

HCV5

User Manual

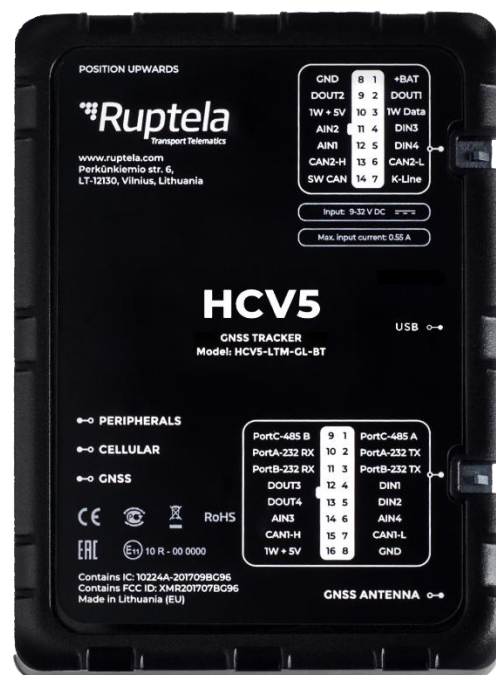


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1 Introduction

1.1 Purpose of This Document

The purpose of this user manual is to provide information about the HCV5 devices. This user manual describes the main features of the device and how to use it. Detailed descriptions of functionalities and peripheral devices can be found on our documentation website: doc.ruptela.it.

1.2 Legal Information

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1.3 Contact Information

General enquiries

Website: ruptela.com

E-mail: info@ruptela.com

Phone: +370 5 2045188

Technical support

E-mail: support@ruptela.com

Phone: +370 5 2045030

1.4 Document Changelog

Version	Date	Modification
1.0	2020-07-16	Initial draft.
1.1	2020-09-01	Updated: Certifications.
1.2	2020-09-18	Updated: Key Features. Updated: CAN Interfaces.
1.3	2020-10-05	Updated: Certifications.
1.4	2020-10-16	Added: Settings Menu. Added: Location Accuracy. Updated: Configuration Menu. Updated: Updating Firmware Manually.
1.5	2020-10-26	Updated: Certifications.

1.5 Safety Information

The following information is provided to ensure safe operation of the device. Please read it carefully before you start using the device!



All the associated (additional) equipment such as computers, batteries, sensors, etc. shall meet the requirements of standard EN60950-1.



Do not disassemble the device. If the enclosure of the device is damaged, or the insulation of the wires is damaged, disconnect the power supply cables from the power supply source first.



All wireless data transferring equipment produces interference that may affect other devices placed nearby.



The device can be installed or dismantled only by qualified personnel!



The device must be firmly fastened in a predefined location. The predefined location is described in the installation instructions.



The configuration must be performed using a 2nd safety class computer (with an autonomic power supply).



Make sure that the device is installed in a location where it will not be subjected to harsh environmental conditions for extended time periods.



Any installation and/or handling during a lightning storm is prohibited.



Caution! If an incorrect type of battery is used for replacement, there is a high explosion risk. Dispose of used batteries according to the environmental requirements.



For configuration use cables that were purchased from Ruptela. Ruptela is not responsible for any harm or damage caused while using the wrong cables.



Attention! Do not connect the wires marked red (power supply) and black (chassis) to the wrong battery poles. The device has reverse polarity protection, however, if connected incorrectly, the device will not work.



Disconnect the device from the power supply before dismantling it.



To disconnect the device from the power supply, you need to disconnect the 12 Pin connector from the device or disconnect the wires from the vehicle's power supply.



Ensure that the cross-sectional area of the wires is at least 0.75 mm².



Install the device in a restricted access location, not accessible or visible to the driver.



This crossed-out wheellie bin symbol means that waste equipment should not be disposed of with your other household waste. The product must be taken to separate collection points at the product's end-of-life.

1.6 Notations

The following notations are used in this document to highlight important information:

Bold text

Used to indicate user interface elements or for emphasis.

Italic text

Used to indicate items that belong to a list and can be selected.

Note



Used to highlight important information or special conditions.

Caution



Used to mark actions that require caution when handling the product.

Warning



Used to mark actions that may cause irreversible damage if performed incorrectly.

Tip



Suggestions on how to proceed.

1.7 Acronyms and Abbreviations

2G – Second Generation Cellular Technology

3G – Third Generation Cellular Technology

AC/DC – Alternating Current/Direct Current

AIN – Analog Input

APN – Access Point Name

CAN – Controller Area Network

DIN – Digital Input

DOUT – Digital Output

FMS – Fleet Management System

HDOP – Horizontal Dilution of Precision

GLONASS – Global Navigation Satellite System

GMT – Greenwich Mean Time

GNSS – Global Navigation Satellite System

GPRS – General Packet Radio Service

GPS – Global Positioning System

GSM – Global System for Mobile Communications

OBD – On-board Diagnostics

LED – Light Emitting Diode

LTE – Long-Term Evolution

PCB – Printed Circuit Board

SMS – Short Message Service

TCP – Transmission Control Protocol

UDP – User Datagram Protocol

UMTS – Universal Mobile Telecommunications System

USB – Universal Serial Bus

VCOM – Virtual Communication Port

1.8 References

Datasheets: <https://doc.ruptela.lt/pages/viewpage.action?pageId=37683326>

Quick Start Guides: <https://doc.ruptela.lt/pages/viewpage.action?pageId=37683326>

Device Center: <https://doc.ruptela.lt/display/AB/Device+Center>

Advanced configuration manual: <https://doc.ruptela.lt/pages/viewpage.action?pageId=37683326>

Firmware and configurator files: <https://doc.ruptela.lt/pages/viewpage.action?pageId=37683324>

Microsoft Framework: <https://www.microsoft.com/en-us/download/details.aspx?id=17851>

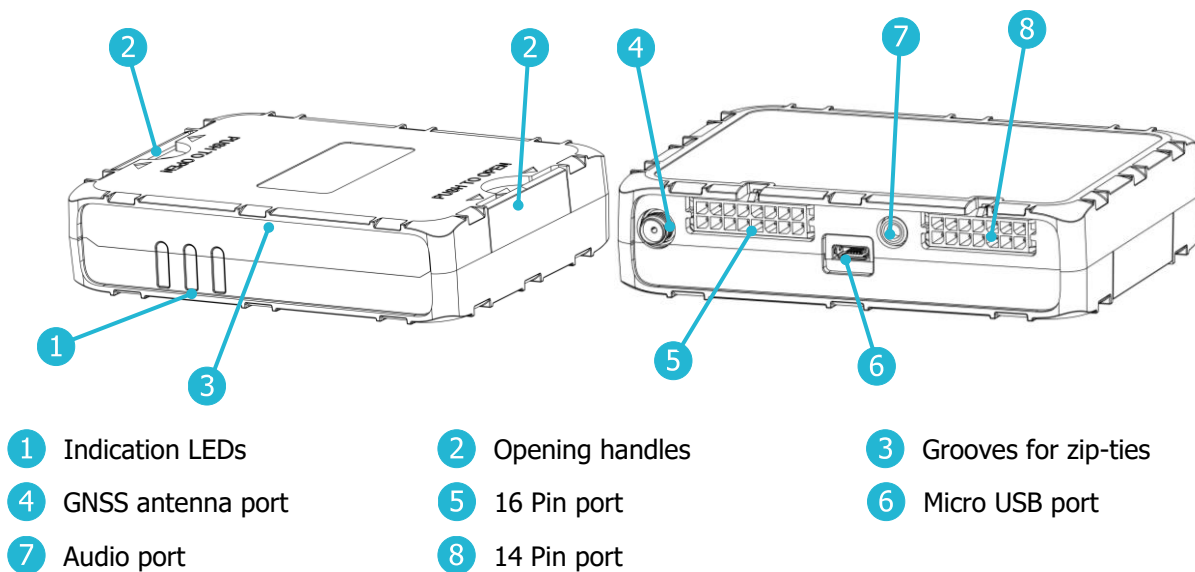
2 Product Information

2.1 About

HCV5 is an advanced and powerful tracking device with low power consumption. It acquires its position with a GNSS signal and transfers data to a server via cellular networks. HCV5 comes in the following variations:

- HCV5-2G-GL-BT – global 2G and Bluetooth
- HCV5-3G-GL-BT – global 3G and Bluetooth
- HCV5-LTM-GL-BT – global LTE Cat M1 and Bluetooth

2.2 Device Overview



2.3 Key Features

- Real-time data from GNSS and accelerometer
- Driver behavior monitoring (Eco-Drive)
- Tachograph data reading
- CANbus data reading (FMS, J1939 and J1708)
- OBD data reading (including proprietary manufacturer data)
- Bluetooth connectivity
- Temperature monitoring
- Driver registration and identification
- Remote ignition blocking
- Fuel monitoring
- Tampering detection
- Antenna detection
- Internal geofences
- Jamming detection
- Commands and configuration via SMS
- Additional sensors and peripherals

2.4 Package Contents

The device is packed in a cardboard box. The package contains the following items:

1. The device itself
2. A 14 pin cable
3. A 16 pin cable
4. An external GNSS antenna (available as an optional accessory)



By default, no SIM card is provided in the package. SIM cards can be obtained from your local phone operator.



2.5 Certifications

The HCV5 devices have passed quality tests and comply with the following certifications:



E-Mark

Certification of Economic Commission for Europe is the European conformity mark issued by the transport sector, indicating that the product complies with relevant laws and regulations or directives.



CE/RED

CE is a certification mark ensures conformity with health, safety and environmental protection standards for products sold within European Economic Area (EEA). The Radio Equipment Directive, or RED, covers the standards for wireless devices.

(47 CFR part 15, subpart B) The FCC Declaration of Conformity is a certification mark employed on electronic products manufactured or sold in the United States which certifies that the electromagnetic interference from the device is under limits approved by the Federal Communications Commission.



FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced technician for help.

Contains FCC ID: XMR201707BG96 (LTE Cat M1 option)

Contains FCC ID: XMR201508UG96 (3G option)

Contains FCC ID: XMR201202M95 (2G option)



IC

IC (Industry Canada) is a government agency that is responsible for the certification of electronic products entering the Canadian market. This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Contains IC: 10224A-201709BG96 (LTE Cat M1 option)

Contains IC: 10224A-201508UG96 (3G option)

Contains IC: 10224A-201606M95 (2G option)

RoHS

RoHS

The Restriction of Hazardous Substances Directive restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment.



WEEE

The Waste Electrical and Electronic Equipment Directive is the European Community Directive set collection, recycling and recovery targets for electrical goods and is part of a legislative initiative to solve the problem of huge amounts of toxic electronic waste.



EAC (in progress)

The Eurasian Conformity Mark indicates products that conform to all technical regulations of the Eurasian Customs Union. It means that the device meets all requirements of the corresponding technical regulations and have passed all conformity assessment procedures.



ANATEL

A certification of radio products for the Brazilian market based on an approval of the local authority Agência Nacional De Telecomunicações (Anatel). This equipment is not entitled to protection against harmful interference and must not cause interference in duly authorized systems.

3 Technical Information

3.1 Indication LED Patterns

LED	Pattern	Description
GNSS	Once every second	Accurate signal
	Once every 0.4 seconds	No signal
Network	Once every 4 seconds	Connected to network and internet
	Once every second	Connected to network, no internet
	Once every 0.2 seconds	No signal
	Always on	Link with the server is open
Peripherals	Always off	No devices connected
	Once every 5 seconds	One device connected
	Twice every 5 seconds	Two devices connected
	Three times every 5 seconds	Three devices connected
All	Once every 5 seconds	Sleep mode

3.2 14 Pin Cable Pinout

Pin	Pin no.	Wire color	Description
+BAT	1	Red	Power supply (9-32 V)
GND	8	Black	Ground connection
DIN3	4	Pink	Digital input 3
DIN4	5	Yellow	Digital input 4
AIN1	12	Grey	Analog input 1
AIN2	11	Green	Analog input 2
DOUT1	2	Purple	Digital output 1
DOUT2	9	Orange	Digital output 2
CAN2-L	6	Blue	CAN Low
CAN2-H	13	White	CAN High
SW CAN	14	Green/White	Single-Wire CAN
K-Line	7	Brown	CAN K-Line
1W +5V	10	Red/Yellow	1-Wire power
1W Data	3	Green/Yellow	1-Wire data

3.3 16 Pin Cable Pinout

Pin	Pin.no.	Wire color	Description
GND	8	Black	Ground connection
PortA-232 RX	10	Blue/Yellow	RS232 RX
PortA-232 TX	2	Green/Brown	RS232 TX
PortB-232 RX	11	Red/Cyan	RS232 RX
PortB-232 TX	3	Pink/Green	RS232 TX
PortC-485 A	1	White/Brown	RS485 line A
PortC-485 B	9	Yellow/Brown	RS485 line B
DIN1	4	Yellow/Black	Digital input 1
DIN2	5	Pink/Black	Digital input 2
AIN3	14	White/Grey	Analog input 3
AIN4	6	White/Green	Analog input 4
DOUT3	12	White/Purple	Digital output 3
DOUT4	13	White/Orange	Digital output 4
CAN1-L	7	Blue/Red	CAN Low
CAN1-H	15	White/Red	CAN High
1W +5V	16	Red/Yellow	1-Wire power

3.4 Physical Characteristics

Dimensions	101 x 74 x 23 mm
Weight	128 ± 1 g
Housing material	Plastic
Internal storage	8 MB
External storage	Up to 32 GB
Accelerator	Built-in 3 axis
Connectors	Molex Micro-Fit 14 Pin and 16 Pin, insulated
Configuration interface	Micro USB
Audio interface	3.5 mm (not available for LTE Cat M1 option)
Antenna	Internal and external (available as an additional accessory)

3.5 Technical Characteristics

3.5.1 Environmental Specifications

Temperature	Operating:	-20 to +45 °C
	Storage:	-20 to +45 °C
	Battery charging:	0 to +45 °C
	Battery discharging:	-20 to +45 °C
Relative humidity	5% to 95% Non-condensing	

3.5.2 Electrical Specifications

Power supply range	9 – 32 V DC
Internal battery	LiPo 3.7 V 1050 mAh
Protections	Battery and 1-Wire power line short circuit protection Reverse polarity protection Electrostatic discharge protection on USB, SIM card slot and 1-Wire data line Overcurrent protection on 1-Wire power line and digital outputs Overvoltage protection on inputs Charging protection

3.5.3 Power Consumption @ 12 V DC

Operating (battery fully charged)	Idle mode:	80 mA
	Active mode (peak):	130 mA
	Sleep mode:	6 mA

3.5.4 Connectivity

2G option	Modem: Quectel M95 Antenna: Internal Frequency bands @ 2G (GSM): 850/900/1800/1900 MHz
3G option	Modem: Quectel UG96 Antenna: Internal Frequency bands @ 2G (GSM): 850/900/1800/1900 MHz Frequency bands @ 3G (UMTS): 800/850/900/1900/2100 MHz
LTE Cat M1 option	Modem: Quectel BG96 Antenna: Internal Frequency bands @ 2G (GSM): 850/900/1800/1900 MHz Bands @ 4G (LTE Cat M1): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B28/B39
GNSS module	Module: U-blox EVA-M8M Antenna: Internal and external (available as an additional accessory) Positioning systems: GPS, GLONASS, Galileo Augmentation systems: QZSS, SBAS (WAAS, GAGAN, EGNOS, MSAS) Aided start services: AssistNow Online Tracking sensitivity: -154 to -164 dBm Reacquisition sensitivity: -152 to -160 dBm Cold start duration: < 30 s Aided start: As low as 3 s
Bluetooth module	Module: NRF52832 Bluetooth version: 5.1 Low energy

3.6 Interfaces

3.6.1 Power Supply

Pins	+BAT, GND
Purpose	To power the device
Parameters	Voltage range: 9 – 32 V DC

3.6.2 Analog Inputs

Pins	AIN1, AIN2, AIN3, AIN4
Purpose	To monitor the values of various peripherals
Parameters	Voltage range: 0 – 30 V DC Resolution: 12 bit
Applications	Various sensors

3.6.3 Digital Inputs

Pins	DIN1, DIN2, DIN3, DIN4
Purpose	To monitor the values of various peripherals
Parameters	Voltage range: 0 – 30 V DC Voltage threshold: 4 V DC All inputs can be used in ground mode Voltage threshold in ground mode: 250 mV DC
Applications	Ignition detection Various sensors

3.6.4 Digital Outputs

Pins	DOUT1, DOUT2, DOUT3, DOUT4
Purpose	To control various peripherals
Parameters	Maximum voltage: 32 V DC Maximum current: 1 A All outputs can be used in inverted mode
Applications	Driver registration Engine blocking Warning indication Network jamming detection (not available for LTE Cat M1 option)

3.6.5 CAN Interfaces

Pins	CAN1-H, CAN1-L, CAN2-H, CAN2-L, SW CAN
Purpose	To read various data from vehicle on-board systems
Applications	Tachograph data reading FMS data reading J1939 data reading HCV and LCV CAN data reading Trailer data reading OBD data and DTC reading Manufacturer specific OBD data reading

3.6.6 K-Line

Pins	K-Line
Purpose	To read tachograph and OBD data
Applications	Tachograph data reading OBD data and DTC reading

3.6.7 Serial Ports

Pins	Port A-232 RX, Port A-232 TX, Port B-232 RX, Port B-232 TX (RS232) Port C-485 A, Port C-485 B (RS485)
Purpose	To connect and communicate with peripheral devices
Applications	Refrigerators RS232 cameras Digital fuel level sensors RFID readers Fatigue sensors

3.6.8 1-Wire

Pins	1W +5V, 1W Data
Purpose	To monitor the values of various peripherals
Applications	Driver registration Temperature sensors Trailer assignation

4 Device Preparation

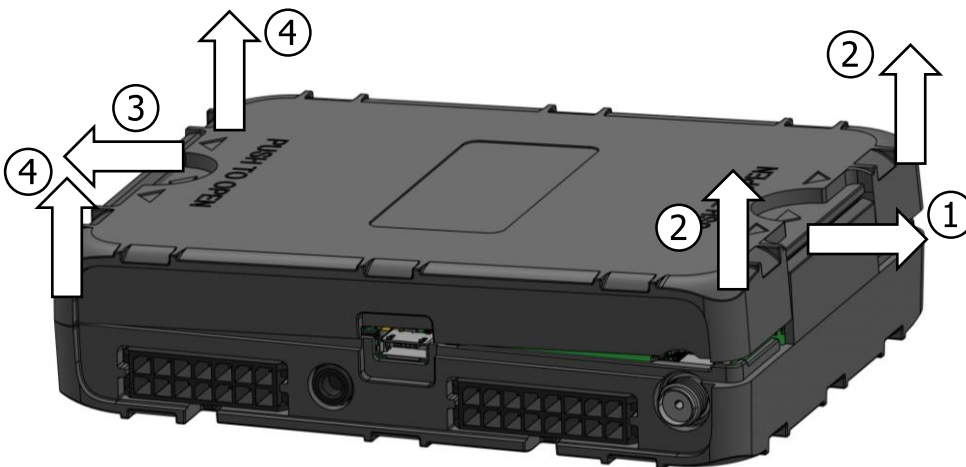
For the device to work, you first need to insert a SIM card. To do so, open the device housing and perform the actions described below.

4.1 Opening the Device

The housing is meant to be opened using your hands. Use the opening handles on the bottom of the housing. Push one handle away from the housing (1) and gently lift up that side of the housing (2). Repeat the process for the other side (3) (4). The bottom part of the housing should come off easily.

⊘ Make sure that the device is powered off before opening it!

⊘ The use of inappropriate tools or excessive force may cause permanent damage to the device.



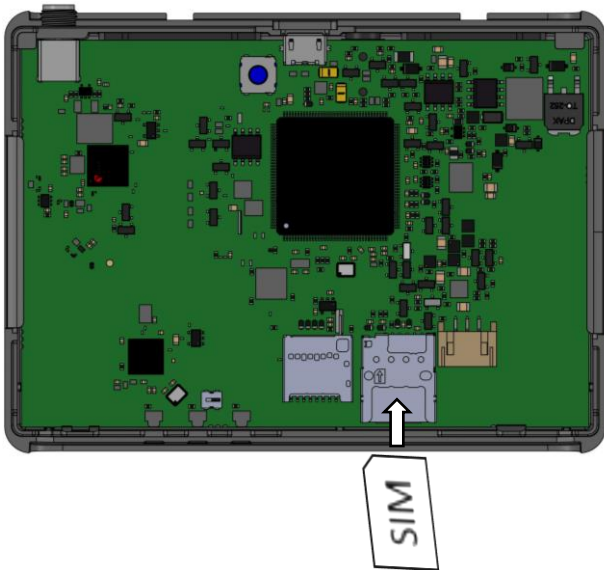
⚠ Avoid opening the device more times than required, as it may wear out the opening handles.

4.2 Inserting a SIM Card

Insert your SIM card into the device as shown in the image below. The microchip must be facing down.



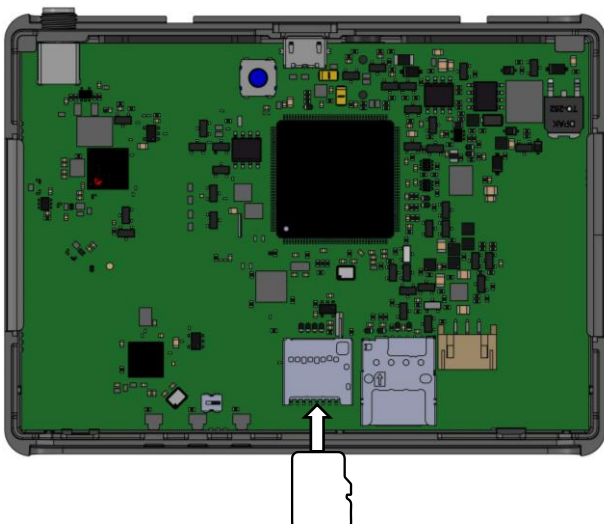
All SIM card security codes must be disabled, otherwise the SIM card will not work with the device.



Use a non-prepaid SIM card to ensure that the balance does not suddenly run out and cause connectivity issues.

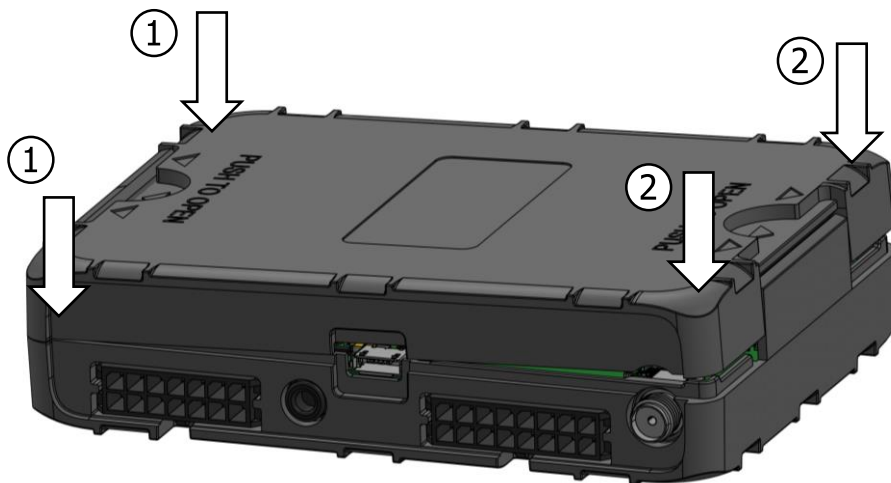
4.3 Inserting an SD Card

Insert your SD card (microSD, up to 32 GB) into the device, as shown in the image below. The SD card must be facing up.



4.4 Closing the Device

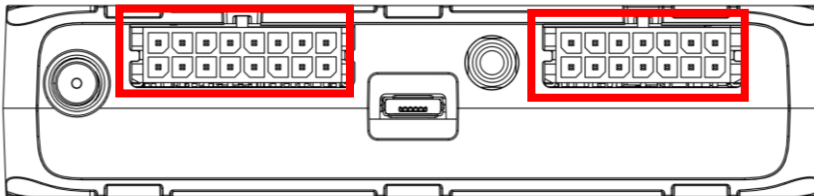
To close the device, simply put the top back on and push one side down until you hear a click. Push down the other side until you hear a click.



4.5 Cable Connection

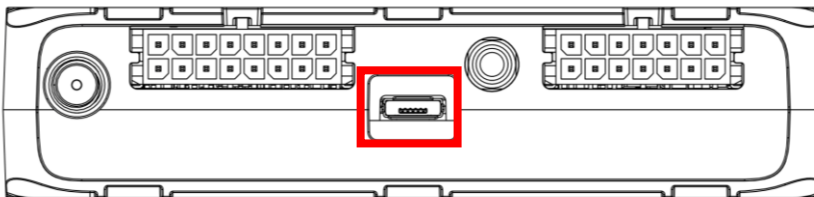
4.5.1 14 and 16 Pin Cable Connection

Connect the 14 and 16 Pin cables to their respective ports on the device, as shown in the image below. The cables can be connected in only one way.



4.5.2 USB Cable Connection

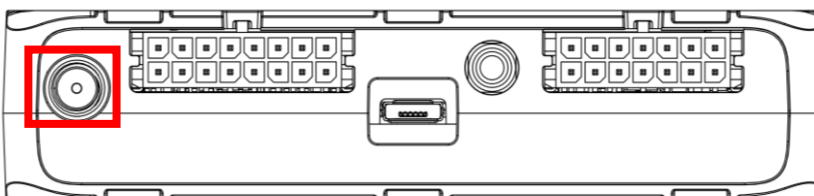
Connect the USB cable to the micro USB port, as shown in the image below. The cable can be connected in only one way. Connect the other end to your computer.



The device can be configured when powered via USB, using an external power supply for configuration is optional.

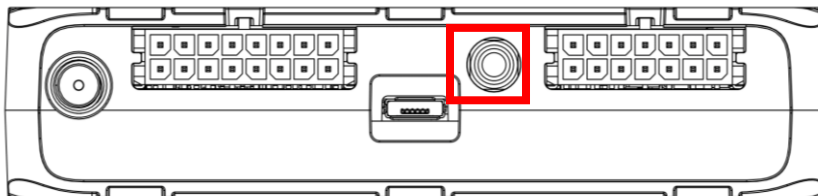
4.5.3 Antenna Cable Connection

Connect the antenna cable to the antenna port, as shown in the image below. Make sure that the cable is fully twisted onto the port.



4.5.4 Audio Cable Connection

Connect your audio equipment using a 3.5 mm audio cable, as shown in the image below. The cable can be connected in only one way.



5 Device Configuration

5.1 Device Center

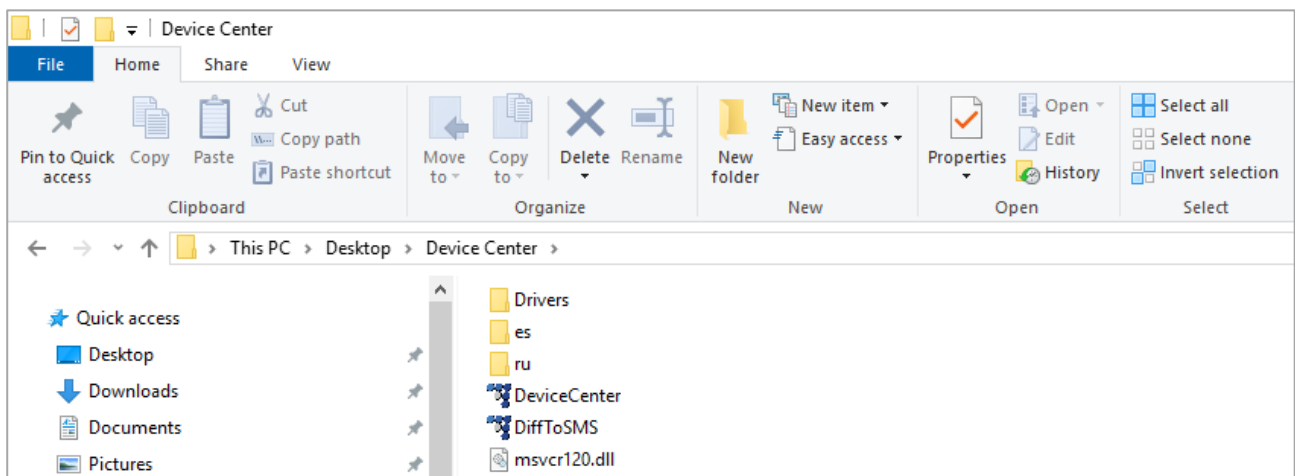
The Device Center application is used to configure the device. The Device Center allows you to do the following:

- Make a new configuration file
- Edit an existing configuration file
- Send a configuration file to your device
- Load an existing configuration file from your device
- Update the device firmware

Download the Device Center from our documentation website: doc.ruptela.lt.

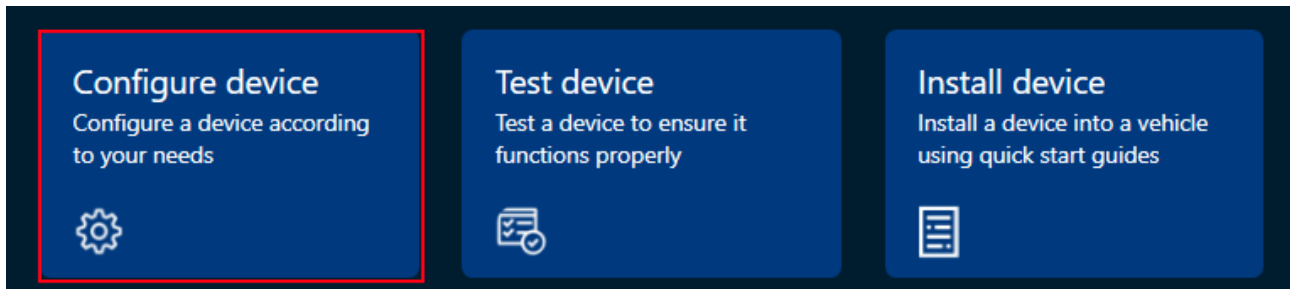
You can also find a detailed description of the Device Center in the User manual section.

Extract the downloaded archive to your desired location. Launch **DeviceCenter.exe**.

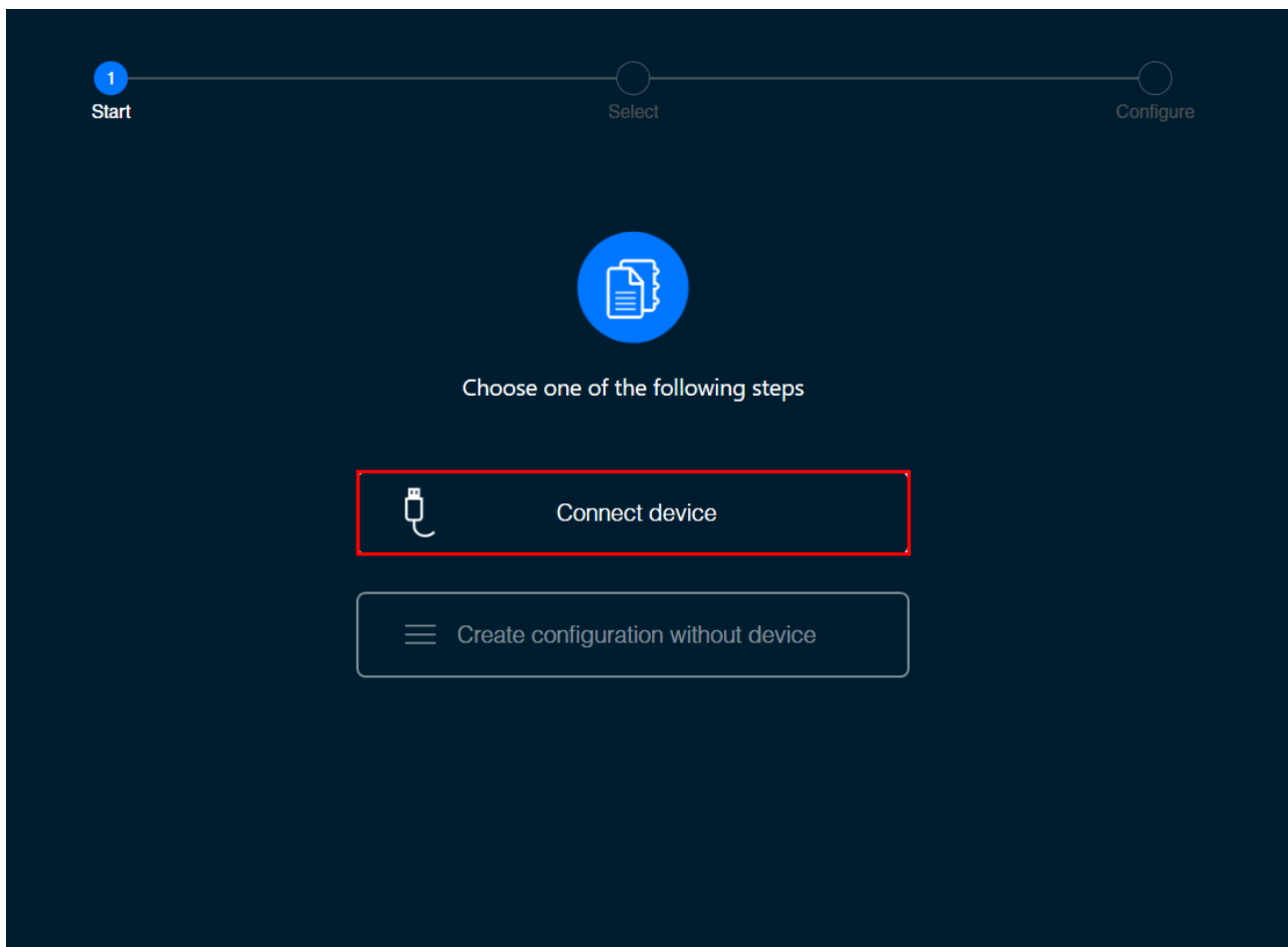


5.2 Starting the Configuration

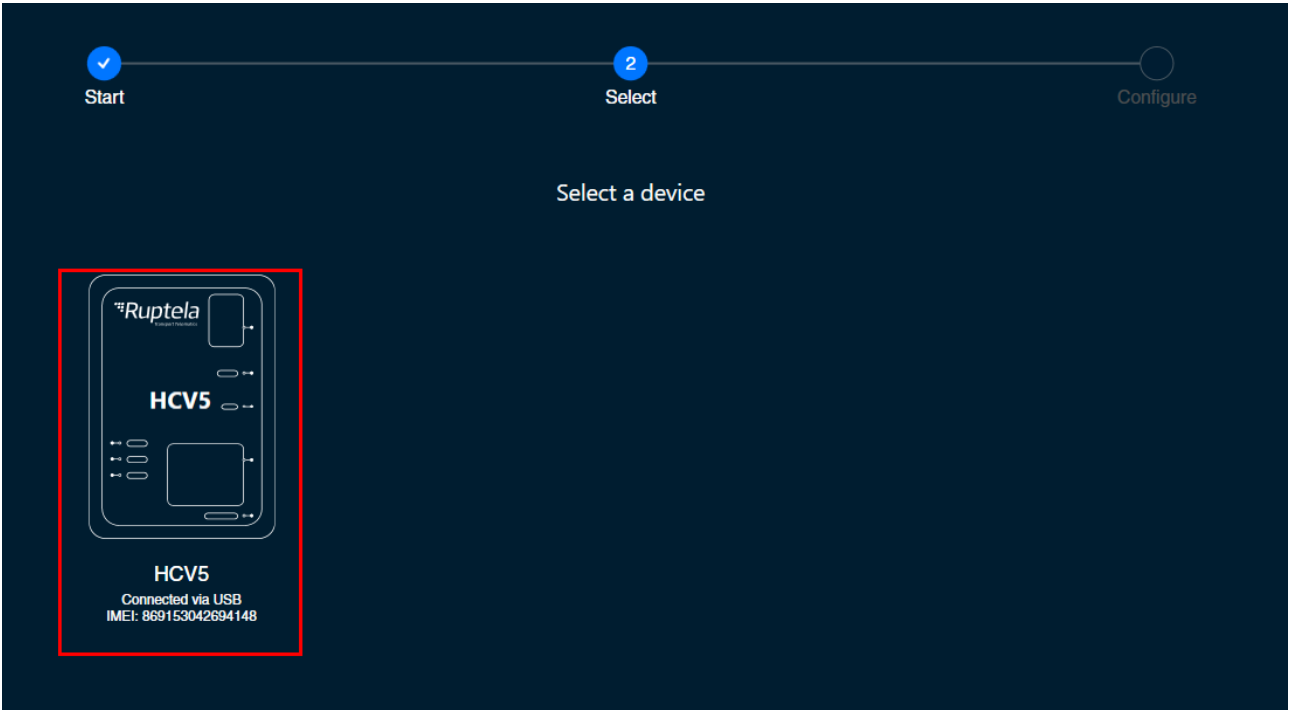
After launching the Device Center, click **Configure device** in the main menu.



If the VCOM drivers are installed, you will be directed to the configuration type selection menu. Click **Connect device**.



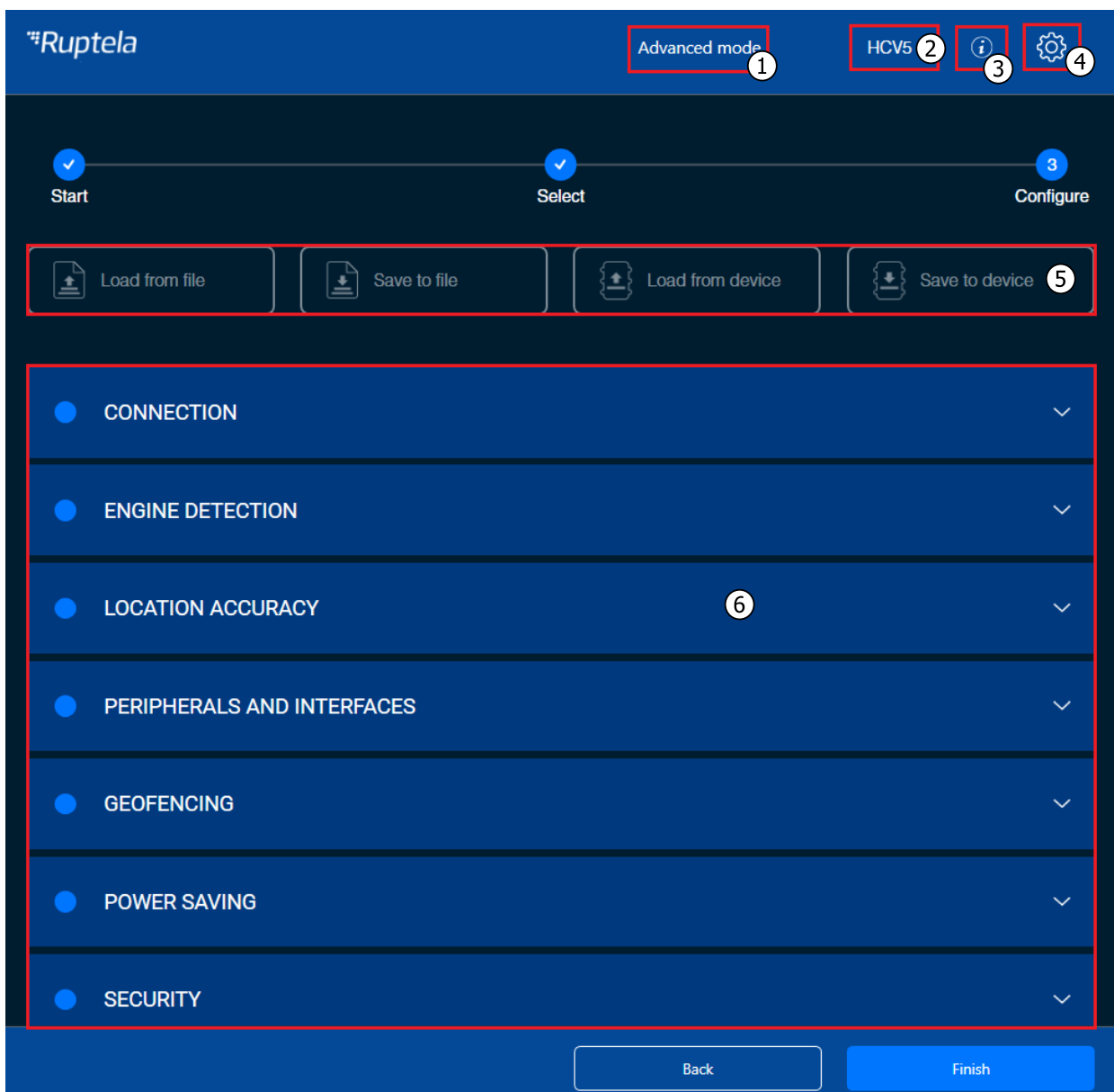
Select your device in the device selection menu by clicking on it.



5.2.1 Configuration Menu

After device selection, you will be directed to the main configuration menu. This menu has the following elements:

1. An **Advanced mode** button – opens the advanced configurator
2. Device info – displays information about the connected device
3. An information icon – opens the Device Center user manual
4. Settings icon – opens general settings and information about Device Center
5. A configuration load/save button bar – used to load/save configuration files
6. Device settings, grouped by functionalities



5.3 Configuration Basics

For the device to be fully operational, it must have a configuration file uploaded to it. A configuration file contains information on what functionalities are active, how they are configured and what kind of data is included in records.

You can upload the same configuration file to multiple devices, making it easy to receive identical data from all your vehicles.

5.3.1 File Extension

Configuration file extension for HCV5 devices: **.ft5c**



Configuration files can easily be recognized by their own icon:

5.3.2 Loading a Configuration from a File

Click **Load from file** in the button bar. Locate your configuration file and click **Open**.



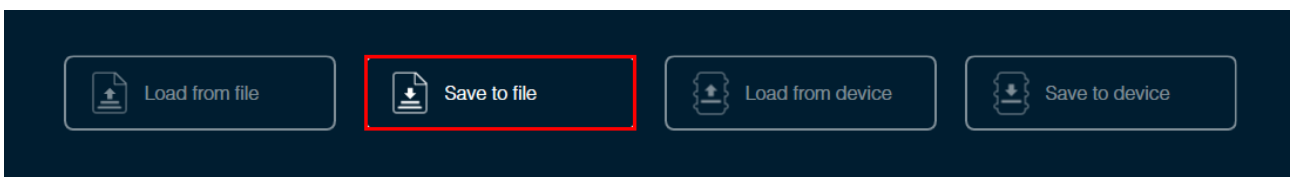
You can also load a configuration file by dragging and dropping the file into the Device Center.



Loading a configuration from a file will discard any changes to the existing configuration.

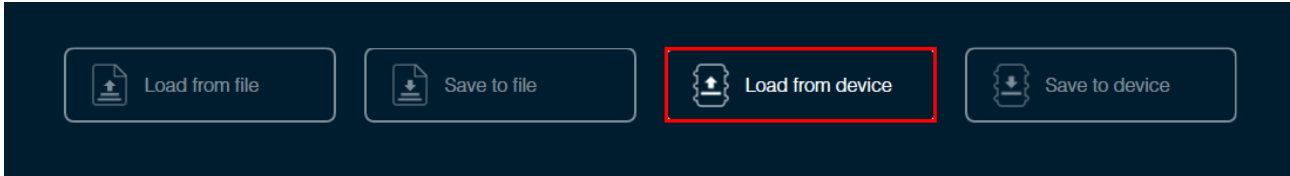
5.3.3 Saving a Configuration to a File

Click **Save to file** in the button bar. Choose where to save your configuration file and click **Save**.



5.3.4 Loading a Configuration from a Device

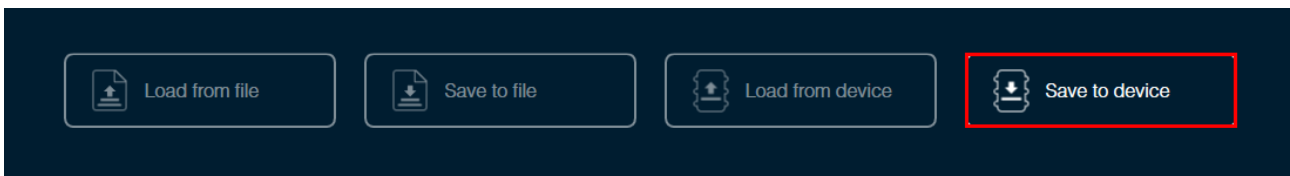
Click **Load from device** in the button bar. The configuration will be loaded from the connected device.



Loading a configuration from a device will discard any changes to the existing configuration.

5.3.5 Saving a Configuration to a Device

Click **Save to device** in the button bar. The configuration will be saved to the connected device.



Saving a configuration to a device will overwrite the existing configuration in the device without any confirmation.

5.4 Essential Settings

Only the settings that are essential to use the device are described in this document. For a detailed description of all the additional functionalities, please refer to the [Device Center](#) and [advanced configuration](#) user manuals.

5.4.1 Server Settings

Open the **Connection** settings section. Enter the IP address and port of your fleet management platform server. If you are using TrustTrack, you do not need to enter anything as the server settings are already entered.

IP/Domain name	The IP address of the server. You may enter a numerical address or a domain name. Default value: 92.62.134.34 (TrustTrack server)
Port	The port of the server. Default value: 9015 (TrustTrack server, TCP protocol)
Protocol	The connection protocol. Possible values: • <i>UDP</i> – uses less data but is less reliable. UDP does not check for lost packets or their order. • <i>TCP</i> – uses more data but is more reliable. TCP checks that all packets are received and if needed, resends the missing ones and reorders them. Default value: <i>TCP</i>

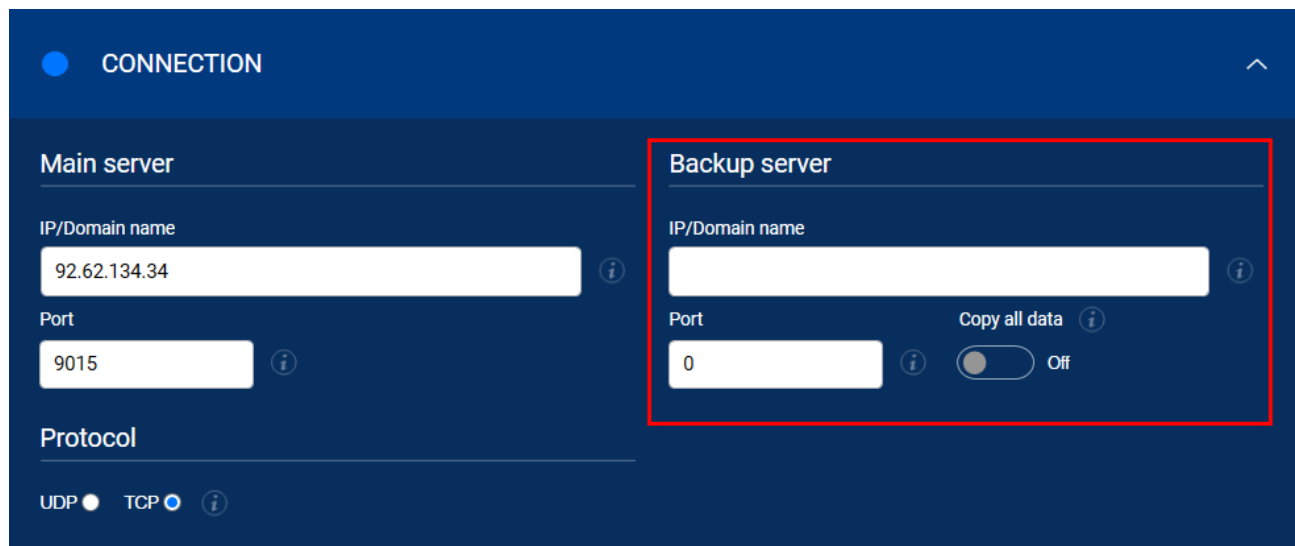


UDP and TCP protocols may have different ports. Make sure you select the correct protocol and enter the correct ports.

5.4.2 Backup Server

You can use a second server as a backup, in case the main server is unreachable. If the main server is reachable, no data is sent to the backup server. Both servers use the same protocol.

IP/Domain name	The IP address of the backup server. You may enter a numerical address or a domain name. Default value: None
Port	The port of the server. Default value: 0
Copy all data	If turned on, a copy of all data will be sent to the backup server even if the main server is reachable. If the main server is unreachable, no data will be sent to any server. Note: Copying data will double the data consumption. Default value: Off



The screenshot shows a web interface for configuring network connections. The title bar at the top says "CONNECTION" with a blue circle icon on the left and an upward arrow on the right. Below the title bar, there are two main sections: "Main server" and "Backup server". The "Main server" section has three fields: "IP/Domain name" with the value "92.62.134.34", "Port" with the value "9015", and "Protocol" with radio buttons for "UDP" and "TCP" (where "TCP" is selected). The "Backup server" section is highlighted with a red rectangle and also has three fields: "IP/Domain name" (empty), "Port" with the value "0", and "Copy all data" which is a toggle switch currently set to "Off". Each input field has a small information icon (i) to its right.

5.4.3 APN Settings

APN settings are needed to connect to the internet. They must be provided by your SIM card provider.

Name	The APN name. This parameter is mandatory for most SIM cards. Consult with your SIM card provider for more information.
Username	The APN username. This parameter is optional.
Password	The APN password. This parameter is optional.

● CONNECTION

Main server

IP/Domain name
92.62.134.34

Port
9015

Protocol
UDP ● TCP ●

APN
Name
Username
Password

Backup server

IP/Domain name

Port
0

Copy all data
Off

5.4.4 Engine Detection Settings

Open the **Engine detection and data collection** section. Configure engine state detection conditions and set the location update rate. When the engine is turned on, records are generated more often, and the state can be displayed in your tracking platform.

Engine state detection method	How the device detects whether the engine is turned on. Possible values: <i>Custom</i> – configure your own engine detection conditions Default value: <i>Custom</i>
Remote blocking	Allows the engine to be blocked remotely via your fleet management platform. It uses a constant connection to the server and increases data consumption by up to 500 kB per month. Default value: Off

ENGINE DETECTION

Engine state detection method

Custom

Custom engine detection logic

Select your connection detection method

AND OR

Engine state options

Engine switch off delay

0

Remote blocking

Off

Custom engine detection conditions

☐ DIN1

☐ DIN2

☐ Movement sensor

☐ Power supply voltage > (mV)

13200

☐ GPS speed > (km/h)

5

☐ DIN3

☒ DIN4

☐ CAN Ignition

☐ RPM >

0

☐ CAN speed > (km/h)

0

Decide which detection logic to use and whether to use a delay for state changes.

Connection detection method

Which logical operator will be used for the engine detection conditions.
Possible values:

- *AND* – all conditions must be true
- *OR* – at least one of the conditions must be true

Default value: *OR*

Engine switch off delay

If turned on, the device registers engine state changes only after the set time period passes.

Default value: Off

ENGINE DETECTION

Engine state detection method

Custom

Custom engine detection logic

Select your connection detection method

AND ☐ OR ☒

Engine state options

Engine switch off delay

☐ Off

0

Custom engine detection conditions

☐ DIN1 ☐ DIN3

☐ DIN2 ☒ DIN4

☐ Movement sensor ☐ CAN ignition

☐ Power supply voltage > (mV) ☐ RPM >

13200 0

☐ GPS speed > (km/h) ☐ CAN speed > (km/h)

5 0

Remote blocking

☐ Off

Then, decide which conditions you wish to use for engine state detection.

DIN1/DIN2/DIN3/DIN4	If ticked, the condition is true when the configured DIN detects a constant input voltage. Default value: DIN4 enabled, other inputs disabled
Movement sensor	If ticked, the condition is true after detecting movement. Default value: Enabled
CAN ignition	If ticked, the condition is true if the engine on state is provided by CAN data. Active only when at least one CAN interface is turned on. Default value: Disabled, inactive
Power supply voltage >	If ticked, the condition is true if the power supply voltage is greater than the entered value (in mV). Default value: Disabled
RPM >	If ticked, the condition is true if the RPM value provided by CAN data is greater than the entered value. Active only when at least one CAN interface is turned on. Default value: Disabled, inactive
GPS speed >	If ticked, the condition is true if the speed value obtained from GPS is greater than the entered value. Default value: Disabled
CAN speed >	If ticked, the condition is true if the speed value obtained from CAN data is greater than the entered value. Active only when at least one CAN interface is turned on. Default value: Disabled, inactive

ENGINE DETECTION

Engine state detection method

Custom

Custom engine detection logic

Select your connection detection method

AND OR

Engine state options

Engine switch off delay Off

0

Custom engine detection conditions

☐ DIN1	☐ DIN3
☐ DIN2	☒ DIN4
☐ Movement sensor	☐ CAN ignition
☐ Power supply voltage > (mV)	☐ RPM >
13200	0
☐ GPS speed > (km/h)	☐ CAN speed > (km/h)
5	0

5.4.5 Location Accuracy

Select the location update rate and set the location accuracy to generate more accurate coordinates.

Location update rate	How often the device updates its location. This controls how often data is collected and sent. Possible values: • <i>High</i> – at least twice a minute when driving (3-7 MB/month on average) • <i>Medium</i> – at least once a minute when driving (2-5 MB/month on average) • <i>Low</i> – at least once every two minutes when driving (1-3 MB/month on average) Default value: <i>Medium</i>
Stationary filter	Discards inaccurate coordinates while the vehicle is not moving. Default value: On
Active filter	Discards inaccurate coordinates by evaluating the vehicle's movement speed. Default value: On
Acceleration threshold (m/s²)	Used in the calculation of the maximum possible distance. If a new coordinate is too far away from the previous one, it will be discarded. Default value: <i>19.6 m/s²</i>
Accuracy filter	Sets the coordinate accuracy. The higher the accuracy, the more coordinates are filtered. We recommend using a lower accuracy, unless you are sure the GNSS signal quality is excellent. Possible values: • <i>Off</i> • <i>Low</i> (recommended) • <i>Medium</i> • <i>High</i> Default value: <i>Off</i>

LOCATION ACCURACY

Location update rate

Medium

Location filter settings

Stationary filter *i*

On

Active filter *i*

On

Acceleration threshold (m/s²) *i*

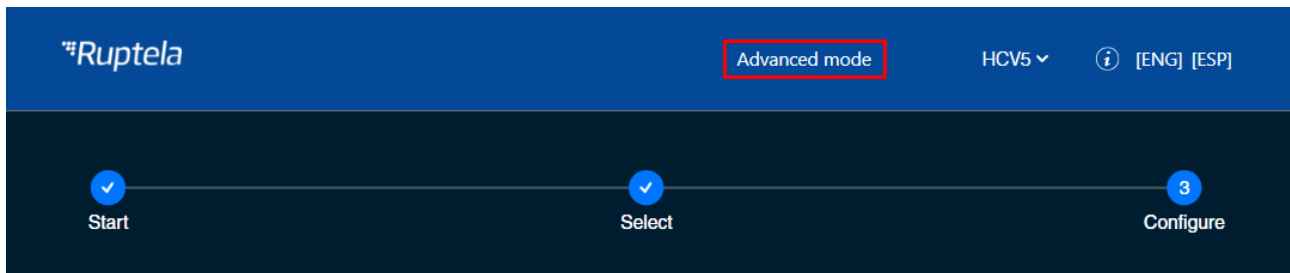
19.6

Accuracy filter *i*

Off

5.5 Advanced Configuration

The Device Center allows you to configure the main functionalities of your device. If you wish to have additional control over what data is received or to configure more advanced functionalities, you can switch to the advanced configurator by clicking **Advanced mode** in the top bar at any time.



A detailed description of the advanced configurator is available at doc.ruptela.it.

Close the advanced configurator to return to the Device Center.

5.6 Configuration via SMS Commands

Alternatively, the device can be configured using SMS commands. Please refer to the following documents for an in-depth description:

- [Device configuration via SMS](#)
- [SMS commands list](#)

5.7 Updating Firmware

We highly recommend using the newest firmware to take advantage of our newest functionalities and improvements. Device firmware can be updated in the following ways:

- Automatically when using a Device Center version that is newer than the firmware
- Manually by sending a firmware file to the device
- Over-the-air using your fleet management software



The device will not send any data during firmware updates.

5.7.1 File Extension

Firmware file extension for HCV5 devices: **.efwt5**

5.7.2 Updating Firmware Automatically

If the Device Center is newer than the detected device firmware, it will suggest updating the firmware. Click **Update firmware** to update the firmware. If the firmware is not updated, you will not be able to load and save configuration files from/to the device.



This method does not require an internet connection. This allows you to update the firmware at any time or location if you have the newest Device Center.



If the Device Center is older than the firmware, you will not be able to load and save configuration files from/to the device. You will need to update the Device Center.



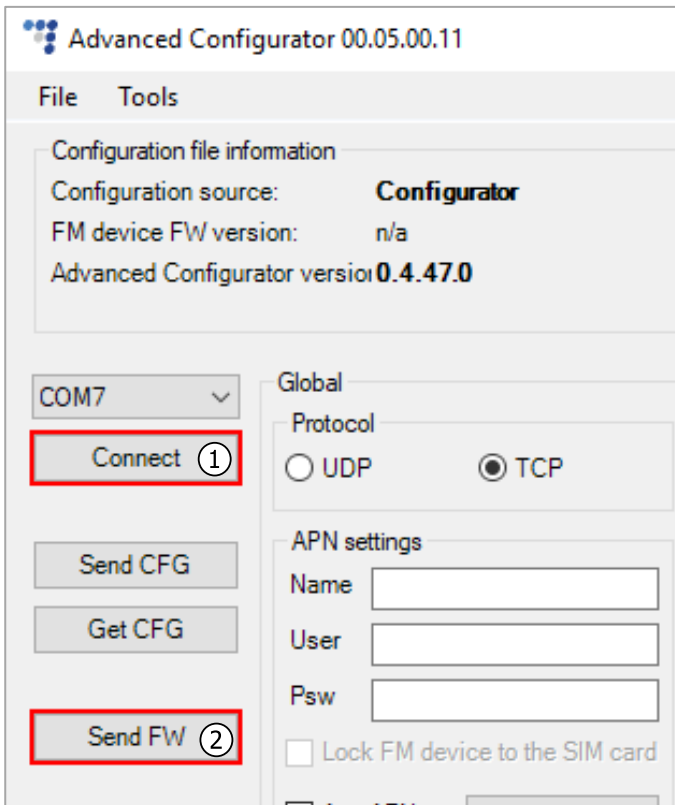
If you skipped the automatic firmware update suggestion and you do not want to update the firmware manually, click **Send FW** and then **Cancel**. The Advanced configurator will suggest again to update the firmware.

5.7.3 Updating Firmware Manually

i This feature requires the use of the advanced configurator.

Updating Firmware using .efw* Extension Files

To update firmware with the .efw* extension file, click **Connect** and **Send FW** in the main configurator menu. Locate your firmware file and click **Open**. The firmware update process will start.



Updating Firmware using .fwp Pack

To update firmware with the .fwp pack, click **Connect** and **Send FW** in the main configurator menu. Locate your firmware .fwp pack and click **Open**. The advanced configurator will upload the required device firmware file(s) and the update process will start.

i To update the Bluetooth module firmware, the tracking device must be first connected to a power supply. Otherwise only the device firmware will be updated.

i If the Bluetooth module firmware version is incompatible with device firmware version, Bluetooth will be disabled.

5.7.4 Updating Firmware Over-the-air

The exact process of how to update firmware over-the-air depends on your fleet management software. The following conditions must be met for the update to be successful:

- The device must be connected to a power supply
- The device must be connected to a cellular network

6 Installation in Vehicle

6.1 Installation Method

To install the device, you need to connect it to a power supply and an ignition source. They may be found in the following locations:

- An FMS connector
- The OBD diagnostic port
- The 9-Pin Deutsch port
- The fuse box

6.2 Required Tools

Before starting the installation, make sure you have the following tools:

- A panel removing tool
- A wrench
- Zip-ties or double-sided tape
- Crimp terminals

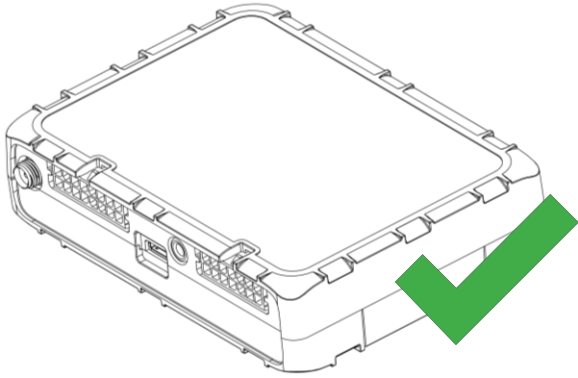
6.3 Installation Recommendations



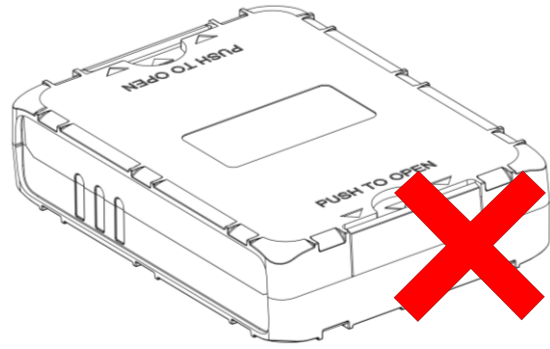
Make sure the installation is carried out only by qualified personnel!

Before starting the installation, decide where you will install the device. The installation location depends on the vehicle and the selected installation method. Follow these recommendations to ensure that the device works properly:

- Install the device in a service access area (under the dashboard, behind the fuse box, etc.)
- Fix the device firmly to the attaching surface, make sure it does not move or shake
- Avoid installing the device near metal surfaces or cables
- Do not install the device near heat emitting or moving parts
- Install the device with the label positioned towards the sky



Correct



Incorrect

6.3.1 External GNSS Antenna Positioning

It is recommended to place the GNSS antenna behind the dashboard as close to the windshield as possible and further away from the doors. It must be uncovered and facing up as shown in the picture below.



Correct



Incorrect



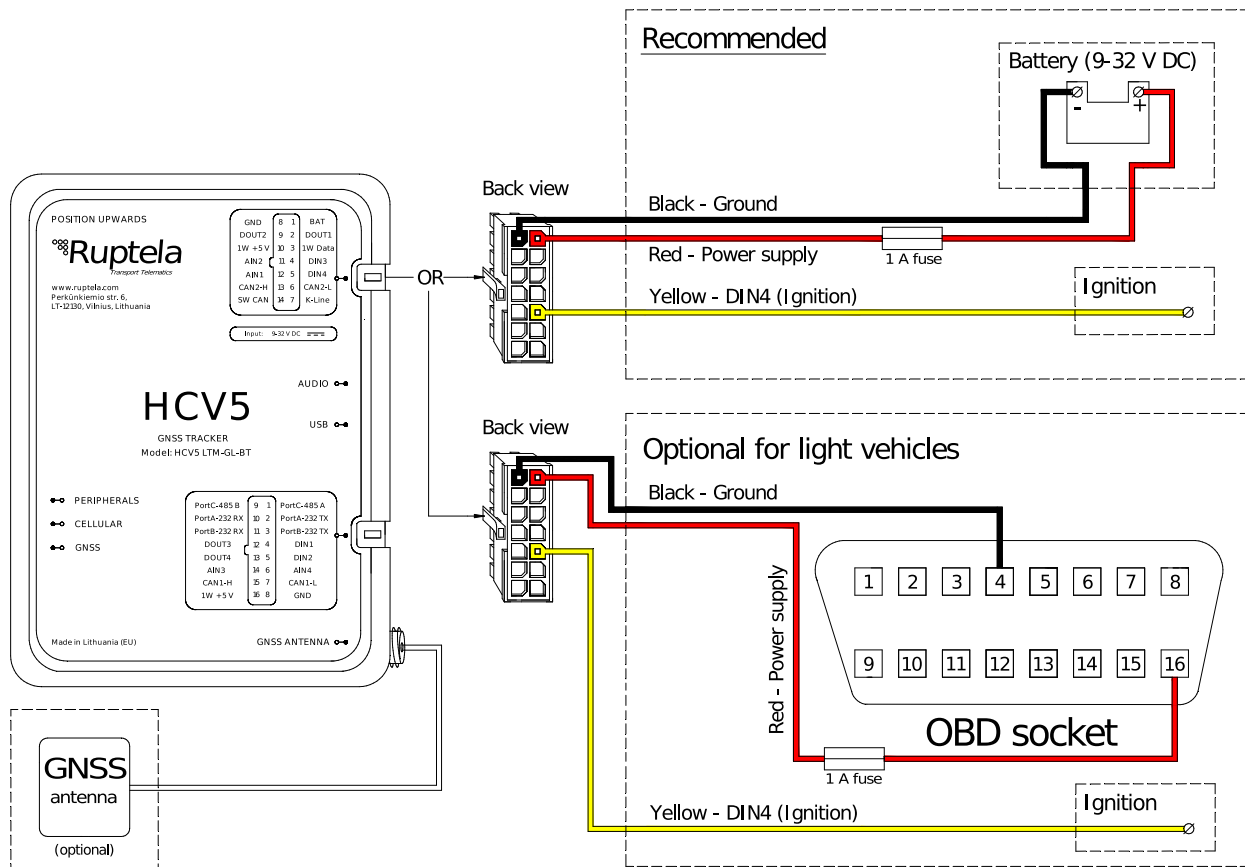
Incorrect antenna placement may result in reduced tracking accuracy.

6.4 Wiring Diagram

Power input: 9-32 V DC.



It is mandatory to use an external automotive 1 A fuse.



6.5 Installation Assistant

You can test your device during installation using the installation assistant tool in the Device Center. The installation assistant checks the status of the main modules and interfaces in real time, allowing you to monitor the quality of the installation and quickly solve any issues.

If the **Overall status** in the overview bar is green, the device is functioning properly, and the installation was successful.



A full description is available in the [Device Center User Manual](#).

6.6 Installation Check-up

1. Take several minutes to review the installation, check that everything is connected properly.
2. Start the vehicle, drive outside if the vehicle was in a building and wait for several minutes.
3. Check that the required data is received by sending an SMS command, using the installation assistant, or checking your fleet management platform (see chapter 7 if you are using TrustTrack).
4. Finish up the installation, make sure there are no hanging wires and that all panels are firmly reattached.

6.7 Troubleshooting

If you did not receive the required data during the installation, you can send several SMS commands to your device to check what might be wrong.

6.7.1 gsminfo

Use the *gsminfo* SMS command to know if the device is connected to mobile networks and the internet.

Command syntax: *password gsminfo*

Response example: *ST:2019.06.20 23:26:33; OP 22210, **lvl 15**, LAC 20030, CID: 28289, GSM; M:I 126, R 125, SP: 0; **GPRS 0**: O 64,C 0, E 248; LK:O 575, E 1, TMO 126; RS: 04; P 0*

The relevant parameters and their values are described in the table below.

lvl	The mobile signal level. If lvl is lower than 10, the signal is weak, and it is likely that there is no connection to the network.
GPRS	The internet status. Possible values: • 0 – no internet connection • 1 – the device is connected to the internet

In the previous example, the GPRS value is 0. This would mean that the device is not connected to the internet.

6.7.2 getapn

If the device is connected to mobile and internet networks but does not send any data, check the APN and connection settings with the *getapn* SMS command.

Command syntax: *password getapn*

Response example: *APN: banga User: PSW: IP1: 92.62.134.38 Port1: 9021 IP2: 195.14.173.3 Port2: 9000 TCP/UDP: 0*

The parameters and their values are self-explanatory, except for **TCP/UDP**.

TCP/UDP	This parameter shows which protocol is used. Possible values: • 0 – TCP • 1 – UDP
----------------	---



If the *getapn* response text is very long (for example, the APN, username and password are 32 symbols long each and two servers are used), it might not fit into a single message and be cropped.

6.7.3 coords

Use the *coords* SMS command to know if the device has an accurate GNSS fix.

Command syntax: *password coords*

Response example if there is no GNSS fix: *GPS is not available*

Response example if there is a GNSS fix: **2019-06-20 07:01**, *lat. 46.1443183, long. 11.881766, alt. 217.5, **sat. 8**, dir. 198.10, **hdop 100**, **state 3***

The relevant parameters and their values are described in the table below.

Datetime	The current date and time in GMT.
sat.	The number of visible satellites. At least 4 satellites must be visible to get an accurate GNSS signal.
hdop	The current HDOP (signal accuracy) level. If the HDOP level is above 3.5, the GNSS signal is inaccurate.
state	The current GNSS state. Possible values: 1 – GNSS module off 2 – GNSS module on, no fix 3 – GNSS module on, fix acquired 4 – GNSS module not responding 5 – GNSS module is in sleep mode 6 – GNSS module disabled

6.7.4 reset

When all else fails, use the *reset* SMS command to restart the device. Configuration parameters will not be lost.

Command syntax: *password reset*

Response example: *Resetting device*

7 Using TrustTrack



This chapter applies only if you are using the TrustTrack fleet management platform.



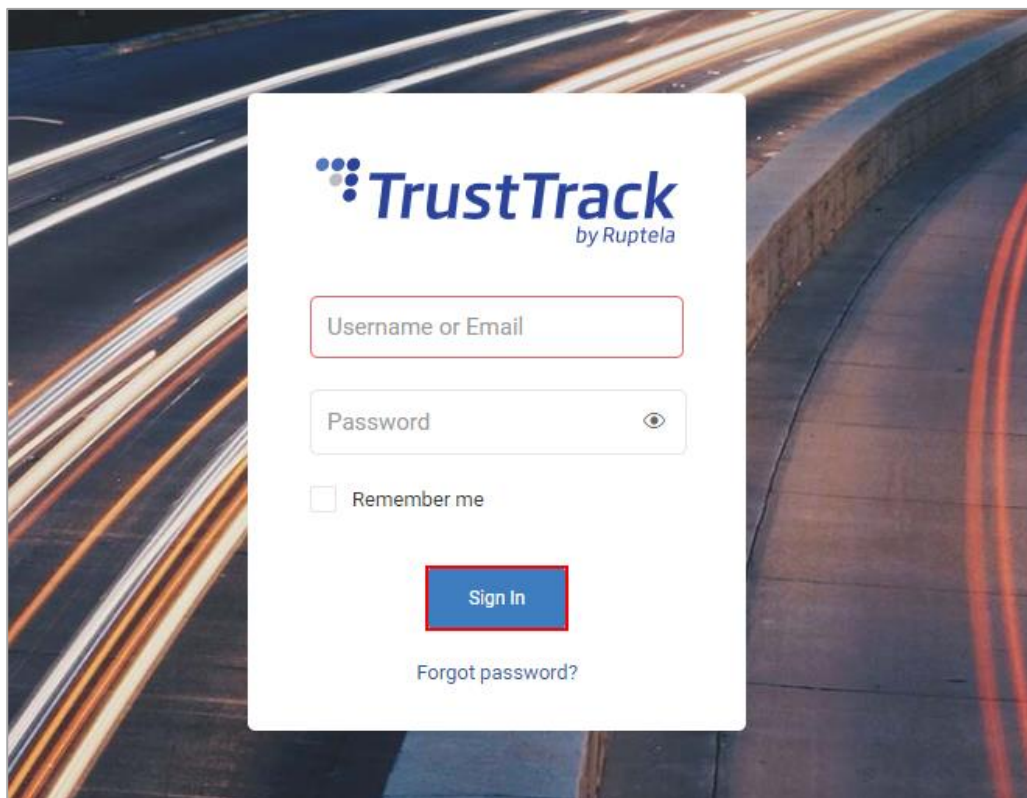
TrustTrack documentation website: <https://www.fmsdocumentation.com/>

7.1 Accessing TrustTrack

TrustTrack can be accessed via the web or using an app. Use the same server domain (typically track2.ruptela.com) for both web and app. Your login credentials are sent to you by e-mail. If you have not received them, contact your sales manager.

7.1.1 Accessing TrustTrack via Web

To access TrustTrack via the web, enter your server domain into the browser. Enter your credentials and click **Sign In**.

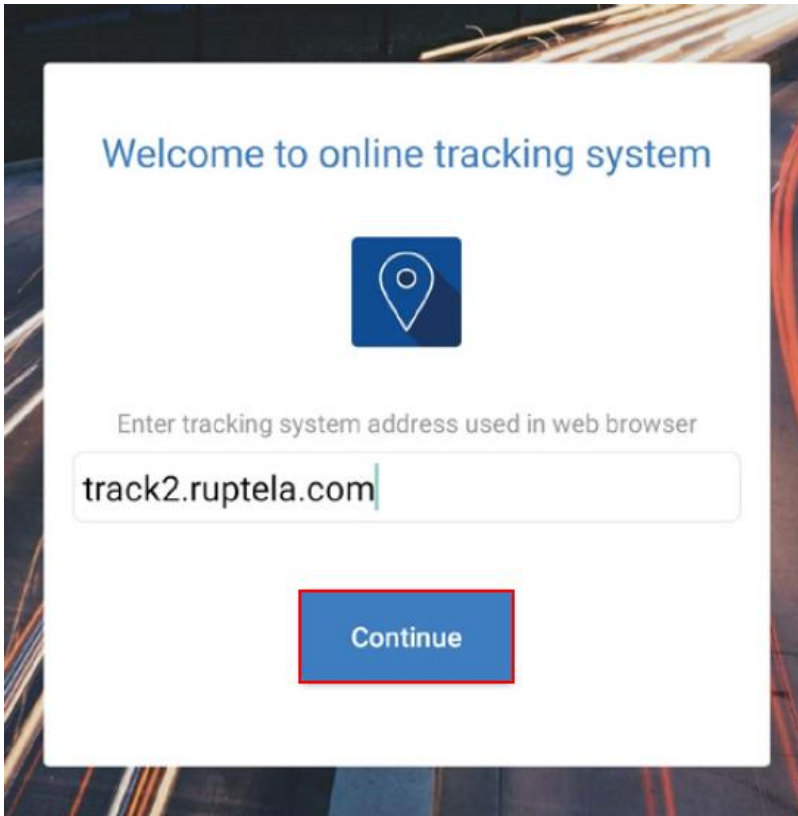


7.1.2 Accessing TrustTrack via App

Download the TrustTrack app:

- [iOS](#)
- [Android](#)

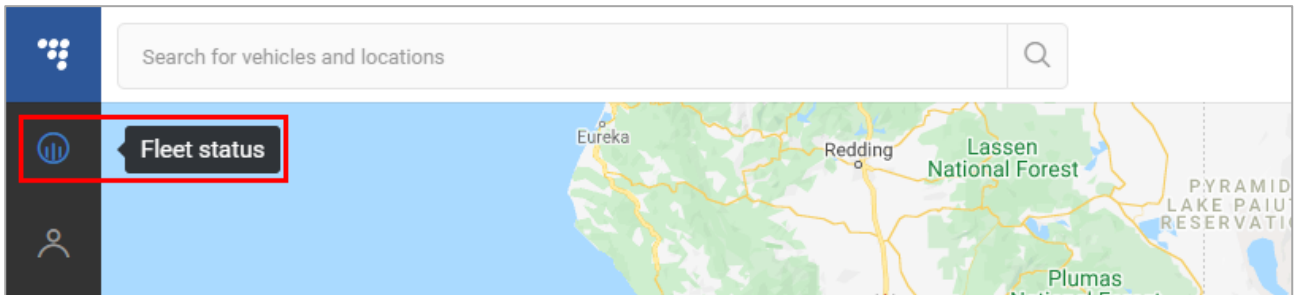
Once downloaded, launch the app. Enter the server domain. You will only need to do this once. Tap **Continue**.



If you entered the server domain incorrectly or wish to change it, clear the app cache in your phone settings. The app will ask you for the server domain upon the next launch.

7.2 Verifying Vehicle Status

After logging in, click the **Fleet status** button in the left menu panel.



Find your vehicle in the **Fleet Status** panel and click on it. Check the **State duration** and **Last signal sync** in the additional panel. If they have recently been updated, data transfer is successful, and the device is properly installed.

Fleet Status	861359034382463
All vehicles 910 910 54 105 660 90 1 List options Speed 861359034382463 LT, Vilnius, Perkūnkiemio g... 0 km/h	Perkūnkiemio gatvė, 4, Vilnius, Vilnius County, 12130, Lithuania 54.7411666, 25.2225916 Vehicle 861359034382463 Plan Premium Current status Ignition off State duration 11 min Last signal sync a few seconds ago Trip type None