TELTONIKA

FTC305

E-Mobility tracker

Quick Manual v1.2 | 2025-10-30

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GLOSSARY

CEP – Circular Error Probable: a statistical statistical measure used to describe the accuracy of a positioning system, commonly used in the context of GNSS. CEP represents the radius of a circle, centered on the true position, within which a given percentage (usually 50%) of the measured positions are expected to fall.

COM port – Serial communication interface that is used to transfer information to/from devices such as modems, terminals and various peripherals.

COLD start – A COLD start occurs when the GNSS receiver lacks all the necessary information for a position fix, requiring it to start from scratch. This means it needs to acquire and decode the almanac and ephemeris data from the satellites, determine the satellite positions, and calculate its position.

FOTA – Firmware-Over-The-Air.

HOT start – A HOT start occurs when the GNSS receiver has all the necessary information to calculate a position fix readily available. This includes the almanac and ephemeris data, the approximate time, and its last known position.

IMEI – International Mobile Equipment Identity: a unique numeric identifier used by networks to identify devices.

NITZ – Network Identity and Time Zone: a mechanism in GSM, used to provision time, date and other parameters to mobile devices in a network.

NTP – Network Time Protocol: a networking protocol for clock synchronization between computer systems.

SELV – Safety Extra Low Voltage: an electrical system in which the voltage cannot exceed 50 VAC or 120 VDC under normal conditions, and under single-fault conditions, including earth faults in other circuits.

Record – AVL data stored in device memory. AVL data contains GNSS and I/O information.

WARM start – A WARM start occurs when the GNSS receiver has some, but not all, of the necessary information for a position fix. It might have valid almanac data but needs to download new ephemeris data or doesn't have an accurate estimate of its current time or position.

ℹ SIM card should be inserted in the module while the connector is plugged off (while module has no power).

SAFETY INFORMATION

This section contains information on how to operate FTC305 safely. By following these requirements and recommendations, you will avoid dangerous situations. You must read these instructions carefully before operating the device and follow them strictly!

SIGNALS AND SYMBOLS

Warnings and cautions which are general to the use of the device under all circumstances are included in this section. Some warnings and cautions are also inserted within the manual where they are most meaningful.



CAUTION! Cautions alert users to exercise appropriate care for safe and effective use of the product.



WARNING! This classifies a hazard of medium risk level. Failure to comply with the warning may result in serious injury.



Please note: Notes provide additional guidelines or information.

— The device uses a 10 V...97 V DC power supply. The nominal voltage is 12 V DC. The allowed range of voltage is 10 V...97 V DC.



CAUTION: Using a power supply outside this range may result in damage to the device or minor injuries. Always verify the power source before connection.

— To avoid mechanical damage, it is advised to transport the device in an impact-proof package. Before usage, the device should be placed so that its LED indicators are visible. They show the status of device operation.

— Before unmounting the device from vehicle, ignition MUST be OFF.



WARNING: Do not disassemble the device. If the device is damaged, the power supply cables are not isolated or the isolation is damaged, DO NOT touch the device before unplugging the power supply.



All wireless data transferring devices produce interference that may affect other devices which are placed nearby.



The device must be connected only by qualified personnel.



The device must be firmly fastened in a predefined location.



The programming must be performed using a PC with autonomic power supply.



Installation and/or handling during a lightning storm is prohibited.



The device is susceptible to water and humidity.



WARNING: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.



Battery should not be disposed of with general household waste. Bring damaged or worn-out batteries to your local recycling center or dispose them to battery recycle bin found in stores.



This sign on the package means that all used electronic and electric equipment should not be mixed with general household waste.

DATA SAFETY AND PRIVACY

In accordance with the General Data Protection Regulation (GDPR), this Data Processing Agreement (DPA) establishes obligations between Teltonika, the data processor, and its customers, acting as data controllers. The DPA outlines how Teltonika will handle customer data while adhering to GDPR regulations. This includes details on the data Teltonika can process, security measures in place, and customer rights concerning their data.

For a comprehensive understanding of the agreement, including permitted sub-processors, data breach procedures, and dispute resolution, please refer to the full Data Processing Agreement:

teltonika-gps.com/about-us/policies-certificates/data-processing-agreement

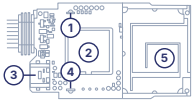
KNOW YOUR DEVICE

FTC305 CASING VERSION

Top view

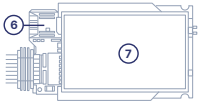


Top view (without cover)



1. Navigate LED
2. GNSS antenna
3. USB-C slot
4. Status LED
5. LTE antenna

Bottom view (without cover)



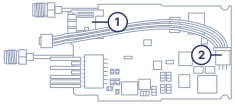
6. SIM slot
7. Battery PCB

FTC305 NO-CASING VERSION

Top view

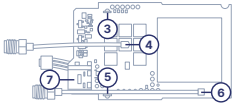


Top view (without cover)



1. SIM slot
2. External battery socket

Bottom view (without cover)



3. Navigate LED
4. External GNSS antenna socket
5. Status LED
6. External Cellular (LTE) antenna socket
7. USB-C slot

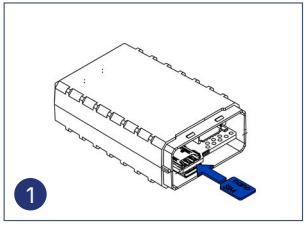
STANDARD FTC305 CASING VERSION PACKAGE CONTAINS:

— FTC305 tracker
— 7-pin main cable
— Packaging box with Teltonika branding

STANDARD FTC305 NO-CASING VERSION PACKAGE CONTAINS:

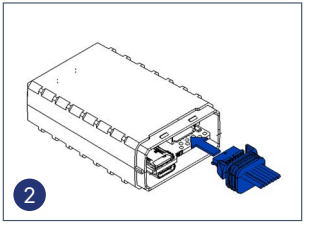
— FTC305 tracker without casing
— 7-pin main cable
— Thermal cambric for PCB
— GNSS and Cellular antennas adapters
— External battery adapter
— GNSS and Cellular external antennas
— 1200 mAh External back-up battery
— Packaging box with Teltonika branding

SET UP YOUR DEVICE (CASING VERSION)



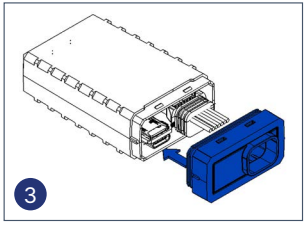
1. Insert SIM card

Insert Nano-SIM card as shown with PIN request disabled. Make sure that Nano-SIM card cut-off corner is pointing towards the SIM slot.



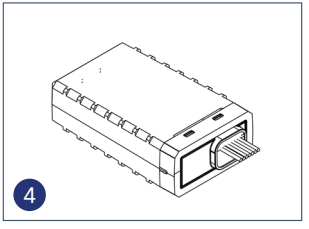
2. Connect the cable

Connect the main 7-pin cable connector to the socket on PCB.



3. Attach the cover

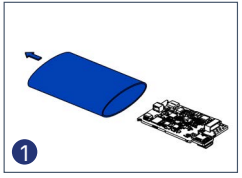
ℹ Please note: Before attaching cover, ensure the device is configured via USB. The USB port on the PCB will be inaccessible once the cover is fully attached.



4. Device is ready

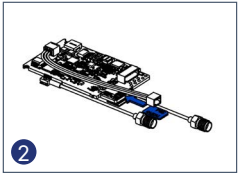
Device is ready to be mounted

SET UP YOUR DEVICE (NO-CASING VERSION)



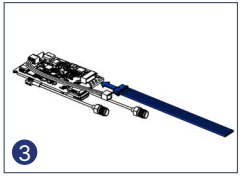
1. Remove thermal cambric

You will receive your device with thermal cambric covering the PCB. Remove the thermal cambric.



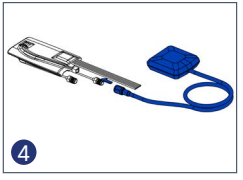
2. Insert SIM card

Insert Nano-SIM card as shown with PIN request disabled. Make sure that Nano-SIM card cut-off corner is pointing towards the SIM slot.



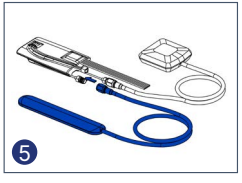
3. Connect the cable

Connect the main 7-pin cable connector to the socket on PCB.



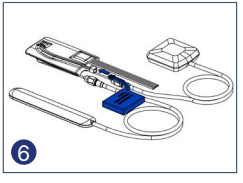
4. Connect GNSS antenna

External GNSS antenna is included in the packaging box. Connect the antenna to GNSS antenna adapter that is connected to PCB.



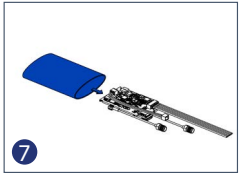
5. Connect Cellular antenna

External Celullar antenna is included in the packaging box. Connect the antenna to LTE antenna adapter that is connected to PCB.



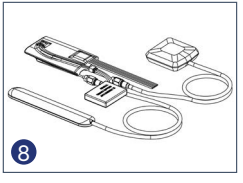
6. Connect the battery

External battery is included in the packaging box. Connect the battery to battery adapter that is connected to PCB.



7. Re-attach thermal cambric

ℹ Please note: You can heat the thermal cambric for it to fully seal the PCB, however, after heating it, you will no longer be able to access SIM and USB slots unless the cambric is removed. You will still be able to configure the device using FOTA WEB or Bluetooth®.

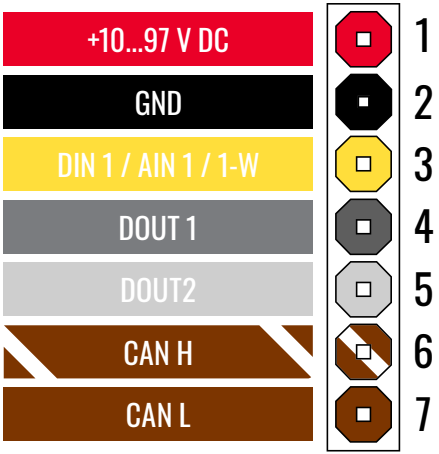


8. Device is ready

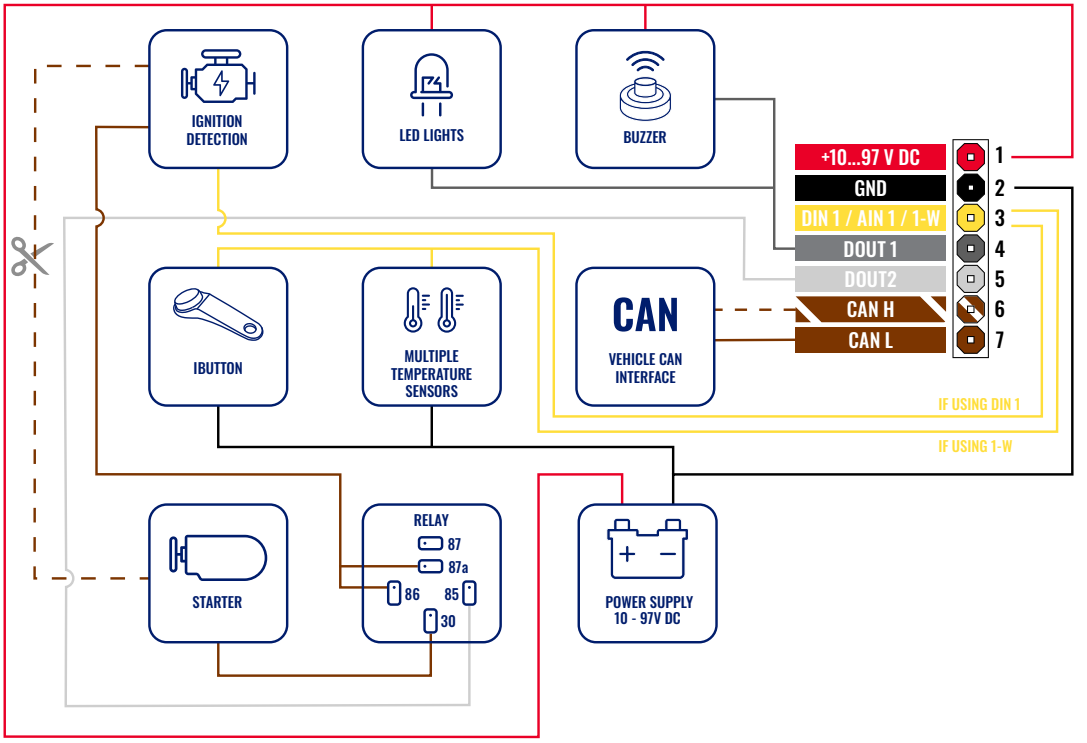
Device is ready to be mounted.

PINOUT

Pin number	Pin name	Description
1	VCC (10-97) VDC (+)	(Red) Power supply (+10-97 V DC)
2	GND (-)	(Black) Ground
3	DIN 1 / AIN 1 / 1-W	(Yellow) Digital input channel 1 / Analog input channel 1 / Data channel for 1-Wire devices
4	DOUT 1	(Grey) Digital output channel 1
5	DOUT 2	(White) Digital output channel 2
6	CAN H	(Brown/White) CAN interface High
7	CAN L	(Brown) CAN inferface Low



WIRING SCHEME



PC CONNECTION (WINDOWS)

1. Connect FTC305 device to computer using USB Type-C cable.

   Please note: FTC305 device does not require external power supply for configuration, however, without external power supply - data sending and other cellular connectivity functions will not work. If you want to test the device on the table it is advised to power-up FTC305 with **DC voltage (10-97 V)** power supply using power wires.

2. Install USB driver, see "How to install USB drivers (Windows)[1]"

HOW TO INSTALL USB DRIVERS (WINDOWS)

1. Download COM port drivers from here[2].
2. Extract and run **TeltonikaCOMDriver.exe.**
3. Click **Next** in driver installation window.
4. In the following window click **Install** button.
5. Setup will continue installing the driver and eventually the confirmation window will appear. Click **Finish** to complete the setup.

[1] Page 10, "How to install USB drivers"

[2] wiki.teltonika-gps.com/images/d/d0/TeltonikaCOMDriver.zip

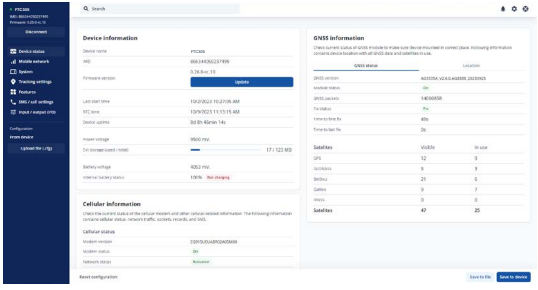
CONFIGURATION (WINDOWS)

Most Teltonika devices are shipped with default factory settings. Use Telematics Configuration Tool (TCT)[1] to change these settings according to your needs.

	Configurator	TCT
Operating system	Windows 7 Windows 8.1 Windows 10 Windows 11	Windows 10 Windows 11
MS .NET Framework version	MS .NET framework 5.0	MS .NET framework 6.0
Version	64 bit	64 bit
Disk Storage		1 GB of free disk space
Internet		Ethernet port or Wi-Fi w/ network access for auto-update

TCT

1. Download the TCT (compressed archive).
2. Extract the archive and launch the executable. The TCT will be installed.
3. Launch the TCT.
4. In the Discovered devices list, select your device and press **Configure**.
5. The Device status window opens. It contains device, GNSS and Cellular information.



Save to device – Save to device – saves configuration to device.

Upload file (.cfg) – Upload file – loads configuration from file.

Save to file – Save to file – saves configuration to file.

Update – Update – update device firmware.

Reset configuration – Reset configuration – sets device configuration to default.

Most important configurator sections are Mobile network (server, Mobile network settings) and Tracking settings (data collection parameters). More details about FTC305 configuration using TCT can be found on our Wiki[1].

[1] wiki.teltonika-gps.com/view/QSG_New_platform

[1] wiki.teltonika-gps.com/view/FTC305_Configuration

QUICK SMS CONFIGURATION

The default configuration ensures best track quality and optimal data usage.

Quickly set up your device by sending this SMS command to it:

```
« setparam 2001:APN;2002:APN_username;2003:APN_password;2004:Domain;2005:Port;2006:0»
```

1. Before SMS text, one space symbol should be inserted. This space is dedicated for device SMS password.

GPRS SETTINGS:

2. **2001** – APN
3. **2002** – APN username (leave field empty if there is no APN username)
4. **2003** – APN password (if there are no APN password, empty field should be left)

SERVER SETTINGS:

5. **2004** – Domain
6. **2005** – Port
7. **2006** – Data sending protocol (0 – TCP, 1 – UDP)



DEFAULT CONFIGURATION SETTINGS

MOVEMENT AND IGNITION DETECTION:



Vehicle movement will be detected by accelerometer



Ignition will be detected by vehicle power voltage between 13.2 – 30 V

DEVICE MAKES A RECORD ON STOP IF:



1 hour passes while vehicle is stationary and ignition is off

RECORDS SENDING TO SERVER:



Every 120 seconds, records are sent to the server (if device has made a record)

DEVICE MAKES A RECORD ON MOVING IF ONE OF THESE EVENTS HAPPEN:



Every 300 seconds



Vehicle drives 100 meters



Vehicle turns 10 degrees



Speed difference between last coordinate and current position is greater than 10 km/h

After successful SMS configuration, FTC305 device will synchronize time and update records to configured server. Time intervals and default I/O elements can be changed by using TCT[1] or SMS parameters[2].

[1] wiki.teltonika-gps.com/view/FTC305_Configuration

[2] wiki.teltonika-gps.com/view/FTC305_Parameter_list

MOUNTING RECOMMENDATIONS

CONNECTING WIRES

— Wires should be fastened to the other wires or non-moving parts. Do not place the wires near moving or heat-emitting objects.

— All electrical connections must be properly isolated. No bare wires should be visible. Re-apply isolation to wires if you removed factory isolation during installation.

— If the wires are placed in the exterior or in places where they can be damaged or exposed to heat, humidity, dirt, etc., additional isolation should be applied.

CONNECTING POWER SOURCE

— Ensure that after the vehicle computer falls asleep, power is still available on chosen wire. Depending on vehicle, this may happen in 5 to 30 minutes period.

— When module is connected, measure voltage again to make sure it did not decrease.

— It is recommended to connect main power cable to the main battery of the vehicle.

CONNECTING IGNITION WIRE

— Make sure that you have selected the correct wire for ignition signal - the electrical signal from the wire should be present after starting the engine.

— Check if this is not an ACC wire (when key is in the first position, most of the vehicle electronics are ON).

— Check if power is still available when you turn off any of vehicles devices.

— Ignition is connected to the ignition relay output. As alternative, any other relay, which has power output when ignition is on, may be chosen.

CONNECTING GROUND WIRE

— Ground wire must be connected to the vehicle frame or metal parts that are fixed to the frame.

— If the wire is fixed with the bolt, the loop must be connected to the end of the wire.

— For better contact scrub paint from the spot where loop is going to be connected.

TROUBLESHOOTING

Troubleshooting section provides guidance to resolve frequently encountered issues during the setup and operational phases of the FTC305 device.

COMMON ISSUES AND SOLUTIONS (FAQ)

Problem	Solution
The device does not turn on when connected to power.	1. Ensure the input voltage range is within 10 - 97 V DC. 2. Avoid overvoltage and ensure that the device is mounted and connected according to mounting recommendations.
Inability to receive GPS signals.	1. Ensure that the device is mounted correct side up with antennas facing up. 2. Check if device is not obstructed by metallic surfaces or other thick materials.

FREQUENTLY USED SMS/GPRS COMMANDS

Command	Description	Response sent on success?	Response sent on failure?
cpureset	Restarts the device	No	Yes
getstatus	Returns status of the device	Yes	Yes
allver	Returns information about device firmware and hardware	Yes	No
web_connect	Triggers FOTA service / connection	Yes	Yes

LED INDICATIONS

NAVIGATION LED

Behaviour	Meaning
Permanently switched on	GNSS signal is not received
Blinking every second	Normal mode, GNSS is working
Off	GNSS is turned off because: Device is not working or Device is in sleep mode
Blinking fast constantly	Device firmware is being flashed

STATUS LED

Behaviour	Meaning
Blinking every second	Normal mode
Blinking every two seconds	Sleep mode
Blinking fast for a short time	Modem activity
Off	Device is not working or Device is in boot mode

BASIC CHARACTERISTICS

Module	
Name	**FTC305-QJAB0:** Quectel EG915U-EU, internal antennas, casing version **FTC305-QKAB0:** Quectel EG915U-LA, internal antennas, casing version **FTC305-QJXB0:** Quectel EG915U-EU, external antennas, external battery, no casing version **FTC305-QKXB0:** Quectel EG915U-LA, external antennas, external battery, no casing version
Technology	LTE CAT 1/GSM/GPRS/GNSS/BLUETOOTH® LE
GNSS	
GNSS	GPS, GLONASS, GALILEO, BEIDOU
Receiver	L1: 75 channel
Tracking sensitivity	-165 dBm
Position Accuracy	< 1.8 m CEP
Velocity Accuracy	< 0.1 m/s (within +/- 15% error)
Hot start	< 1 s
Warm start	< 25 s

Cellular	
2G bands	GSM: B2/B3/B5/B8
4G bands	**FTC305-QJAB0:** LTE FDD (EG915U-EU): B1/B3/B5/B7/B8/B20/B28 **FTC305-QJXB0:** LTE FDD (EG915U-EU): B1/B3/B5/B7/B8/B20/B28 **FTC305-QKAB0:** LTE FDD (EG915U-LA): B2/B3/B4/B5/B7/B8/B28/B66 **FTC305-QKXB0:** LTE FDD (EG915U-LA): B2/B3/B4/B5/B7/B8/B28/B66
Data transfer	LTE FDD (CAT 1): Max. 10 Mbps (DL) / Max. 5 Mbps (UL) GSM (GPRS): Max. 85.6 Kbps (DL) / Max. 85.6 Kbps (UL)
Transmit power	Class 4 for GSM900: 33 dBm ± 2 dB Class 1 for DCS1800: 30 dBm ± 2 dB Class 3 for LTE-FDD: 23 dBm ± 2 dB
Data support	SMS (TEXT, PDU), Network protocols (TCP, UDP)

Power	
Input voltage range	10 - 97 V DC
Back-up battery	**Casing version:** 380 mAh Li-ion battery 3.7 V (1.41 Wh) **No casing version:** 1200 mAh Li-ion battery 3.7 V (4.44 Wh) (External)
Internal fuse	3A
Power Consumption	At 12V < 40 mA (Nominal with no load) At 12V < 0.25 A Max (with full Load/Peak)

Bluetooth® Technology	
Specification	5.3 + LE

Interface	
Digital Inputs	1
Digital Outputs	2
Analog Inputs	1
1-Wire	1
CAN	1
GNSS antenna	**Casing version:** Internal High Gain **No casing version:** External (SMA female connector)
GSM antenna	**Casing version:** Internal High Gain **No casing version:** External (RP SMA female connector)
USB	2.0 USB Type-C
LED indication	2 status LED lights
SIM	Nano-SIM
Memory	128MB internal flash memory

Physical Specification

Dimensions	**Casing version:** 69 × 41 × 20.9 mm (L x W x H) **No casing version:** 62 × 39.6 × 11.5 mm (L x W x H)
Weight	**Casing version:** 76.8 g **No casing version (with accessories):** 126.1 g

Operating Environment

Operating temperature	-30 °C to +85 °C
Storage temperature	-30 °C to +85 °C
Operating humidity	65 ± 20% non-condensing
Ingress protection rating	**Casing version:** IP67 **No casing version:** N/A
Battery charge temperature	0 °C to +45 °C
Battery discharge temperature	-20 °C to +60 °C
Battery storage conditions	**Casing version:** -10 °C to +25 °C for 3 or more months **No casing version:** -20 °C to +45 °C for 3 or more months

Data Codec

Codec support	Codec 8 Extended[1]

Features

Sensors	Accelerometer
Scenarios	Green Driving, Over Speeding detection, Jamming detection, Unplug detection, Crash detection, Manual CAN data reading, Manual CAN commands[2]
Sleep modes	Online sleep, Deep sleep, Power off sleep[3]
Configuration and firmware update	FOTA Web[4], Telematics Configurator[5] (TCT)
Time Synchronization	GNSS, NTP, NITZ
Ignition detection	Digital Input 1, Accelerometer, External Power Voltage

[1] wiki.teltonika-gps.com/view/Codec#Codec_8_Extended

[2] wiki.teltonika-gps.com/view/FTC305_Features

[3] wiki.teltonika-gps.com/view/FTC305_Sleep_modes

[4] wiki.teltonika-gps.com/view/FOTA_WEB

[5] wiki.teltonika-gps.com/view/Telematics_Configuration_Tool_(TCT)

WARRANTY

We guarantee our products 24-month warranty[1] period.

All batteries carry a 6-month warranty period.

Post-warranty repair service for products is not provided.

If a product stops operating within this specific warranty time, the product can be:

— Repaired

— Replaced with a new product

— Replaced with an equivalent repaired product fulfilling the same functionality

— Replaced with a different product fulfilling the same functionality in case of EOL for the original product

WARRANTY DISCLAIMER

Customers are only allowed to return products as a result of the product being defective, due to order assembly or manufacturing fault.

Products are intended to be used by personnel with training and experience.

Warranty does not cover defects or malfunctions caused by accidents, misuse, abuse, catastrophes, improper maintenance or inadequate installation – not following operating instructions (including failure to heed warnings) or use with equipment with which it is not intended to be used.

Warranty does not apply to any consequential damages.

Warranty is not applicable for supplementary product equipment (i. e. PSU, power cables, antennas) unless the accessory is defective on arrival.

More information on what is RMA[2]

[1] Additional agreement for an extended warranty period can be agreed upon separately.

[3] wiki.teltonika-gps.com/view/RMA_guidelines

TELTONIKA

COMPANY DETAILS

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TELEMATICS WEBSITE

teltonika-gps.com

For more information about our products and services, please visit our website: teltonika-gps.com.

WIKI KNOWLEDGE BASE

wiki.teltonika-gps.com

For technical assistance, troubleshooting, and further inquiries, refer to our comprehensive support resources at our technical assistance portal: Teltonika Wiki.

FOTA WEB

fota.teltonika.lt

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