



FMB965

Smart water-resistant tracker

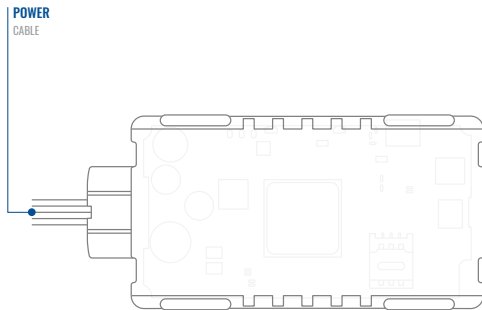
Quick Manual v2.3

CONTENT

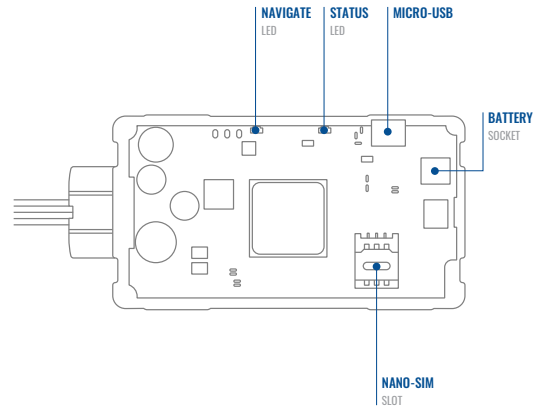
Know your device.....	3
Pinout	4
Wiring scheme.....	5
Set up your device	6
PC Connection (Windows).....	7
How to install USB drivers (Windows)	7
Configuration.....	8
Quick SMS configuration.....	10
Mounting recommendations.....	11
Basic characteristics	12
LED indications.....	12
Electrical characteristics.....	15
Safety information	16
Certification	17
Warranty	19
Warranty disclaimer	19

KNOW YOUR DEVICE

TOP VIEW

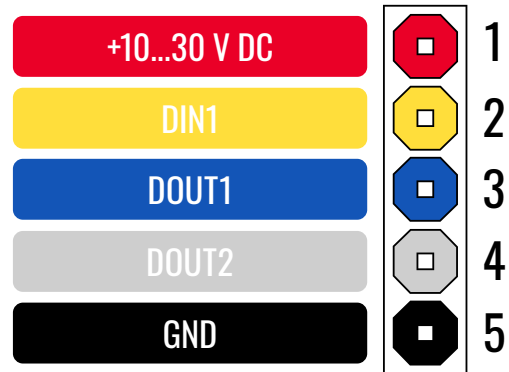


TOP VIEW (WITHOUT COVER)



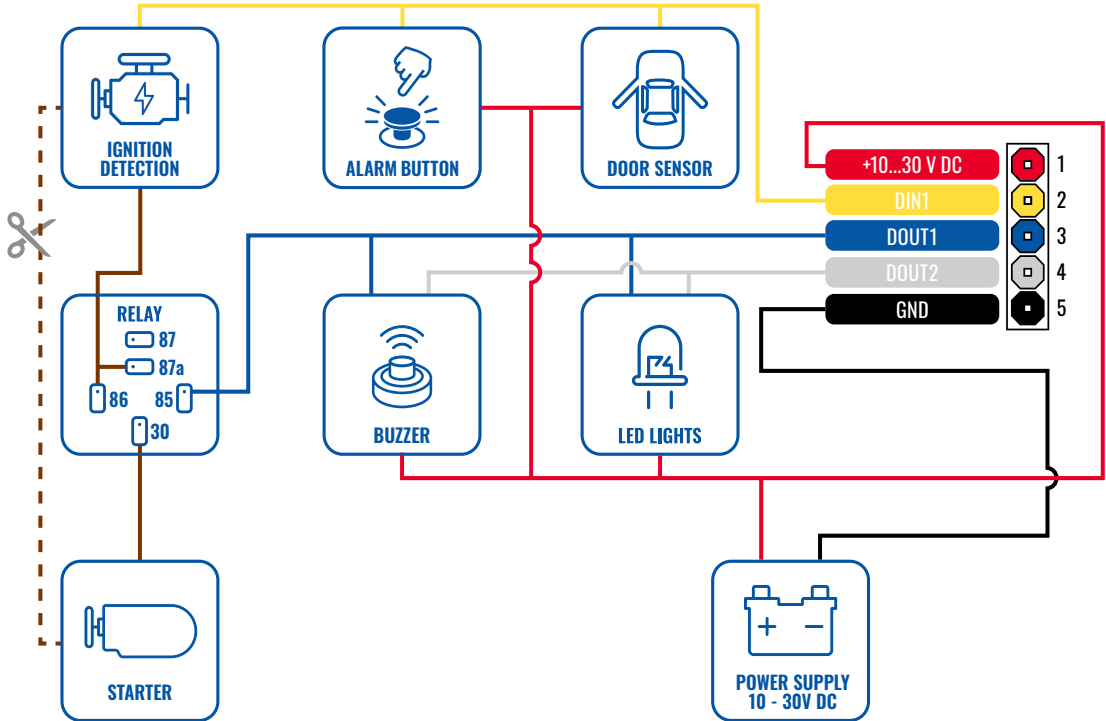
PINOUT

PIN NUMBER	PIN NAME	DESCRIPTION
1	VCC (10-30)V DC (+)	(Red) Power supply (10-30) V DC (+)
2	DIN 1	(Yellow) Digital input, channel 1. DEDICATED FOR IGNITION INPUT
3	DOUT 1	(Blue) Digital output
4	DOUT 2	(White) Digital output
5	GND (-)	(Black) Ground



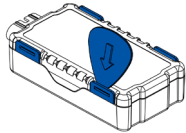
FMB965 pinout

WIRING SCHEME



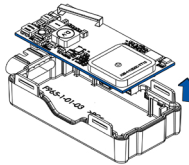
SET UP YOUR DEVICE

HOW TO INSERT MICRO-SIM CARD AND CONNECT THE BATTERY



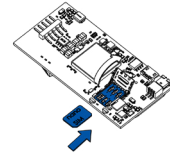
1 COVER REMOVAL

Gently remove FMB965 cover using plastic pry tool from both sides.



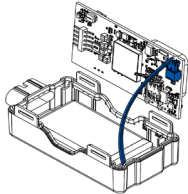
2 PCB REMOVAL

Gently lift the PCB out of the cover.



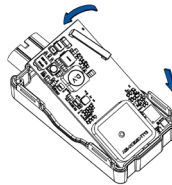
3 NANO-SIM CARD INSERT

Insert Nano-SIM card as shown with PIN request disabled or read Security info how to enter it later in Configurator. Make sure that Nano-SIM card cut-off corner is pointing outwards to slot.



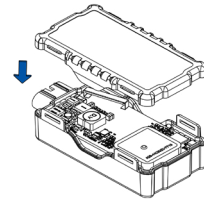
4 BATTERY CONNECTION

Connect the battery as shown on device.



5 INSERT PCB

Place PCB back into the place as shown in the picture, first the end that is marked as 1 need to be inserted, then the end that is marked as 2.



6 ATTACHING COVER BACK

Attach device cover back. Device is ready to be connected.

PC CONNECTION (WINDOWS)

1. Power-up FMB965 with **DC voltage (10 – 30 V)** power supply using **supplied power cable**. LED's should start blinking, see "**LED indications**".
2. Connect device to computer using **Micro-USB cable** or Bluetooth® wireless technology connection:
 - Using Micro-USB cable
 - You will need to install USB drivers, see "**How to install USB drivers (Windows)**"¹
 - Using **Bluetooth® technology**
 - FMB965 **Bluetooth® technology** is enabled by default. Turn on Bluetooth® connection on your PC, then select **Add Bluetooth or other device > Bluetooth**. Choose your device named – "**FMB965_last_7_imei_digits**", without **LE** in the end. Enter default password **5555**, press **Connect** and then select **Done**.
3. You are now ready to use the device on your computer.

¹https://wiki.teltonika-gps.com/view/FMB965_LED_status

²Page 6, "How to install USB drivers"

HOW TO INSTALL USB DRIVERS (WINDOWS)

1. Please download COM port drivers from [here](#)¹.
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.

¹wiki.teltonika-gps.com/images/d/d0/TeltonikaCOMDriver.zip

CONFIGURATION

At first FMB965 device will have default factory settings set. These settings should be changed according to the users needs. Main configuration can be performed via [Teltonika Configurator](#)¹ software. Get the latest **Configurator** version from [here](#)². Configurator operates on **Microsoft Windows OS** and uses prerequisite **MS .NET Framework**. Make sure you have the correct version installed.

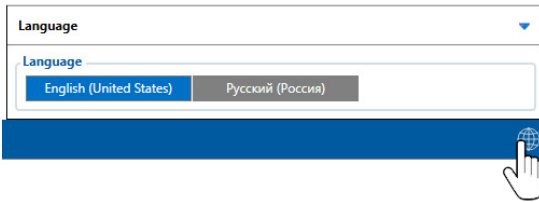
¹ wiki.teltonika-gps.com/view/Teltonika_Configurator


² wiki.teltonika-gps.com/view/Teltonika_Configurator_versions

MS .NET REQUIREMENTS

Operating system	MS .NET Framework version	Version	Links
Windows Vista			
Windows 7	MS .NET Framework 4.6.2	32 and 64 bit	www.microsoft.com ¹
Windows 8.1			
Windows 10			

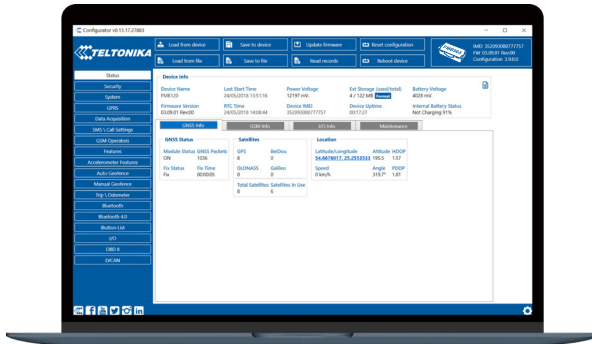
¹ dotnet.microsoft.com/en-us/download/dotnet-framework/net462



Downloaded Configurator will be in compressed archive. Extract it and launch Configurator.exe. After launch software language can be changed by clicking  in the right bottom corner.











Configuration process begins by pressing on connected device.



After connection to Configurator **Status window** will be displayed.

Various **Status window**¹ tabs display information about **GNSS**², **GSM**³, **I/O**⁴, **Maintenance**⁵ and etc. FMB965 has one user editable profile, which can be loaded and saved to the device. After any modification of configuration the changes need to be saved to device using **Save to device** button. Main buttons offer following functionality:

-  **Load from device** – loads configuration from device.
-  **Save to device** – saves configuration to device.
-  **Load from file** – loads configuration from file.
-  **Save to file** – saves configuration to file.
-  **Update firmware** – updates firmware on device.
-  **Read records** – reads records from the device.
-  **Reboot device** – restarts device.
-  **Reset configuration** – sets device configuration to default.

Most important configurator section is **GPRS** – where all your server and **GPRS settings**⁶ can be configured and **Data Acquisition**⁷ – where data acquiring parameters can be configured. More details about FMB965 configuration using Configurator can be found in our **Wiki**⁸.

¹ wiki.teltonika-gps.com/view/FMB965_Status_info

² wiki.teltonika-gps.com/view/FMB965_Status_info#GNSS_Info

³ wiki.teltonika-gps.com/view/FMB965_Status_info#GSM_Info

⁴ wiki.teltonika-gps.com/view/FMB965_Status_info#I2FO_Info

⁵ wiki.teltonika-gps.com/view/FMB965_Status_info#Maintenance

⁶ wiki.teltonika-gps.com/index.php?title=FMB965_GPRS_settings

⁷ wiki.teltonika-gps.com/index.php?title=FMB965_Data_acquisition_settings

⁸ wiki.teltonika-gps.com/index.php?title=FMB965_Configuration

QUICK SMS CONFIGURATION

Default configuration has optimal parameters present to ensure best performance of track quality and 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

2

3

4

5

6

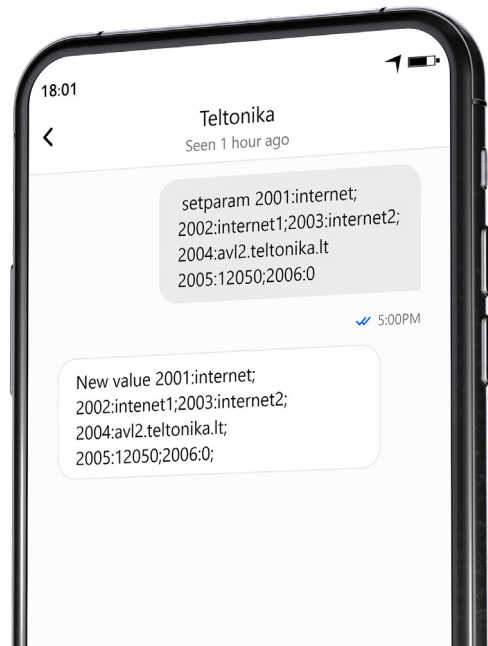
Note: Before SMS text, two space symbols should be inserted.

GPRS SETTINGS:

- 1 2001 – APN
- 2 2002 – APN username (if there are no APN username, empty field should be left)
- 3 2003 – APN password (if there are no APN password, empty field should be left)

SERVER SETTINGS:

- 4 2004 – Domain
- 5 2005 – Port
- 6 2006 – Data sending protocol (0 – TCP, 1 – UDP)



MOUNTING RECOMMENDATIONS

CONNECTING WIRES

- Wires should be fastened to the other wires or non-moving parts. Try to avoid heat emitting and moving objects near the wires.
- The connections should not be seen very clearly. If factory isolation was removed while connecting wires, it should be applied again.
- 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.
- Wires cannot be connected to the board computers or control units.

CONNECTING POWER SOURCE

- Be sure that after the car computer falls asleep, power is still available on chosen wire. Depending on car, 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 to the main power cable in the fuse box.
- Use 3A, 125V external fuse.

CONNECTING IGNITION WIRE

- Be sure to check if it is a real ignition wire i. e. power does not disappear 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 available).

- 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 is 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.

PAY ATTENTION!



Connecting the power supply must be carried out in a very low impedance point of on-board vehicle network. Connecting the GND at an arbitrary point to the mass of the car is unacceptable, as static and dynamic potentials on the line GND will be unpredictable, which can lead to unstable FMB965 operation and even its failure.

LED INDICATIONS

NAVIGATION LED INDICATIONS

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 INDICATIONS

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	TM2500
Technology	GSM, GPRS, GNSS, BLUETOOTH® LE

GNSS

GNSS	GPS, GLONASS, GALILEO, BEIDOU, SBAS, QZSS, DGPS, AGPS
Receiver	33 channels
Tracking sensitivity	-165 dBm
Accuracy	< 2.5 CEP
Velocity accuracy	<0.1m/s (within +/- 15% error)
Hot start	< 1 s
Warm start	< 25 s
Cold start	< 35 s

CELLUAR

Technology	GSM
2G bands	Quad-band 850 / 900 / 1800 / 1900 MHz
Data transfer	GPRS Multi-Slot Class 12 (up to 240 kbps), GPRS Mobile Station Class B
Data support	SMS (text/data)

	GSM850: 33dBm 5dBm±
Maximum output power	EGSM900: 33dBm 5dBm±
	DCS1800: 30dBm 5dBm±
	PCS1900: 30dBm 5dBm±
Frequency range	GSM 900: 880 – 915 MHz
	GSM 1800: 1710 – 1785 MHz

POWER

Input voltage range	10 - 30 V DC with overvoltage protection
Back-up battery	1200 mAh Li-Ion battery
Internal fuse	3 A, 125 V
Power Consumption	At 12V < 1.00 mA (Power Off sleep ¹)
	At 12V < 2.4 mA (Deep Sleep ²)
	At 12V < 2.64 mA (Online Deep Sleep ³)
	At 12V < 6.1 mA (GPS Sleep ⁴)
	At 12V < 22.82 mA (nominal with no load)
	At 12V < 250 mA Max. (with full Load / Peak)

¹ wiki.teltonika-gps.com/view/FMB965_Sleep_modes#Power_off_sleep_mode

² wiki.teltonika-gps.com/view/FMB965_Sleep_modes#Deep_Sleep_mode

³ wiki.teltonika-gps.com/view/FMB965_Sleep_modes#Online_Deep_Sleep_mode

⁴ wiki.teltonika-gps.com/view/FMB965_Sleep_modes#GPS_Sleep_mode

BLUETOOTH® TECHNOLOGY

Specification	4.0 + LE
Supported peripherals	EYE beacon and sensor ⁵ , Headset ⁶ , OBDII dongle ⁷ , Inateck Barcode Scanner, Unversal Bluetooth® LE beacons and sensors support

INTERFACE

Digital Inputs	1
Digital Outputs	2
GNSS antenna	Internal High Gain
GSM antenna	Internal High Gain
USB	2.0 Micro-USB
LED indication	2 status LED lights
SIM	Nano-SIM
Memory	128MB internal flash memory

PHYSICAL SPECIFICATION

Dimensions	79 x 43 x 22 mm (L x W x H)
Weight	74 g

⁵ teltonika-gps.com/products/accessories/sensors-beacons

⁶ wiki.teltonika.lt/view/How_to_connect_Blue-tooth_Hands_Free_adapter_to_FMB_device

⁷ wiki.teltonika.lt/view/How_to_connect_OBD_II_Blue-tooth_Dongle_to_FMB_device

OPERATING ENVIRONMENT

Operating temperature (without battery)	-40 °C to +85 °C
Storage temperature (without battery)	-40 °C to +85 °C
Operating temperature (with battery)	-20 °C to +40 °C
Storage temperature (with battery)	-10 °C to +45 °C
Operating humidity	5% to 95% non-condensing
Ingress Protection Rating	IP67
Battery charge temperature	0 °C to +45 °C
Battery discharge temperature	-20 °C to +60 °C
Battery storage temperature	-10°C ~ 45 °C storage for a long time (≥3months)

FEATURES

Sensors	Accelerometer
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Scenarios

Green Driving, Over Speeding detection, Jamming detection, GNSS Fuel Counter, DOUT Control Via Call, DOUT Control Via ignition, Ignition On Counter, Excessive Idling detection, Unplug detection, Towing detection, Crash detection, Crash Data Visualization, Auto Geofence, Manual Geofence, Trip, Immobilizer⁸

Sleep modes

GPS Sleep, Online Deep Sleep, Deep Sleep, Power Off sleep⁹

Configuration and firmware update

FOTA Web¹⁰, FOTA Desktop¹¹, Teltonika Configurator¹² (USB, Bluetooth[®] wireless technology), FMBT mobile application¹³ (Configuration)

SMS

Configuration, Events, DOUT Control, Debug

GPRS commands

Configuration, Debug, DOUT Control

⁸ wiki.teltonika-gps.com/view/FMB965_Accelerometer_Features_settings

⁹ wiki.teltonika-gps.com/view/FMB965_Sleep_modes

¹⁰ wiki.teltonika.lt/view/FOTA_WEB

¹¹ wiki.teltonika-gps.com/view/FOTA_Desktop

¹² wiki.teltonika.lt/view/Teltonika_Configurator

¹³ wiki.teltonika-gps.com/view/FMBT_Mobile_application

Time Synchronization	GPS, NITZ, NTP
Fuel monitoring	OBDII dongle¹⁴
Ignition detection	Digital Input 1, Accelerometer, External Power Voltage, Engine RPM (OBDII dongle)
Power off sleep mode	Allows to power off module to reduce power consumption to less than 1mA in a sleep mode

¹⁴wiki.teltonika.lt/view/How_to_connect_OBD_II_Blue-tooth_Dongle_to_FMB_device

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC DESCRIPTION

VALUE

SUPPLY VOLTAGE	MIN.	TYP.	MAX.	UNIT
Supply Voltage (Recommended Operating Conditions)	+10		+30	V

DIGITAL OUTPUT (OPEN DRAIN GRADE)

Drain current (Digital Output OFF)			120	µA
Drain current (Digital Output ON, Recommended Operating Conditions)	0.1		0.5	A
Static Drain-Source resistance (Digital Output ON)			300	mΩ

DIGITAL INPUT

Input resistance (DIN1)	47			kΩ
Input voltage (Recommended Operating Conditions)	0		30	V
Input Voltage threshold		4		V

SAFETY INFORMATION

This message contains information on how to operate FMB965 safely. By following these requirements and recommendations, you will avoid dangerous situations. You must read these instructions carefully and follow them strictly before operating the device!

- The device uses SELV limited power source. The nominal voltage is +12 V DC. The allowed voltage range is +10..+30 V DC.
- 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.
- When connecting the connection (1x5) cables to the vehicle, the appropriate jumpers of the power supply of the vehicle should be disconnected.
- Before dismounting the device from the vehicle, the 1x5 connection must be disconnected.
- The device is designed to be mounted in a zone of limited access, which is inaccessible to the operator. All related devices must meet the requirements of EN EN 62368-1 standard.
- The device FMB965 is not designed as a navigational device for boats.



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.

CERTIFICATION



This sign on the package means that it is necessary to read the User 's Manual before your start using the device. Full User 's Manual version can be found in our [Wiki](#)¹.

¹ wiki.teltonika-gps.com/view/FMB965



UK Conformity Assessed (UKCA) marking is a conformity mark that indicates conformity with the applicable requirements for above described products sold within Great Britain.



The RoHS1 is a directive regulating the manufacture, import and distribution of Electronics and Electrical Equipment (EEE) within the EU, which bans from use 10 different hazardous materials (to date).



The Declaration EAC and the Certificate EAC in conformity with the technical regulation TR CU of the EurAsEC Customs Union are EAC certification documents issued by independent organizations. Such organizations perform their function through laboratories accredited to the public agencies in charge of the supervision of metrology and standardization in the three countries of the EAC Custom Union, joining at the moment the certification system : Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan.



The standard aims to provide users more detailed information than vague marketing terms such as waterproof.



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



E-Mark and e-Mark are the European conformity marks issued by the transport sector, indicating that the products comply with relevant laws and regulations or directives. Vehicles and related products need to go through the E-Mark certification process to be legally sold in Europe.



Hereby, Teltonika declare under our sole responsibility that the above described product is in conformity with the relevant Community harmonization: European Directive 2014/53/EU (RED).



REACH addresses the production and use of chemical substances, and their potential impacts on both human health and the environment. Its 849 pages took seven years to pass, and it has been described as the most complex legislation in the Union's history and the most important in 20 years. It is the strictest law to date regulating chemical substances and will affect industries throughout the world.



The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by UAB Teltonika Telematics is under license. Other trademarks and trade names are those of their respective owners.

DECLARATION OF IMEI ASSIGNMENT

The IMEI number is used by a GSM network to identify valid devices and therefore can be used for stopping a stolen phone from accessing that network. For example, if a mobile phone is stolen, the owner can call their network provider and instruct them to blacklist the phone using its IMEI number. This renders the phone useless on that network and sometimes other networks too, whether or not the phone's subscriber identity module (SIM) is changed.

CHECK ALL CERTIFICATES

All newest certificates may be found in our [Wiki](#)².

² wiki.teltonika-gps.com/view/FMB965_Certification_%26_Approvals

WARRANTY

We guarantee our products 24-month warranty¹ 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

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

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 RMA¹](#)

¹ wiki.teltonika-gps.com/view/RMA_guidelines