

RIDECARE INSIGHT INSTALLATION MANUAL

Product Name: IVS-SLIM

Product Designation: Damage, Smoke & Harsh Driving Detection, Vehicle Condition & Fleet Status

Application: Vehicles in shared use cases

Version: 3.0

Date: 14.07.2022

General Description

Purpose

The Bosch IVS-SLIM solution enables the detection of damages to the vehicle, smoking inside the vehicle, and harsh driving maneuvers. Therefore, Bosch provides the IVS device to be installed into the fleet vehicles.

The installation is done following four steps:

- 1) Create digital couple using the Bosch Installation UI
- 2) Optional: Create Vehicle Baseline
- 3) Connect to power and ground & check connectivity
- 4) Adhere the device onto the vehicle windshield

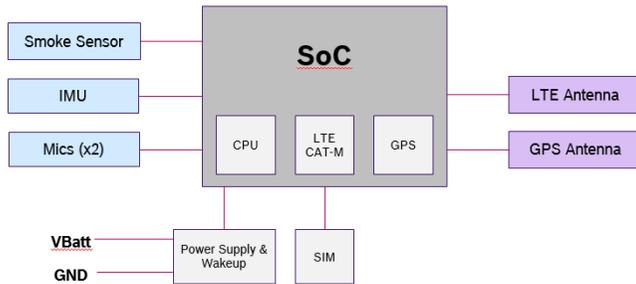
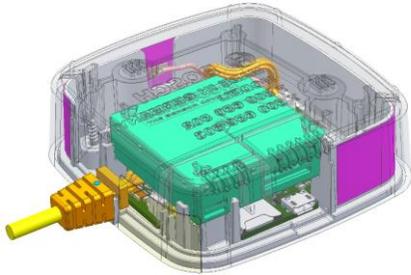
Please make sure you have read the [User Manual](#) before installing the IVS device.

Attention: Step 3) can vary from vehicle type to vehicle type. Bosch will help you to find the best way to connect the device to power and ground.

DEVICE SPECIFICATION & DELIVERY PACKAGE

Device Specification

Set up of Hardware



Operating temperature	-25°C to +60°C (-13°F to 140°F)
Storage temperature	-25°C to +70°C (-13°F to 158°F)
Relative operating humidity	20% to 80%, noncondensing
Input voltage	+8V to +16V DC
Power consumption	500mA @ 12V
Dimensions (W x L x H)	80mm x 80mm x 27mm
Weight	90g

Outside the operating temperature, the correct function of IVS-Slim is not guaranteed.

Cellular bands

European Union, Malaysia:

Cellular bands and power for 7 500 650 504

Mode	Freq in MHz	EIRP in dBm	EIRP in W
GSM900	880.2	36.00	3.98
UMTS I	1920	27.40	0.55
UMTS VIII	880	26.00	0.40
LTE B1	1920	27.40	0.55
LTE B3	1710	28.50	0.71
LTE B7	2500	27.90	0.62
LTE B8	880	26.00	0.40
LTE B20	832	26.00	0.40
LTE B28	703	26.00	0.40

EIRP = maximum conducted output power + antenna gain (IVS Slim uses internal antenna TAOGLAS FXUB89)

United States of America, Canada:

Cellular bands and power for 7 500 650 505

Mode	Freq in MHz	EIRP in dBm	EIRP in W
UMTS B2	1850	27.69	0.59
UMTS B4	1710	28.66	0.73
UMTS B5	824	27.15	0.52
LTE B2	1850	26.31	0.43
LTE B4	1710	28.24	0.67
LTE B5	824	27.19	0.52
LTE B12	699	25.03	0.32

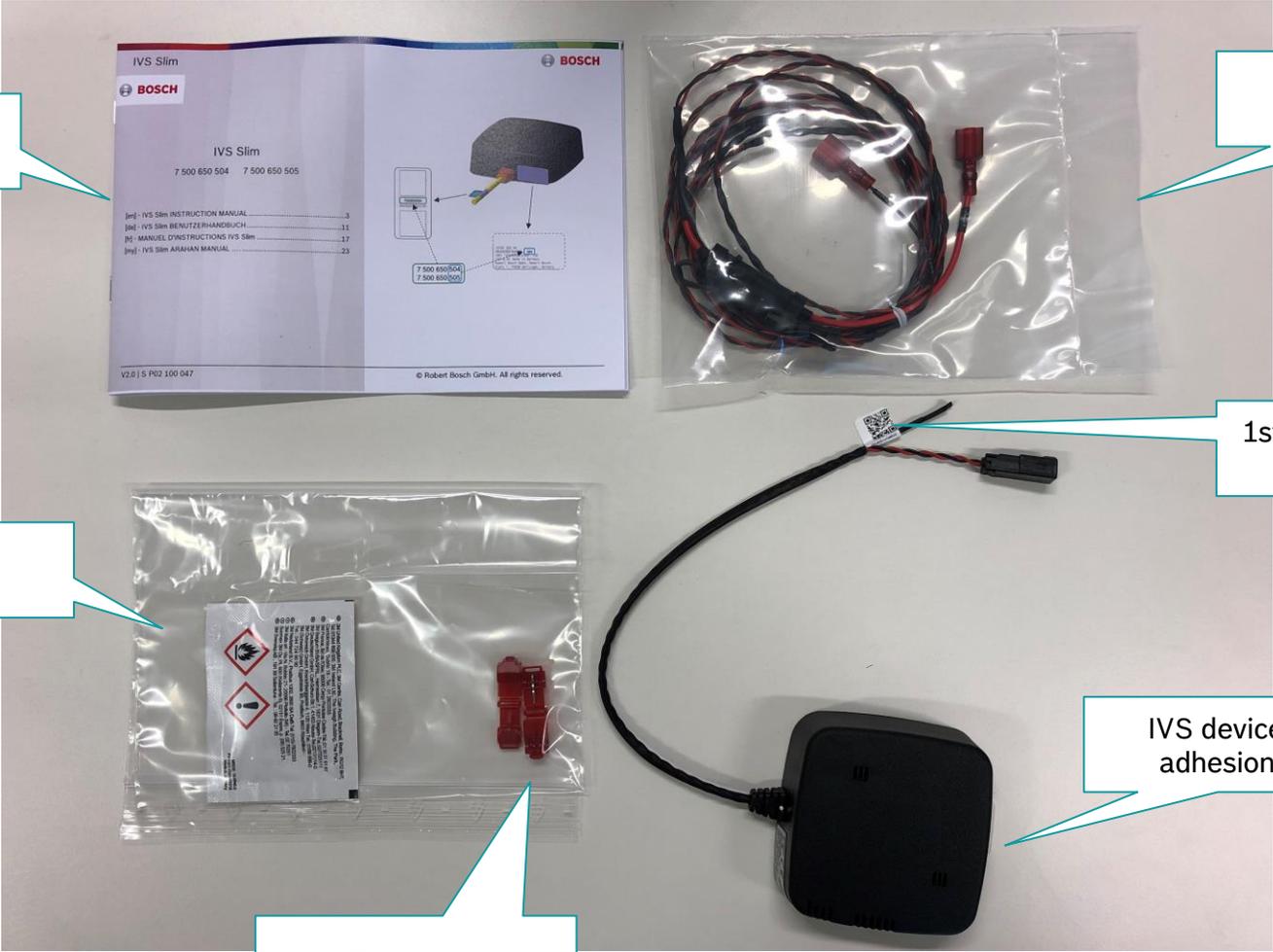
EIRP = maximum conducted output power + antenna gain (IVS Slim uses internal antenna TAOGLAS FXUB87)

As IVS Slim includes antennas, the user and/or bystander has to ensure a minimum distance of more than 20cm to the device.

Description

- Device will be glued onto the windshield via glue pad
- Device will be connected to vehicle power and ground
- The average power consumption of the device is:
 - Active mode: ca. 200 mA
 - Low-power mode: ca. 15 mA
 - Ultra-low power mode: ca. 150 µA
- The network provider is Vodafone
- The data from the device is sent to the Amazon cloud EU-server
- No ASIL required as no direct interface with vehicle

Delivery Package



User manual

2nd split cable (270cm)

1st split cable (30cm) incl. cable label

Alcohol wipe

T-taps (2x)

IVS device incl. adhesion pad

INSTALLATION GUIDELINES

Installation Guidelines

Safety instructions

- ▶ The module shall be installed in the interior of a street legal passenger vehicle with a rated voltage of 12V.
- ▶ The module shall be installed in a way such that the inlets and outlet are not obstructed/covered.
- ▶ Only connecting cables included with this device and wiring methods called out in this manual may be used. **The 2A fuse integrated into the provided power harness must be in place during installation and device lifetime in the vehicle.** Compliance with the applicable standards can no longer be guaranteed if the device is modified without the agreement of Robert Bosch GmbH.
- ▶ Care must be taken to make sure that power for this device is not pulled from safety-related vehicle functions, such as: airbags, anti-lock brake systems, traction control, and collision prevention systems.
- ▶ Do not install the device at temperatures below 10°C (50°F) or above 60°C (140°F). If the outside temperature is below 10°C, please turn the vehicle on with heat=ON for several minutes until the interior of the vehicle reaches 10°C or above. Once the vehicle interior is within the specified temperature range, it is safe to mount the device.
- ▶ Avoid installing the device in humid or dusty locations.
- ▶ The windshield contact surface for the device must be clean and dry during installation to ensure proper bonding. This includes being free of condensation.

Installation Guidelines

Safety instructions

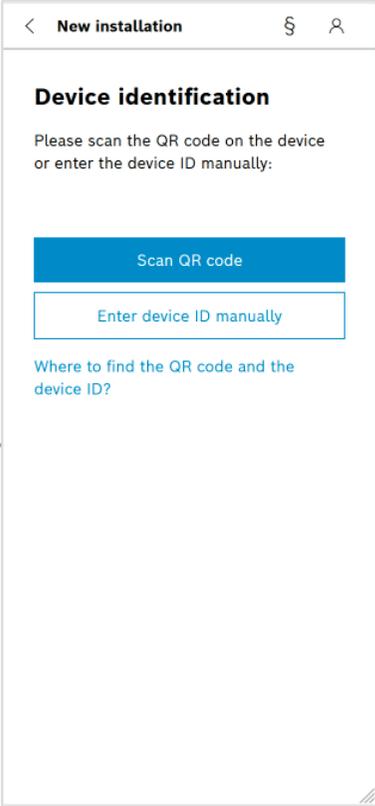
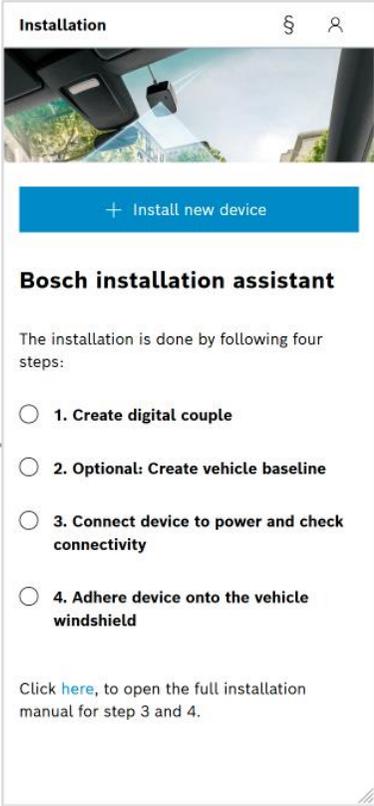
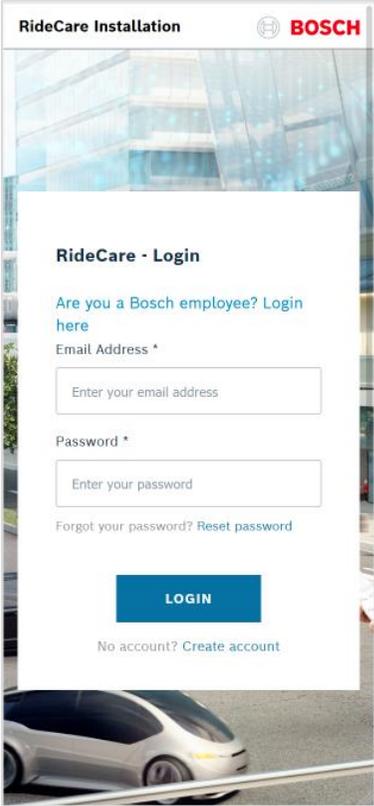
- ▶ Do not insert foreign bodies in the openings of the device – otherwise injury or damage to the device may occur.
- ▶ Do not cover ventilation openings – otherwise a build-up of heat may occur in the device that could lead to malfunction.
- ▶ The device must not come into contact with hot or burning objects (e.g. cigarettes, heat gun, etc.).
- ▶ To clean the device, never use hard or sharp objects that could damage the protective pane or housing.
- ▶ Do not use aggressive cleaning agents such as thinners, benzine, abrasive cleaners, spray cleaners, acidic or alkaline solutions, or wax.
- ▶ Do not spray any liquids onto the device. Make sure that no liquid enters the inside of the device.
- ▶ Do not disassemble the device.
- ▶ Do not use the device if it seems damaged.

Installation Guidelines

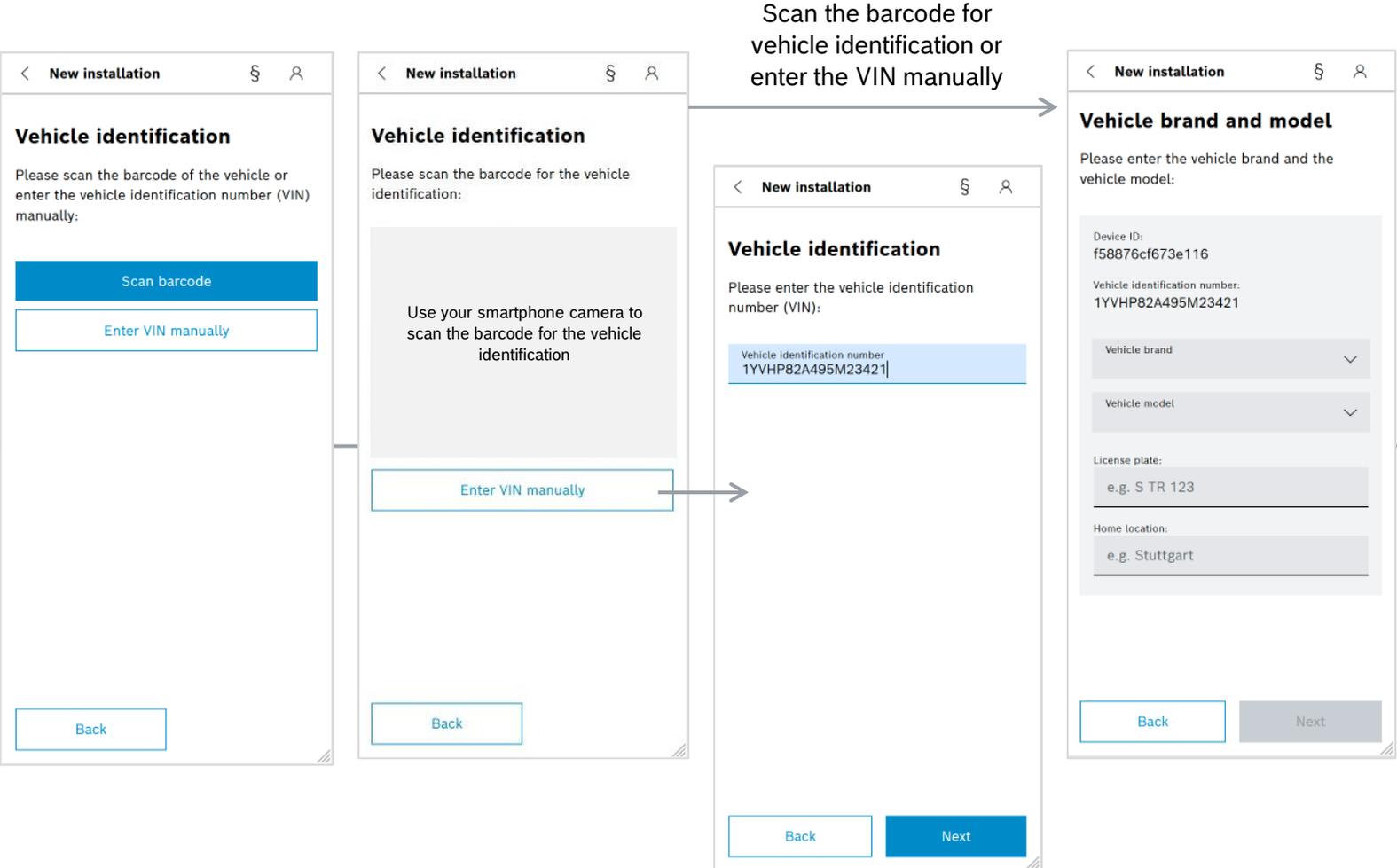
Warning notes

- ▶ **WARNING:** Read and follow the instructions and precautions in this guide and all documents referenced in this guide when installing this device. Always refer to the vehicle manufacturer's service manual for proper installation and wiring of any aftermarket devices, including this device. Failure to do so may result in property damage and/or personal injury.
- ▶ **WARNING:** Park the vehicle on a level surface before beginning any maintenance or installation. Block the wheels to prevent the vehicle from moving. Never work under a vehicle supported only by jacks as jacks can slip and fall over.
- ▶ **WARNING:** All wires that carry electrical current to the IVS device must be fused. Failure to fuse the power, ground, and ignition wires can lead to serious personal injury and/or property damage. If any wires or cables containing fuses/fuse boxes need to be cut or otherwise shortened, always be certain to replace such fuses/fuse boxes or install new ones.
- ▶ **WARNING:** Wire Protection: Take all necessary measures to protect all wire runs through a metal surface with a grommet or other device and all wire runs outside the vehicle cab with a loom. Always protect against wire fatigue and harness abrasion by properly attaching wires at closely spaced intervals, while avoiding contact with sharp edges or doing anything else that might result in exposed wires. All wires should be secured with tie wraps at least every one foot (30 cm/300 mm) or less. Do not over-tighten any tie wraps.
- ▶ **WARNING:** The IVS device shall not be placed anywhere on the windshield that could obscure the vision of the driver and cause unsafe vehicle operation.
- ▶ **WARNING:** Do not pound on IVS device for any reason as this could crack the vehicle's windshield.
- ▶ **WARNING:** All electrical work in the vehicle should be performed by an experienced technician.

1) Create digital couple using the Bosch Installation UI

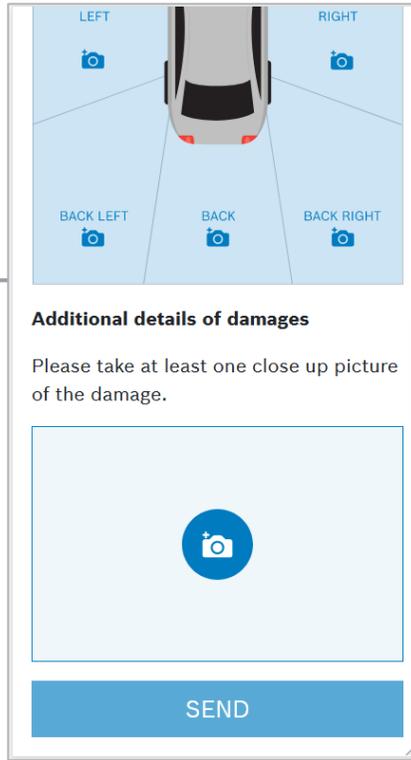
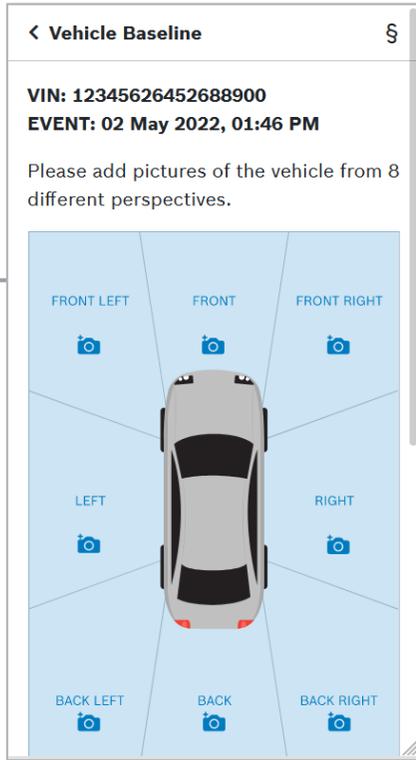
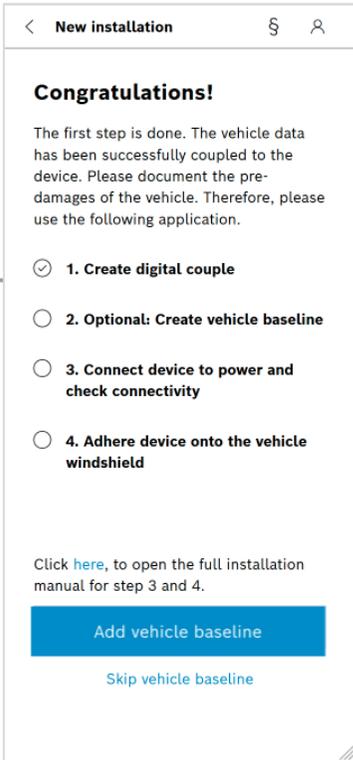


1) Create digital couple using the Bosch Installation UI

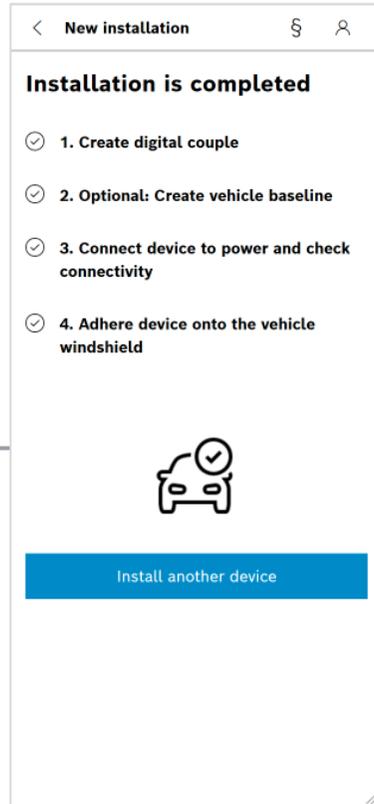
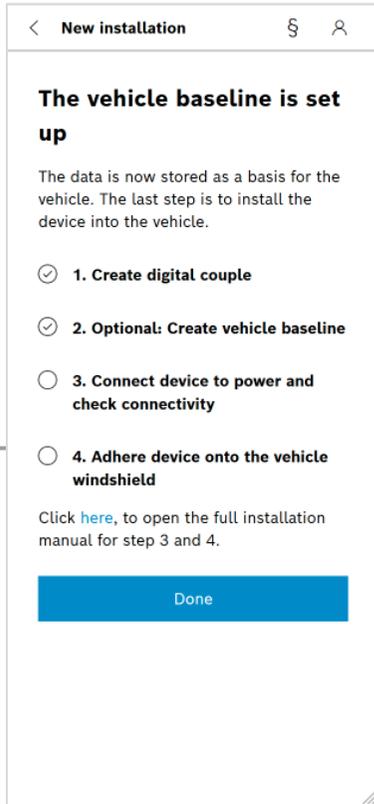


2) Optional: Create Vehicle Baseline

- ▶ On the day of installation it is necessary to document the pre-damages of the vehicle
- ▶ This will help you to identify new damages – i.e. when the damages are very small (scratches/dents)
- ▶ Bosch offers a mobile application to create the vehicle baseline - alternatively, you can also document the vehicle baseline by yourself

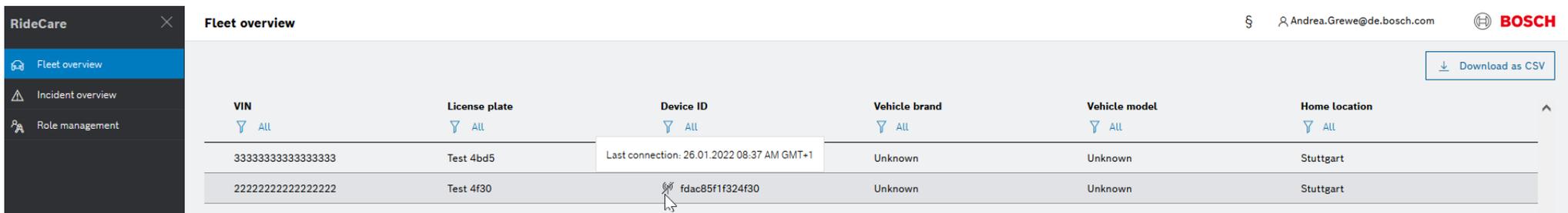


2) Optional: Create Vehicle Baseline



3) Connect to power and ground & check connectivity

- ▶ After the digital couple and the vehicle baseline is created, the device shall be connected to power and ground
- ▶ The device must be **permanently powered**
- ▶ In best case, the device will be powered by the 12V current supply of the overhead console/dome light
- ▶ However, many vehicles shut off the power supply of the dome light after the ignition is turned off
- ▶ If there is no constant power supply at the overhead console/dome light, an alternative power supply must be defined: OBD, TCU, Fuse box
- ▶ Bosch will support you in identifying the best way to connect to power and ground
- ▶ After the device was connected to power and ground, please check in the [Customer Dashboard](#), if the device connects to the Bosch backend (tab: 'Fleet Overview') – therefore you can use your cell phone or your laptop

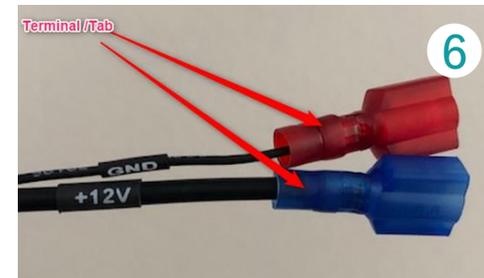
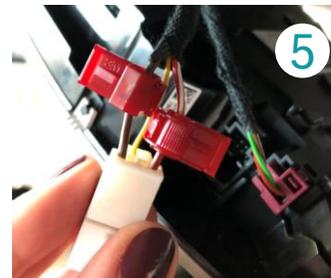
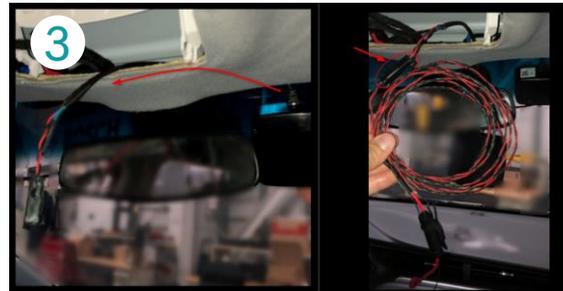


The screenshot shows the 'Fleet overview' page in the RideCare system. The page includes a sidebar with navigation options: 'Fleet overview' (selected), 'Incident overview', and 'Role management'. The main content area displays a table with columns for VIN, License plate, Device ID, Vehicle brand, Vehicle model, and Home location. A 'Download as CSV' button is visible in the top right corner. The table contains two rows of data, with the second row highlighted. A mouse cursor is pointing at the Device ID 'fdac85f1f324f30' in the second row.

VIN	License plate	Device ID	Vehicle brand	Vehicle model	Home location
3333333333333333	Test 4bd5	Last connection: 26.01.2022 08:37 AM GMT+1	Unknown	Unknown	Stuttgart
2222222222222222	Test 4f30	fdac85f1f324f30	Unknown	Unknown	Stuttgart

3.1) Connect to dome light

- ▶ **Open the dome light with a prying tool**
- ▶ **Locate the power plug and ensure constant 12V power**
- ▶ Attach **1 x t-tap to the ground wire** and **1 x t-tap to the power wire** using pliers
- ▶ Connect the device to the t-taps
- ▶ Optional: Use insulation tape or zip ties to secure the remaining device cable in the dome light compartment
- ▶ Reattach the dome light
- ▶ **IMPORTANT:** The correct connector must match the t-taps placed on the vehicle wire harness: wire labeled (GND) goes to the vehicle ground wire (brown in this example), and wire labeled (+12V) goes to vehicle power (red in this example).
- ▶ **IMPORTANT:** Please make sure that the device cable is not folded or squeezed by the dome light compartment.
- ▶ Required tools (may be different depending on your vehicle):
 - ▶ Pliers
 - ▶ Prying tool



3.2) Connect to OBD or TCU

- ▶ **If no constant power supply is available at the dome light**, power and ground can be provided by the **OBD or TCU**
 - ▶ Usually the OBD interface is located in the driver floor room
 - ▶ Usually the TCU is located at the lower corner of the windshield on the driver side or underneath the steering wheel
- ▶ Remove the cover of the a-pillar and **route the cable along the a-pillar to the floor room**
 - ▶ **Option 1:** Remove the OBD plug and attach the t-taps to the OBD cables (1 x power, 1 x ground) or use an OBD-adapter
 - ▶ **Option 2:** Attach the t-taps to the power & ground cable of the TCU
- ▶ Connect the device to the t-taps
- ▶ **IMPORTANT:** Not every OBD interface provides constant power – please check with the OEM, if constant power is available.
- ▶ **IMPORTANT:** Please make sure, that the cable routed over the a-pillar does not interfere with the side airbag system.
- ▶ **IMPORTANT:** The OBD adapter is not part of the delivery package by Bosch and must be acquired by the MSP.
- ▶ Required tools (may be different depending on your vehicle):
 - ▶ Pliers
 - ▶ Prying tool
 - ▶ OBD adapter (optional)



3.3) Connect to fuse box

- ▶ **If no constant power supply is available at the dome light**, power and ground can be provided by the **fuse box**
- ▶ Use an add-a-fuse adapter to get power from the fuse box & ring connector to get vehicle ground where available
- ▶ **IMPORTANT:** The fuse box adapter and fuses are not part of the delivery package by Bosch and must be acquired by the MSP.

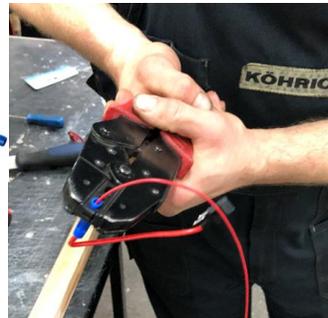
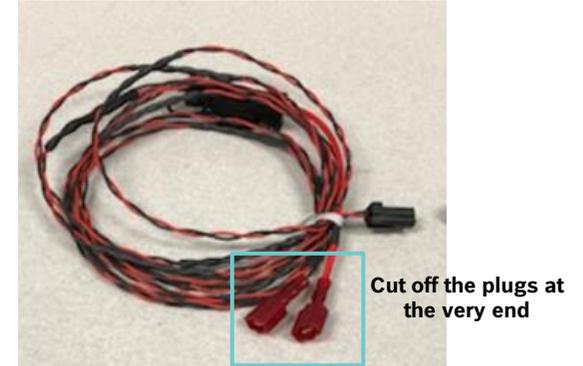
- ▶ Required tools (may be different depending on your vehicle):
 - ▶ Pliers
 - ▶ Prying tool
 - ▶ Insulation tape
 - ▶ Crimping tool
 - ▶ Add-a-fuse adapter & fuse which fit your vehicle type
 - ▶ Ring connector



3.3) Connect to fuse box

▶ Preparations:

- ▶ Acquire fuse box adapter & fuses - Bosch recommends Eaton brand
 - ▶ Acquire ring connector
 - ▶ Cut off the plugs at the very end of the second split of the cable
 - ▶ Crimp the power cable of the device into the fuse box adapter
 - ▶ Crimp a ring connector to the ground cable of the device
-
- ▶ **IMPORTANT:** Each fuse box is different. Make sure to examine your vehicle's fuse box prior to acquiring the fuse box adapter & fuses; in order to ensure the correct size is acquired.
 - ▶ **IMPORTANT:** Please make sure that the right location in the fuse box is used to provide power to the IVS device. More detail on identifying this can be found on the next page.

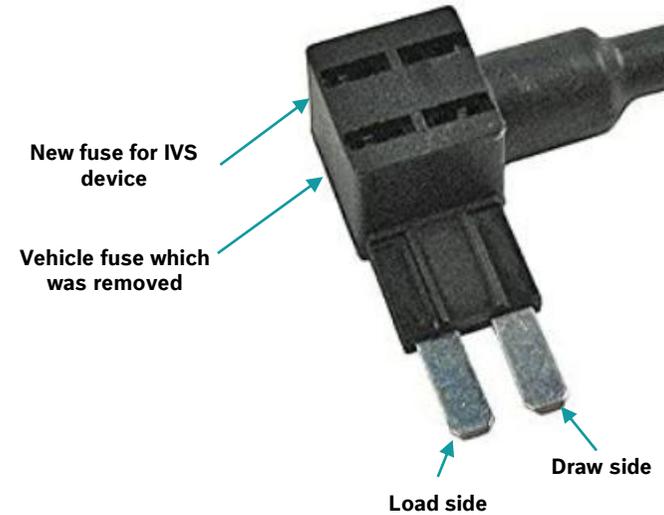


Crimp power cable into fuse box adapter
Crimp ring connector to ground cable

3.3) Connect to fuse box

► Identifying the right fuse location to pull power from:

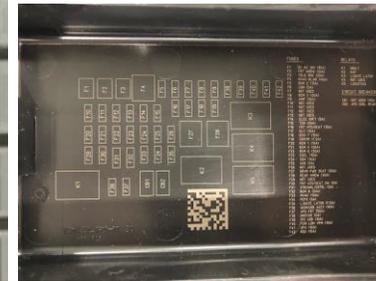
- Using a multimeter set to check DC voltage, probe ground from the vehicle where available, and probe power from the top of the desired fuse. A suitable location will have constant 12V, and the fuse rating **must be higher than or equal to the new fuse** you have purchased for IVS.
 - Remove the fuse using needle nose pliers, and then probe power from each side of the open slot. The side with 12V will be the load side, and the side with 0V will be the draw side (see diagram on the right).
 - When inserting the fuse adaptor, take care to insert in the orientation described to the right. In other words, the load side as described in the diagram must correspond to the side of the fuse slot which provides constant 12V. This will ensure that the power will cut if the fuse blows.
- **IMPORTANT:** Check which vehicle functions go to which fuse location (diagram is usually located on the plastic cover for the fusebox). Care must be taken to ensure that power for this device is not pulled from safety-related vehicle functions, such as: airbags, anti-lock brake systems, traction control, and collision prevention systems.



Power can be probed from the top of the fuse, here



Example: Diagram on plastic cover shows fuse locations, and which functions are affected



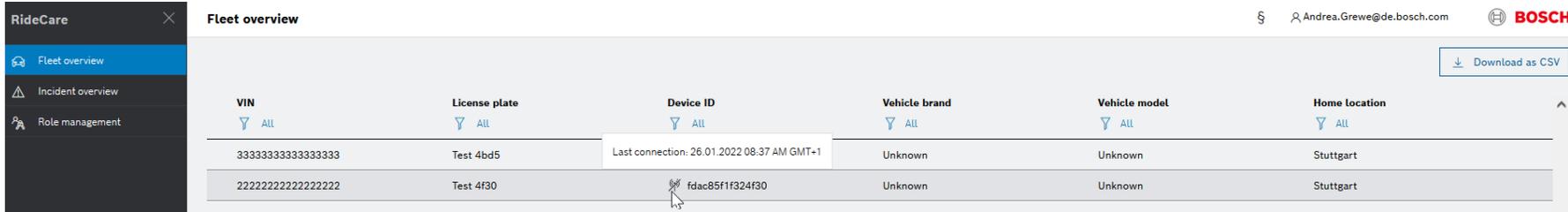
3.3) Connect to fuse box

- ▶ **After the preparations are done:**
 - ▶ Route split 2 of the wire harness from the specified device location to the fuse box. This is usually done by routing up the A-pillar and over the headliner
 - ▶ Attach split 1 and split 2
- ▶ Identify a suitable ground location and connect the ring connector accordingly
- ▶ Identify the correct location to get power from the fuse box (see previous page) and plug in the fuse box adapter
- ▶ **IMPORTANT:** Please make sure, that the cable in the engine compartment is secured by insulation tape.
- ▶ **IMPORTANT:** Please make sure, that the cable routed over the a-pillar does not interfere with the side airbag system.



4) Adhere the device onto the vehicle windshield

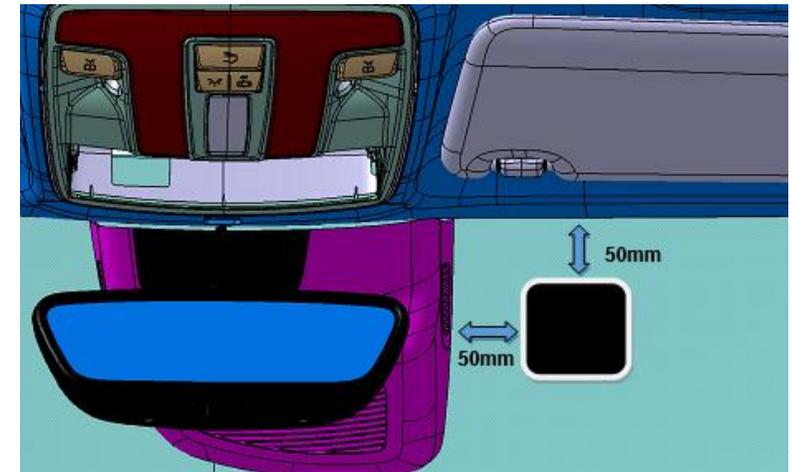
- ▶ **IMPORTANT:** Before adhering the device onto the windshield, please check in the [Customer Dashboard](#), if the device connects to the Bosch backend (tab: 'Fleet Overview') – therefore you can use your cell phone or your laptop



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3333333333333333	Test 4bd5	Last connection: 26.01.2022 08:37 AM GMT+1	Unknown	Unknown	Stuttgart
2222222222222222	Test 4f30	fdac85f1f324f30	Unknown	Unknown	Stuttgart

- ▶ Prepare the surface: With the provided alcohol wipe, clean the windshield surface in the intended installation area and let it dry completely.
- ▶ Locate the device on the windshield: The device is placed on the passenger side of the overhead console or rear-view mirror, roughly 50mm from both the console/mirror and 50mm from where the windshield meets the headliner. Depending on the size of the installer's hands, 2-3 finger's width can be used to approximate this distance. Compliance with the applicable standards can no longer be guaranteed if the device is mounted more than 50mm below the edge of the headliner.



4) Adhere the device onto the vehicle windshield

- ▶ Carefully remove the adhesive tape paper liner without disturbing its adhesion to the unit
- ▶ First, place the top edge of the unit (edge facing headliner with cable attached). Slowly roll the rest of the unit onto the windshield
- ▶ Due care should be taken to prevent air bubbles between the windshield and the adhesive backing
- ▶ The power cable and unit label must be facing upward toward the roof of the vehicle, or else functionality will be affected
- ▶ The unit should be pressed onto the windshield by hand with moderate pressure for at least 30 seconds for required adhesion. Once installed, the unit should ideally remain untouched for 30 minutes to allow the adhesive tape to fully cure to the windshield. However, holding strength will be achieved very quickly
- ▶ **IMPORTANT:** As stated in the safety guidelines, do not pound on the device for any reason as this could crack the vehicle's windshield.



DE-INSTALLATION

De-Installation

1. Disconnect power supply and ground.

- ▶ Depending on how the device was installed:
 - ▶ **Option 1:** By using t-taps: Disconnect the plugs from the t-taps and leave the t-taps on the cable of the dome light, TCU power supply cable, OBD cable.
 - ▶ **Option 2:** By using an adapter (OBD adapter or fuse box adapter): Remove the adapter completely.
 - ▶ **Option 3:** By using ring connectors: Remove the ring-connectors completely.

2. Detach the split 2 from the split 1 cable.

2. Pull the split 2 cable over the a-pillar.

4. Remove the device from the windshield.

- ▶ Use a putty metal knife to carefully slide between the device glue pad and the windshield.
- ▶ Gently move the putty metal knife from side to side to detach the glue pad from the windshield.
- ▶ Pull down the putty metal knife to remove the device from the windshield.



5. Clean the windshield with an isopropyl alcohol wipe or with a soap and water mixture.

- ▶ **IMPORTANT:** The t-taps used will remain in the vehicle and shall not be removed.
- ▶ **IMPORTANT:** Take care during the usage of the putty metal knife to not scratch the windshield.
- ▶ **IMPORTANT:** Removal of the device may be easier when the interior of the vehicle is a higher temperature (at least 10°C).

DATE	VERSION	CHANGES	RESPONSIBLE
24.08.2020	v1.0	Initial Installation Manual	Grewe
31.03.2021	v1.2	Update content	Grewe
28.04.2021	v1.2	Update content & add installation methods	Lewis
20.05.2021	v2.0	Integration of additional installation methods	Grewe
07.12.2021	v2.1	Update cellular bands & screens Installation UI	Grewe, Koch
27.01.2022	v2.2	Update installation procedure & conditions	Grewe, Lewis
16.02.2022	v2.3	Installation condition update & typos corrected	Lewis
28.03.2022	v2.4	Safety-related functions expanded upon, power directly from vehicle batt removed, more info added for fuse box installation	Lewis
14.06.2022	v2.5	General updates to installation methods, removal of battery power method	Lewis
13.07.2022	v3.0	General updates to installation methods, update screens Installation UI	Brueckner, Koch

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