TELTONIKA | Telematics

TFT100

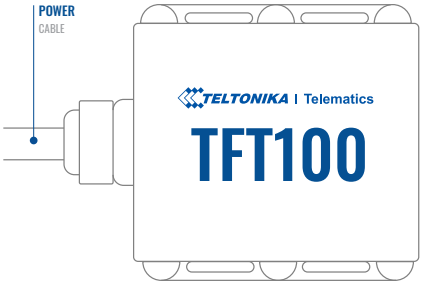
2G tracker with high-voltage support
for e-mobility & heavy machinery

Quick Manual v1.5

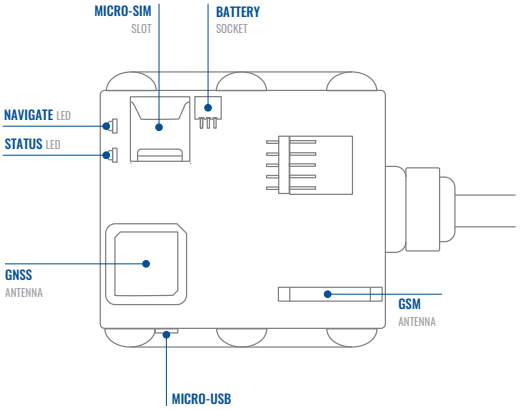
CONTENT

KNOW YOUR DEVICE

TOP VIEW

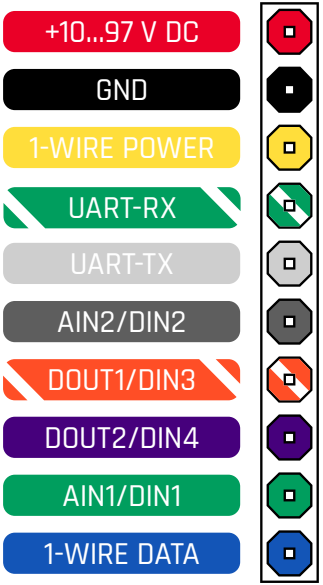


TOP VIEW (WITHOUT COVER)



UART PINOUT

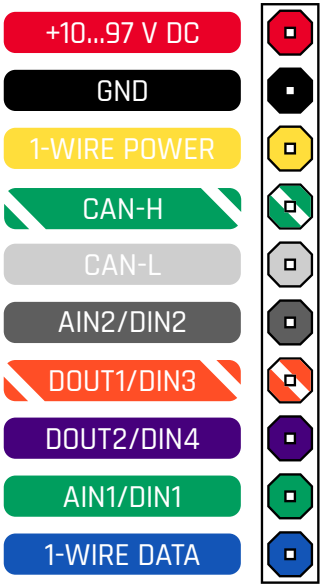
PIN COLOR	PIN NAME	DESCRIPTION
Red	VCC (10-97) V DC (+)	Power supply (+10...97 V DC).
Black	GND (-)	Ground.
Yellow	1WIRE POWER	Power supply pin for Dallas 1-Wire devices.
White/ Green	UART-RX	Input for data reception through UART.
White	UART-TX	Output for data transmission through UART.
Grey	AIN 2 / DIN 2	Analog input, channel 2 / Digital input, channel 2.
White/ Orange	DOUT 1 / DIN 3	Digital output, channel 1 / Digital input, channel 3.
Violet	DOUT 2 / DIN 4	Digital output, channel 2 / Digital input, channel 4.
Green	AIN 1 / DIN 1	Analog input, channel 1 / Digital input, channel 1.
Blue	1WIRE DATA	Data channel for 1–Wire devices.



TFT100 UART PINOUT

CAN PINOUT

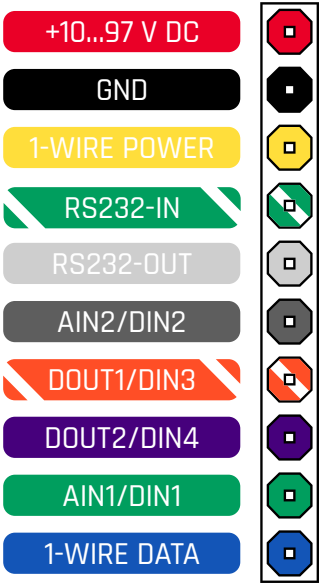
PIN COLOR	PIN NAME	DESCRIPTION
Red	VCC (10-97) V DC (+)	Power supply (+10...97 V DC).
Black	GND (-)	Ground.
Yellow	1WIRE POWER	Power supply pin for Dallas 1-Wire devices.
White/ Green	CAN-H	CAN interface High.
White	CAN-L	CAN interface Low.
Grey	AIN 2 / DIN 2	Analog input, channel 2 / Digital input, channel 2.
White/ Orange	DOUT 1 / DIN 3	Digital output, channel 1 / Digital input, channel 3.
Violet	DOUT 2 / DIN 4	Digital output, channel 2 / Digital input, channel 4.
Green	AIN 1 / DIN 1	Analog input, channel 1 / Digital input, channel 1.
Blue	1WIRE DATA	Data channel for 1–Wire devices.



TFT100 CAN PINOUT

RS232 PINOUT

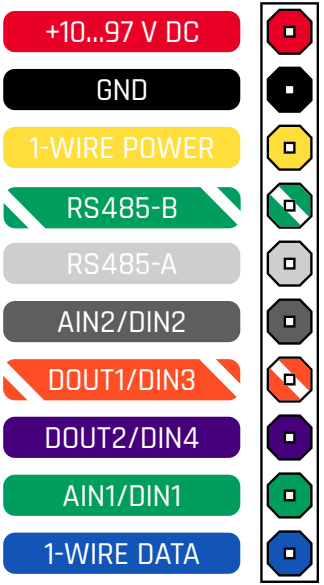
PIN COLOR	PIN NAME	DESCRIPTION
Red	VCC (10-97) V DC (+)	Power supply (+10...97 V DC).
Black	GND (-)	Ground.
Yellow	1WIRE POWER	Power supply pin for Dallas 1-Wire devices.
White/ Green	RS232-IN	Input wire for RS232.
White	RS232-OUT	Output wire for RS232.
Grey	AIN 2 / DIN 2	Analog input, channel 2 / Digital input, channel 2.
White/ Orange	DOUT 1 / DIN 3	Digital output, channel 1 / Digital input, channel 3.
Violet	DOUT 2 / DIN 4	Digital output, channel 2 / Digital input, channel 4.
Green	AIN 1 / DIN 1	Analog input, channel 1 / Digital input, channel 1.
Blue	1WIRE DATA	Data channel for 1–Wire devices.



TFT100 RS232 PINOUT

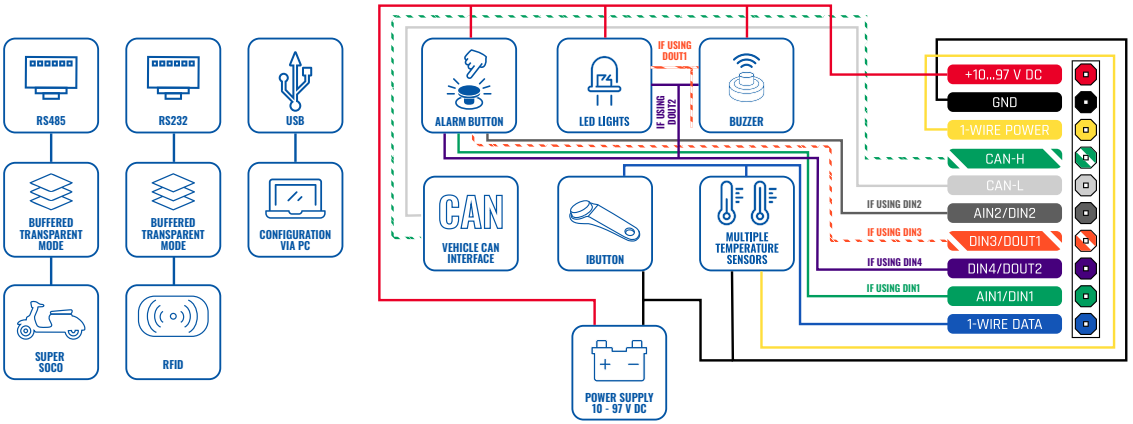
RS485 PINOUT

PIN COLOR	PIN NAME	DESCRIPTION
Red	VCC (10-97) V DC (+)	Power supply (+10...97 V DC).
Black	GND (-)	Ground.
Yellow	1WIRE POWER	Power supply pin for Dallas 1-Wire devices.
White/ Green	RS485-B	Input for data reception through UART.
White	RS485-A	Output for data transmission through UART.
Grey	AIN 2 / DIN 2	Analog input, channel 2 / Digital input, channel 2.
White/ Orange	DOUT 1 / DIN 3	Digital output, channel 1 / Digital input, channel 3.
Violet	DOUT 2 / DIN 4	Digital output, channel 2 / Digital input, channel 4.
Green	AIN 1 / DIN 1	Analog input, channel 1 / Digital input, channel 1.
Blue	1WIRE DATA	Data channel for 1–Wire devices.



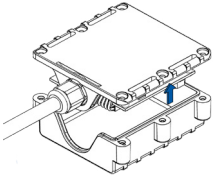
TFT100 RS485 PINOUT

WIRING SCHEME



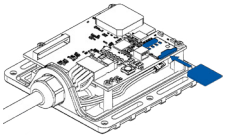
SET UP YOUR DEVICE

HOW TO INSERT MICRO-SIM CARD



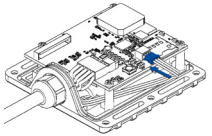
1 COVER REMOVAL

Remove the bottom cover.



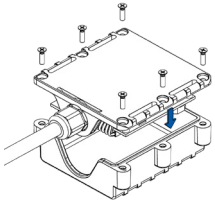
2 MICRO-SIM CARD INSERT

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



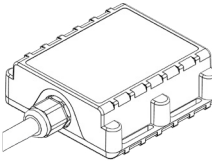
3 BATTERY CONNCETION

Connect the **battery** as shown to the device.



4 ATTACHING COVER BACK

After configuration, attach device **cover** and put the **screws** back in.



5 COMPLETELY CLOSED DEVICE

Device is ready to be connected.

PC CONNECTION (WINDOWS)

1. Power-up TFT100 with **DC voltage 10 - 97V** power supply using **supplied power cable**. LED's should start blinking, see **"LED behaviour description"**.
2. Connect device to computer using **Micro-USB cable** or **Bluetooth®** connection:
   - Using **Micro-USB cable**
     - You will need to install USB drivers, see "**How to install USB drivers (Windows)**"
   - Using **Bluetooth® wireless technology**
     - TFT100 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 – "**TFT100_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.

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.

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

CONFIGURATION

At first TFT100 device will have default factory settings set. These settings should be changed according to the user's needs. Main configuration can be performed via **Teltonika Configurator*** software. Get the latest **Configurator** version from **here****. Configurator operates on **Microsoft Windows OS** and uses prerequisite **MS .NET Framework.** Make sure you have the correct version installed.

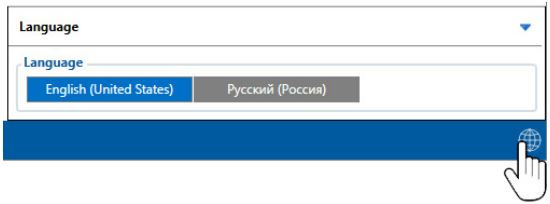
* wiki.teltonika-gps.com/view/Teltonika_Configurator

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

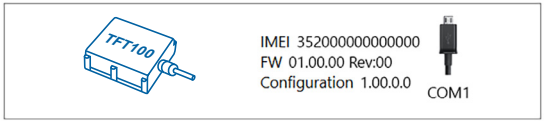
MS .NET REQUIREMENTS

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

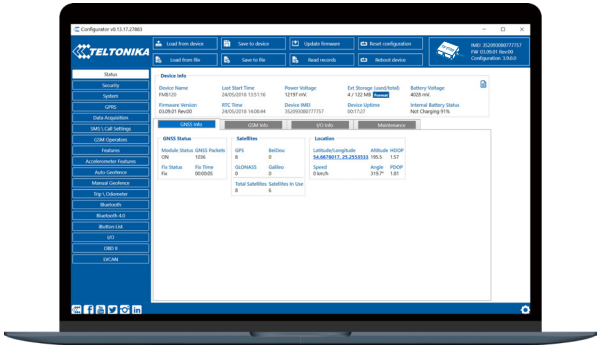
* dotnet.microsoft.com/en-us/download/dotnet-framework/net462



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. TFT100 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 TFT100 configuration using Configurator can be found in our Wiki[8].

[1] wiki.teltonika-gps.com/view/TFT100_Status_info

[2] wiki.teltonika-gps.com/view/TFT100_Status_info#GNSS_Info

[3] wiki.teltonika-gps.com/view/TFT100_Status_info#GSM_Info

[4] wiki.teltonika-gps.com/view/TFT100_Status_info#I.2FO_Info

[5] wiki.teltonika-gps.com/view/TFT100_Status_info#Maintenance

[6] wiki.teltonika-gps.com/index.php?title=TFT100_GPRS_settings

[7] wiki.teltonika-gps.com/index.php?title=TFT100_Data_acquisition_settings

[8] wiki.teltonika-gps.com/index.php?title=TFT100_Configuration

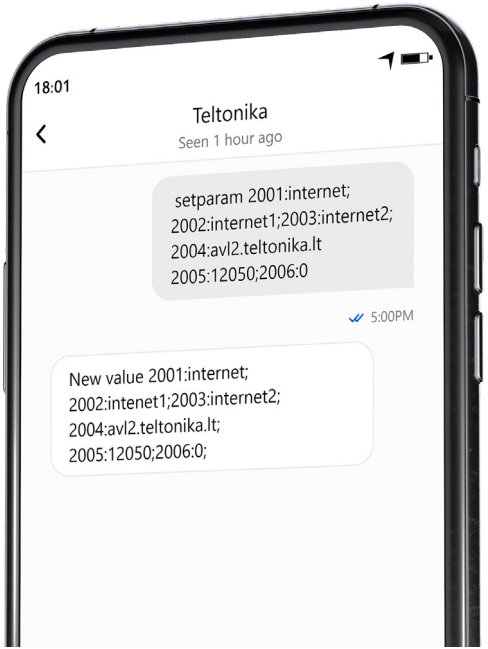
QUICK SMS CONFIGURATION

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»
```

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)

DEFAULT CONFIGURATION SETTINGS

MOVEMENT AND IGNITION DETECTION:

VEHICLE MOVEMENT
will be detected by accelerometer

IGNITION
will be detected by vehicle power voltage between 12 – 30 V

DEVICE MAKES A RECORD ON STOP IF:

1 HOUR PASSES
while vehicle is stationary

RECORDS SENDING TO SERVER:

EVERY 120 SECOND
it is sent to the server If device has made a record

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

PASSES
300 seconds

VEHICLE DRIVES
100 meters

VEHICLE TURNS
10 degrees

SPEED DIFFERENCE
between last coordinate and current position is greater than 10 km/h

Time intervals and default I/O elements can be changed by using **Teltonika Configurator**[1].

[1] wiki.teltonika-gps.com/view/TFT100_Firmware_and_configurator

MOUNTING RECOMMENDATIONS

CONNECTING WIRES

- Wires should be connected while the module is not plugged in.
- Wires should be fastened to stable wires or other non-moving parts. Any heat emitting and/or moving objects should be kept away from the wires.
- There should be no exposed wires. If factory isolation was removed while connecting wires, the isolation material should be applied.
- 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 and the wires should not be loose.

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. These points in the car are the battery terminals. Therefore, we recommend connecting the power of TFT100 (GND and POWER wires) directly to the battery terminals. Another valid option is to connect the wires to the main POWER cable inside the fuse box (if there is none, then to the power supply where the fuses of vehicle's computer are), GND wire must be connected in a special point, designed to connect GND vehicle computer. 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 TFT100 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	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

PRODUCT	
Model name	TFT100-TAIB0* TFT100-TAIBB** TFT100-TAIBC*** TFT100-TAIBD****

*CAN interface
**RS485 interface
***RS232 interface
****UART interface

MODULE	
Name	Teltonika TM2500
Technology	2G(GSM/GPRS)/GNSS/BLUETOOTH® LE

GNSS	
GNSS	Teltonika TM2500
Receiver	L1: GPS, GLONASS, GALILEO, BEIDOU, SBAS*, QZSS*, DGPS*, AGPS*
Tracking sensitivity	33 tracking channel 99 acquisition channel
Position accuracy	-165 dBM
Velocity accuracy	< 0.1 m/s (within +/- 15% error)

* Optional GNSS modes available with custom firmware development, for more information contact your sales manager.

Hot start	< 1 s
Warm start	< 25 s
Cold start	< 35 s

BLUETOOTH® TECHNOLOGY

Specification	4.0 + LE
Supported peripherals	Temperature and Humidity sensor, Universal Bluetooth® LE sensors support

CELLULAR

Technology	GSM/GPRS
2G	GSM: B2/B3/B5/B8
GPRS	GPRS Mobile Station Class B
Data transfer	GSM (GPRS): Max. 85.6 Kbps (DL) / Max. 85.6 Kbps (UL)
Data support	SMS (TEXT, PDU), Network protocols (TCP,UDP,TLS,DTLS)

POWER

Input voltage range	10 - 97 V DC with overvoltage protection
Back-up battery	1800 mAh Li-Ion battery 3.7 V (6.66 Wh)
Internal fuse	3.15 A, 125 V

POWER CONSUMPTION

At 12V (Ultra Deep Sleep)	< 8 mA
At 12V (Deep Sleep)	< 12 mA
At 12V (Online Deep Sleep)	< 12 mA
At 12V (GPS Sleep)	< 19.5 mA
At 12V (Nominal with no load)	< 34 mA
At 12V (With full load/peak)	< 2 A Max

PHYSICAL SPECIFICATION

Dimensions	72.5 x 73 x 27.3 mm (L x W x H)
Weight	169 g

OPERATING ENVIRONMENT

Operating temperature (without battery)	-20 °C to +75 °C
Storage temperature (without battery)	-20 °C to +75 °C
Operating temperature (with battery)	-20 °C to +60 °C
Storage temperature (with battery)	-20 °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 +70 °C
Battery storage temperature	-10 °C to +45 °C

INTERFACE

Digital input	4
Digital output	2
Analog input	2
1-Wire Data	1
1-Wire Power	1
Communication interface	CAN / RS485 / RS232 / UART*
GNSS antenna	Internal High Gain
Cellular antenna	Internal High Gain
USB	2.0 Micro-USB
LED indication	2 status LED lights

* Depending on ordered TFT100 modification

SIM	Micro-SIM, eSIM**
Memory	128MB internal flash memory

**eSIM is available with separate PCB assembly, for more information contact your sales manager

FEATURES

Sensors	Accelerometer
Scenarios	Eco/Green Driving, Over Speeding, Jamming, Excessive Idling, FallDown, Towing detection, Crash detection, Auto Geofence, Manual Geofence, Trip/Odometer, Immobilizer, iButton, DOUT control via call, DOUT control via Ignition, Last Known Position, Timestamp Backup, Ignition ON Counter
CAN Modes*	Manual CAN, Manual CAN commands, Manual J1939, Bosch, Askoll, Default J1939, FLEX, Debug
RS485 Modes**	Log Mode, NMEA, TCP Ascii, TCP Binary, Super Soco
RS232 Modes***	Log Mode, NMEA, TCP Ascii, TCP Binary
UART Modes***	Log Mode, NMEA, TCP Ascii, TCP Binary

*Available for TFT100-TAIB0
**Available for TFT100-TAIBB
***Available for TFT100-TAIB0

Sleep Modes	GPS Sleep, Online Deep Sleep, Deep Sleep, Ultra Deep Sleep
Configuration and firmware update	FOTA Web, Teltonika Configurator (USB, Bluetooth® wireless technology)
SMS	Configuration, Events, Debug
GPRS commands	Configuration, Debug
Time Synchronization	GNSS, NITZ, NTP
Ignition detection	Accelerometer, External Power Voltage, DIN1, DIN3, DIN4, CAN*

CERTIFICATION & APPROVALS

Regulatory	CE (RED), EAC, E-Mark, Anatel, UKCA, Ukrainian UCRF, RoHS, REACH, IP67

SAFETY INFORMATION

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

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.

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.

CERTIFICATION AND APPROVALS

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] https://wiki.teltonika-gps.com/view/TFT100

Para maiores informações, consulte o site da ANATEL **www.anatel.gov.br**
Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

For more information, see the ANATEL website **www.anatel.gov.br**
This equipment is not entitled to protection against harmful interference and must not cause interference in duly authorized systems.

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

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.

CHECK ALL CERTIFICATES

All newest certificates may be found in our **Wiki**[2].

[2] wiki.teltonika-gps.com/view/TFT100_Certification_%26_Approvals

WARRANTY

We guarantee our products 24-month warranty* 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

* 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 RMA***

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