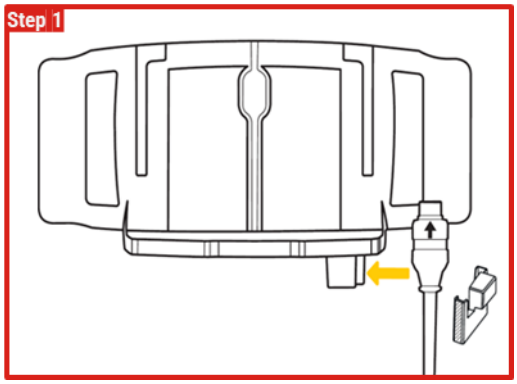


Remove the protective film from the adhesive device.

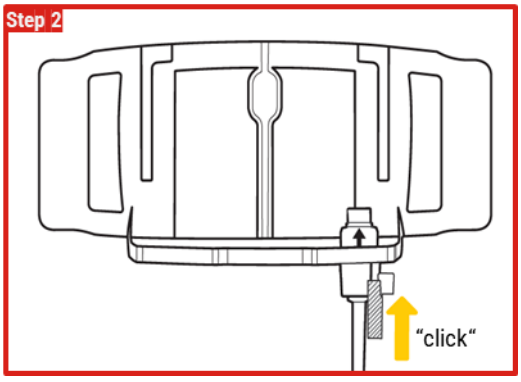


Press the VRS together with the bracket firmly into the intended installation position. Maintain the pressure for at least 10 seconds.

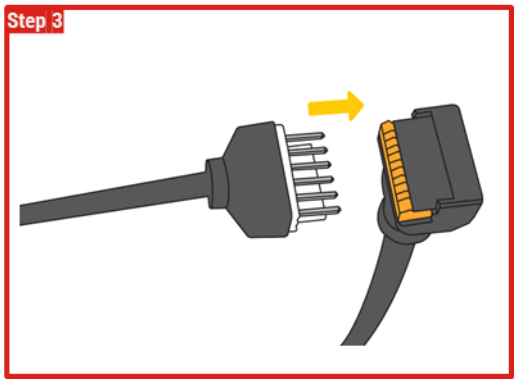
1.4.2.2 Installation in the vehicle with wiring "open-end vehicle to HVCIII adapter (multiple use)"



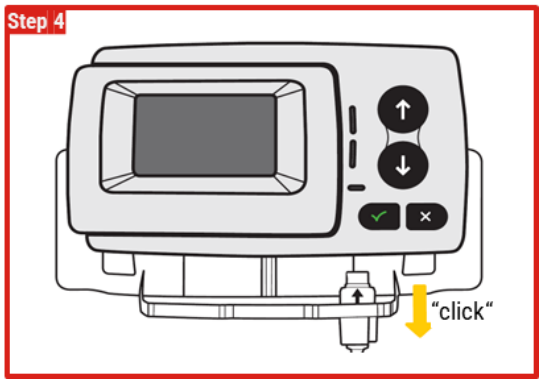
The connection cable is fed into the cable opening on the side of the VRS holder. The black arrow on the cable connector must point upwards and towards the driver and be pushed as far as it will go in the provided guide.



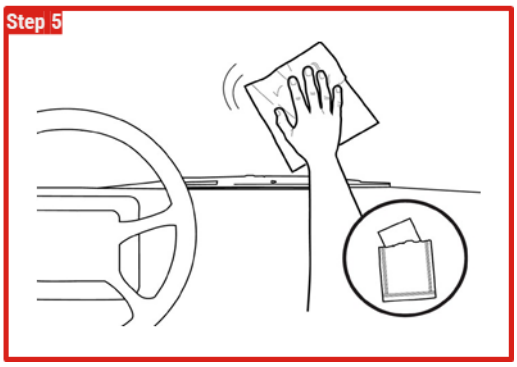
The connection cable is attached to the holder with the cable fastener. The cable fastener must be placed with its protrusion pointing outwards on the right at both guide grooves of the holder and pushed upwards. The cable fastener engages when you apply further sustained pressure. You will hear a click.



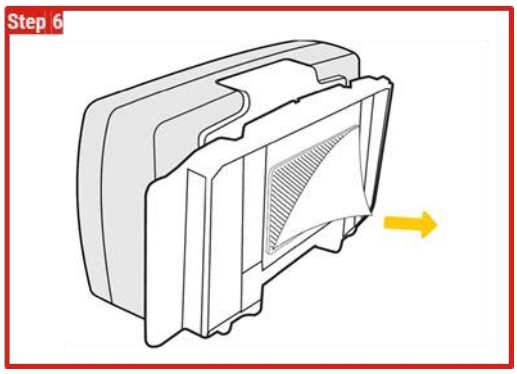
The connection cable is connected to the existing cabling.



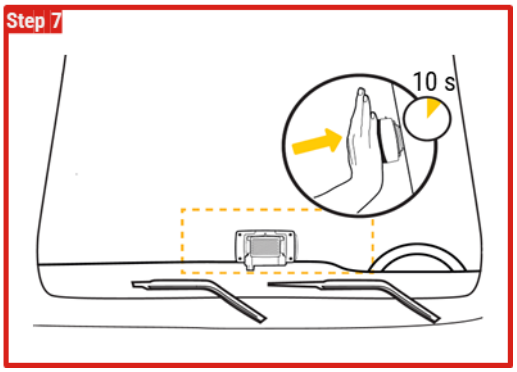
VRS is inserted into the VRS holder from above.



The windscreen is cleaned in the intended mounting area using the cleaning cloth supplied. The installation area must be clean, dry and free of grease.

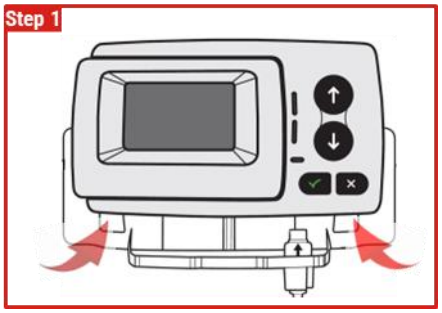


Remove the protective film from the adhesive device.



Press the VRS together with the bracket firmly into the intended installation position. Maintain the pressure for at least 10 seconds.

1.4.3 Removal of the VRS from the bracket

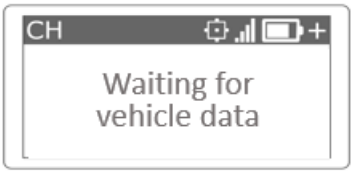


The VRS can be removed from the bracket by applying moderate upward pressure. A dampened sound can be heard when doing so.

1.5 VRS Commissioning

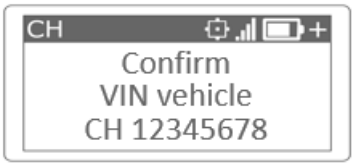
After **successful installation** in a **vehicle registered with NATRAS** and establishing the connection with the vehicle, the VRS must be put into operation. To do this, a few initialisation steps must be carried out **in the vehicle:**

1. Switch on the vehicle's ignition. If the VRS is correctly installed and connected to the power supply, it will become active.
2. The VRS then begins the initialisation sequence. It establishes a network connection and retrieves existing personalisation data:



The process usually takes only a few minutes, but it may take up to 30 minutes the first time you use it. Do not switch off the ignition during this time – this is crucial for a successful initialisation. Thank you for your patience!

3. Once the data has been successfully transmitted, the last 8 digits of the vehicle identification number (VIN) are displayed so that it can be checked whether the VRS is assigned to the correct vehicle:



If the displayed vehicle identification is correct, i.e. the VRS is in the correct vehicle, please confirm by pressing the button  . Otherwise, please contact NATRAS Support.

4. Once you have ensured that the VRS is installed in the correct vehicle, you can select the language of the user interface. The following languages are available:
    - German (preset)
    - English
    - French
    - Italian

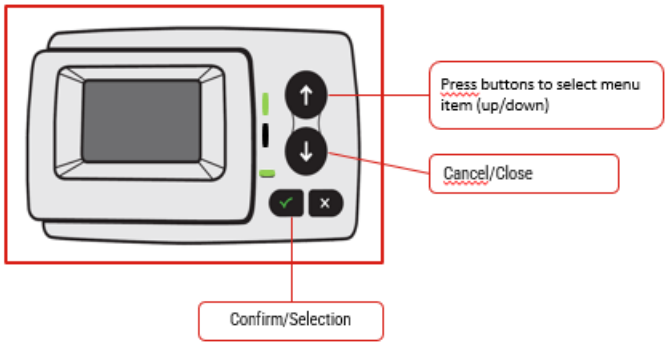
    Select the desired language using the buttons  or  and confirm your selection by pressing the button  . The language can easily be changed later (**see chapter 2.2.2**).
5. The VRS is now ready for operation.

2 Operation of the VRS

2.1 Operating and signalling elements

- Keys for data entry
- Display for showing important information and for controlling data input
- Light-emitting diodes (LED displays) that indicate the status of the VRS
- Buzzer for signalling tones

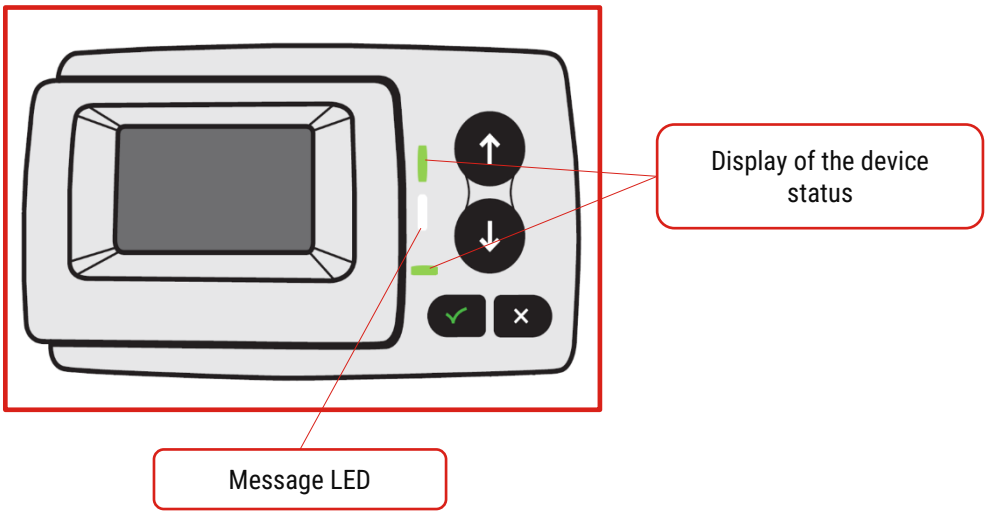
2.1.1 Keys



The buttons ↑ and ↓ are used to select entries in menus and submenus. The selection is confirmed with the ✓ button. The ✕ button is used to cancel the entry in a settings menu or to close an input menu.

For safety reasons, the buttons are blocked when the vehicle is travelling faster than 10 km/h.
For your own safety, please only make entries when the vehicle is stationary.

2.1.2 LED displays



The two LEDs for displaying the status of the VRS can indicate different states:

- LEDs are off:
  The VRS is inactive or the initialisation process is still running after a start.
- LEDs light up green:
  The VRS is active and fully functional.
- LEDs flash green:
  The VRS indicates a warning, a condition that is only a minor problem but could become a problem (see chapter 3).
- LEDs light up red:
  The VRS is active but not functional. Action by the driver is required (**see chapter 3**).

The message LED lights up white when a message is available for the driver.

2.1.3 Signal tones

The status of the VRS is also signalled acoustically each time a change is made by emitting one of the following beeps once:

- A medium-length tone: OK
  The VRS is active and functional.

  This signal is emitted when a warning or error status of the VRS is rectified and the VRS is functional again, e.g. when an interrupted power supply is restored or a data connection that has been interrupted for a longer period can be resumed.

- Four short beeps: Error signal
  The VRS is active but not functional. Action by the driver is required (**see chapter 3**).

  This signal is output when the VRS detects an error, e.g. an interrupted power supply that leads to a critically low battery charge level or a prolonged interruption in the data connection.

- Two long beeps: Warning
  The VRS has detected a condition (e.g. interruption of the power supply) that may require action by the driver. The driver is required to pay increased attention.

Details on the error states and the respective acoustic signals can be found in **chapter 3** are shown.

2.1.4 Status indication on the display

When the VRS is active, the first line of the display shows important statuses:

Symbol	Description
CH	This indicates that the VRS is collecting data for the HVC. This is only displayed within the customs territory (Switzerland and Liechtenstein). Outside the customs territory, the symbol is hidden and not visible. For technical reasons, the Swiss customs territory is divided into several areas. When changing between these areas – in both driving directions – this display appears briefly on the overview screen. Toll collection remains unaffected, as the position data continues to be recorded and transmitted. This display/information does not require any further action.
	This indicates that the position data recording is limited to the Swiss customs territory (Switzerland and Liechtenstein).
	The VRS battery is fully charged. The battery charge level is displayed in 20% increments.
	The VRS battery is flat.
	Shows the availability of the connection to the mobile network. The number of bars represents signal strength.
	Position data acquisition is active and provides data with the required accuracy.

	It indicates that the external power supply is connected. The battery is in charging mode.
	A new message is available (**see chapter 2.3**). The last 10 messages are stored.

2.2 Changing settings

The VRS buttons are deactivated when the vehicle is travelling faster than 10 km/h.

For your own safety, please only make entries when the vehicle is stationary.

To change settings, press the button  to access the settings menu from the overview screen.

Press the button  to access the selection of the respective submenus. Use the arrow buttons  and  to select the respective submenu and press  to open it.

2.2.1 Register trailer

For vehicles within the Swiss customs territory (including Liechtenstein):

Before starting each journey, it must be checked whether the trailer is correctly declared at the VRS. If necessary, a declaration must be made.

After each trailer change, the current trailer must be correctly declared at the VRS before continuing the journey.

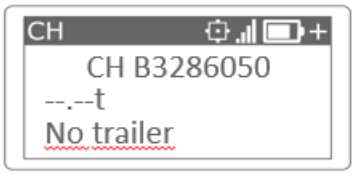
For vehicles outside the Swiss customs territory:

Before entering Swiss customs territory, it must be checked whether an existing trailer is correctly declared in the VRS and must be declared if necessary.

When carrying trailers that are not subject to duty, the vehicle type trailer or semi-trailer and the weight must be declared as 00.00 tonnes.

You only need to declare the trailers/semitrailers you are towing. There is no longer any need to declare any loaded trailers/semitrailers or rear-mounted cranes.

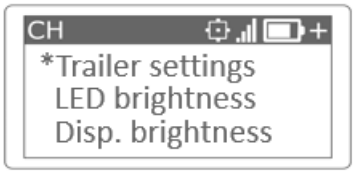
On the active VRS, the currently declared trailer is always shown on the display. The following illustration shows the status of the display if no trailer is registered:



The registration of a trailer takes place in two steps:

1. selection of the trailer type.
2. enter the trailer weight (total weight according to the vehicle license).

To start the login, the settings menu must be called up. To do this, press the button.
In the settings menu, the last selection, usually the trailer registration, is selected (marked with *).

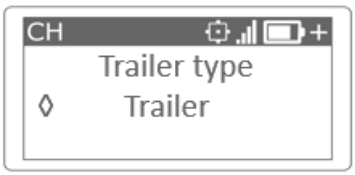


Use the push buttons and to navigate until the "Trailer" entry is selected. To start, press the button.

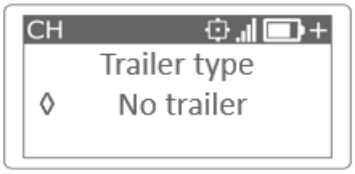
The last selected trailer type is displayed:

Starting with the "No trailer" option, the other options can be selected as follows:

Trailer — Press the button

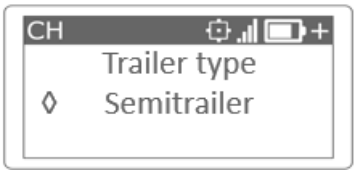


No trailer — Press the button



Semi-trailer

Press the button ↓



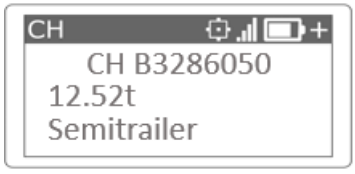
Confirm your selection by pressing the button ✓. To exit the menu without changing the registered tag, press the button ✗.

If one of the two options Trailer or Semi-trailer has been selected, the menu for entering the trailer weight is activated automatically:

The last weight entered is preset, the first digit of the number flashes. Press the arrow buttons ↑ or ↓ to increase or decrease the flashing digit by 1. The ✓ button confirms the entry, the flashing jumps one digit to the right.

After confirming the last digit of the weight, the entry is accepted as the weight and the settings menu is displayed:

Pressing the ✗ button exits the settings menu and the registered trailer type is displayed in the VRS overview screen:



Before starting each journey, please ensure that both the type of trailer you are carrying and the weight of the trailer are entered correctly on the VRS.

Incorrect or missing trailer registrations must be corrected or completed subsequently (within 10 days) in the outage solution, which is an integral part of the Online-Service-Desk (OSD).

2.2.2 LED brightness

To adjust the LED brightness, start the settings menu by pressing the button . Press and hold the button until the option for selecting the LED brightness is highlighted.

Press the button to display the currently set LED brightness. Use the arrow buttons and to navigate until the desired LED brightness is displayed.

The button confirms the selected LED brightness, the button returns to the settings menu.

2.2.3 Display brightness

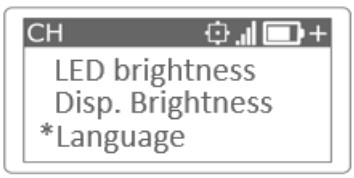
To adjust the display brightness, start the settings menu by pressing the button . Press and hold the button until the option for selecting the display brightness is highlighted.

Press the button to display the currently set display brightness. Use the arrow buttons and to navigate until the desired display brightness is displayed.

The button confirms the selected display brightness, the button returns to the settings menu.

2.2.4 Changing the language

To set the language, start the settings menu by pressing the button. Press the button until the option to select the language is highlighted:



Press the button to display the currently set language. Use the arrow buttons and to navigate until the desired language is displayed. The following languages are available for selection:

- German
- English
- French
- Italian

Press  to confirm the selected language and  to return to the menu settings.

2.3 Viewing information

To view information, press the button  to access the information menu from the overview screen.

Press the button  to access the selection of the respective submenus. Use the arrow buttons  and  to select the respective submenu and press  to open it.

2.3.1 Retrieving messages

The VRS can display messages to the driver, when, for example the VRS status changes. In this case, the message LED lights up white and the message is shown on the display for about 15 seconds._The last 10 messages are stored by the VRS in chronological order and can be selected individually using the arrow buttons  and  . Press the button  to display the message.

2.3.2 Further information

Further information can be accessed in the respective submenus by using the arrow keys  and  to select it. Press the button  to display the message.

3 Operation and monitoring of functionality

The VRS signals its status and therefore its functionality using the display, the status LEDs (**see chapter 2.1.2**) and, if the status changes, by means of an acoustic signal (**see chapter 2.1.3**).

The VRS is in idle mode before the vehicle is put into operation:

- status LEDs are off
- display is off

The VRS wakes up from sleep mode when any button is pressed or the vehicle is set in motion. In many cases, the vibration when getting into the vehicle or closing the doors is sufficient.

3.1 Display an monitoring of the functionality of the VRS

The condition and functionality of the vehicle recording system (VRS) are to be checked regularly and, if necessary, measures are to be taken to ensure functionality.

In the event of malfunctions or failures, measures to restore the connection must be initiated immediately. Days with missing registrations will be assessed by the FOCBS at its discretion.

3.2 Automatic software updates

The VRS updates automatically in the background – you do not need to do anything. When the restart is complete (this usually takes only a few minutes), the message "please contact support" may appear. In this case, do not disconnect the VRS from the power source and wait for the restart. After that, full functionality is restored. The LEDs light up green.

3.3 Optical and acoustic status messages

The following list of conditions applies to VRS in moving vehicles within the customs territory:

Status LEDs	Acoustic signal	Display (status display)	Condition	Action
Green light	---	The following symbols are displayed:  Battery charge level at least 60%.	Functional	---
Flashing green	Warning (2 beeps)	The symbol  is not displayed. The battery charge level shows 80% or less.	Functional, but the power supply is not guaranteed	Check that the plug in the VRS is inserted correctly. If using a connection cable with an emotach plug, also check this connection.
Flashing green	Warning (2 beeps)	The symbol  is not displayed. Battery charge level: 	Still functional, but the power supply has not been guaranteed for some time. Failure of the device is imminent.	Check that the plug in the VRS is inserted correctly. If using a connection cable with an emotach plug, also check this connection. When using a cable for the on-board connection, check that the plug is fully inserted.
Red light	Error (4 Beep)	At least one of the following symbols is not displayed: 	Not functional	Contact NATRAS Support and register the journey in the failure solution manually.

After reporting a failure of the VRS to NATRAS Support, the journey can be continued but must be manually logged into the failure solution within 10 days.

This applies to all further journeys made by the vehicle until a replacement for the defective VRS has arrived and been installed in the vehicle.

3.4 VRS Codes

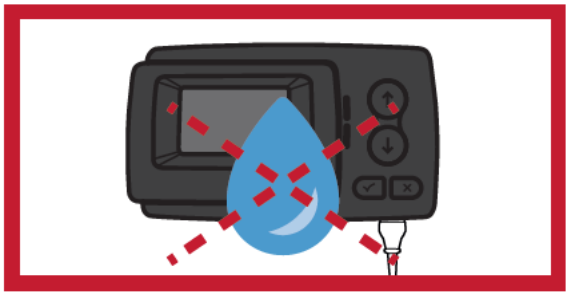
VRS Code	Screen display	Description
2	(2) Rebooting	VRS was restarted. Reasons for a restart: SW update such as the new phrase file, etc.
24	(24) Contact support center	If the LEDs are green and/or flashing, the VRS is still operational as long as the ignition and the power supply are active. If this behaviour occurs repeatedly, we recommend replacing the VRS, as a battery cell may be defective.
26	(26) Battery empty – device switches off	Please ensure that the VRS is correctly connected to the power supply so that the VRS battery can be charged.
1008	(1008) Contact support center	If the LED on the VRS is red, we recommend replacing the VRS, as the satellite reception module may be defective.
2002	(2002) No GPS signal	No GPS signal has been received for approximately 10 minutes at the time of reporting (e.g. in underground car parks, covered galleries, tunnels, etc...)
3012	(3012) No network	No GPRS connection has been established for approximately 24 hours at the time of reporting. (e.g. in underground car parks, covered galleries, tunnels, etc.).
3016	(3016) Contact support center	The connection to the internal communication module has been interrupted. Please replace the VRS
3018	(3018) Contact support center	The connection to the SIM card has been interrupted. Please replace the VRS.
4006	(4006) Battery low – please recharge	Please ensure that the VRS is correctly connected to the power supply so that the VRS battery can be recharged
4008	(4008) Battery low – please recharge	Please ensure that the VRS is correctly connected to the power supply so that the VRS battery can be recharged
4010	(4010) Contact support center	If this behaviour occurs repeatedly, we recommend replacing the VRS, as a battery charge control may be defective.
5002	(5002) Battery low – please recharge	Please ensure that the VRS is correctly connected to the power supply so that the VRS battery can be recharged.
5004	(5004) Battery low – please recharge	Please ensure that the VRS is correctly connected to the power supply so that the VRS battery can be recharged.
5006	(5006) Battery mode	Please ensure that the VRS is correctly connected to the power supply so that the VRS battery can be recharged.
7014	(7014) Contact support center	There is a fault in the VRS. The device must be replaced and the journey recorded in the failure solution.
10000	(10000) Contact support center	There is a fault in the VRS. The device must be replaced and the journey recorded in the failure solution.

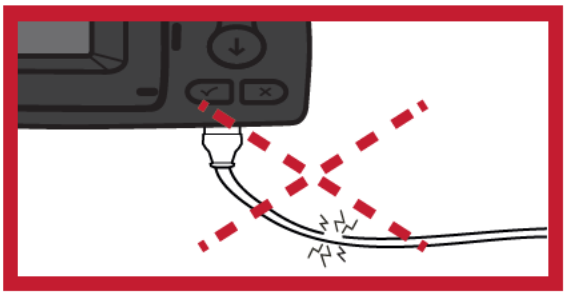
11002	(11002) Contact support center	There is a fault in the VRS. The device must be replaced and the journey recorded in the failure solution.
16002	(1002) Contact support center	There is a fault in the VRS. The device must be replaced and the journey recorded in the failure solution.
17002	(17002) Contact support center	There is a fault in the VRS. The device must be replaced and the journey recorded in the failure solution.
50012	(50012) Contact support center	There is a fault in the VRS. The device must be replaced and the journey recorded in the failure solution.
50020	(50020) Contact support center	There is a fault in the VRS. The device must be replaced and the journey recorded in the failure solution.

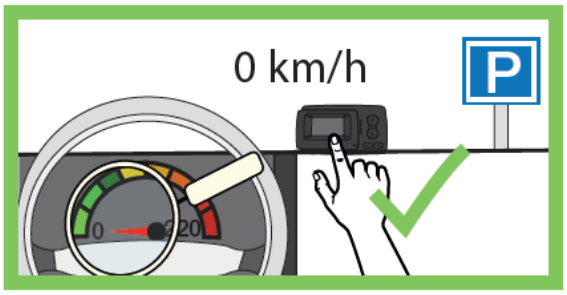
4 Instructions for dismantling and disposing of the emotach

Removal guide Emotach

5 Safety instructions







6 Frequently asked questions (FAQ)

- **Question:** what should I do if I encounter a problem that is not covered in this manual?
- **Answer:** *if a problem occurs that is not described here, please send an e-mail to support@natras.ch*

- **Question: h**ow can I submit feedback or suggestions for improving the application?
- **Answer:** *we welcome feedback and suggestions. These can be sent directly by e-mail to improvements@natras.ch. Please note that suggestions for improvement must be approved by the client (FOCBS).*