Trace5 User Manual

Table of Contents

Purpose of This Document

The purpose of this user manual is to provide information about the Trace5 vehicle tracking devices. This user manual describes the main features of the device and how to use it.

Legal Information

Document Changelog

Version	Date	Modification
1.0	2020-04-03	Initial draft.
1.1	2020-04-16	Updated: Power Consumption.
1.2	2020-04-27	Added: Installation Assistant.
1.3	2020-05-15	Updated: GNSS module characteristics in Connectivity. Updated: Certifications. Updated: Carrier Approvals.
1.4	2020-08-10	Updated: Carrier Approvals.
1.5	2020-10-12	Updated: Product Information. Updated: File Extension. Updated: Starting the Configuration. Updated: Configuration Menu. Updated: Carrier Approvals.
1.6	2020-10-16	Added: Settings Menu. Added: Location Accuracy. Updated: Configuration Menu. Updated: Updating Firmware Manually.
1.7	2020-12-18	Updated: Digital Outputs.
1.8	2021-01-26	Updated: Connectivity.
1.9	2021-02-15	Updated: About. Updated: Certifications. Updated: Technical Characteristics.
1.10	2021-04-23	Added: Note for Package Contents. Added: Trace5 Information. Updated: Device Labels.

		Updated: Certifications. Updated: Physical Properties. Removed: Trace5 GL Information.
1.11	2021-11-05	Various changes to accommodate the new versions of the device. Updated: Product Information device list and photos. Updated: Key Features. Updated: Device Pinout. Updated: Connectivity. Updated: Interfaces. Updated: Installation Recommendations. Updated: Wiring Diagram.
1.12	2022-02-18	Added: SIM card size comparison. Added: Installation using OBDII Harness video. Updated: Product Information. Updated: Connectivity.
1.13	2022-03-14	Updated: Product Information. Updated: Connectivity.
1.14	2022-06-28	Added: Note regarding data sending with configured APN username/password.

Safety Information

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

⚠	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 dismounted 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 dismounting 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 18 AWG (0.75 mm^2).
⚠	Install the device in a restricted access location, not accessible or visible to the driver.
🗑	This crossed-out wheelie 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.

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

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

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.

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

SW – Single-Wire

TCP – Transmission Control Protocol

UDP – User Datagram Protocol

UMTS – Universal Mobile Telecommunications System

USB – Universal Serial Bus

VCOM – Virtual Communication Port

References

Datasheet: https://doc.ruptela.com/articles/#!tracking-devices-publication/en-trace5-datasheet

NA Datasheet: https://doc.ruptela.com/articles/#!tracking-devices-publication/en-trace5-na-datasheet

Quick Start Guide: https://doc.ruptela.com/articles/#!tracking-devices-publication/trace5-quick-start-guide

Device Center: https://doc.ruptela.com/articles/#!downloads-publication/device-center

Advanced configuration manual: https://doc.ruptela.com/articles/#!tracking-devices-publication/advanced-configurator-user-manual

Firmware and configurator files: https://doc.ruptela.com/articles/#!downloads-publication/downloads-home

Microsoft Framework: https://dotnet.microsoft.com/download/dotnet-framework/net48

1.1 Trace5 Product Information

About

Trace5 is a compact GNSS-based telematics device designed to perform a wide range of tasks for fleet management, tracking, safety, and security. A wide choice of models provides connectivity options for every region.
The device is available in the following variations:

- **Trace5-2G** – 2G connectivity only
- **Trace5-LTM** – global LTE Cat M1/LTE Cat NB2 connectivity (with 2G fallback)
- **Trace5-LTE-EMEA** - LTE Cat 1 (4G) connectivity for the EMEA region (with 2G fallback)
- **Trace5-LTE-LA** – LTE Cat 1 (4G) connectivity for the LA region (with 2G fallback)
- **Trace5-LTM-NA** – LTE Cat M1/NB IoT connectivity (with 2G fallback) for the North American market

All Trace5 devices have internal LTE/GSM and GNSS antennas and are equipped with internal backup batteries. In addition to the standard option of the compact IP30 housing, Trace5-LTM and Trace5-LTE-EMEA devices are also available with IP67 rated housing (denoted by the "IP67" in the model name).

Trace5-LTM (front) and Trace5-LTM-IP67 (back)

Device Overview

1	12 Pin port	2	Mini USB port	3	Indication LED

Key Features

- Real-time data from GPS and accelerometer
- Remote ignition blocking
- Internal geofences
- Driver behavior monitoring (Eco-Drive)
- Temperature monitoring
- Driver registration and identification
- Impact and Rollover detection
- Additional sensors and peripherals

Package Contents

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

1. A Trace5 device
2. A 12-pin installation harness

> ℹ Package content depends on the order and may not contain all of the items listed above.

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

Certifications

Trace5 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 that 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.
	FCC	(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. 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: XMR201910BG95M3**
	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.
	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-2019BG95M3
PTCRB	PTCRB	PTCRB (PCS Type Certification Review Board) is an organization that has been set up by the network operators to test GSM devices such as mobile phones, modules, M2M devices, etc. The testing is based on appropriate 3GPP standards and meets the requirements of the GSM operators. PTCRB certification is a requirement for launching cellular devices on the North American GSM carriers such as AT&T, Verizon (for LTE), etc.
	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.

Patents

Trace5 is compliant with numerous patents both in the United States and Canada. A full list can be found here.

1.2   Trace5 Technical Information

Indication LED Patterns

Mode	Pattern	Description
GNSS fix acquired	Once every second	Good cellular signal, no network connection
	Once every 4 seconds	Good cellular signal, connected to network
	Always on, blinks once every 4 seconds	Link with the server is open
	Once every 0.2 seconds	No signal
GNSS fix not acquired	Twice every second	Good cellular signal, no network connection
	Twice every 4 seconds	Good cellular signal, connected to network
	Always on, blinks twice every 4 seconds	Link with the server is open
	Twice every 0.2 seconds	No signal
Sleep mode	Once every 10 seconds	The device is in sleep mode

Device Pinout

Pin	Pin no.	Wire color	Description
+BAT	7	Red	Power supply 8-30 V DC
GND	1	Black	Ground connection
DIN1	2	Pink	Digital input 1
DIN2*	6	Blue	Digital input 2
DIN3*	11	White	Digital input 3
DIN4*	5	Yellow	Digital input 4
AIN1	3	Grey	Analog input 1
AIN2*	4	Green	Analog input 2
DOUT1	8	Purple	Digital output 1
DOUT2	9	Orange	Digital output 2
1W Pwr*	12	White/Red	1-Wire Power
1W Data*	10	Green/Yellow	1-Wire Data

* – Not available with pre-revision Trace5-LTM devices.

Physical Characteristics

| Dimensions | Standard version: 64.5 x 61 x 22 mm (2.54 x 2.40 x 0.87") |
	IP67 version: 95 x 77 x 29 mm (3.74 x 3.03 x 1.14")
Weight	Standard version: 70 g (2.47 oz)
	IP67 version: 185 g (6.52 oz)
Housing material	Standard version: Plastic (PC + ABS)
	IP67 version: Plastic (PC), IP67 certified
Internal storage	8 MB
Accelerometer	Built-in 3 axis
SIM card	Micro SIM
Connector	Molex Micro-Fit 12 Pin, insulated
Configuration interface	Mini USB
Antenna	Internal

Technical Characteristics

Environmental Specifications

Temperature	Operating: -30 to +60 °C (-22 to 140 °F)
	Storage: -40 to +65 °C (-40 to 149 °F)
	Battery charging: 0 to +45 °C (32 to 113 °F)
	Battery discharging: -20 to +60 °C (-4 to 140 °F)
	Battery storage: -20 to +60 °C (-4 to 140 °F)
Relative humidity	5% to 95% Non-condensing

Electrical Specifications

Power supply range	8 – 30 V DC
Internal battery	LiPo 3.7 V 190 mAh
Protections	Battery short circuit protection
	Reverse polarity protection
	Electrostatic discharge protection on USB
	Charging protection

Power Consumption @ 12 V DC

| Operating | Idle mode (battery fully charged): 33 mA* |
| (internal battery fully | Active mode (peak): ~230 mA |
charged)	Sleep mode (lowest): 5 mA**

* – configuration dependent value

** – for pre-revision Trace5-LTM

Connectivity

Cellular	**Trace5-2G:**

	Modem: Quectel M95
	Antenna: Internal (Quad-band)
	Frequency band @ GSM: 850/900/1800/1900 MHz
	Trace5-LTM:
	Modem: Quectel BG95-M3
	Antenna: Internal
	LTE Cat M1 Bands:
	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25*/B26/B27*/B28/B66*/B85*
	LTE Cat NB2: B
	1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25*/B28/B66*/B71*/B85*
	GSM/EDGE: 850/900/1800/1900 MHz
	Trace5-LTE-EMEA:
	Modem: Fibocom MC610-EU-00
	Antenna: Internal
	Bands (LTE-FDD): B1/3/7/8/20/28
	Bands (GSM): 900/1800 MHz
	Trace5-LTE-LA:
	Modem: Fibocom MC610-LA-00
	Antenna: Internal
	Bands (LTE-FDD): B1/2/3/4/5/7/8/28/66
	Bands (GSM): 850/900/1800/1900 MHz
GNSS	Module: U-blox EVA-M8M
	Antenna: Internal
	Positioning systems: GPS, GLONASS, Galileo
	Augmentation systems: QZSS, SBAS (WAAS, GAGAN, EGNOS, MSAS)
	Aided start services: AssistNow Online (A-GNSS)**
	Tracking sensitivity: -154 to -164 dBm
	Reacquisition sensitivity: -152 to -160 dBm
	Cold start duration: < 30 s
	Aided start: As low as 3 s

* – available upon request

** – will be available with firmware update for Trace5-2G, Trace5-LTE and Trace5-LTM (Rev.A).

Interfaces

Power Supply

Pins	+BAT, GND

Purpose	To power the device
Parameters	Voltage range: 8 – 30 V DC

Analog Inputs

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

* – Not available in pre-revision Trace5-LTM.

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 (250 mV DC if in ground mode)
Applications	Ignition detection Various sensors

* – Not available in pre-revision Trace5-LTM.

Digital Outputs

Pins	DOUT1, DOUT2 (both invertible)
Purpose	To control various peripherals
Parameters	Maximum voltage: 32 V DC Maximum current: 1 A
Applications	Engine blocking Warning indication Network jamming detection

## 1.3   Trace5 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.

Opening the Device

Use a flat head screwdriver to open the plastic housing. Insert the screwdriver between the top and bottom parts of the housing and lift the top part up as shown in the image below. The top of the housing should easily dismount from the holding pins.

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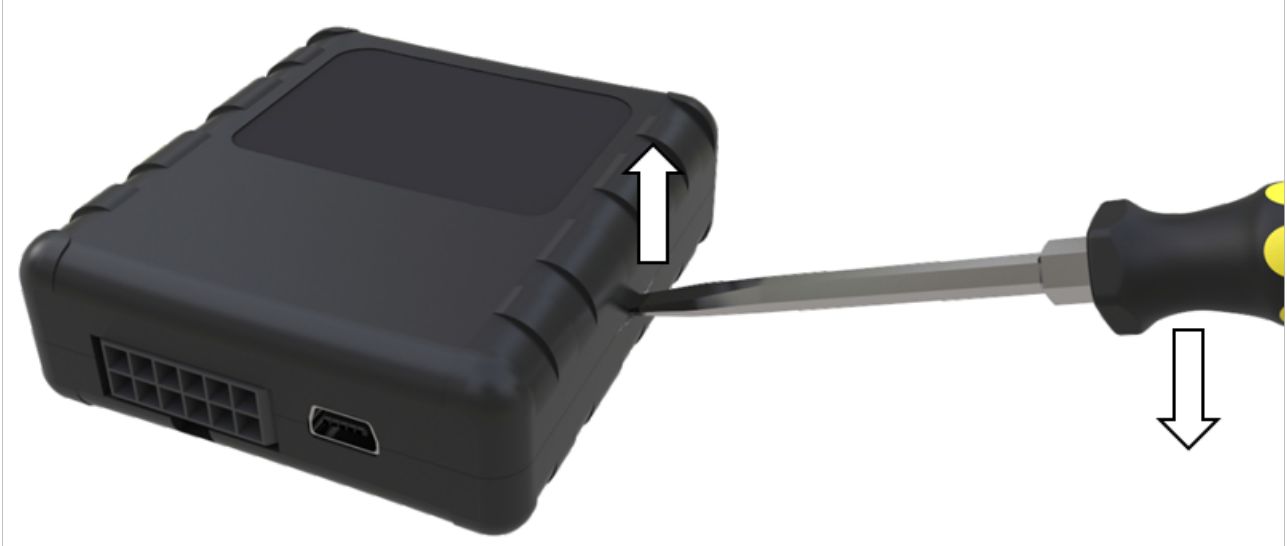
⚠	Avoid opening the device more times than required, as it may wear out the holding pins.

Inserting a SIM Card

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

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

ℹ	An industrial grade SIM is strongly recommended if the device will be exposed to temperatures higher than 40° C.
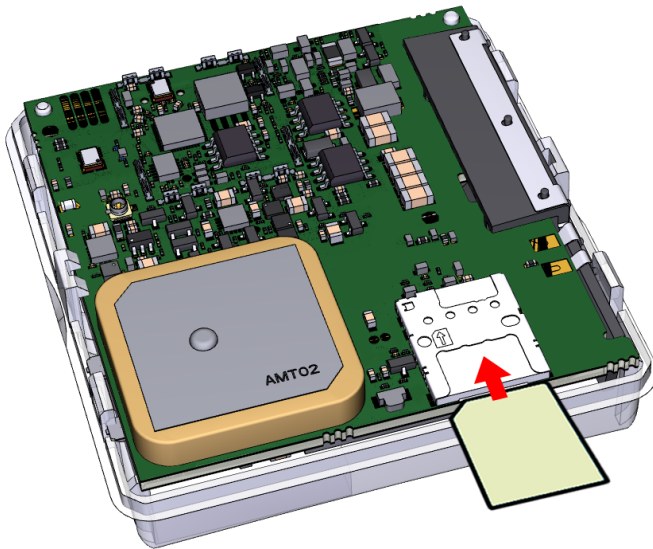
> ✓ Use a non-prepaid SIM card to ensure that the balance does not suddenly run out and cause connectivity issues.

Closing the Device

To close the device, you first need to reinsert the PCB if it was taken out of the housing and attach it to the holding pins. Reinsert the PCB in the following order:

1. Orient the PCB so that it is facing up
2. Put the PCB under the middle plastic pin (1)
3. Mount the PCB on the stabilizer pin (2)
4. Mount the PCB on the support pin (3)

Once one side of the PCB is attached to the holding pins, push the other side of the PCB down onto the other pins. The PCB should attach to them easily.

Once the PCB is attached to the pins, place the of top the housing on one side of the device as shown in the image below. Then simply push the other side down until you hear a clicking sound and the housing is closed.

Cable Connection

12 Pin Cable Connection

Connect the wiring harness to the 12 Pin Micro-Fit port on the device as shown in the image below. The harness can be connected in only one way.
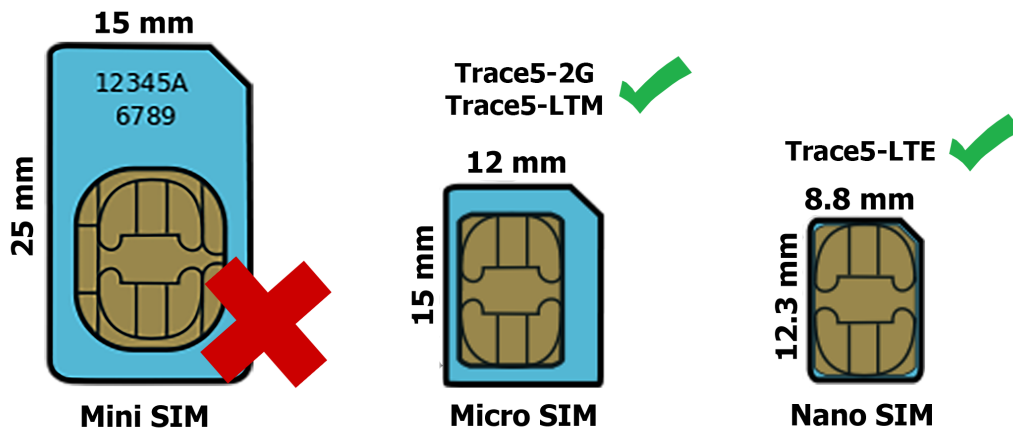

USB Cable Connection

Connect the USB cable to the mini 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.

SIM Card Size Comparison

When inserting a SIM card into the device, make sure it is inserted correctly as shown on the device and is the correct size. Refer to the image below:

15 mm

12345A
6789

25 mm

Mini SIM

**Trace5-2G
Trace5-LTM** ✔

12 mm

15 mm

Micro SIM

Trace5-LTE ✔

8.8 mm

12.3 mm

Nano SIM

1.4   Trace5 Device Configuration
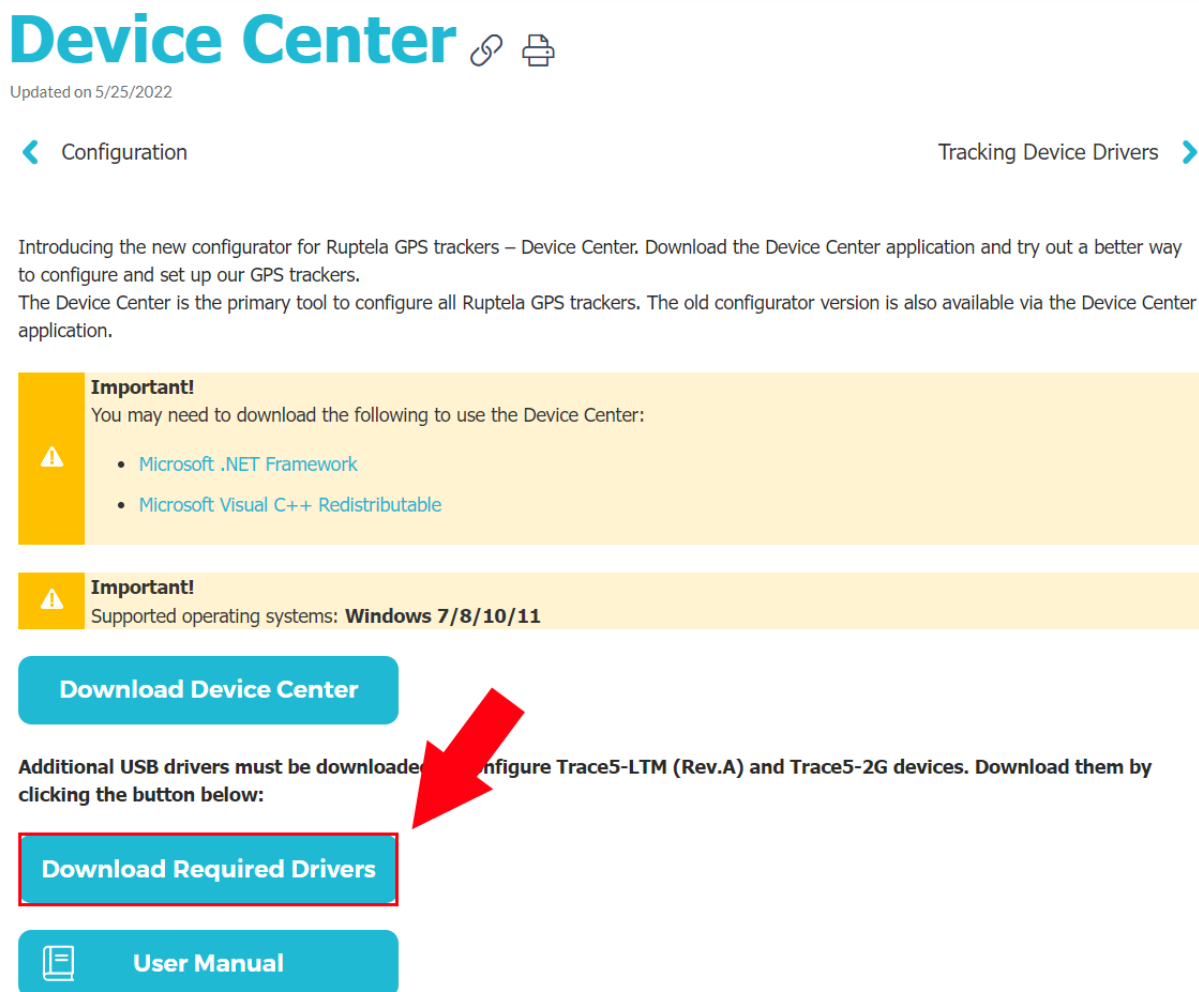
Device Center

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: Device Center.

Make sure to download and install the required drivers listed below:

Device Center 🔗 🖨

Updated on 5/25/2022

❮ Configuration   Tracking Device Drivers ❯

Introducing the new configurator for Ruptela GPS trackers – Device Center. Download the Device Center application and try out a better way to configure and set up our GPS trackers.
The Device Center is the primary tool to configure all Ruptela GPS trackers. The old configurator version is also available via the Device Center application.

⚠ **Important!**
You may need to download the following to use the Device Center:

- Microsoft .NET Framework
- Microsoft Visual C++ Redistributable

⚠ **Important!**
Supported operating systems: **Windows 7/8/10/11**
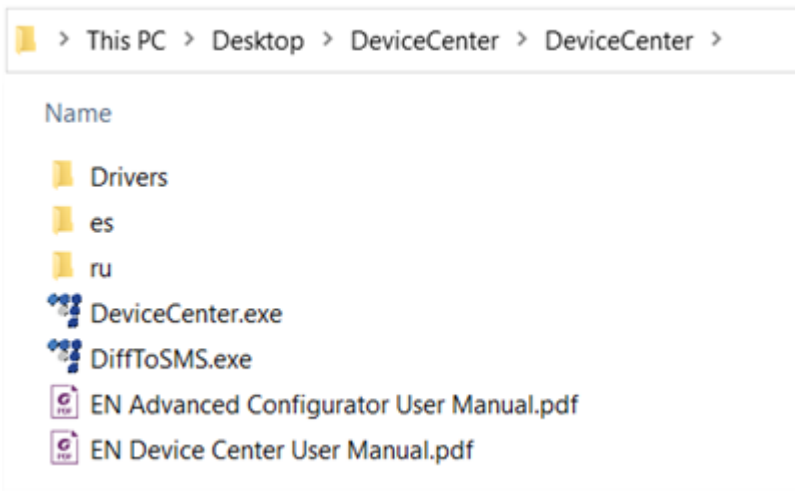
Download Device Center

Additional USB drivers must be downloaded ...figure Trace5-LTM (Rev.A) and Trace5-2G devices. Download them by clicking the button below:
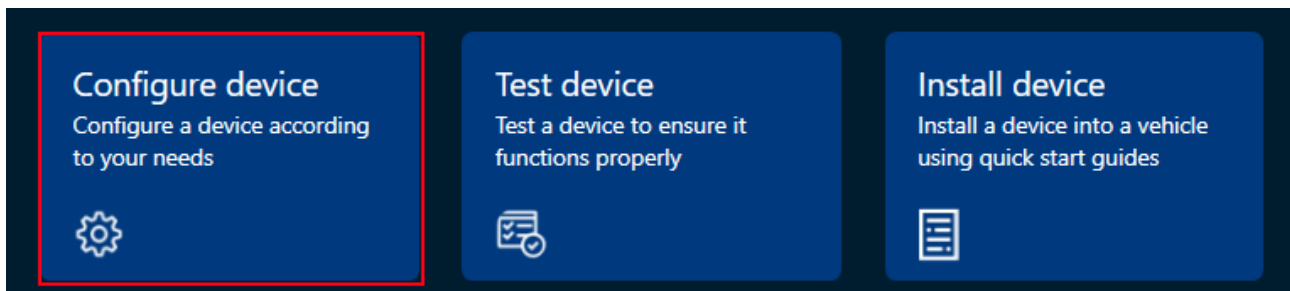
Download Required Drivers

📖   **User Manual**

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**.

This PC > Desktop > DeviceCenter > DeviceCenter >

Name

- Drivers
- es
- ru
- DeviceCenter.exe
- DiffToSMS.exe
- EN Advanced Configurator User Manual.pdf
- EN Device Center User Manual.pdf

Starting the Configuration

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

Configure device
Configure a device according to your needs

Test device
Test a device to ensure it functions properly

Install device
Install a device into a vehicle using quick start guides

Install the device drivers if prompted. You will be directed to the configuration type selection menu. Click **Connect device**.
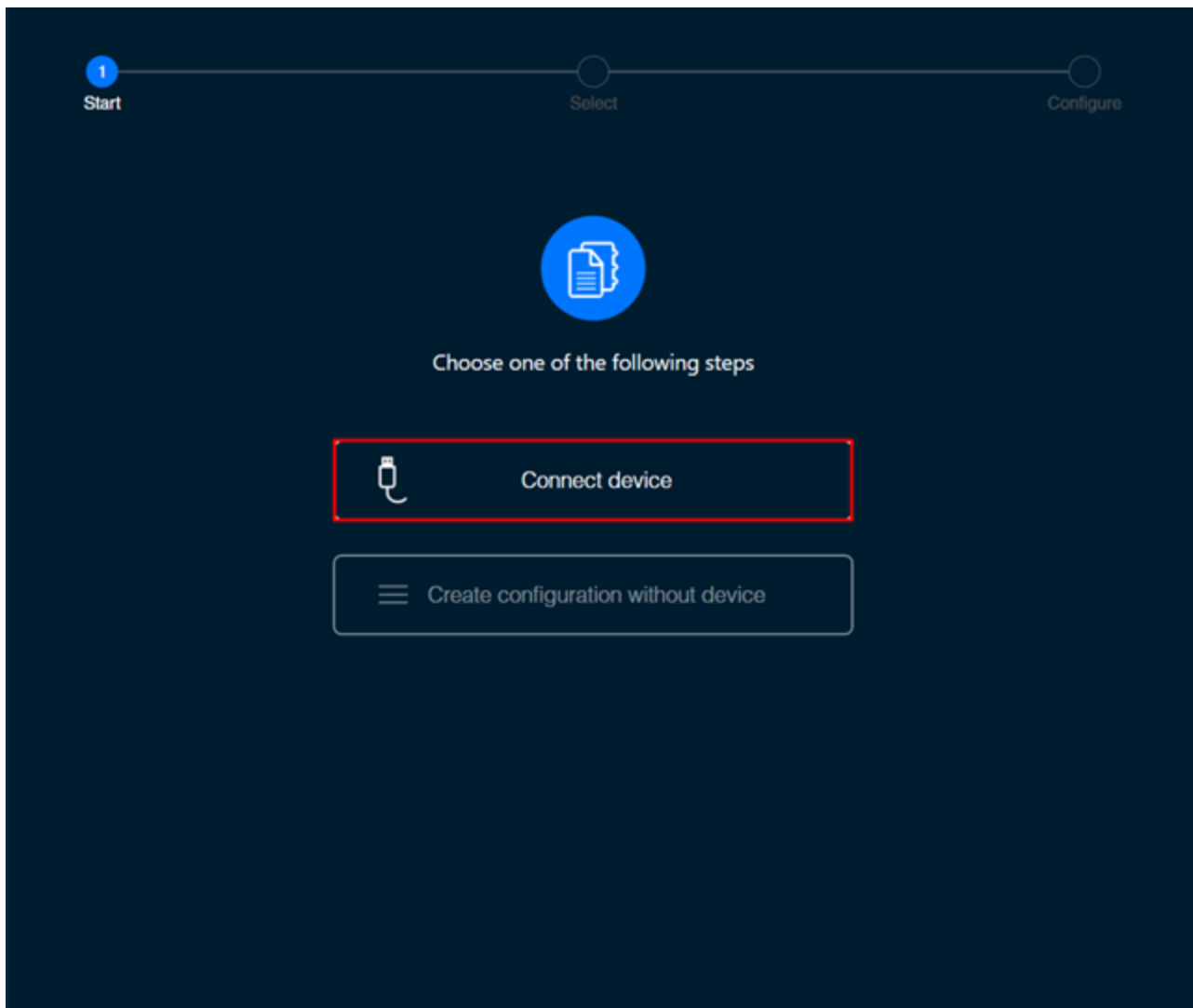
Select your device in the device selection menu by clicking on it.

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
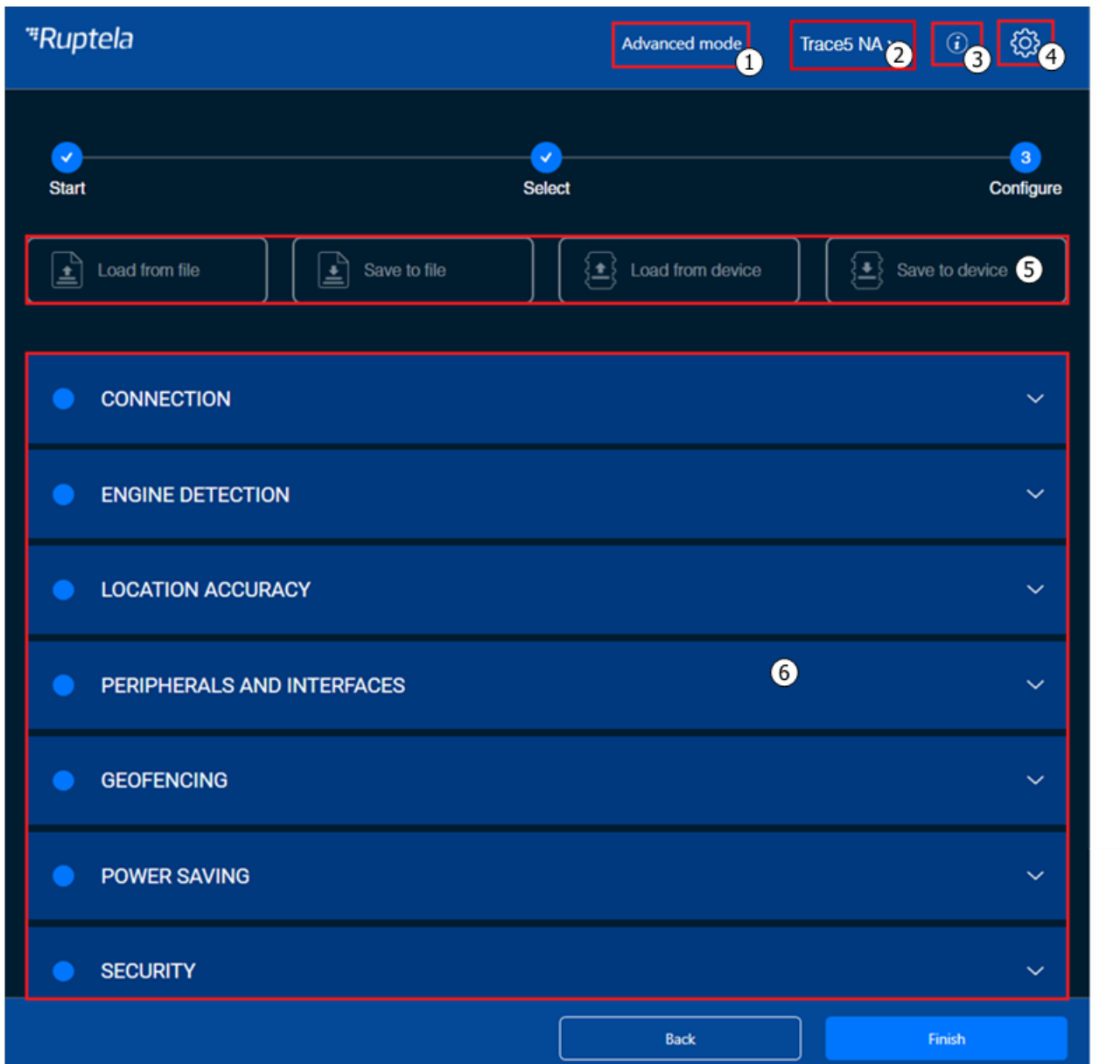
Configuration Basics

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.

File Extension

Configuration file extension for Trace5 devices:

Trace5-LTM (pre-revision): **.fa5c**

Trace5 NA: **.fb5c**

Trace5 (all other versions): **.fd5c**

✅ Configuration files can easily be recognized by their own icon: 📑

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.

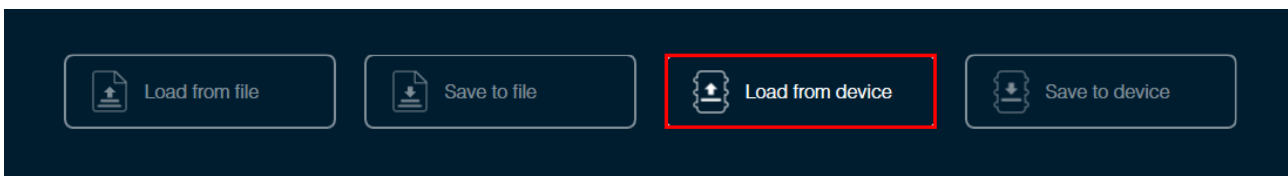⚠️ Loading a configuration from a file will discard any changes to the existing configuration.

Saving a Configuration to a File

Click **Save to file** in the button bar. Choose where to save your configuration file and click **Save**.
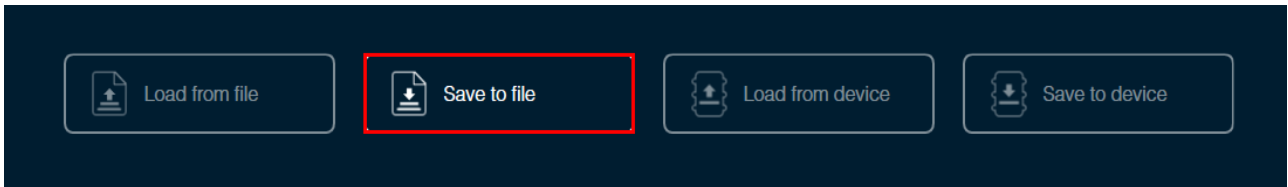
Loading a Configuration from a Device

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.

Saving a Configuration to a Device

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

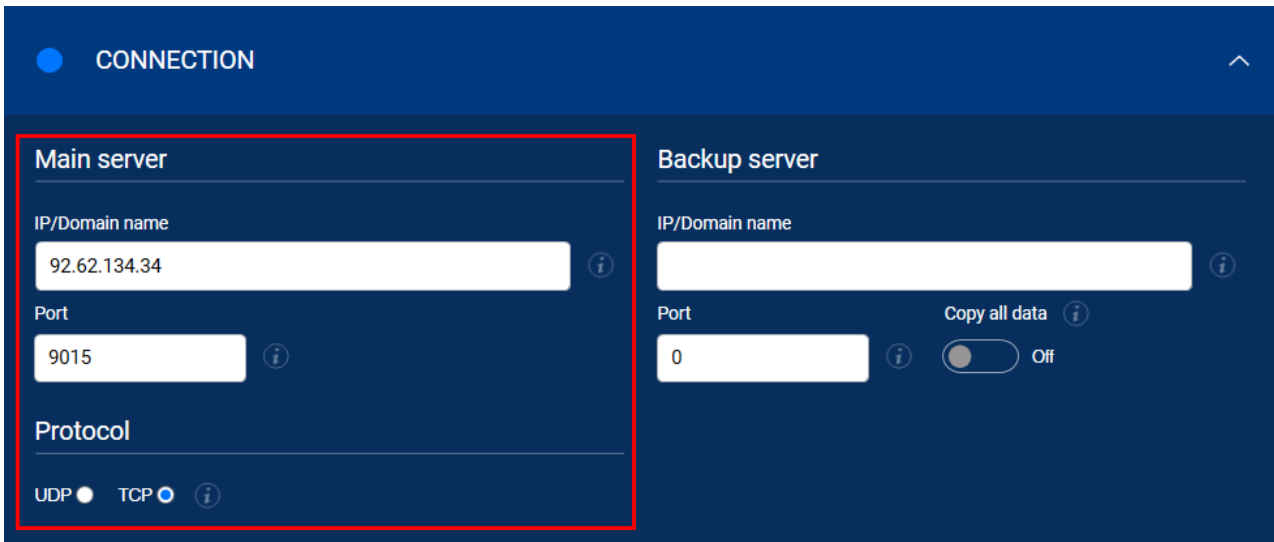| ⚠ | Saving a configuration to a device will overwrite the existing configuration in the device without any confirmation. |

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.

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: • *UDP* – uses less data but is less reliable. UDP does not check for lost packets or their order. • *TCP* – 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: *TCP*

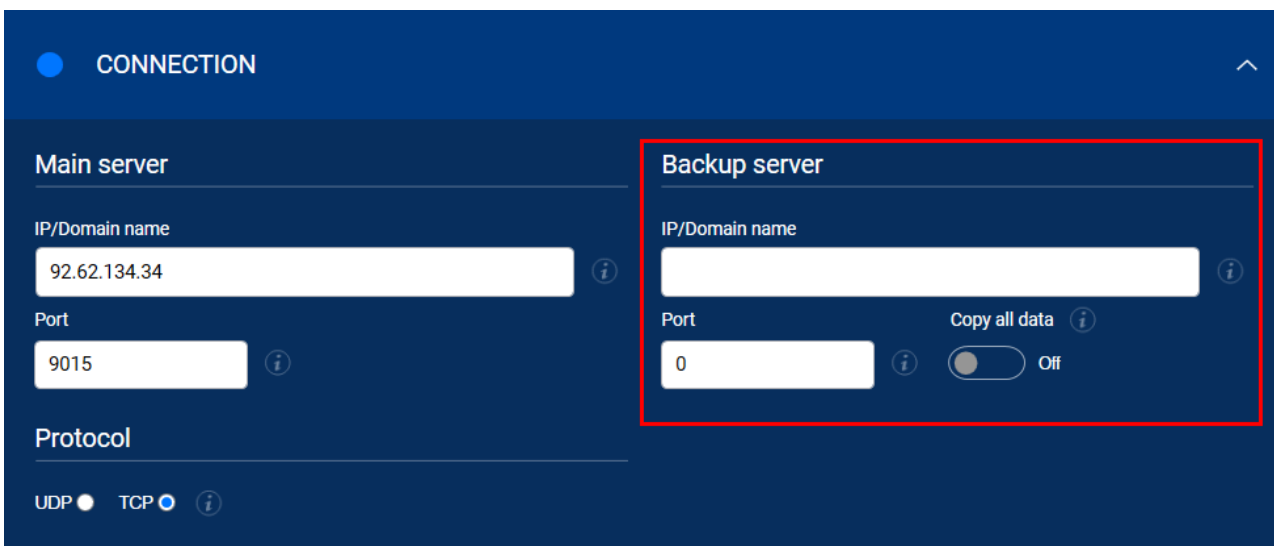| ℹ | UDP and TCP protocols may have different ports. Make sure you select the correct protocol and enter the correct ports. |

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.

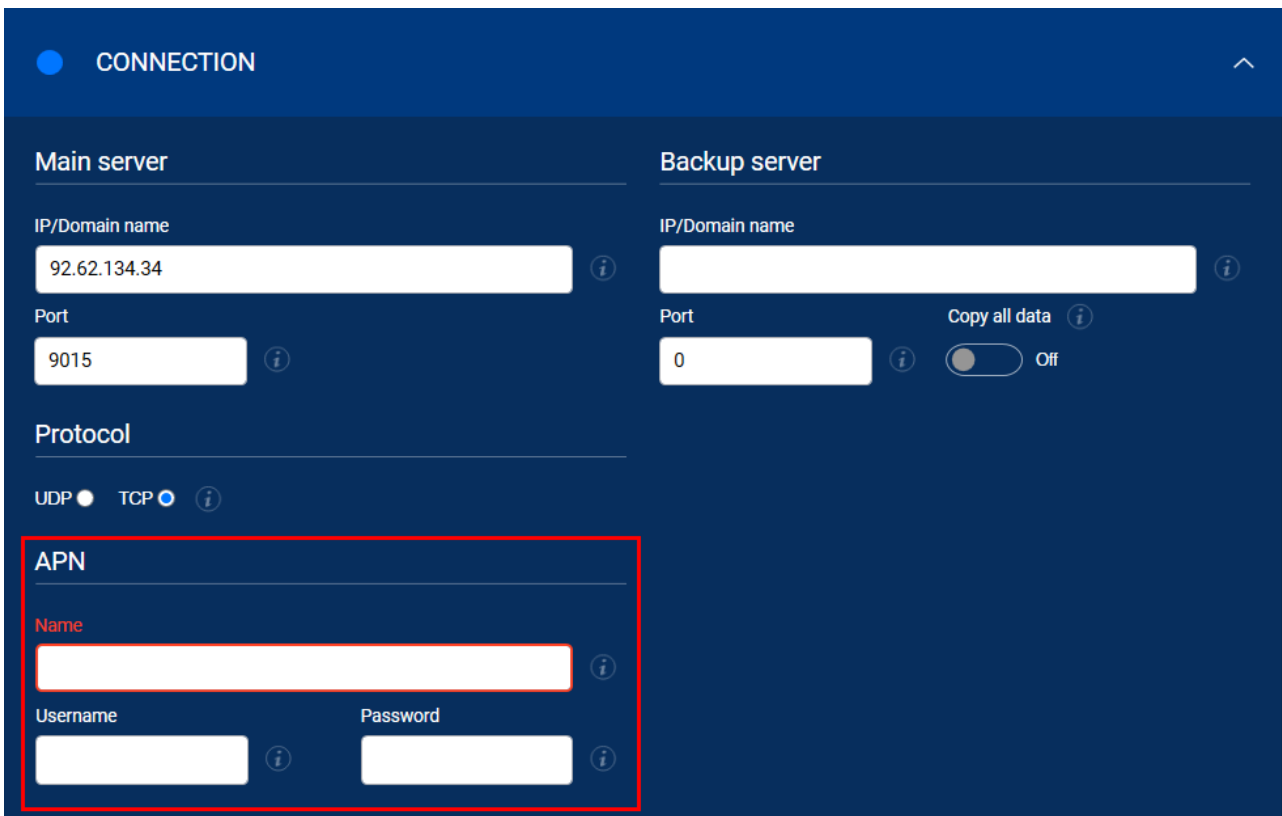| IP/Domain name	The IP address of the backup server. You may enter a numerical address or a domain name. Default value: None
Port	The port of the server. Default value: 0
Copy all data	If turned on, a copy of all data will be sent to the backup server even if the main server is reachable. If the main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

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.

⚠️ The Trace5-LTE-EMEA and Trace5-LTE-LA devices will not send data if the APN username and/or password are configured due to a known modem issue.
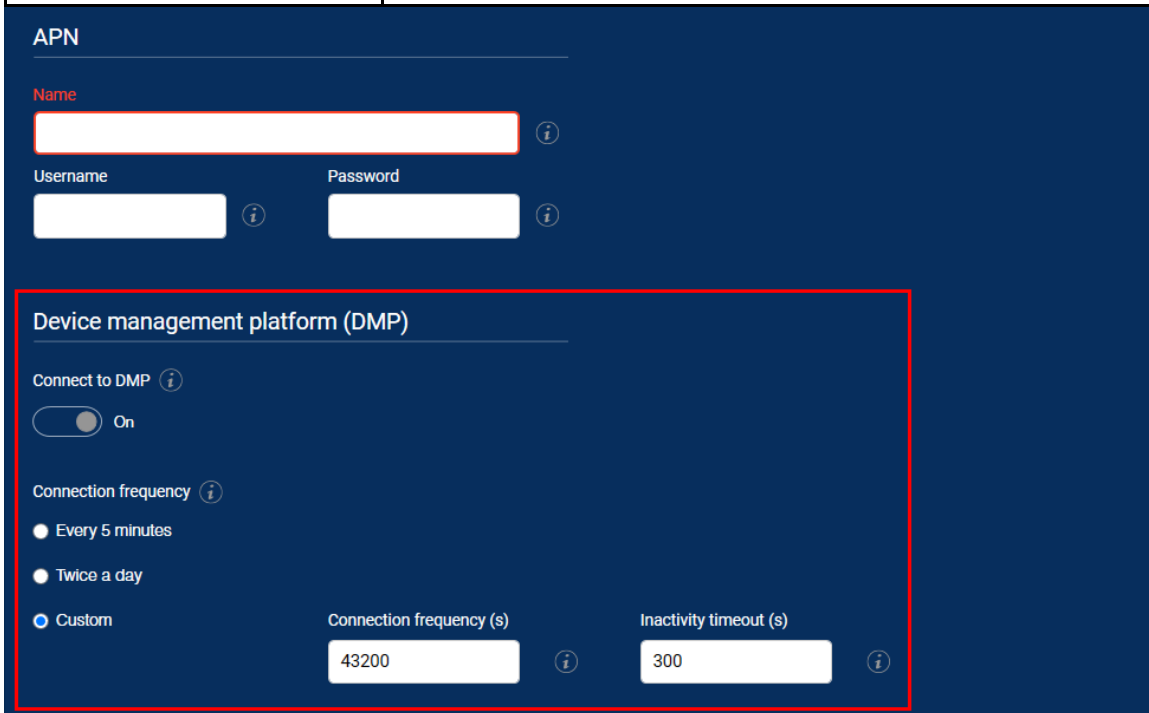

Device Management Platform Settings

Set, how the device will connect to the device management platform to receive remote firmware and/or configuration updates.

Connect to DMP	Turn on to enable periodic connections to the device management platform. Contact technical support to disable this functionality.

	Default value: On

Connection frequency	Set how often the device will connect to the device management platform. Possible values:
	
	 • Every 5 minutes
	 • Twice a day
	 • *Custom* – allows setting the following:
	
	    o **Connection frequency (s)** – set a custom connection frequency
	    o **Inactivity timeout (s)** – set how long the device will wait for updates after connecting before closing the connection
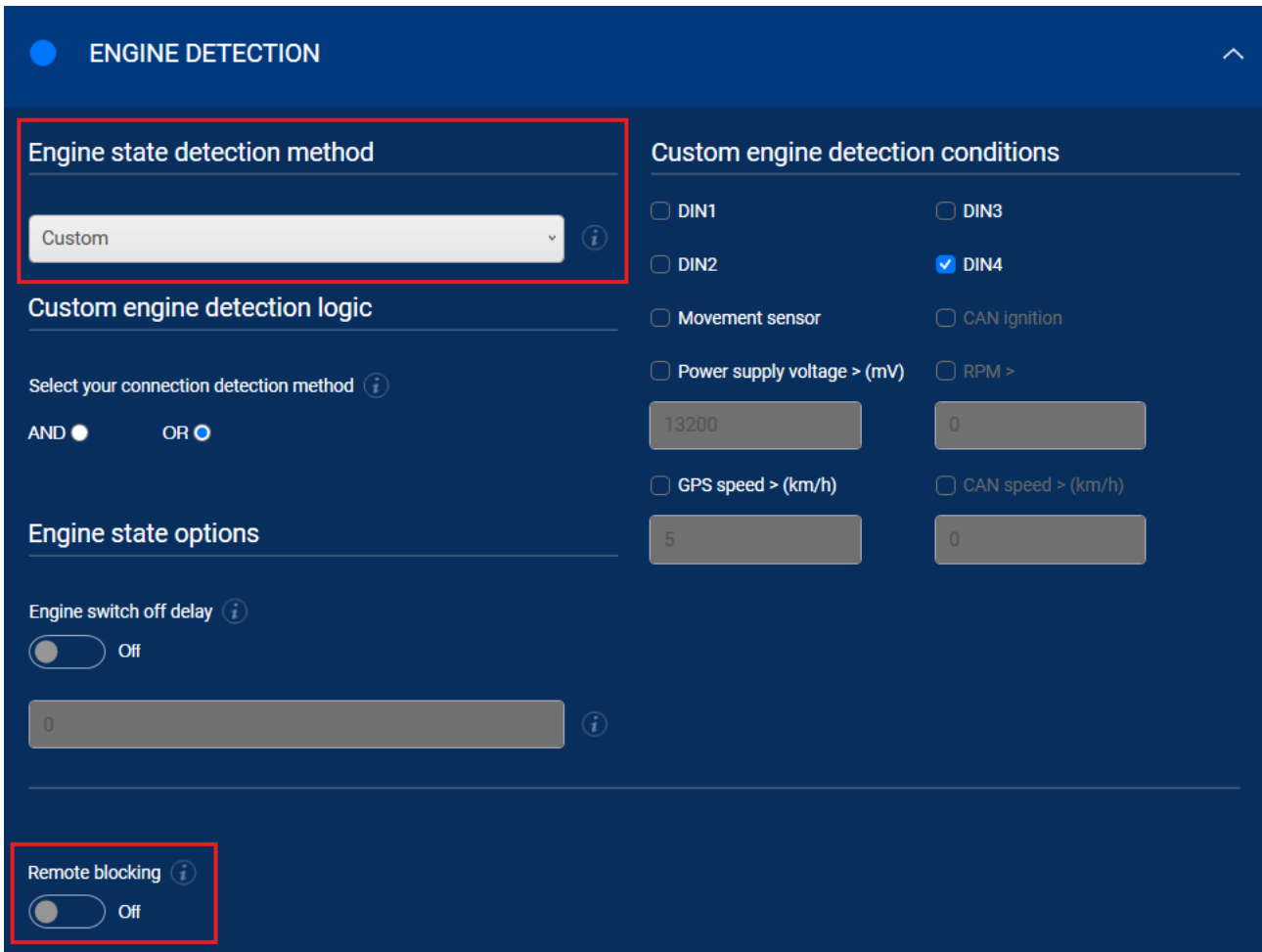	
	 Default value: *Every 5 minutes*

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: • *Custom* – configure your own engine detection conditions

	Default value: *Custom*
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

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

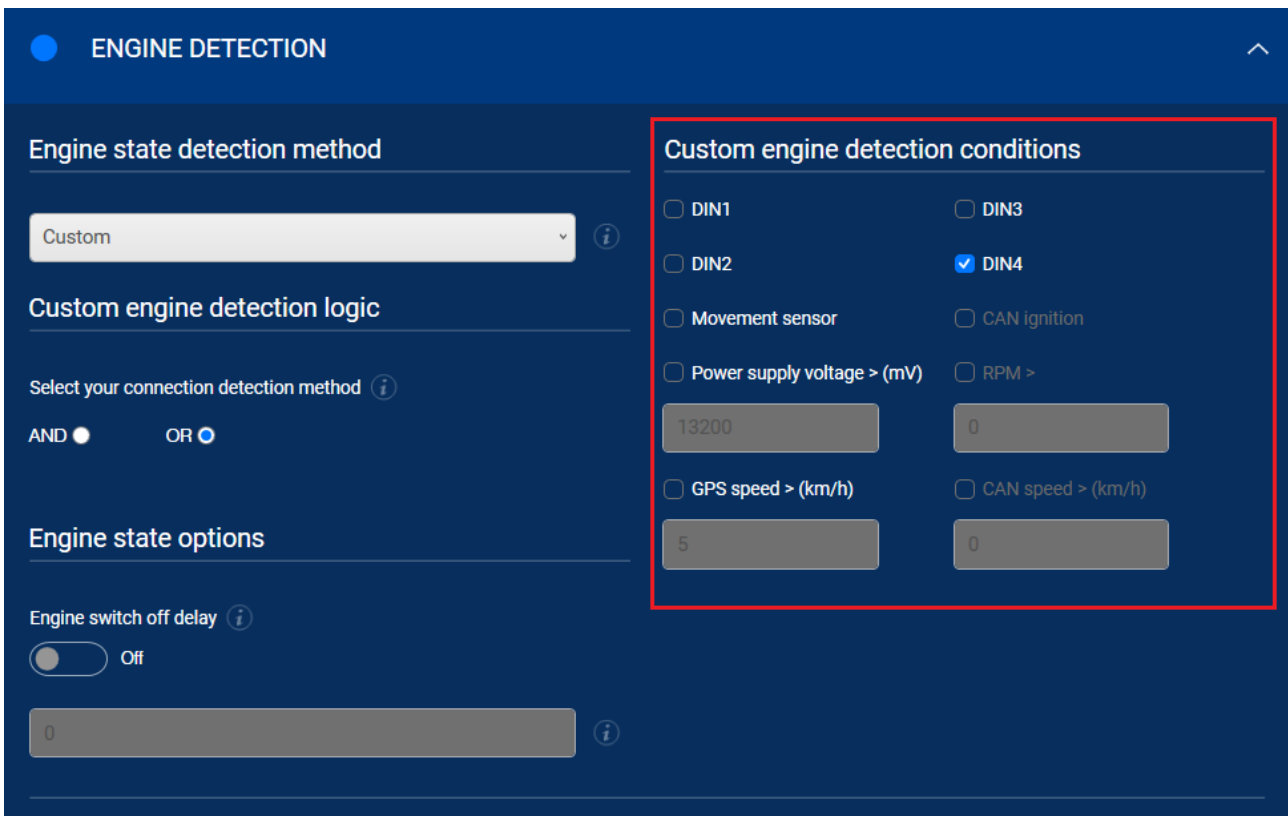|	
Connection detection method	Which logical operator will be used for the engine detection conditions. Possible values: • *AND* – all conditions must be true • *OR* – at least one of the conditions must be true Default value: *OR*
Engine switch off delay	If turned on, the device registers engine state changes only after the set time period passes. Default value: Off
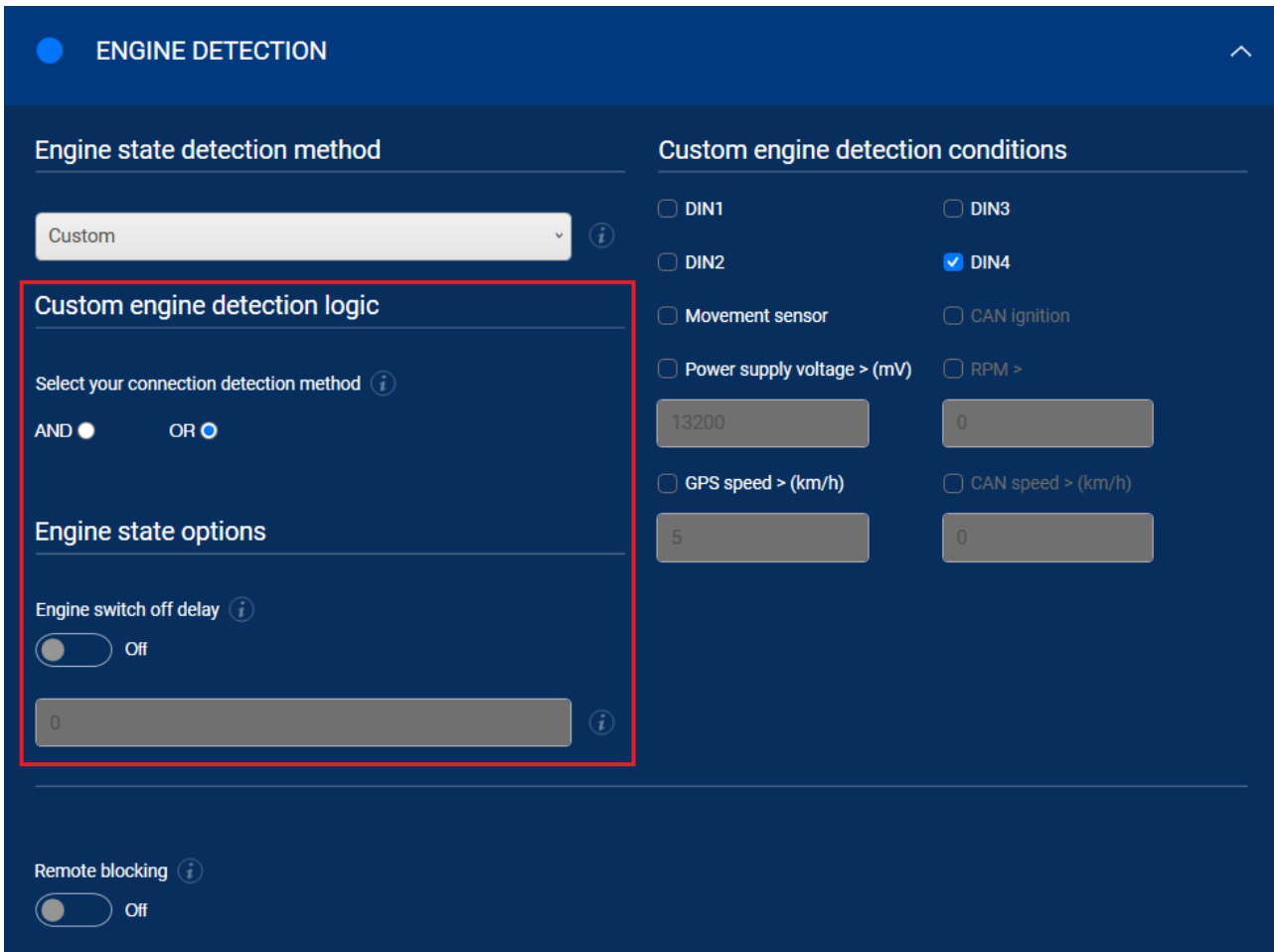
Then, decide which conditions you wish to use for engine state detection.

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

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:
	• *High* – at least twice a minute when driving (3-7 MB/month on average)
	• *Medium* – at least once a minute when driving (2-5 MB/month on average)
	• *Low* – at least once every two minutes when driving (1-3 MB/month on average)

	• Custom -— configure parameters, to define how often the data should be updated:
	
	    ○ **Ignition off (s)** – set how often the location should be updated when the ignition is off. Default value: *3600* s
	
	    ○ **Distance travelled (m)** – set how far the vehicle should travel to update the location. Default value: *500* m
	
	    ○ **Ignition on (s)** – set how often the location should be updated when the ignition is on. Default value: *60* s
	
	    ○ **Angle turned (deg)** – set how far the vehicle should turn to update the location. Default value: *15* deg
	
	Default value: *Medium*

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/s^2)	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: *19.6 m/s^2*
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: • *Off* • *Low* (recommended) • *Medium* • *High* Default value: *Off*

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.
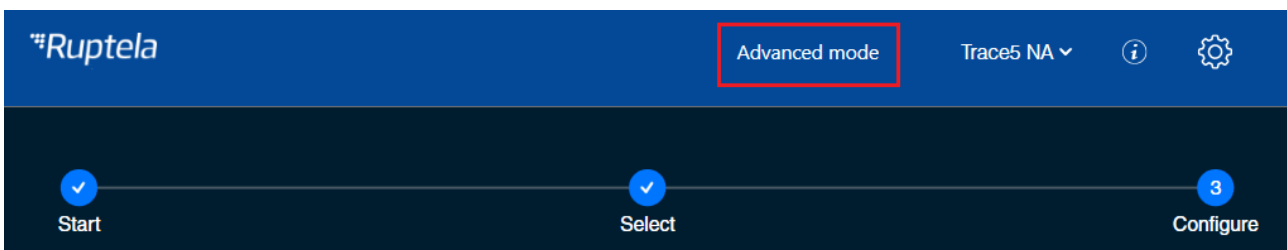
A detailed description of the advanced configurator is available in the advanced configurator user manual. Close the advanced configurator to return to the Device Center.

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](#)

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

> ℹ The device will not send any data during firmware updates.

File Extension

Firmware file extension for Trace5 devices:

Trace5-LTM (pre-revision): **.efwa5**

Trace5 NA: **.efwb5**

Trace5 (all other versions): **.efwd5**

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.

> ℹ 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.

Updating Firmware Manually

> ℹ This feature requires the use of the Advanced Configurator.

Updating Firmware using .efw* Extension Files

To update the 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.
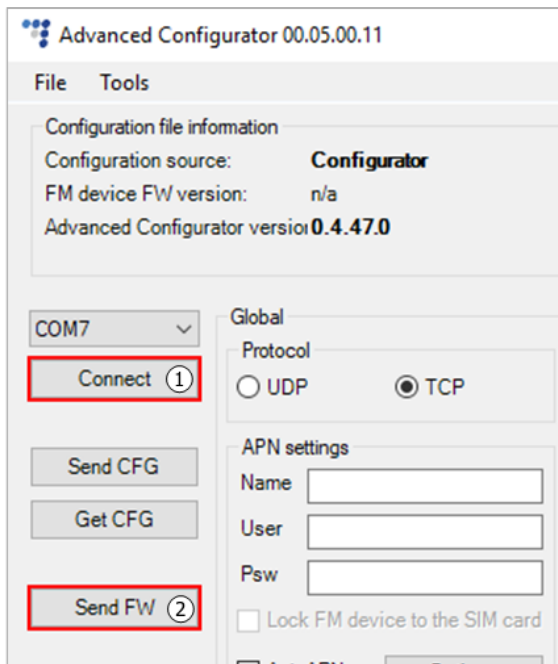
Updating Firmware using .fwp Pack

To update the 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.

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

1.5 Trace5 Installation in Vehicle

Installation Using OBDII Harness

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:

- The OBD diagnostic port
- The fuse box
- The 9-Pin Deutsch port

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

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 location of the OBD2 socket. 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.) as close to the top of the dashboard as possible
- 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 an angle of up to 45° in any axis
- The device must be facing towards the sky (see the picture below)
- Make sure that the device is connected to the power supply and to the ignition source set in the Device Center engine detection if the ignition is to be captured via DIN
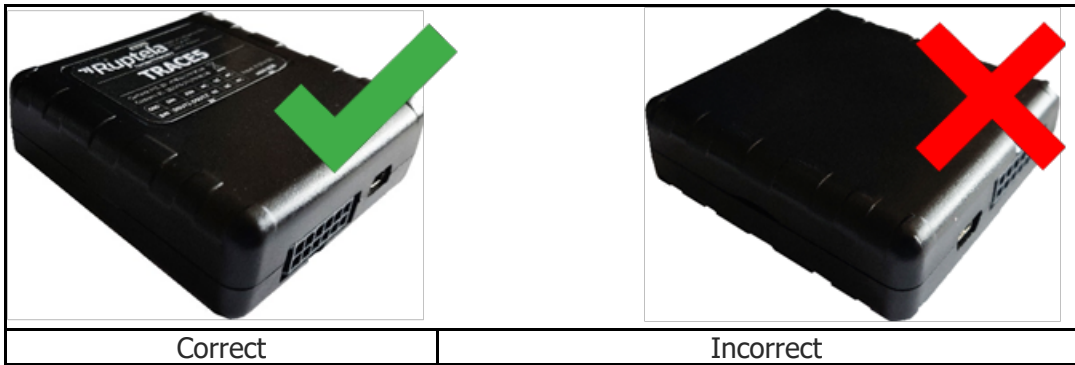
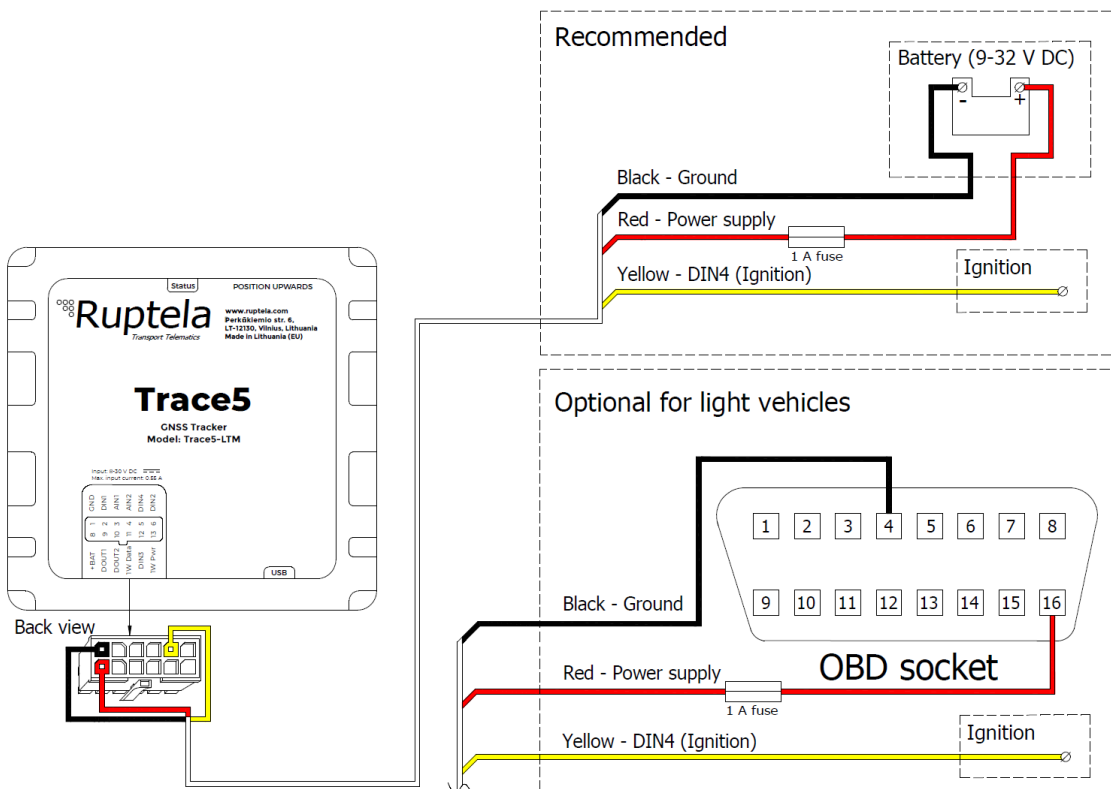| Correct	Incorrect

⚠️ Incorrect device installation may result in reduced tracking accuracy.

Wiring Diagram

Power input: 8-30 V DC.

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

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.

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 "Using TrustTrack" if you are using TrustTrack).
4. Finish up the installation, make sure there are no hanging wires and that all panels are firmly reattached.

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.

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.

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

> ℹ️ 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.

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

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*

1.6   Trace5 Using TrustTrack

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

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

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.

Accessing TrustTrack via Web

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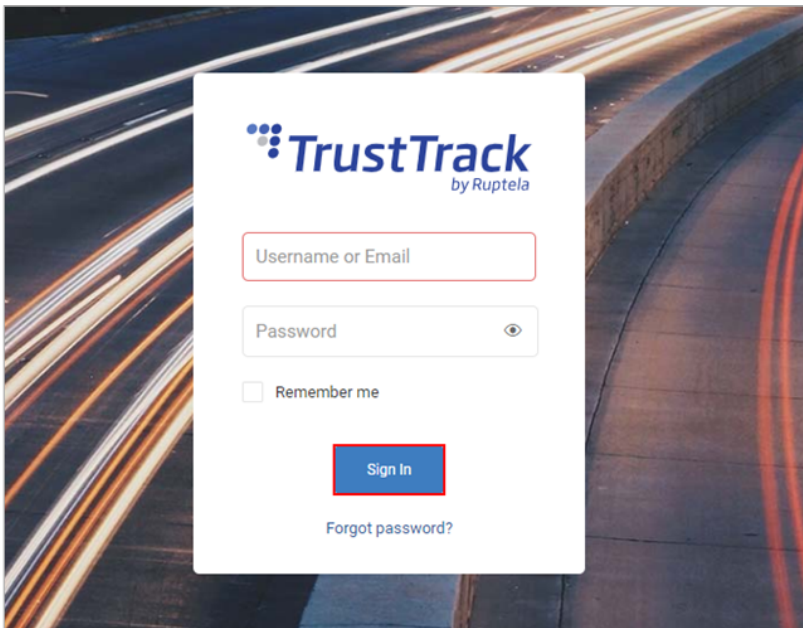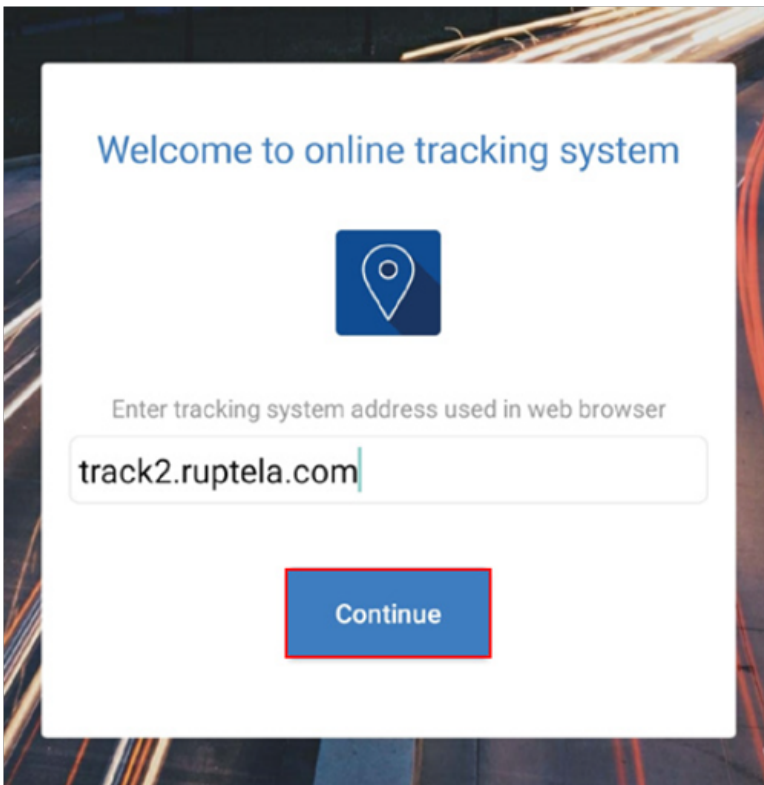

Accessing TrustTrack via App

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.

Verifying Vehicle Status

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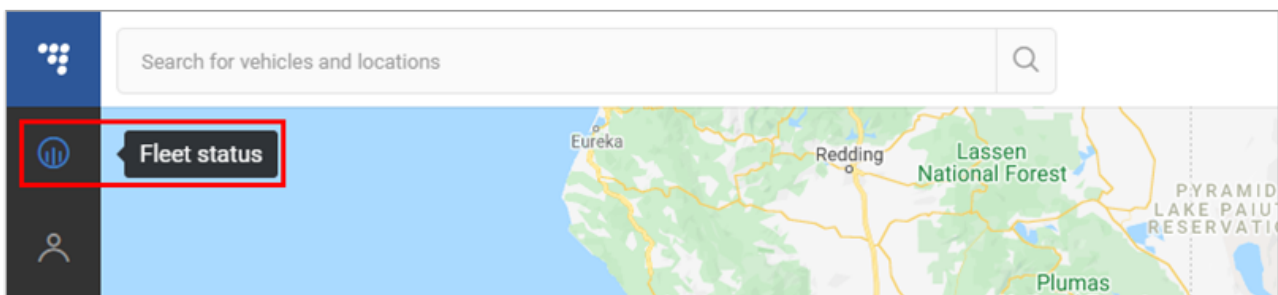
Find your vehicle in the **Fleet Status** panel and click on it. Check the **State duration** and **Last signal sync** in the additional panel. If they have recently been updated, data transfer is successful, and the device is properly installed.