Manual

CAR-A-WAN.coach

IPmotion™
Home of the CAR-A-WAN

Coach optimized 3G/4G router with
integrated WLAN hotspot

CAWv6S7455C, CAWv6S7455PC, CAWv6S7455TC

CAR-A-WAN.coach - User Manual

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Content

1 Visualization

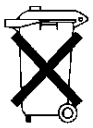
The abbreviation CAW stands for CAR-A-WAN.coach in this manual.
Version v6 is not used in this manual.

The following pictograms are used in this manual:

Indicates instructions which, if not observed, endanger your health, functionality or safety.

Indicates additional information and tips.

Recycling Label



Identification of assemblies or parts that must be disposed of as hazardous waste. Never dispose of these components in the trash.

This device is intended for use in vehicles. This applies in all countries of the EU and other countries following the EU Directive 1999/5/EC without any exception, except France. There, WLAN outdoors within the frequency range between 2545-2483.5 MHz shall be limited to 10mW e.i.r.p..

2 Warranty terms

The receipt is considered proof of the first purchase and should be kept in a safe place. It is required for the claiming of warranty services.

If the product is sold to another user, he is entitled to warranty services for the rest of the warranty period. The proof of purchase, as well as this declaration, should pass into its possession upon transfer.

We guarantee that this device is in good working order and technically complies with the descriptions in the enclosed documentation.

The warranty period for electronic vehicle components corresponds to the minimum period specified by the legislator.

This warranty does not apply to the following cases:

- Defects caused by freight damage, accidents, natural disasters, abuse, vandalism, improper use, incorrect maintenance or incorrect repair by third parties.
- In case of modifications, unauthorized interventions, faulty operation, other devices or accessories, incorrect installation, or modifications not approved by us.
- Failure to follow the instructions in the documentation supplied.
- Incompatibility of the product due to technical innovations or regulations that may occur after the purchase.
- When using product components which are not authorized by us or which are incompatible and which lead to malfunctions.
- For phenomena which occur in connection with the normal ageing process of the product (wearing parts).
- For defects caused by external devices.

The warranty period for parts replaced and/or repaired under this warranty shall expire together with the original warranty for the product.

Devices sent in without accessories will be replaced without accessories. In order to avoid damage in transit, a return of the device will only be accepted if it is in the original packaging.

Any travel costs incurred are generally excluded from the warranty.

IPmotion GmbH makes no warranties, express or implied, with respect to this device and its quality, performance, merchantability or fitness for a particular purpose.

Some jurisdictions do not allow the exclusion of implied warranties. In this case, the validity of all explicit and / or implicit warranties is limited to the warranty period.

With the expiration of this period, all guarantees lose their validity. Some countries do not allow the limitation of the validity of implied warranties by law, so the above limitation does not apply.

3 Limitation of liability

Claims for damages are excluded unless they are based on intent or gross negligence on the part of IPmotion GmbH or its employees. The liability according to the product liability law remains unaffected. We are under no circumstances liable for:

Claims brought against you by third parties due to loss or damage.

Loss or damage to your records or data, or the cost of recovering those records.

Economic consequential damage, including lost profits or savings or collateral damage, also in the event that the employees of IPmotion GmbH have been informed of the possibility of such damage.

In no event shall IPmotion GmbH be liable for any incidental, indirect, special, consequential or other damages of any kind. This includes, without limitation, damages for loss of profit, business interruption, loss of business information, or any other loss resulting from the use of the CAR-A-WAN.coach or in any relationship with the device, whether based on contract, damages, negligence, strict liability, or other claims, even if IPmotion GmbH has been informed in advance of the possibility of such damages.

This exclusion also includes any liability which may arise from claims of third parties against the first purchaser.

Some countries do not allow the exclusion or limitation of incidental or consequential damages by law, so the above statement does not apply.

4 Safety and security

4.1 General safety instructions

Please read and observe the user manual and the safety instructions listed in this chapter carefully before carrying out any further steps such as transportation, storage, connection, commissioning, etc.

Work on the router and antennas must only be carried out by authorised specialist personnel.

4.2 Improper installation

Improper installation can lead to damage to the unit or the vehicle!

Special knowledge and skills are required for the installation of the system. It is strongly recommended that installation be carried out by a specialist workshop.

4.3 24V connection

Only use the supplied adapter plug to connect to the 24V DC on-board power supply of your vehicle.

When connecting the CAR-A-WAN.coach must be the power supply of the CAR-A-WAN.coach must be protected with a 1A slow-blow fuse (T) that cannot be switched on again.

4.4 Mobile radio antennas

The installation of mobile radio antenna cables on vehicles is not recommended without expert knowledge and suitable tools.

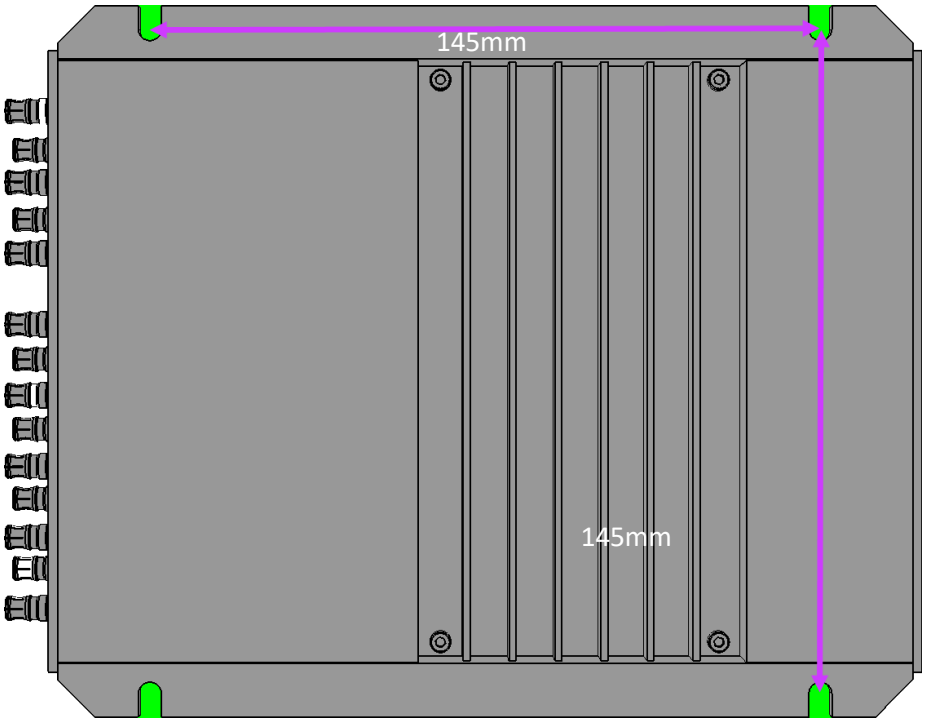
Poorly assembled or arbitrarily shortened or extended high-frequency antenna cables can have poor reception and transmission performance and interfere with other equipment.

Unadjusted, minimal bending radii of antenna cables can lead to breakage of the core of antenna cables. Poor reception and transmission power can be the result.

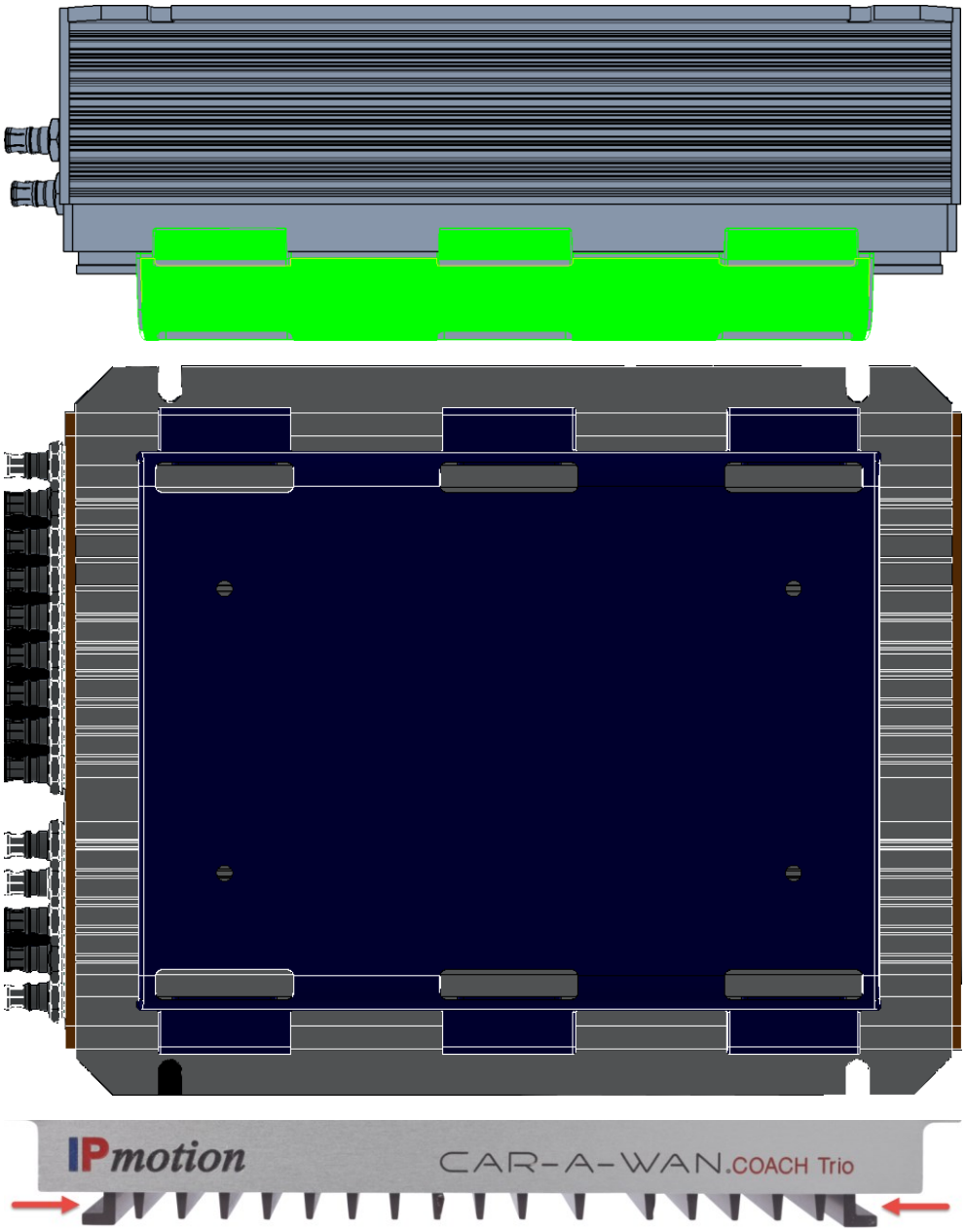
4.5 Device mounting

The router is intended for mounting in motor vehicles. It can be mounted directly:

- on aluminium housing (with four screws Ø 4mm arranged in square, edge length 145mm)



- or via the already installed housing bracket of the v3/v4.



Never set up or operate the device in a damp environment. Liquids must also be kept away from the device.

The router must not be mounted near heat sources, as the aluminium housing must be able to dissipate heat.

4.6 Risk of injury

Unsuitable installation locations, missing or insufficiently fixed brackets can cause injuries in the event of a traffic accident.

4.7 Risk of damage & injury during installation

When removing panels, sharp or pointed tools can cause injury and material damage.

Always loosen parts carefully. Do not apply direct pressure to the connection cable.

4.8 Damage to important vehicle parts

When drilling mounting holes or driving in sheet metal screws, important vehicle parts or lines can be damaged.

Ensure that there is sufficient clearance behind the screw and drill holes.

4.9 Maintenance, service and malfunctions

Repairs may only be carried out by qualified personnel.

Only those spare parts may be used which comply with the CAR-A-WAN.coach can't change.

The operating system is an integral part of the certification process. When using an operating system not released by IPmotion, there is a risk that the certification will become invalid. If necessary, the tests underlying the certification must be carried out again and, if necessary, the prerequisite for this must be reassessed.

Software updates should only be installed according to instructions and when the power supply has been secured. An interruption of the power supply can lead to a total failure of the CAR-A-WAN.coach.

Software updates should only be carried out with sufficiently fast mobile phone coverage, since the transmission time is longer than the follow-up time of the CAR-A-WAN.coach due to the size of the updates and could therefore be terminated prematurely.

5 Introductory remarks

This manual is intended to provide basic information about the router with integrated wireless LAN hotspot to be installed in the vehicle, namely the operating principle, the application of the various functions and what to do in the event of malfunctions.

This manual also contains information on configuration, handling and installation.

The contents of this device description may change due to advances in technology. We have made every effort to ensure that the content is correct and clear.

Should we nevertheless have made mistakes, we are grateful for any information.

We assume no liability for errors in this description and the resulting consequences.

The CAR-A-WAN.coach is designed to connect computers, laptops, netbooks, smartphones, electronic cash registers with Internet cash function and other TCP/IP-enabled devices such as webcams from the vehicle to the Internet:

- wired via LAN
- wireless via WLAN

The CAR-A-WAN.coach independently dials into the Internet and, if necessary, reconnects if the connection is interrupted. Furthermore, dial-in rules can be taken into account, such as a roaming lock or minimum signal quality.

In the Plus version, the second WAN connection can be

- parallel or
- alternatively

In the Trio version, the second or third WAN connection can be

- parallel or
- alternatively

to secure the availability of the connection.

Three concurrent connections are used as a parallel connection and new connection requests are distributed across the three connections, maintaining a path once taken to terminate the individual WAN connection previously used.

If these WAN connections are 3G (HSPA) and a connection switches to LTE, all traffic can be redirected to the faster, alternative connection while the slower connection is disabled. The higher-value connection speed is allowed to dial in.

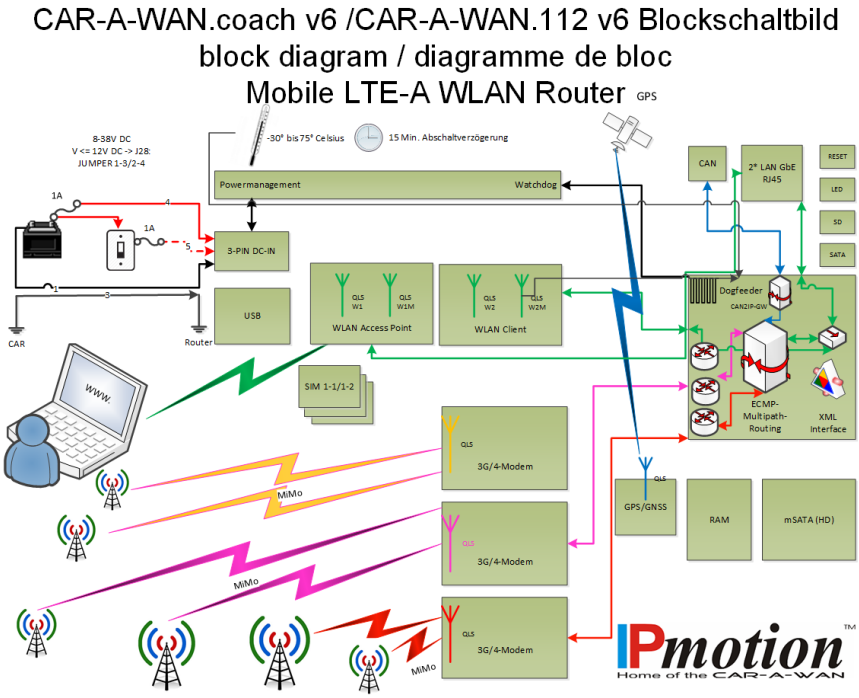
6 System description

The Linux router CAR-A-WAN.coach connects local devices connected via LAN or WLAN to the Internet using up to three data modems. System rules, such as user-defined rules, control the dial-in behavior.

The power management controls the follow-up time and the almost complete disconnection from the 24V DC power supply, or correct cold starts during a manual restart or triggered watchdog of the embedded PC.

Two SIM cards are switchable, each connected with a 3G / LTE modem, LEDs (inside the housing) signal the operating states, a speaker can emit warning tones, an optional, tactile switch can trigger the reset of the router.

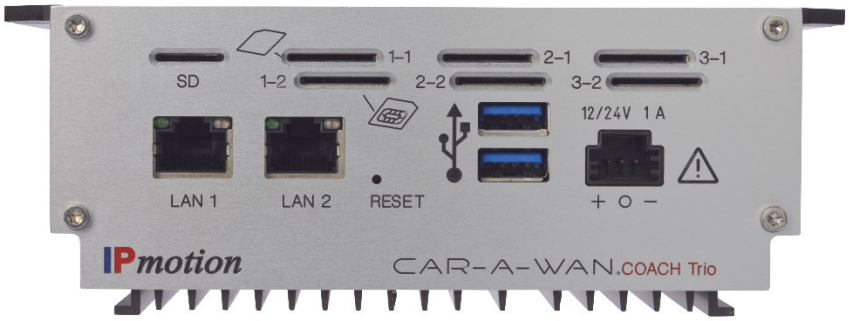
The modems transfer their operating heat to the aluminium housing. Plug connections for the connection of power supply and antennas facilitate installation and allow installation and removal without tools.



7 Device description CAR-A-WAN.coach

In this chapter, the corresponding device elements are explained and you receive the instructions for operation as well as all information on the device connections.

7.1 Front panel connections and controls



Hinweis

WWAN means Wireless Wide Area Network, also known as 3G (UMTS), LTE, 4G.

Hinweis

M stands for MIMO. MIMO technology increases reliability and data throughput.

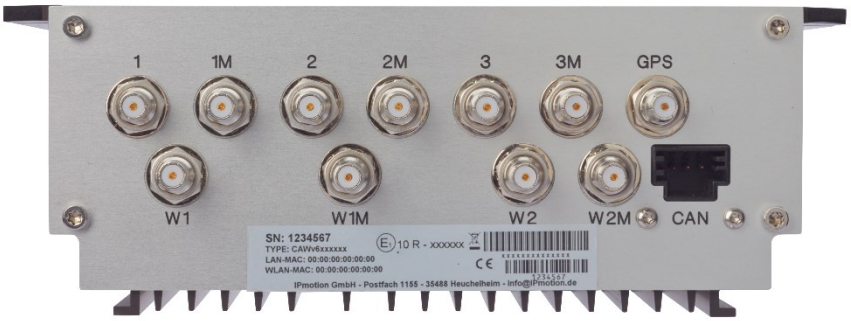
On the front of the device you will find (from left to right) connections for 2* LAN (RJ45 10/100/1000 MBit/s), a concealed reset button that can only be pressed with a paper clip, an LED for indicating the operating status, 2* USB connections and the pin tray for connecting the power supply cable.

The power supply connection contacts permanent plus 12-24V DC (clamp 30), as well as switching plus (clamp 15) and ground (clamp 31).

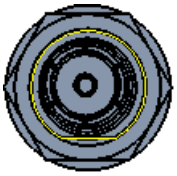
LAN connections (RJ45, Ethernet 1-2):

The Ethernet1 and WLAN interfaces are mutually bridged, i.e. you can also connect your devices to LAN instead of WLAN. Devices connected to the LAN can communicate with devices connected to the WLAN. The clients are not isolated from each other. The Ethernet2 interface is not yet configured on delivery.

7.2 Connectors on the rear panel



On the back of the device, in the upper row, you will find the connections for the mobile radio modems (WWAN 1-3) and their MIMO connections WWAN 1M-3M and GPS. The lower row contains the connectors for the WLAN antennas W1/W1M and the CAN connector.



Antenna connections (QLS):

Since the QLS antenna connectors have no coding, but only a correct assignment the function of the CAR-A-WAN.coach, we recommend making the cable ends distinguishable before assembly when laying the antenna cables.

We recommend colour coding using a band of insulating tape similar to the FAKRA codes used in automotive engineering:

1 / 1M -> bordeaux (RAL 4004) -> WWAN1 (3G/LTE-A)
2 / 2M -> carmine red (RAL 3002) -> WWAN2 (3G/LTE-A)
3 / 3M -> pastel orange (RAL 2003) -> WWAN3 (3G/LTE-A)
GPS -> bright blue (RAL 5005) -> GPS
W1 / W1M -> white / yellow (RAL 9016/1026) -> WLAN in the vehicle
W2 / W2M -> beige (RAL 1001) -> WLAN outside of the vehicle

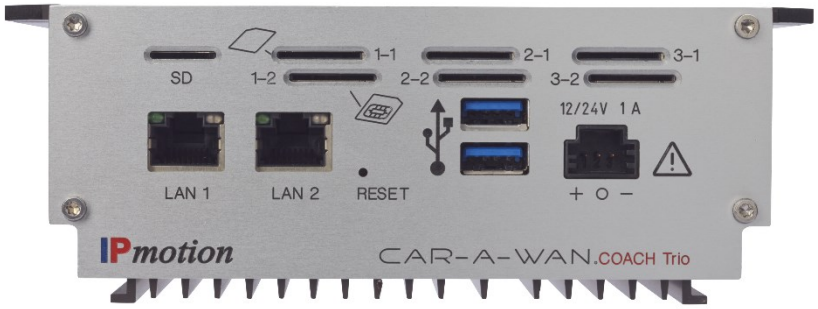
When attaching the plug, its ring must be retracted so that the locking springs are released. The plug is then pushed onto the female panel connector on the housing side and the front ring of the plug is moved towards the housing with firm pressure; the connection is locked.

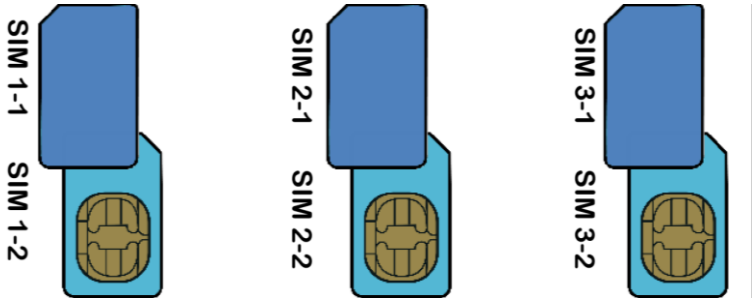
When attaching the plug, its ring must be retracted so that the locking springs are released.

The plug is then pushed onto the female panel connector on the housing side and the front ring of the plug is moved towards the housing with firm pressure; the connection is locked.

7.3 SIM card holder in router housing

The SIM card holders for mini-SIM cards (2FF) are located at the front end of the router housing, to the right of the SD card slot, which, like the USB 3.0 ports, is intended for future applications.





Please do not use smaller Sim cards (Micro or Nano, these are too small and have no contact). The use of Sim card adapters is not recommended. Please take this into account when purchasing and handling SIM cards.

On the board there are two SIM card holders per modem; one is visible from above and holds the default SIM card, the second SIM card holder is directly underneath and a SIM card inserted there can be used by switching after a reboot.

If only one SIM card is used, slide it into the visible holder 1-1, 2-1 or 3-1, with the notch in front and the gold contacts down, until you feel it click

into place. When using two SIM cards per modem, start with SIM card 1-2, 2-2 or 3-2.


Hinweis

Please do not use only the lower SIM card slot. Always assign an activated SIM card to at least the upper SIM card slot.

7.4 Markings and identification features of the CAR-A-WAN.coach

At the front end of the router housing there is a QR code (left) with the serial number (7 digits) and a QR code (right) with the link to the "my CAR-A-WAN" website with reference to the admin website, the serial number, the user name and individual initial password.

On the back you will find

- the manufacturer's specification with the address
- a QR code (on the left side, overwritten with "INIT") with a link to the website for the correct connection of the QLS antenna cable and power supply and the download of the operating manuals
- another QR code (on the right side, overwritten with "SUPPORT") with a reference to the installation checklist and contact details
- the CE mark
- the RoHS mark
- the E-Mark symbol
- the IP protection class (IP30)
- a GTIN 13 barcode
- the product ID in text form (CAWv6S7455TC, CAWv6S7455PC, CAWv6S7455C)
- Customer-specific identification number, if applicable

7.5 Optical signalling of the CAR-A-WAN.coach

LED lights up red =
the power supply is applied

LED lights up green =
the CAR-A-WAN is online and a VPN connection is active; remote maintenance is possible

7.6 Acoustic messages of the CAR-A-WAN.coach

None at the moment.

None at the moment.

8 Storage and unpacking

8.1 Storage of the CAR-A-WAN.coach

If the device is not installed immediately, the following should be noted:

Always leave the device and accessories in their original packaging and store them.

Recommended ambient temperatures for storage in packaging are between -30° C and +75° C.

The device and the packaging must be protected from moisture.

8.2 Unpacking the CAR-A-WAN.coach

Remove shipping cartons and packaging material.

Check the delivery for completeness using the delivery note. If the delivery is incomplete or if you have received an incorrect delivery, the supplier must be informed immediately.

Also check the delivery for transport damage. Complaints about transport damage must be made immediately:

Keep all shipping cartons and packaging materials in a safe place for inspection.

Please inform the manufacturer or your supplier immediately.

Inform the transport company immediately.

9 Installation and Connection

All environmental and operating requirements specified in the technical data must be met to ensure proper functioning of the CAR-A-WAN.coach to ensure.

When installing the CAR-A-WAN.coach, the following must be observed:

Only make modifications to the on-board electrical system of your vehicle yourself if you have the necessary specialist knowledge.

Make sure that the ventilation of the CAR-A-WAN.coach is guaranteed.

Pay attention to the bend radii of antenna cables. Knots and too narrow bending radii can lead to breaks in the antenna cable and conductors.

Bring cables to room temperature before laying them.

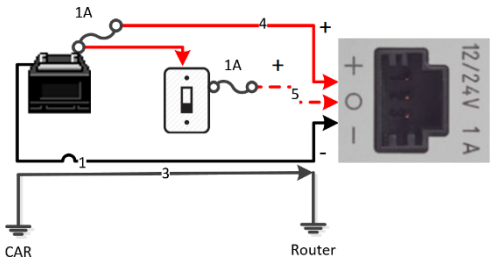
The device is equipped with colour-coded system screw connections which correspond to the drawing on the device cover. This makes it more difficult to reverse the polarity on the device.

9.1 Power supply of the CAR-A-WAN.coach

The connection diagram (Fig. 4) and the following information must be observed:

Fig. 4: Connection to the on-board electrical system

Fuse:	**2 times 1 A slow-blow, each after continuous plus and switching plus**
Cable cross-section:	**min. 0.50 mm² / max. 0.75 mm²**
Current (I) max at 24V	**Typical 700 mA, but not more than 800 mA**



9.2 Installation sequence

Assembly

Mount the CAR-A-WAN.coach and so that it can be reached with the power supply cable, see chapter 4.5 .

Power supply

Install the power supply cable, starting with ground, then "ignition", then continuous positive, or plug the prepared and fused power supply cable for the accessory socket into it.

Check the device for max. 30 seconds by applying voltage to the device. The LED on the front face must light red; with the connection to the Internet and the setup of the maintenance VPN, the color changes to green.

Disconnect the device from the supply voltage by releasing and pulling out the plug by pressing on the top of the plug. Switching off the ignition is not sufficient, as the device has a tracking electronics.

Preparation of SIM cards - preliminary consideration

Have your SIM cards ready now. It is recommended to define the assignment of SIM card and module number in advance. In the plus version with a total of two modules, module 1 is addressed approx. 30 seconds before the second module and prepared for dial-in. With the trio version, the whole thing takes 30 seconds longer.

If the modules are online, they are used for data transfer; however, as long as connections are not terminated (e.g. due to poor signal quality), data paths remain in operation.

For a VPN, for example, use a data connection that is not quite as fast, but is all the more stable. This should be activated first. If you need the VPN immediately after starting your PC, you should prefer it to an occasionally faster, but fluctuating data connection.

We deliver the CAR-A-WAN.coach without the SIM pin set at the factory and recommend deactivating the SIM pin query if only you have access to the router and SIM cards.

Deactivating the SIM pin

Please deactivate the SIM pin of your SIM cards with the help of your telephone. If this should not succeed (with some SIM cards this is the case), then we must keep in mind that we have to the CAR-A-WAN.coach will later have to communicate the PIN for permanent storage and that the SIM cards must not be exchanged with each other if we do not want the cards to be blocked accidentally by the mobile phone operator.

Please do not insert SIM cards yet!

Lay antenna cable - do not damage!

Some important tips for finding the right place for the antenna(s):

- First try to find the optimal way for the antenna with a cord, also consider the bending radii of the cables.
- If this is successful, you can now test the antenna finally, read the chapter by monitoring the signal strength level in the web administration.
- Measure the required cable length and, if necessary, have the cable assembled by us.
- Temper the cables so that plastics, for example, are not laid too cold. Otherwise there is a risk of cable breakage. Temperatures below +5 degrees Celsius are unsuitable even for simple PVC cables. The insulation, which is often thicker in the high-frequency range, should not be damaged at an approximate room temperature (15 - 20 degrees Celsius).

10 Device operation and operation

10.1 CAR-A-WAN.coach use Web Administration

For changes to the basic settings of the CAR-A-WAN.coach provides you with an administration website that can be addressed directly. All you need is an up-to-date web browser and a network connection to the CAR-A-WAN.coach.

A user on a computer can change the configuration values, but should have basic knowledge of the configuration of routers or WLAN access points. Before you install the CAR-A-WAN.coach, you should have the following information at hand:

- SIM PIN (see 0), assigned to your SIM card, to your SIM cards
- APN
- Desired SSID / password of the WPA encryption

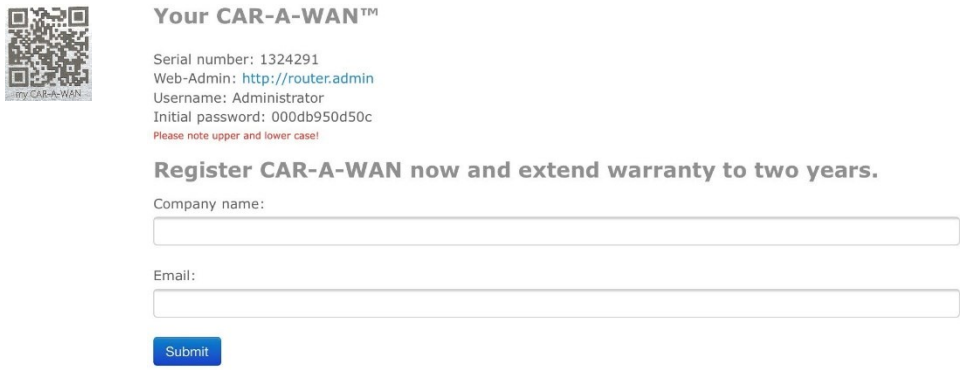
Launch CAR-A-WAN.coach Admin-Web

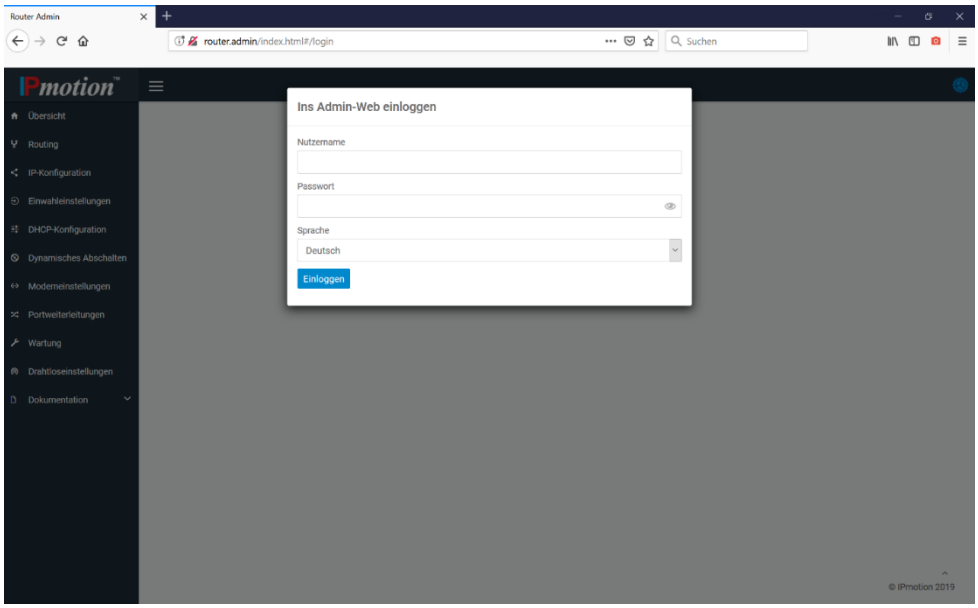
http://[IP address of CAR-A-WAN. coach]

Default setting:

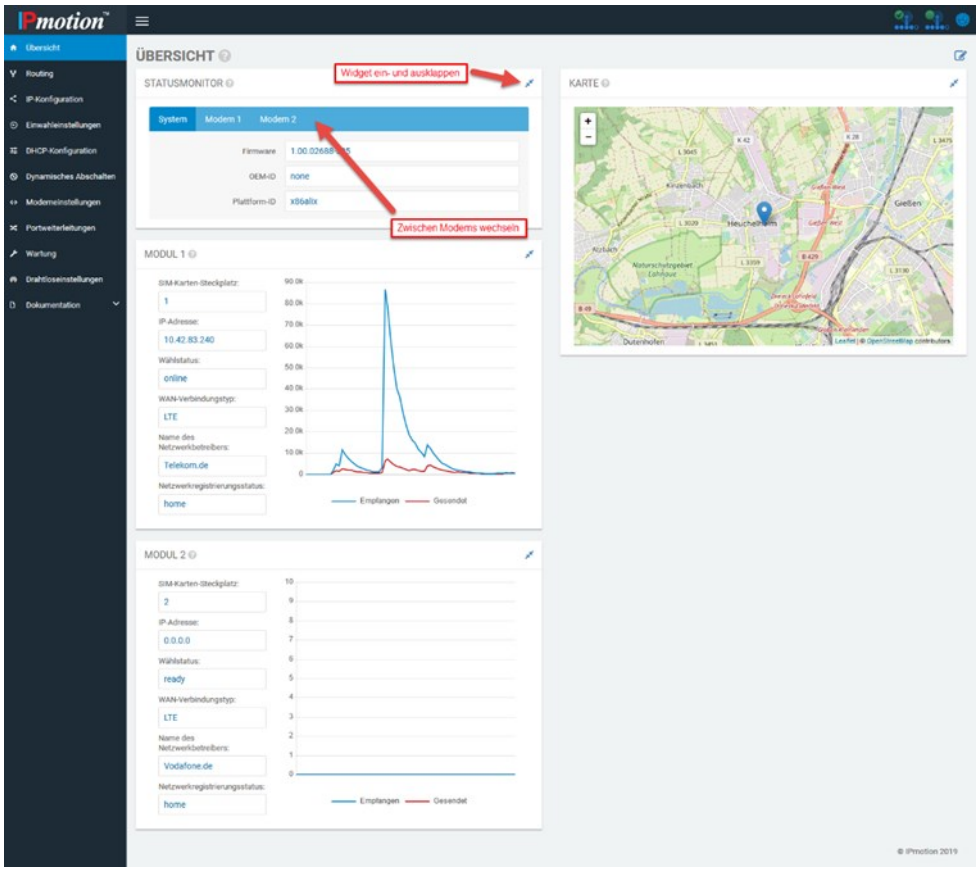
- http://10.10.10.1 or http://router.admin
- User: [is not shown here] / Default password: [is not shown here]
- Select language (German/English)

User name and initial password can be obtained by scanning the "my CAR-A-WAN" QR code.

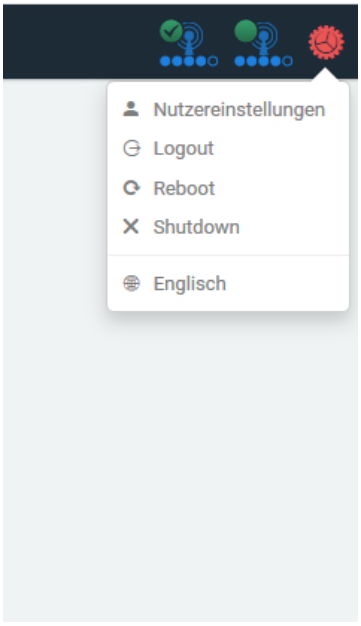




You can call up further information on possible settings and terms in the menus at any time using the question mark symbol.



User settings / password change



The Settings button (top right) takes you to the user settings. In this dialog you can change the password of the administrator. An empty password is not permitted.

Please keep in mind that the documentation of the CAR-A-WAN.coach can be downloaded via the website without verification of the person. If you do not change the administrator password, anyone can configure the router from the LAN.

We therefore strongly recommend that you set a password at the very beginning so that misuse can be ruled out.

Please write down this password and keep it in a safe place. The CAR-A-WAN.coach does not have an integrated process for resetting your chosen password.

Password resets require an intervention on the CAR-A-WAN.coach operating system and are chargeable services.

Dial-up settings

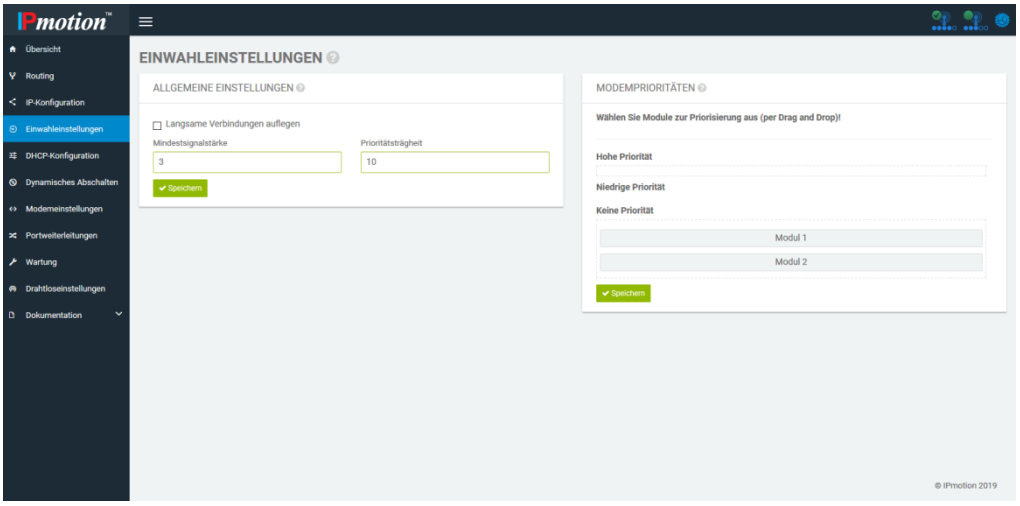
The following module settings are basically independent of each other, i.e. the modules can be configured independently of each other.

However, it can be determined for both from when a dial-in has to take place and under which conditions it has to be omitted.

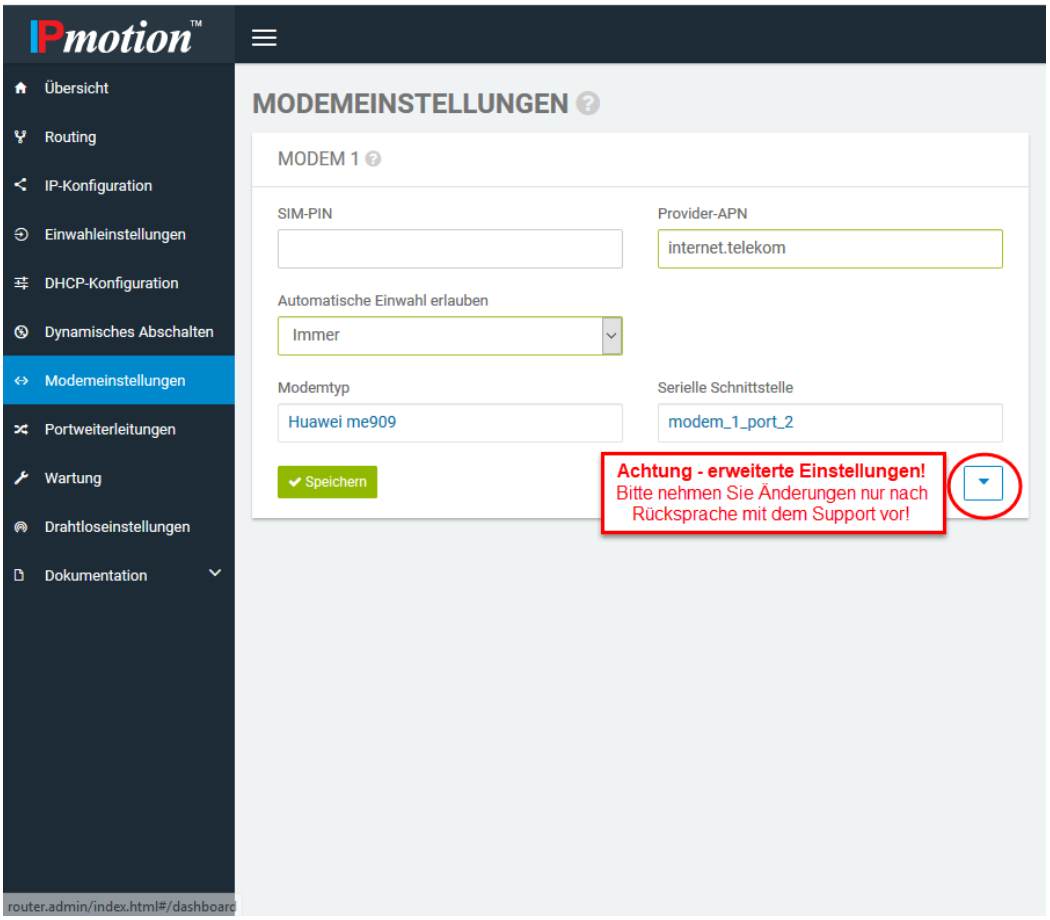
If a check mark is set for "Hang up slow connection", the slower connection type (2G/3G) is hung up if the other module has established a faster connection type (3G/4G).

Furthermore, connections are only established or maintained with a minimum quality.

The value -1 (in words: minus one) deactivates the minimum signal strength for dial-in.



Modem settings

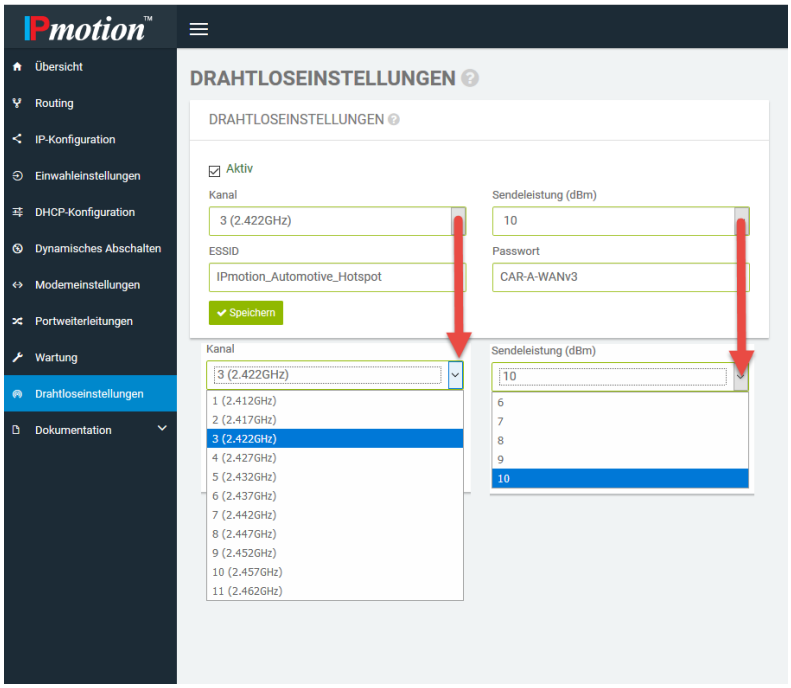


The menu for configuring the data modules allows changes to be made to the authentication for dialling in and the type of command transfer between the CAR-A-WAN.coach and the integrated data modules. All other fields not described in detail here may only be changed upon request by the IPmotion support and may cause a malfunction of the CAR-A-WAN.coach to the point of total failure.

- *SIM PIN* (PIN of the SIM card is displayed hidden. Please make sure that password managers of your web browser do not recognize this value as a password to be saved. This is a common error source, which can be recognized by the module status "Power" instead of "Ready" or "Online")

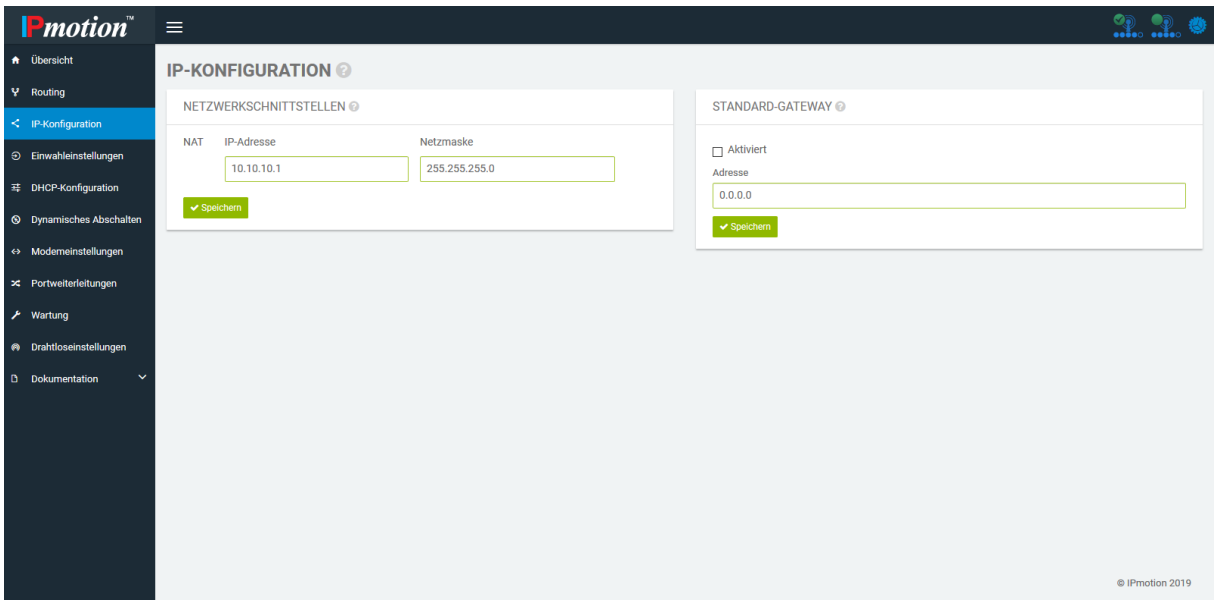
- *Provider APN:* Network identifier within the provider
- *Username & Password (*You get this information from your mobile provider, settings under "Advanced settings")
- *Allow automatic dial-in* (This setting controls whether the module is allowed to dial-in when it is *"Ready"* and has logged in with a mobile phone provider.
  - *Always* (The dial-in is always carried out again if the connection has been interrupted by driving.)
  - *Never* (A manual dial-in can only be performed by the CAR-A-WAN.coach Monitor).
  - *When not roaming* (Please select this option if you want to prevent dialing into a foreign network (abroad). This option may not interrupt an existing dial-in, it only prevents new dial-ins.)
- *PIN string* (If no PIN is used for the SIM card, i.e. the PIN has been deactivated, the content of this field must be deleted.

Wireless settings



Here the optional access point for wireless LAN can be switched on or off, the network identification can be changed and the channel number can be set. The order also specifies the regulatory domain that restricts the available WLAN channels to the permitted channels and transmission powers.

IP configuration



The menu "IP configuration" is located at the CAR-A-WAN.coach provides a configurable network interface.

A second, routable interface is not provided in the standard configuration, but is conceivable in principle, e.g. if the host access point for WLAN is deactivated and the WLAN card functions as a transition to other networks.

The field "NAT" is only available if a second interface is available.

DHCP configuration

The DHCP configuration is carried out automatically to match the IP address entered under "IP configuration".

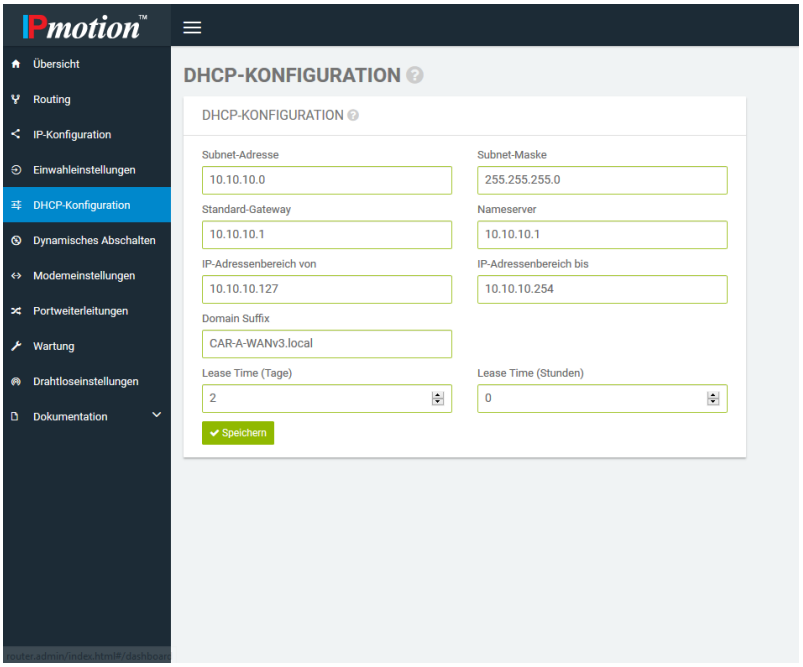


Fig. 12: DHCP configuration

DNS

The CAR-A-WAN comes with its own DNS server, which is bound to the router's address and is always switched on. This DNS has the peculiarity that it does not direct its queries to the DNS servers of the respective mobile phone providers, but directly queries the root servers and from there, with the typical mobile phone runtime, the previously determined responsible DNS servers of the hosts to be reached.

By its very nature, this query is slower than a query from mobile providers, but offers advantages when using multiple, parallel WAN connections: This avoids DNS queries from the Internet running into the void because they were made via the Internet (seen from the other side - via the other mobile phone provider) instead of via the switching mobile phone provider.

Alternatively, an external DNS server can also be stored in the DHCP configuration menu, which is then passed on to the clients, such as Google (8.8.8.8).

In addition, here is a short list of DNS servers that are freely accessible and, in contrast to Google, anonymous:

(see also: https://www.kuketz-blog.de/empfehlungsecke/#dns):

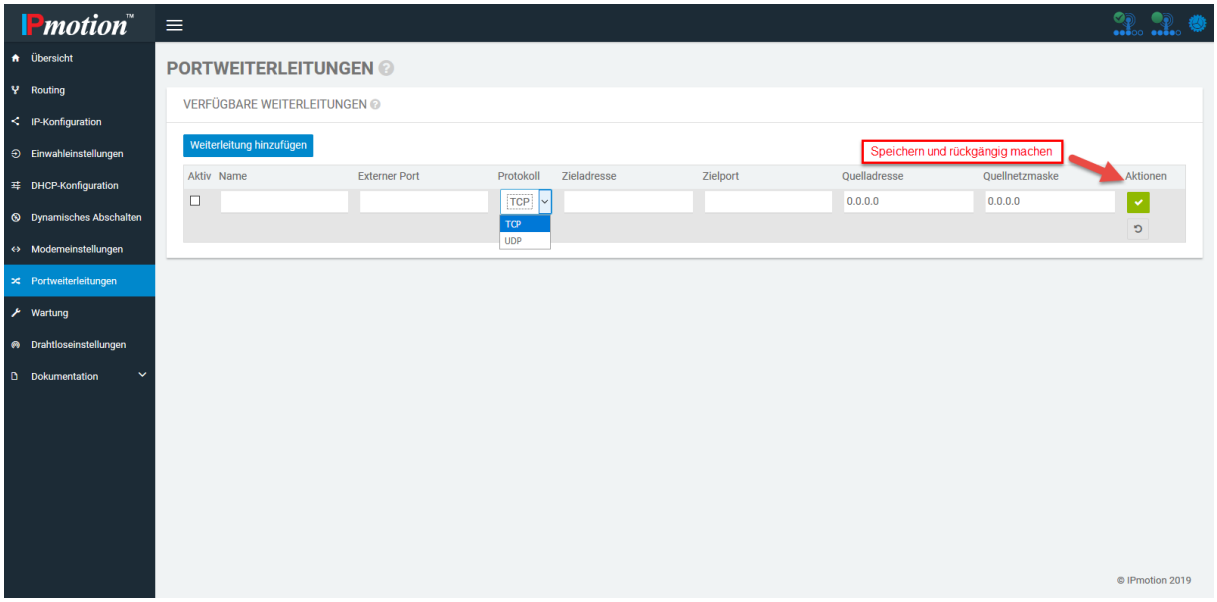
Digital courage
DNS server (DNSSEC / DNS over TLS):
IPv4: 46.182.19.48
IPv6: 2a02:2970:1002::18
Server location: Germany

dismail.de
DNS server (DNSSEC / DNS over TLS):
IPv4: 80.241.218.68IPv6
: 2a02:c205:3001:4558::1
Server location: Germany
Special feature: Advertising and tracking filter list

AS250.net Foundation
DNS Server 1 (DNSSEC):
IPv4: 194.150.168.168
Server Location: Germany

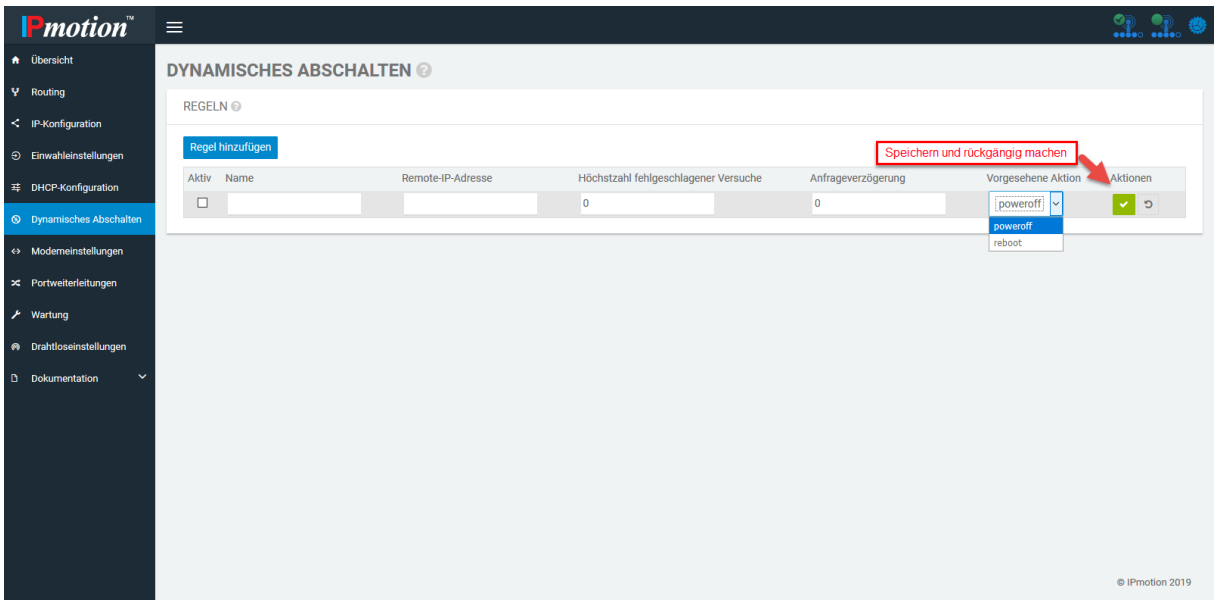
DNS server 2 (DNSSEC):
IPv4: 194.150.168.169
Server location: Germany
Special feature: Advertisement and tracking filter list

Port forwarding



Port forwarding set up in this menu can be switched on and off by clicking on "Active". However, applications can only be accessible from the outside if the provider enables internal routing and provides a public IP address. This is usually not the case, so that special services such as MDEX.de must be used to securely publish device-internal services on the Internet or Intranet.

Dynamic shutdown



Operating modes and messages

The most important operating modes of the router can be described as follows:

- ***off***
- ***On, Offline***
- ***On, Online***
- ***On, Roaming***
- ***On, waiting for shutdown***
- ***update sequence***

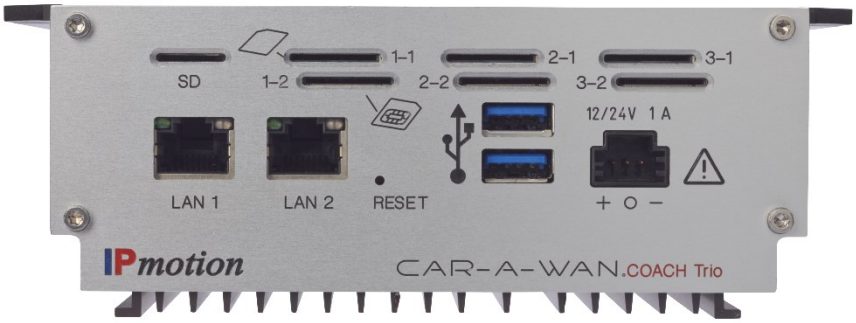
10.2 Commissioning of the CAR-A-WAN.coach

In order to guarantee error-free commissioning, the following action points must be observed:

- Check the presence of SIM cards
- Check the position of antennas.
- Check the input fuses and switch on the power supply.
- Wait about 60 seconds.
- Turn on your PC and connect to WLAN or LAN

If all steps have been completed successfully, the router must be in the on-state.

- Now configure the SIM PIN(s) via the admin website, see chapter Modem settings.
- The factory settings do not request for a PIN.
- The SIM1-1 is configured for Telekom of Germany, the SIM2-1 for Vodafone of Germany and the SIM3-1 for O2 of Germany.
- Insert the SIM cards into the corresponding slots as follows:



-
  - SIM 1 as default SIM card 1 in e.g. slot 1-1 with golden contact surface downwards until it clicks into place.

  - SIM 2 analogue with golden contact surface upwards in slot 1-2 until it snaps into place

- Proceed a warm start of the device via the admin website (settings symbol “gear”, reboot) or briefly interrupt the power supply.
- Use your PC to check the online connection.


Hinweis

The router should be visible in the WLAN after about one minute and online after about 90 seconds.

The router can now remain ready for operation in this state.

11 Troubleshooting

Troubleshooting work on the hardware of the CAR-A-WAN.coach must only be carried out by authorised specialist personnel.

If the router does not work properly, please try to solve the problem using the table below:

Issue	Possible cause	Remedy
The router cannot be started, no warning message.	The network for the router does not exist or is switched on.	Make sure that all connections have been made and confirm this with appropriate voltage measurements. Check the mains input fuse of the CAR-A-WAN.coach.
I do not see the WLAN of the CAR-A-WAN, although my operating system offers WLAN connections.	The WLAN of the CAR-A-WAN is switched off or other WLANs occupy the same channel or adjacent channels.	Connect to the CAR-A-WAN via a LAN cable and navigate to the administration website and switch on the WLAN or change the channel (see chapter)
I can't reach the administration website.	You have set up a Web proxy in the Internet connections of the Web browser.	Disable the web proxy or bypass the proxy server for local addresses.

The module(s) cannot be dialled in, but they seem to have reception because they have signal strength (see chapter Device operation and operation The signal strength indicator shows neither Home nor Roaming (see chapter Dial-up settings).	Possibly the modules see generally available mobile radio networks, but could not register in these.	Make sure → that the data-enabled SIM cards are inserted correctly → that the SIM cards may not require a SIM PIN, but this is not correctly configured. → that the router was restarted after inserting the SIM cards or reconfiguring the SIM PIN settings, see Chapter SIM card holder in router housing

The modules cannot be dialled in successfully even though they are registered in the network and the signal strength is sufficient*. *The signal strength sufficient for dial-in is individual and depends on the network technology (3G/LTE), modem, antenna used, including cables and provider. You can set a global minimum value yourself, see chapter Device operation and operation, Dial-up settings	The APN is wrong, the SIM card is not yet activated or blocked by the provider. The prepaid card has no credit.	Make sure that the provider-specific data (APN/Username/Password) has been correctly transferred to the CAR-A-WAN. Note: As of September 2019, user name and password cannot yet be transferred: Please carry out an update, see chapter CAR-A-WAN.coach use Web Administration, Maintenance, Update or inform Support of the serial number. → that the SIM card is suitable for use, contact the hotline of your mobile phone provider if necessary.
The PC can be dialled into the VPN, but network resources are not available.	The IP address of the CAR-A-WAN.coach is the same as the VPN server.	IP address of the CAR-A-WAN. Change coach under Routing. Restart the router, see chapter Device operation and operation, IP configuration

The signal strength is too weak, although a mobile phone/USB stick with the same SIM card indicates a good signal strength.	The antenna cable is broken or the bending radius of the antenna cable is too small.	Replace the router or the antennas or the antenna cable.

The error image you registered is the CAR-A-WAN.coach in the table, please notify our service department and have the following information ready:

- Model number, serial number
- Date on which the problem occurred
- Detailed description of the problem

12 Service protocol

Always make any changes to the CAR-A-WAN.coach into the service log.

Date:	Changes to settings, such as passwords, etc.:	Performed by:

13 Service hotline

Should, contrary to expectations, have problems with the CAR-A-WAN.coach, or if you require safety-relevant information, please contact our service hotline at the telephone or fax number:

Phone no.: +49 641-350999-30

Fax No: +49 641–350999-90

If it is not possible to establish a telephone connection, we have set up an e-mail contact for you:

support@IPmotion.de

You can also contact the area or branch you are interested in directly at the following Internet address.

http://www.IPmotion.de/contact

14 Technical data

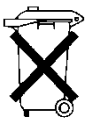
14.1 Specification CAR-A-WAN.coach

WWAN bands	LTE bands: B1 (2100), B2 (1900), B3 (1800), B4 (AWS), B7 (2600), B12 (700ac), B13 (700c), B20 (800DD), B5 (850), B25 (1900), B26 (US 850 Ext), B29 (US 700de Lower), B41 (TDD 2500), B30 (2300 WCS) UMTS bands: B1 (2100), B2 (1900), B8 (900), B4 (AWS), B3 (1800), B5 (850)
LTE regions:	Europe, North America, South America, Asia, Africa

Antenna gain with 8 meter low-loss cable RG58 < = 0 dBi

WLAN bands	IEEE 802.11b/g/n/ac 2.4 GHz/5Ghz
Size:	153,6mm x 56,0mm x 201,5mm (only housing with QLS connectors) 153,6mm x 70mm x 201,5mm (with optional bracket)
Power consumption:	10 Watt at 24 V
Ground (with 3 modems):	1000 gram
Protection class:	IP 30
Operating temperature:	-35 to 75 degrees Celsius
Storage temperature:	-40 to 90 degrees Celsius

15 Recycling the CAR-A-WAN.coach



IPmotion GmbH takes all CAR-A-WAN.coach for recycling free of charge.

Our modular concept allows the recycling of individual components (aluminium housings/PVC mountings), as well as the independent feeding of the electronic components for material separation.

Simply request the recycling kit for recycling by sending an email to recycling@IPmotion.de and quoting at least one IMEI number or serial number on the back of the router.

This kit will be sent to you free of charge throughout Europe and consists of a package, a questionnaire and a return label. For your expenditure we refund you 5, - EUR plus VAT.

We will also provide you with a non-binding upgrade offer, as on average the modems supplied can be exchanged for such more powerful radio technologies within three years of the initial purchase.

16 Identification of the CAR-A-WAN. coach


Hinweis

IPmotion GmbH identifies the product variants of a CAR-A-WAN.coach v6 on the front side with the serial number (QR code):

On the opposite back you will find

TYPE = Product variant (CAWv6S7455TC, CAWv6S7455PC or CAWv6S7455C)
GTIN = 42600317319, 426003173196077 or 4260031731953

MAC = MAC address of the LAN/WLAN interface
IMEI = Unique identification of the radio module(s)

Here you can also find QR code to call up the help page of the product https://www.ipmotion.de/[GTIN] as well as a QR code to call up the Webadmin page http://router.admin

17 Declaration of conformity

The CE-marked routers of the CAR-A-WAN.coach series comply with the following harmonized standards and EU directives:

Electromagnetic compatibility: **tbd**

Mobile phone compliance: **tbd**

Product safety/health: **tbd**